



UNIVERSIDADE CATÓLICA PORTUGUESA

# Venture Capital and Sustainable Finance

## Clinical study on the integration of ESG criteria in the pre-investment process

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# Resumo

As alterações climáticas e a degradação ambiental representam ameaças para as atividades económicas e sociais em todo o mundo. O sistema financeiro tem desempenhado um papel central na transformação sustentável da economia global, com as considerações Ambientais, Sociais e de Governança (ESG) a tornarem-se generalizadas no setor. As iniciativas do *Pacto Ecológico Europeu* da Comissão Europeia visam transformar a UE numa economia moderna, eficiente em termos de recursos e competitiva, sendo o empreendedorismo e a inovação chave na transição para o desenvolvimento sustentável. Este estudo investiga até que ponto o capital de risco, reconhecido como um intermediário financeiro significativo no ecossistema empreendedor, está a financiar a transição, examinando as motivações dos gestores de fundos de capital de risco na integração dos critérios ESG no seu processo de pré investimento. Para revelar estas motivações, foram realizadas entrevistas pessoais, apoiadas por um questionário estruturado, a uma amostra de representantes de fundos de capital de risco sedeados em Portugal.

Os empresas que integram o presente estudo incorporam fatores ESG, principalmente na seleção de negócios, mas não os priorizam, considerando-os como pouco importantes. Os resultados apoiam a hipótese de que os fundos não consideram a integração ESG como um fator determinante. Não foram encontradas diferenças entre as empresas signatárias e não signatárias dos UN PRI. A perceção positiva do impacto ESG nos retornos dos investimentos é inconsistente na amostra, e os resultados são insuficientes para confirmar a perceção de uma relação positiva entre as considerações ESG e os retornos dos investimentos. Embora o ambiente regulatório não seja o principal

impulsionador para a incorporação de ESG, o grau de integração está positivamente associado aos desenvolvimentos políticos e regulatórios.

O estudo destaca os principais obstáculos ao investimento ESG, tais como a subjetividade excessiva, a falta de clareza e as dificuldades em quantificar os fatores ESG. Esta conclusão está alinhada com a constatação da Comissão do Mercado de Valores Mobiliários (CMVM) de que as entidades gestoras precisam de reforçar as competências internas para cumprir o quadro regulamentar aplicável. Os investidores salientam que os requisitos regulamentares, se desconectados da implementação prática, podem levar a processos artificiais e a um *greenwashing* não intencional. Apesar de reconhecerem a importância dos tópicos de sustentabilidade, existe desconfiança devido à dificuldade em medir o impacto ESG, tanto na sociedade quanto no desempenho dos fundos.

Palavras-chave: Capital de risco, Finanças Sustentáveis, ESG

Número de palavras: 9950

# Abstract

The climate change and environmental degradation present existential threats to economic and social activities worldwide. The financial system has been assigned a central role in the sustainable transformation of the global economy, with Environmental, Social and Governance (ESG) considerations becoming widespread in the financial sector. The European Commission's Green Deal initiatives aim to transform the EU into a modern, resource-efficient, and competitive economy, with entrepreneurship and innovation being key drivers of the sustainable development transition. This study investigates the extent to which Venture Capital (VC), recognized as a significant financial intermediary in entrepreneurial ecosystem, is funding the transition by examining the motivations of fund managers in integrating ESG criteria into their pre-investment process. To uncover these motivations, personal interviews were conducted, supported by a structured questionnaire, administered to a sample of representatives of Portuguese VC funds.

Participants incorporate ESG factors mainly in deal screening, but do not prioritize them, perceiving them as somewhat unimportant. This supports the hypothesis that VCs do not consider ESG integration a criterion factor, with no differences noted between UN PRI signatory and non-signatory firms. The positive perception of ESG's impact on investment returns is inconsistent across the sample, and the results are insufficient to confirm a positive relationship between ESG considerations and investment returns. While the regulatory environment is not the primary driver for incorporating ESG, VC engagement with ESG factors is positively associated with policy and regulatory developments.

The study highlights key barriers to ESG investing, such as excessive subjectivity, lack of clarity, and difficulties in quantifying ESG factors. This conclusion is aligned with the Comissão do Mercado de Valores Mobiliários (CMVM)'s recognition that management entities need to strengthen internal competencies to comply with the applicable regulatory framework. VCs also report that regulatory requirements, if disconnected from practical implementation, can lead to artificial processes and potential unintentional greenwashing. Despite recognizing the importance of sustainability topics, there is distrust due to the difficulty in measuring ESG impact, both in society and funds' performance.

Keywords: Venture Capital, Sustainable Finance, ESG



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# Abbreviations

AUM – Assets under management

CMVM – Comissão do Mercado de Valores Mobiliários

EC – European Commission

ESG - Environmental, Social and Governance

ESMA - European Securities and Markets Authority

GIIN - Global Impact Investing Network

GP – General Partner

IPO - Initial public offering

LP – Limited Partner

NVCA - National Venture Capital Association

PE – Private Equity

PRI - Principles for Responsible Investment

SDGs - United Nations Sustainable Development Goals

SF – Sustainable Finance

SFDR - Sustainable Finance Disclosure Regulation

SRI - Socially Responsible Investing

VC- Venture Capital

VCs - Venture Capitalists

WTP - Willingness to Pay



# Introduction

The financial system, as the provider of capital, has been assigned a central role in the sustainable transformation of the global economy (Steffen & Schmidt, 2021). Within this system, venture capital (VC) is seen as one of the more prominent methods of financing new ventures (Barber et al., 2019), with sustainable entrepreneurship emerging as a new horizon in this research field (Cumming et al., 2023). VC is a facilitator for the growth of dynamic entrepreneurial startups, especially in cutting-edge sectors like biotechnology, information technology and e-commerce (Bottazzi, 2002). Sustainability transitions require a redirection of finance flows, towards new sustainable technologies and practices (Steffen & Schmidt, 2021). The present study examines the interception of sustainable development and VC. The central question under analysis is VC fund managers' motivations that support the integration of ESG criteria in the pre-investment activities, focusing on deal screening and deal evaluation. This study aims to contribute to fund seekers, limited partners (LPs), venture capitalists (VCs), regulators, and governments.

Firstly, it is crucial to understand if VCs consider ESG integration as a criterion in deal screening and evaluation. The literature shows that authors hold divergent opinions regarding VCs' selection criteria, particularly in the weighting of "jockey's" attributes compared to those of the "horse" (Kaplan et al., 2009; Esen et al., 2023; Gompers et al., 2020; Macmillan et al., 1985; Hall & Hofer, 1993). The authors do not mention ESG factors as part of the pre-investment decision process, driving the first research hypotheses. Secondly, considering that at the heart of ESG investing lies a dichotomy between sustainability and profitability (Coqueret, 2020), this research contributes to the discussion about

which factors drive ESG investing, particularly, whether ESG considerations can materialize into higher returns. Thirdly, driven by the rapid evolution of regulatory agendas at both European and national levels to promote a sustainable economy, the hypothesis that implemented regulation mobilize capital towards sustainable investments is tested (Barber et al.,2019). Is ESG engagement positively associated with the level of policy and regulatory developments?

A clinical study methodology approach, applied through personal interviews conducted with representatives of Portuguese VC funds, shows that VCs incorporate ESG factors mainly in deal screening but perceive them as somewhat unimportant. This supports the hypothesis that VCs do not consider ESG integration a criterion factor, with no differences noted between UN PRI signatory and non-signatory firms. The positive view regarding the impact of ESG on investment returns varies within the sample and is not substantial enough to confirm. The regulatory environment is not the primary driver for incorporating ESG. However, VC engagement with ESG factors is positively associated with policy and regulatory developments. The key barriers identified to ESG investing are excessive subjectivity, lack of clarity, and difficulties in quantifying ESG factors. VCs report that regulatory requirements, if disconnected from practical implementation, can lead to unintentional greenwashing. The importance of sustainability topics is recognized but VCs reinforce the need to measure ESG impact, both in society and in funds' performance, to build trust.

The work is organized as follows. The first chapter presents a comprehensive literature review that aims to provide an overview and link the available research on startups, on VC and on the field of Sustainable Finance (SF), particularly ESG, culminating with the implications and hypotheses. The second chapter outlines

the clinical studies methodology and clinical study structure. Finally, chapter three includes the results of the research, which are summarized in chapter four.



# Chapter 1

## Literature Review

### 1. Startups, Venture Capital, and ESG

Across industries, geographies, and company sizes, organizations have increasingly devoted more resources towards improving environmental, social and governance (ESG) initiatives (Pérez et al., 2022). According to Coqueret (2020), the research on sustainable finance (SF) has intensified over the past decade, and the main reason behind is the persistent negligence of resources (both natural and human). Investors are increasingly concerned with these issues, leading to a shift in preferences: ESG considerations are now widespread in the money management industry (Coqueret, 2020).

Contemporary VC emerged in the US in the mid-1940s, and half a century later has become the primary form of financial intermediation (Bottazzi, 2002). According to Bottazzi (2002), VC is effective in assisting these firms to overcome credit constraints, and thus facilitating their establishment in the first place. VC provides not only adequate capital to finance startups, but can influence its business strategy and corporate governance, in an early stage of development (e.g., Hellmann & Puri, 2002; Hellmann & Puri, 2000; Slager, 2006).

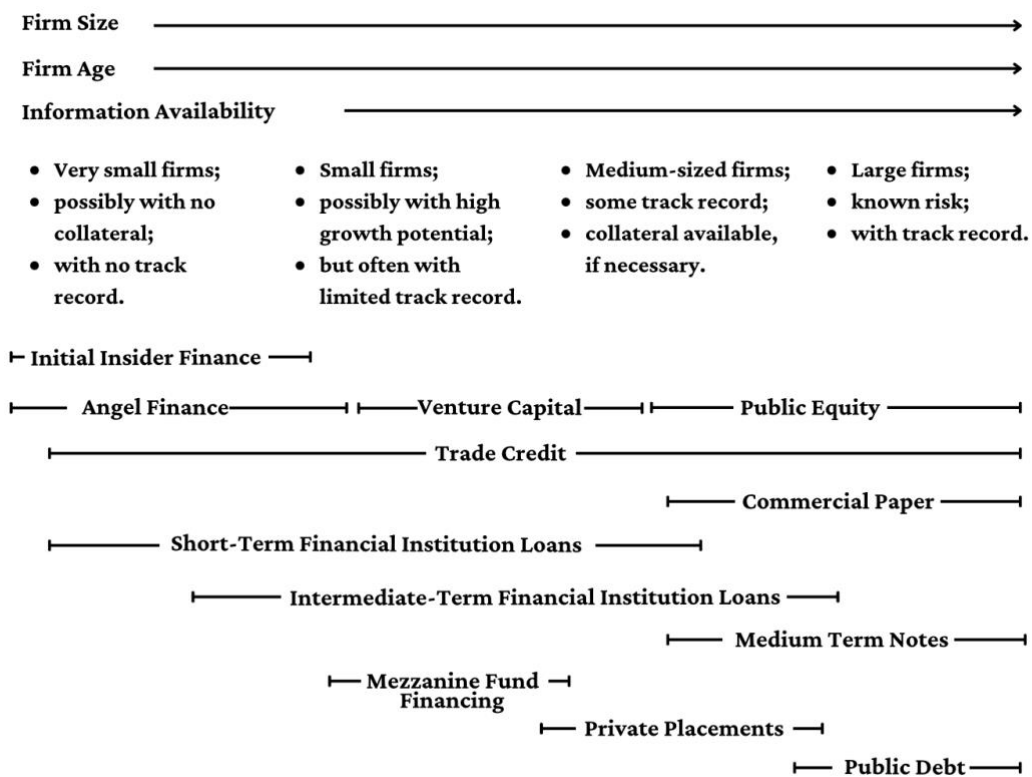
The following literature review is grounded in the vital role of SF and the significance of VC as a vehicle to foment young and dynamic startups' growth. Accordingly, this work aims to give an overview and link the research available on startups, on VC and on the field of ESG and impact investing, presenting them, mostly, from the investors' perspective.

## 1.1. Startups' financing challenges

The role of startups as an engine of economic growth has gained considerable public attention in the 1990s, which arises from the belief that innovation is vitally dependent on a prosper entrepreneurial sector (Berger & Udell, 1998). Hence, the US generated more rapid economic growth than Western Europe in the 1990s, largely due to the expansion of small, tech-based companies (Damodaran, 2009). According to the Art.22(2) of EU Commission Regulation No. 651/ 2014, startups are legally described as unlisted small enterprises with less than five years, which have not yet distributed profits, and have not been formed through of merger. Startups can be found in all industry sectors and locations, mainly in rapidly developing fields, and are often characterized as knowledge-based and technology driven.

Given its nature, generally, startups have no significant operating history, possess few tangible assets, have little or no revenues and operating losses, and a high probability of failure (Damodaran, 2009b). As pointed out by Damodaran (2009), these characteristics are among the reasons for the inherent difficulty of valuing a startup. In this context, young firms are typically plagued by high levels of uncertainty, information asymmetry (and opacity) between entrepreneurs and investors, which, ultimately, results in startups' struggle when raising capital for the growth of the business (Gompers & Lerner, 2001). Damodaran (2009) argues that most young and startup companies are dependent upon private capital, rather than public markets – initially from the owner's savings (and friends and family) and subsequently from Private Equity (PE) or VC. However, the empirical evidence shows that there is a gap between the demand for financial resources by startup companies and the supply of early-stage equity capital (Berger & Udell, 1998). As shown on Figure 1, (Berger & Udell, 1998) illustrate the available sources of finance along the firm's lifecycle. Information asymmetries along with lack of evidence of continual profitability

and, consequently, high risk levels for investors, are key determinants in deciding which segment of the capital market – be it public or private – and the types of finance to pursue at each stage of a company’s life cycle. PE refers to the asset class of equity securities in companies that are not publicly traded on a stock exchange (Cumming, 2012a). The term “private equity” typically includes investments in VC or growth investment, as well as late-stage and buyout investments. In the context of the present work the focus is on VC. According to Bonini & Capizzi (2019), the last decade has seen the emergence of alternative sources of early-stage financing, including incubators, accelerators, university-affiliated and corporate seed funds, business angels and both equity- and debt-based crowdfunding platforms. However, the same authors suggest that traditional closed-end VC funds continue to play an important role in early-stage financing.



**Figure 1:** Firm continuum and sources of finance, adapted from Berger & Udell (1998, Fig.1)

## 1.2. Venture Capital

It is generally considered that VC is one of the primary methods by which PE investors make funds available to emerging companies that have high growth potential (Cumming et al., 2022; Hellmann & Puri, 2002; Winton & Yerramilli, 2008). Modern VC emerged in 1946 with the creation of American Research and Development, which raised funds from wealthy individuals and college endowments and invested them in technology-based entrepreneurial startups (Bottazzi, 2002). Wright & Robbie (1998) define VC as the investment by professional investors of long-term, unquoted, risk equity finance in new firms where the primary reward is an eventual capital gain, supplemented by dividend yield. Within the PE market, Mason & Harrison (1999) define generically VC as the provision of finance by an investor to businesses that are not quoted on a stock market, and which have the potential to grow rapidly and become significant businesses in international markets. VC is, typically, a time-limited (5 to 10 years) partner in the ventures it funds, often holding a minority stake (Landström & Elgar, 2007). VC includes startup investments – financing for product development; early-stage investments – financing to companies that require further funds to initiate commercial manufacturing and sales; and expansion-stage investments – financing for growth and expansion (Slager, 2006). According to Cumming (2012), the most desired methods of exiting are an initial public offering (IPO), and a trade sale through acquisition.

In the context of the present research, it is imperative to examine how the VC market operates, how investors select their investments, and understand the influence of the policy and regulatory atmosphere on the market.

### 1.2.1. The role of venture capital

It has been considered that the sophistication of the US VC industry is one of the reasons for the ability to turn innovative ideas from universities and R&D laboratories into today's most dynamic and successful corporations such as Intel, Cisco, Microsoft, Oracle, Amazon, Apple, e-Bay, etc. (Bottazzi, 2002). Past literature tackles the significance of VC in innovation, job creation and industrial renewal (Mason & Harrison, 1999). This raises a question: How does VC foment the growth of entrepreneurial firms?

Many authors suggest that VCs play roles beyond those of financial intermediaries (Hellmann & Puri, 2002) (Bottazzi, 2002). Hellmann and Puri (2000) find that venture-backed firms are faster in bringing their products to the market, are found to be more dynamic and pursue more ambitious innovations. The authors acknowledge that investors may collect information not only about the firms, but on their behalf, which, ultimately, can increase the firm's value. VC companies improve the risk-return profile of the firms they finance by specializing in specific industries and stages of firm's growth, or by collaborating on deals with other VC firms (Slager, 2006). Moreover, VCs operate in environments that allow a higher efficiency in selecting and monitoring investments, which provides them a comparative advantage over alternative investors. VCs may be prominent in sectors where informational opacity is significant, such as biotechnology and information technology. They perceive information asymmetries as costly, but theoretically they perceive them as less costly than do other investors. (Amit et al., 1998). According to Hellmann & Puri (2002), VCs play a role, beyond the traditional forms of financial intermediaries, affect professionalization measures, such as human resources policies, introduction of stock option plans, CEO turnover, and, consequently, they have a significant effect in corporate governance (Hellmann & Puri, 2000). The rise of industries such as biotechnology as well as advancements in healthcare and high-

tech have been driven in large part by the availability of VC in emerging companies (Nanda & Rhodes-Kropf, 2013).

### 1.2.2. The structure of Venture Capital

According to Cumming (2012b), the VC industry acts through 3 main players: entrepreneurs seeking risk capital, investors who allocate fractions of their managed assets to VC funds (limited partners), and VCs (general partners). VCs act as intermediaries between entrepreneurs – have ideas but need financing – and investors (suppliers) – seeking high returns (Zider, 1998).

The VC market can be divided in different submarkets, including institutional, corporate, and informal VC. Discussion of VC is often implicitly restricted to the institutional VC industry (“formal VC”) (Colin Mason & Richard Harrison, 1999). Institutional VC firms act as intermediaries between financial institutions and unquoted companies. In Corporate VC the LP is a firm, or a subsidiary of a firm – it can be seen as a strategic tool for companies. Informal VC is often associated with business angels, which invest their own capital. (Landström & Elgar, 2007)

The VC process consists of a series of stages between seeking potential investments until the time when the ventured company exits the venture (Figure 2). After seeking potential investments (deal origination), VCs screen the proposals through the delineation of key policy variables (deal screening), deals that pass the screening phase are subject to a due diligence process – the decision whether to invest determined by the relative levels of perceived risk and expected return (deal evaluation). The pre investment activities culminate in the deal structuring, negotiating the terms of the investment, namely the price, equity relinquished to the investor, and covenants (Landström & Elgar, 2007; Tyebjee & Bruno, 1984; Zacharakis & Meyer, 2000)

P. Gompers & Lerner (2001) highlight the importance of pre-investment screening, sophisticated contracting, and post-investment add value monitoring and advising.

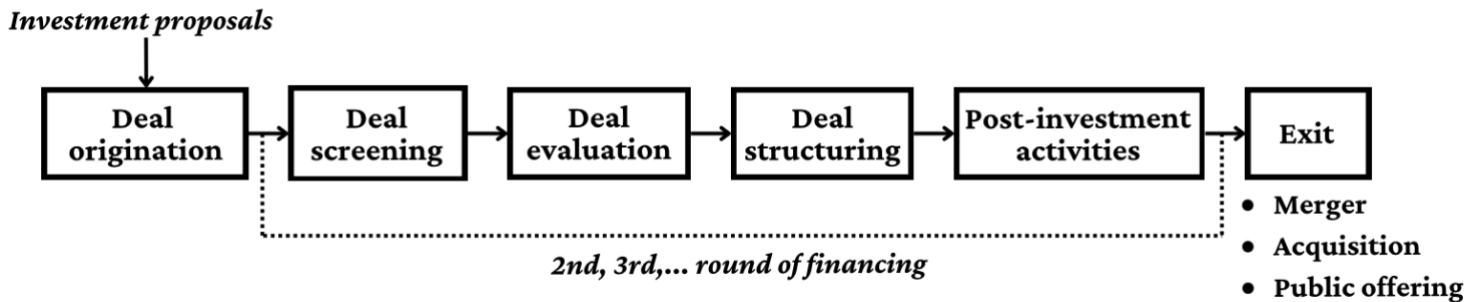


Figure 2: Venture capital pre investment activities, adapted from *Tyebjee & Bruno (1984)*

VC companies realize most of their returns upon exiting from their portfolio firms. When they sell their shares in an IPO, their investment is assumed to be a signal of the quality of the firm to other less informed investors (Slager, 2006).

### 1.2.3. Investors' allocation criteria

The capital flow between institutions and startups involves a complex chain of principals and agents, but it can be argued that it follows a two-stages process (Cumming, 2012b; Macmillan et al., 1985; Groh & Liechtenstein, 2009). To understand the factors that influence the investment decision process, it is of interest to differentiate the criteria considered in both stages. LPs conduct geographic segmentation and selection based on diverse criteria. While economic growth holds significance in the international allocation process, due to the complex nature of VC, successful transactions rely on additional parameters.

Groh & Liechtenstein (2011) developed a survey using a questionnaire, which was applied to LPs worldwide. The top five criteria are deal flow and access to transactions, the VCs track record, local market experience, the match of the team background with the proposed investment strategy, and the reputation of the

team or individuals. Firstly, LPs scrutinize VCs staffing policies, particularly the alignment with the proposed investment strategy, reducing the probability of opportunistic behaviors. Secondly, LPs are expecting that their investees add value through collaborative involvement and monitoring. Thirdly, and most crucial, the flow of deals and access to transactions, which depends on the GPs' network and reputation. These three allocation criteria are deeply interconnected.

Groh & Liechtenstein (2011) conclude that the above findings are relatively similar to VCs criteria when sorting entrepreneurial ventures – second step of the allocation process, particularly the conclusion of the significance of the entrepreneur, over the product. Most existing literature has focused on the “jockey” – founders or the top management attributes – versus the “horse” – business-related factors – debate (Kaplan et al., 2009; Esen et al., 2023). According to a survey by (Gompers et al., 2020), VCs prioritize the management team over business-related factors such as products or technology, although there are significant cross-sectional variations across company stage and industry. Macmillan et al. (1985), in a survey among 150 GPs, confirm the frequently iterated view that the entrepreneur's quality ultimately determines funding decision. They find that five of the top ten most important criteria are related with the entrepreneur's experience or personality, irrespective of the horse (product), horse race (market), or odds (financial criteria). Moreover, Macmillan et al. (1985) propose six main factors considered by GPs during screening process: risk of total investment loss, inability to bail out, if necessary, failure to implement the venture idea, competitive risk, management failure risk, and leadership failure risk. On the contrary, Kaplan et al., 2009 argue that VCs should focus more on due diligence of the business rather than management. They note that firms often replace their founders and initial managers and still manage to go public. Hall & Hofer (1993) found that VCs assign little importance to the

entrepreneur/entrepreneurial team and the venture's strategy during early stages of the venture evaluation process. The literature shows that authors hold divergent opinions regarding VCs selection criteria, particularly in the weighting of "jockey's" attributes compared to those of the "horse" in their decision-making.

#### 1.2.4. Venture Capital in Europe

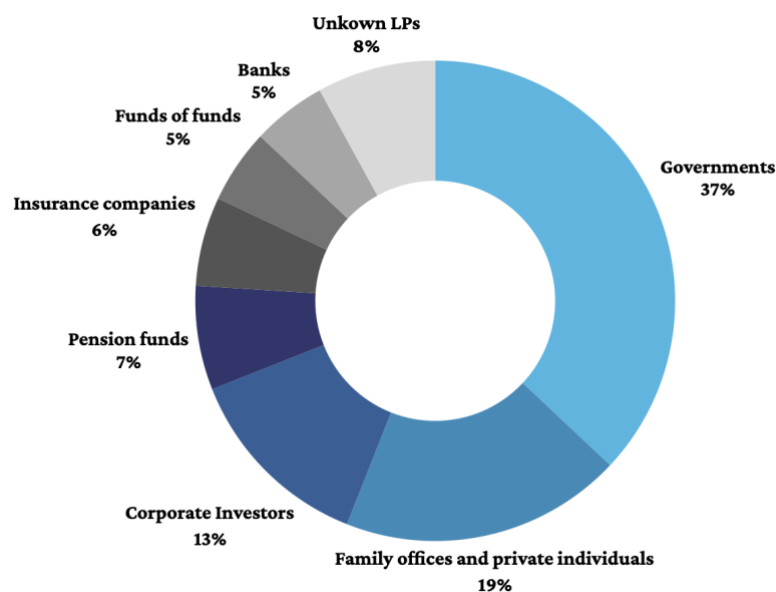
VC contributed to the competitive strength of the US economy in the 90s by fostering innovative startups (Hellmann & Puri, 2000; Bottazzi, 2002). It was after the late 1980s that the VC industry emerged in EU, with its size more than doubling between 1986 and 1990. This growth is associated with the introduction of secondary stock markets, such as the UK's AIM, France Nouveau Marché, and the EASDAQ, enabling ventures to IPO (Bottazzi, 2002). By the late 1990s, the inflow of US VC companies and funds changed the European model from being based mainly on strong financial background towards acknowledging operational expertise in financing high-tech firms. However, many US firms closed their European offices after the stock market bubble burst.

According to Cumming (2012b), from 2003 to 2010, VC fundraising among US investors slowed, leading to the increase in uninvested capital. Compared to PE, the decline in VC after the financial crisis was not as dramatic. This difference is due to a few factors: private deals heavily rely on debt, and were affected by the credit crisis, while VC investments are more countercyclical. When IPOs are weak, there are more VC deals, as they take longer to mature. Despite a slowdown in investment dollars and deal numbers, the impact varied by financing stage. The number of initial funding deals declined significantly, while later funding rounds saw reduced investment dollars. The decline in early deals likely derives from VC firms adopting stricter investment criteria and being more risk averse. Additionally, pursuing an IPO in a recession is not attractive. During

illiquid exit markets, VCs allocate a higher proportion to early-stages projects, while in liquid markets, they invest more in later-stage ventures.

Cumming (2012b) stresses that between 2004 and 2008 in EU, 23.6% of raised capital came from pension funds, with funds of funds second at 14.5%. During the same period, NVCA in the US reported 42% of capital sourced from pension funds, while finance and insurance companies provided 25%. The author suggests that in more developed European VC markets, there's a diverse mix of investors with strong contribution of pension funds' investments. Several academic researchers emphasize the importance of government in setting legal and economic framework conditions for both initiating VC programs as well as providing a favorable environment for the seeding and expansion of VC (Landström & Elgar, 2007).

In 2023, venture fundraising totaled €14.2bn – a 21% decline from the previous five-year average (Investing in Europe: Private Equity Activity, 2023). The top three sources of capital were government agencies (37%), corporate investors (13%), and private investors (10%). The France & Benelux region remained the principal source of capital (37% of funds) – Graph 1.



**Graph 1:** Proportion of total funds raised by European VC in 2023, adapted from Sifted Article (May 2024) Source: Invest Europe.

VC investment reached €12.9bn in 2023, roughly 5% below the average of the past five years. ICT received around 43% of VC investment, followed by biotech & healthcare (24%), and energy and environment (9%).

Venture divestments in 2023 reached €2.4bn, a 16% decrease from the year before and 14% below the average for the past five years. A total of 1 168 companies were exited, which is slightly below the average of the previous five years.

### 1.2.5. Venture Capital in Portugal

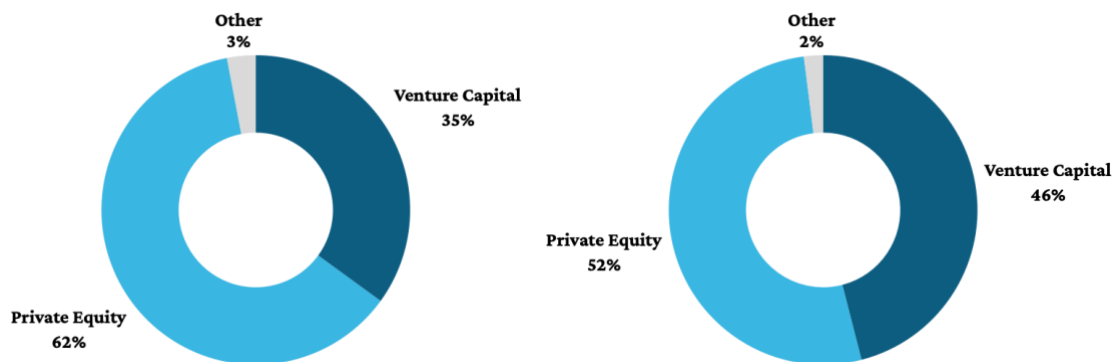
According to Portuguese Securities Market Commission (CMVM), in 2022, there was a recorded increase in the value of assets under management (AUM) in the Portuguese VC sector<sup>1</sup>, which rose 18% to 7.2bn euros in December 2022 (CMVM, 2022). The same trend is observed in the number of participants, which has increased significantly: 3 606 participants at the end of 2020, to 7 921 at the end of 2021 (+120%), and 10 771 in December 2022 (+36%). This evolution reflects the increased interest of investors (57% are based in Portugal, and 77% of investors are non-professional).

At the end of 2020, there were 166 active funds, which grew to 221 by the end of 2021 (+33%), and to 247 in December 2022 (+12%). In 2022, active funds were concentrated in PE and VC (129 and 113, respectively). Approximately 62% of AUM corresponded to PE, and 35% to VC funds (Graph 2). In 2022, investment through the seed capital, start-up or early-stage phases increased significantly, reaching 1.2bn euros (+42% compared to 2021). Compared to the European VC sector, seed capital and start-up stages account for 7% of VC investment, whereas in Portugal they represent 23%. In Portugal, the stages supporting company

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<sup>1</sup> According to CMVM, venture capital sector (“*setor do capital de risco*”) encompasses four typologies: private equity, venture capital, infrastructure, and real estate.

expansion (growth/Mezzanine) and seed capital, start-up or early stages have been increasing their relative share.



**Graph 2:** Continuation of the trend of fund concentration in PE and venture capital strategies. % assets under management (left) and % number of funds (right), adapted from CMVM (2022)

### 1.3. The intersection of Venture Capital and Sustainable Finance

Sustainable entrepreneurship is one of the new horizons in the VC research field (Cumming et al., 2023). According to the authors, this emergent ground is motivated in part by the United Nations Sustainable Development Goals (SDGs) (United Nations, 2024), which have led to governments around the world the world attempting to follow the path of sustainable development. VC is seen as one of the more prominent methods of financing startups within innovative and technology driven sectors (Gompers & Lerner, 2001; Zider, 1998). Sustainability transitions require a redirection of finance flows, towards new sustainable technologies and practices (Steffen & Schmidt, 2021). These two arguments underscore the relevance of the intersection between ESG and VC. As a result, VCs and PE funds are increasingly engaging in impact investing (Barber et al., 2019), which signifies going beyond funding innovation, with VC demonstrating a commitment to not only financial returns but also ESG outcomes.

The European Commission (EC) defines the concept of Sustainable Finance (SF) as “the process of taking ESG considerations into account when making investment decisions in the financial sector, leading to more long-term investments in sustainable

*economic activities and projects.*” (European Commission, 2024b). In this definition, EC also introduces the term ESG, widely embraced by asset owners and managers. Coined in 2004, ESG is rooted in the socially responsible investment (SRI) movement. Impact investing, coined in 2007, is defined by the Global Impact Investing Network (GIIN) as *“investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return”*. ESG serves as a framework for public understanding, while Impact Investing is a forward-looking strategy (Foroughi, 2022). The distinction between SF, ESG, and Impact Investing, among other SF-related concepts (Figure 3), is sometimes unclear as they share the same fundamental idea (Roncalli, 2022).



**Figure 3:** Sustainable finance concepts, adapted from Roncalli (2022)

Cetindamar & Ozkazanc-Pan (2017) concentrate on a particular subcategory of impact investors: VC firms acting as impact investors, a distinctive hybrid organization form. The authors argue that VC sector is mature and well-established, yet there is limited understanding of their effectiveness in achieving social aims through financial investments under a new hybrid organizational framework.

Considering both the dichotomy between sustainability and profitability as well as the attributes of both startups and VC pointed out, there is a pathway for future research related to how can VCs select ESG conscious enterprises, how can VC investments contribute to the SDGs and how does Impact Investing affect the economy and sustainable development (Cumming et al., 2023; Coqueret, 2020).

### 1.3.1. Why do investors consider ESG criteria?

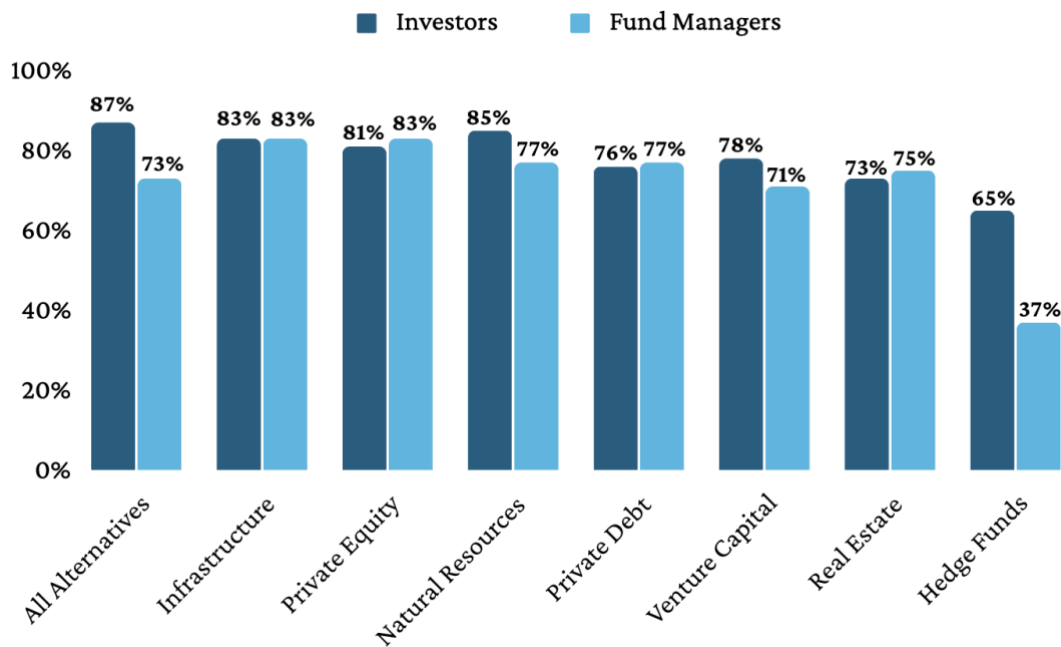
Hartzmark & Sussman (2019) find that a large portion of the market perceives sustainability positively, consistent with nonpecuniary motives, such as altruism or warm glow. Choy et al. (2023) argue that that social capital, defined as the set of country-level norms and networks facilitating cooperation, guides retail investors to demand more sustainable portfolios, consistent with prior evidence showing their sensitivity to market sentiment.

Among investment managers, a popular way of demonstrating commitment to impact investment involves endorsing the United Nations Principles for Responsible Investment (PRI) (Liang et al., 2022). Initiated by UN Secretary-General Kofi Annan in 2005, the PRI had close to 4000 signatories and over US\$120tn AUM by the end of 2021. Other initiatives in the ESG ecosystem include Climate action 100+ and net-zero alliances (Roncalli, 2022).

This raises the question of the impact of responsible investment on ESG portfolio results. Brandon et al. (2022) find that PRI signatories exhibit better portfolio ESG ratings compared to non-PRI signatories, but this trend is observed only among institutions outside the US. In the US, signatories have poorer ratings than US non-PRI investors, which is aligned with the concept of greenwashing. Lyon & Maxwell (2011) define greenwashing as *“selective disclosure of positive information about a company’s environmental or social performance, without full disclosure of negative information on these dimensions, so as to create an overly positive*

corporate image". The discrepancy is attributed to stronger commercial incentives for US firms to become PRI signatories, regulatory uncertainty about ESG investing alignment with fiduciary responsibilities, and a less mature ESG market in the US (Brandon et al., 2022).

Figure 3 reveals the results of a 2018 Preqin poll. 78% of VC investors 71% of VC fund managers believed that ESG would become more important in the upcoming five years. We might consider the likelihood that fund managers endorse in responsible investment to meet investors' preferences. (Liang et al., 2022)



**Graph 3:** Investors and fund managers that believe ESG will become more important over the next five years, adapted from Preqin Investor and Fund Manager Surveys (2018)

Under this framework, two questions arise: Are VC investors willing to pay (WTP) for impact, investing in assets with both social and financial objectives? And are they willing to accept a tradeoff between financial returns and non-pecuniary benefits?

Białkowski et al. (2016) focus on SRI mutual funds and show that the demand is growing rapidly. However, performance in public market SRI has not been statistically different from other mutual funds. Hence, the tilt toward SRI may not reflect a WTP in wealth for non-pecuniary benefits. Within the same context, Barber et al. (2019) study PE, specifically, VC and growth equity investments, from 1995 to 2014, and find that investors are willing to forego returns (accept a reduction of 2.5-3.7 percentage points in ex ante IRRs) in favor of non-pecuniary benefits when investing in dual-objective VC fund<sup>2</sup>. Investors with organizational missions, those who are PRI signatories (especially after signing), and those encountering political or regulatory pressure tend to display a high WTP. Investors constrained by legal restrictions against non-financial motivated investments (e.g., ERISA in the US) tend to demonstrate low WTP for impact. The WTP for impact varies has significant variation across different legal and regulatory frameworks, investor location, and times. This variability presents numerous opportunities for future research to explore the factors influencing the observed differences.

### 1.3.2. Policy and regulatory framework in Europe

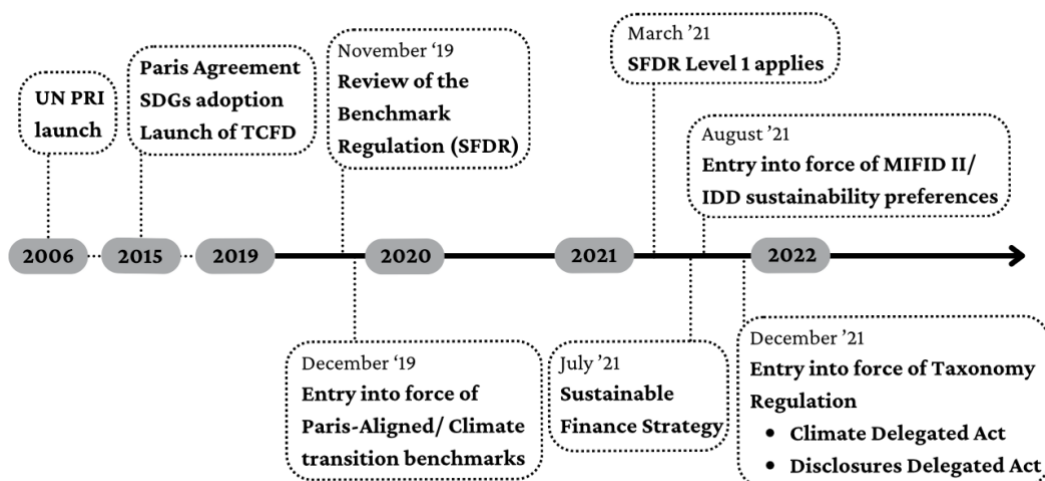
Regulators and supervisors lead the ESG discussion, primarily due to the remarkable growth of ESG and climate investing, along with evolving motivations (GSIA, 2022). In the past, responsible investing was niche, guided by ethical values. Nowadays, ESG has turned into a marketing tool, and the risk of greenwashing has significantly increased, alongside the political will to mitigate global warming (Roncalli, 2022). The number of ESG regulations has increased dramatically in recent years. According to PRI, the number of regulations has more than quadrupled in the last 10 years (PRI, 2024). Most have been developed

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<sup>2</sup> The authors isolate impact funds using a strict criterion that the fund must state dual objectives in its motivation.

since 2000, and the acceleration coincides with the Paris Agreement for climate change.

Figure 4 provides a summary of EU policy and regulatory developments. Global regulatory advancements in the 2020s were established in 2015 with the Paris Agreement, the subsequent embrace of the SDGs and the initiation of the Taskforce on Climate-related Financial Disclosures (TCFD) (GSIA, 2022). The 17 SDGs are at the core of the UN 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015. By adopting the Paris Agreement on climate change and the UN 2030 Agenda for Sustainable Development, governments from around the world chose a more sustainable path for our planet and our economy (European Commission, 2018).



**Figure 4:** EU Policy and Regulatory key developments timeline, adapted from Global Sustainable Investment Review (2022)

According to CMVM, asset management has been heavily impacted by two regulations: the SFDR Regulation and the Taxonomy Regulation (CMVM, 2024). The EU Taxonomy (European Commission, 2024a), effective on January 1, 2022, can support the reduction of ESG ratings divergence across different ESG data providers, even though the potential has not yet fully materialized (Dumrose et al., 2022). On the 27<sup>th</sup> of November of 2019, it was published the Regulation (EU)

2019/2088 on sustainability-related disclosure in the financial services sector (SFDR) being effective as of March 10, 2021. With the introduction of SFDR, EU aims to change behavior patterns in the financial sector, discouraging greenwashing (Becker et al., 2022), and achieve one of the EU's big political objectives: attract private funding to help EU make the shift to a net-zero economy (European Commission, 2024b)

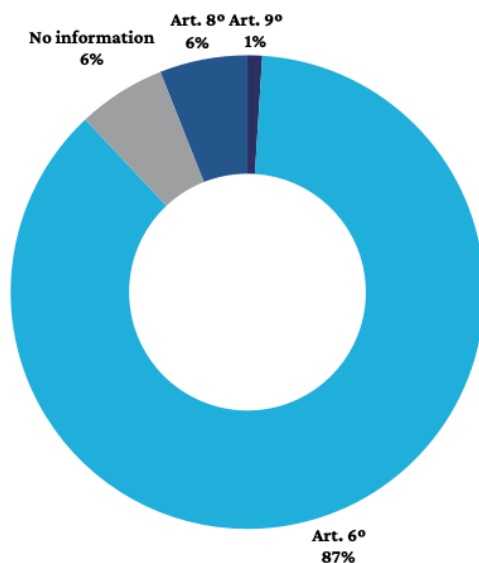
Becker et al. (2022) refer that following the announcement of the SFDR, sustainability ratings of EU-based funds exhibited a significantly greater increase than US-based funds. This observation indicates that, on the fund level, the intervention so far achieved its intended purpose of redirecting capital toward more sustainable investments. This study underscores the efficacy of the implemented regulation and signals the SFDR's role in mobilizing capital towards sustainable investments.

The density of information disclosure requirements under the SFDR Regulation depends on the following product/fund classification: (Roncalli, 2022): Products that only consider sustainability risks (Article 6); Products that promote environmental and/or social characteristics (Article 8); Products that aim for sustainable investments (Article 9).

### 1.3.3. Policy and regulatory framework in Portugal

According to CMVM, most Portuguese PE and VC funds are classified under Article 6 (Graph 4), which does not mean that management entities do not have to ensure compliance with a set of minimum disclosure requirements (CMVM, 2022). On the Portuguese Capital Activity report, released on September 13, 2023, CMVM highlights a comprehensive supervisory effort to ensure compliance with sustainability disclosure requirements among management entities. This includes evaluating the information disclosed on the respective websites, assessing how these entities integrate sustainability risks into their investment

decision-making process and remuneration policies, as well as the methodologies used.



**Graph 4:** Distribution of the number of PE and VC funds under Articles 6, 8, and 9 of the SFDR Regulation. Adapted from Relatório sobre a atividade de capital de risco, CMVM (2022)

The report identifies weaknesses among PE and VC fund managers in adequately monitoring regulatory changes, especially in understanding and ensuring compliance with the minimum content required under the SFDR Regulation and the Delegated Regulation. These weaknesses stem not only from regulatory dynamism but also from limited reinforcement of competencies and resources in sustainability within management entities. Despite some efforts to strengthen capacity in this area, such as dedicating human and technical resources<sup>3</sup> and employee training<sup>4</sup>, there remains a significant need for specialization.

To address these challenges, CMVM has published a Sustainability Guide (CMVM, 2024), aiming to facilitate and encourage supervised entities to adopt

<sup>3</sup> About 13% of management entities indicated that they had strengthened their resource structure with dedicated human resources and some specialization in sustainability.

<sup>4</sup> The proportion of management entities that reported having ensured the participation of employees in training programs in this area is 30%.

procedures aligned with recommendations from CMVM and ESMA regarding SF standards.

#### 1.4. Implications and Hypotheses

Based on the literature review, it is evident that climate change and environmental degradation are existential threats to both EU and the world. In response to these challenges, the European Commission's Green Deal<sup>5</sup> (European Commission, 2024) initiative aims to transform the EU into a modern, resource-efficient, and competitive economy. Entrepreneurship and innovation are crucial for facilitating this transition. In the context of the literature review, the following questions are raised: How do VCs perceive SF? To what extent is VC funding the sustainable development transition?

The present study is grounded in the perceived interception of sustainable development and VC, and its relevance. The central question that will be the subject of analysis, and hence the problem, are VC fund managers' motivations that support the integration of ESG criteria in the pre-investment activities, focusing on deal screening and deal evaluation. It is crucial to consider the hypotheses as follows:

***Hypothesis 1: Venture capitalists consider ESG integration as a criterion factor in deal screening and evaluation.***

The literature shows that authors hold divergent opinions regarding VCs selection criteria, particularly in the weighting of "jockey's" attributes compared to those of the "horse" in their decision-making (Kaplan et al., 2009; Esen et al., 2023; Gompers et al. (2020); Macmillan et al., 1985; Hall & Hofer, 1993). The

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<sup>5</sup> The European Commission has adopted a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.

authors don't mention environmental and social factors as part of the pre-investment decision process.

***Hypothesis 2:** Venture capitalists perceive a positive relationship between ESG considerations (included in deal screening and evaluation) and investment returns.*

Hartzmark & Sussman (2019) find that a large portion of the market perceives sustainability positively, consistent with nonpecuniary motives, such as altruism or warm glow. Choy et al. (2023) argue that social capital<sup>6</sup> guides retail investors to demand and thus exert pressure on fund managers to develop more sustainable portfolios. Liang et al. (2022) consider that VC fund managers endorse in responsible investment to meet investors' preferences.

According to Barber et al. (2019), investors are willing to forego returns in favor of nonpecuniary benefits in dual-objective VC funds. Are VC fund managers also willing to pay for impact?

***Hypothesis 3:** Venture capitalists' engagement with ESG factors (in deal screening and evaluation) is positively associated with the level of policy and regulatory developments.*

Regulators worldwide have been integrating sustainability into the financial and economic system (GSIA, 2022). These interventions aim to direct capital flows to enable the transition to net zero by 2050. Barber et al. (2019) conclude that, on the fund level, the regulatory intervention so far achieved its intended purpose of redirecting capital toward more sustainable investments. This study underscores the efficacy of the implemented regulation and signals the SFDR's role in mobilizing capital towards sustainable investments. Also, investors encountering political or regulatory pressure tend to display a high WTP for impact.

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<sup>6</sup> *Social capital* defined as the set of country-level norms and networks facilitating cooperation.

# Chapter 2

## 2. Method and Data

### 2.1. Clinical Studies Methodology

The aim of the research is to analyze the correspondence between the theoretical motivations identified in the selection of ventures by VC fund managers and the perceived motivations that lead Portuguese VC funds to invest considering ESG criteria. According to Donaldson (2000), most contemporary academic research in corporate financial management concentrates on analyzing statistical data to understand overall trends and develop hypotheses. This approach relies on aggregate data but may not fully capture the intricacies of individual firm behavior and management actions intent. Therefore, parallel research using firm-specific data, often termed field-based or "clinical" research, is also conducted. Jensen et al. (1989) refer that *clinical studies* methodology – term derived from the medical-field literature – provide valuable insights, challenge accepted theory, and use unique sources of data. The core of finance theory lies in understanding how economic agents allocate and utilize their resources across both space and time. Given the complexity and uncertainty inherent in financial decision-making, it is relevant to have a detailed analysis of the decision-making processes from the agents' perspective – such as investors and fund managers (Merton, 1994).

As pointed out by Jensen et al. (1989), perfect market theory serves as a clear benchmark for evaluating markets in their ideal form. However, there are an infinite number of imperfect market theories corresponding to the limitless combinations of alternative assumptions. Innovations in financing techniques, along with deregulation, reregulation, and shifts in the structure of commerce, are evolving rapidly, leading to significant transformations in the functions and

operations of financial institutions. New ways to communicate these changes to the scientific community are required because the changes provide tests of leading theories. Clinical papers can play an important role in this discovery and communication process and, therefore, in the evolution of the science of finance. (Jensen et al., 1989)

Moreover, Donaldson (2000) suggests that for theory to be useful for both theorists and practitioners, it's crucial to understand the way managers think on any given issue, to develop a persuasive argument as to the way they ought to think. Theory, empirical testing, and clinical studies in financial economics complement each other, each playing a crucial role (Jensen et al., 1989). Theory offers logical frameworks and hypotheses for empirical and clinical research. Empirical testing guides theorists by identifying irrelevant models and indicating areas for clinical research to explore counterexamples. Clinical studies provide insights for both theory and empirical work.

While papers have been written on both the theory of VC and large sample empirical results, Gompers et al. (2020) survey evidence attempts to deepen the understanding of VCs decisions. The authors surveyed 885 VCs representing 681 different VC firms and interviewed 29 VCs to provide clarification and additional insights. Inspired by the insights provided by Macmillan et al. (1985) and Gompers et al. (2020) research, the purpose of this research is to offer fund seekers insight into critical criteria, which could lead to an improvement in the success rate of new ventures. Also, to expand VCs awareness of the weights being attached to various criteria by their peers.

## 2.2. Clinical study structure

Through the clinical research conducted, the fundamental goal is to obtain evidence that allows establishing an empirical connection between the hypotheses established and reflected in the interview questionnaire (see

Appendix A) and the theoretical criteria and motivations. The clinical study methodology is applied through the development of personal interviews, supported by a structured (closed) questionnaire, administered to a sample of representatives (respondents) of Portuguese VC funds.

The questionnaire structure was developed on three main topics: the theoretical discussion on the investment criteria in the second step of the allocation process – GPs’ selection of ventures – presented on Chapter 1.2.3., on the perceived motivations for including ESG criteria in pre-investment activities and the regulatory atmosphere impact in the investment process (Chapter 1.3).

The questionnaire includes descriptive questions, namely, questions 1,2,3 and 4 for contextualizing the firms that integrate the sample; theoretical/conceptual questions to explore respondents’ understanding, beliefs, and opinions, to validate the formulated hypotheses; control questions intending to verify the congruence between the responses, ensuring validity and reliability.

The table below categorizes questions based on their nature and their alignment with the three hypotheses.

<i>Hypotheses</i>	<b>Questions</b>			
	<b>Conceptual</b>	<b>Control</b>	<b>Open</b>	<b>Descriptive</b>
<b>1</b>	5,15,16	6,8	12	
<b>2</b>	7,18	14	12b)	11
<b>3</b>	7,17	10	12a),13	9

**Table 1:** Research hypotheses and survey questions

Throughout the survey, the questions are divided into three sections. The first and second segment encompass the profiles of respondents, firm, and investees’ companies – including the header and questions 1 to 4. The third section, consisting of questions 5 to 18, seeks to elucidate the fund’s processes, policies, motivations, and beliefs. Intentionally, each conceptual question is

separate from its corresponding control question, ensuring that this deliberate division remains subtle.

Krosnick (1999) argues that in closed-ended questions respondents often limit their answers to the provided choices, even if the best answer is not included. In the questionnaire the respondents were asked to list any additional criteria (question 6 and 7). Open questions (12,12a),12b) and 13) were included to capture further insights not addressed by closed-ended questions.

To scrutinize H1, Question 5 (Q5) is based on the initial question from the survey conducted by Botsari & Lang (2020), assessing whether ESG considerations are part of the investment decision process. Q15 and Q16 aim to distinguish the significance of ESG in deal screening versus deal evaluation. As a consistency check, Q8 aims to understand the top selection criteria in the investment process. The list of criteria is derived from Macmillan et al. (1985b) and Botsari & Lang (2020) research. Additionally, Q6 seeks to elucidate which ESG strategies do VCs apply (Roncalli, 2022) and (Botsari & Lang, 2020). Q12 is an open-ended question allowing respondents to further explain existing ESG policies<sup>7</sup> in place, if applicable.

To capture the motivations underlying the ESG investing (H2 and H3) a list adapted from (Botsari & Lang, 2020) survey was applied. In Q7, instead of a multiple-choice format, a ranking scale was utilized to measure the relative importance of the motives. While the impact of ESG on VC investment returns was addressed across various ESG strategies in Botsari & Lang (2020) survey, Q18 asks if, in general, the respondent agrees that integrating ESG factors enhances risk-adjusted returns, to avoid the risk of receiving “not applicable” or “no information” responses. Furthermore, Q12 b) inquires whether and how firms adjust the required rate of return. Q14 serves a similar purpose and

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<sup>7</sup> Formal framework that outlines the principles and procedures the fund uses to integrate ESG considerations into its investment decisions and management processes.

functions as a control question. Although Q11 does not directly address H2, it seeks to evaluate whether there is an increasing demand from LPs and/or stakeholders for ESG engagement.

To analyze H3, in addition to Q7, Q17 directly queries the extent to which respondents believe that regulatory compliance significantly influences firms' focus on ESG factors, alongside control Q10. Questions 12 a), 13 and 9 aim to capture whether regulatory requirements have shaped the ESG policy and whether they pose challenges to ESG investing.

# Chapter 3

## 3. Results

For the purposes of this research, a comprehensive list of twenty VC firms based in Portugal was compiled utilizing various websites (Almeida, 2021; Woszczykm, 2023; Fleitmann, 2022), in the light of the absence of an official publicly available database. From this compilation, three interviews were conducted via Microsoft Teams, facilitated by a questionnaire. Conducting interviews in a meeting format allowed for real-time clarification of questions and responses, enhancing response accuracy (Schober & Conrad, 1997). This approach was essential given the limited number of interviews conducted. Additionally, one firm provided completed surveys and submitted the responses via Microsoft Forms. The participants were Novabase (a subsidiary of the Novabase group), Startventures (a subsidiary of Banco de Investimento Global), Olisipoway (a holding company) and Armilar Venture Partners. Two entities, Portugal Ventures and Bynd, are now designing a formalized policy, and for that reason, they opted not to participate in the study. One of the contacted firms, Pathena, has ceased its investment period. Twelve firms either did not respond or could not be reached for contact. As such, the presented results reflect the insights from Novabase, Startventures, Olisipoway and Armilar Venture Partners. All the respondents hold active involvement in funding decisions, occupying roles such as venture partners, analysts, specialists or investors.

The sample is composed by representatives of both institutional and corporate VC and their collective is as follows: Most firms invested less than 5 million euros in the last fiscal year, except Armilar VP, which invested between 10 and 15 million euros; On average, they have six employees actively involved in funding decisions, with an average gender distribution of 48% female and 52% male, and

an average age of 38 years; Geographically, all firms are based in Lisbon; Their investment focus is predominantly on seed and early-stage ventures, with a higher percentage allocated to ventures based in Portugal. The primary industries of focus are Fintech and Insurtech (Startventures); Technology (Novabase, Armilar VP) and Healthcare (Armilar VP); Olisipoway maintains a broad investment scope, excluding only sectors subject to legal obstacles. The only fund that is PRI signatory is Armilar VP.

The results are presented in accordance with each hypothesis individually. Default nomenclatures (V, W, X, Y) will be adopted to safeguard the confidentiality requirements raised during the interviews. On the following chapter, the results and discussion of the article's contribution considering the research questions and existing literature will be presented.

### 3.1. ESG Integration

When analyzing the ranking of GPs' selection criteria (Q8, Table 2) – the second step of the allocation process – it becomes evident that the three most considered factors are related to the entrepreneur and management team, followed by product and/ or service value proposition and characteristics of the market. In line with the findings of Macmillan et al. (1985) and Gompers et al. (2020), who argue that the quality of the entrepreneur ultimately determines funding decision, and in contrast to Hall & Hofer (1993), who suggest that VCs assign little importance to the entrepreneurial team. However, it cannot be concluded that funds are more concerned with the “jockey” versus the “horse”, as suggested by Kaplan et al. (2009). While three out of four firms affirm that they consider ESG in the investment process, the potential social and environmental return ranks last along with referral by other investors, suggesting that relatively to other selection criteria, ESG is not a primary consideration.

Combining the answers to Q5, Q6, and Q12, it's possible to understand how ESG is integrated into the firms' investment process. Firm W considers ESG but not systematically, lacking a defined ESG strategy in its investment process. Nevertheless, the firm acknowledges that its values align with ESG principles, seeing ESG integration as a natural consequence. The company relies on mentoring and consulting from partners who are experts in the area. Internally, they do not have anyone dedicated to it.

Firm V adopts a more comprehensive approach, conducting negative screening, integrating ESG into valuation despite limited price influence, since they are price-takers, and performing a materiality assessment to identify the relative importance of specific ESG factors.

Firm X evaluates product alignment with ESG principles rather than assessing the venture. The respondent notes that there is an ESG policy at the group level, but no standardized implementation method due to the uniqueness of each product. The fund focuses on how products fit and enhance the market.

The Firm V had a framework to evaluate new ventures' ESG risks (Figure 5). Regulatory concerns required a more structured approach. Due to insufficient data to support more complex models, a qualitative solution was identified: a framework that identifies the most relevant sector-specific factors (SASB, 2024).

			<i>Question (Q)</i>						
			V	W	X	Y	Average		
H1	cn <sup>8</sup>	8	Selection criteria ranking [1] more– [6] less important	Entrepreneur and management team	2	1	2	2	1,8
				Product and/ or service value proposition	3	2	1	4	2,5
				Characteristics of the market	1	3	5	3	3,0
				Strategic fit in investment portfolio	6	4	4	7	5,3
				Potential social and environmental return	8	5	6	8	6,8
				Past performance / financial robustness	4	6	NA	5	5,0
				Referral by other investors	7	7	7	6	6,8
				Financial considerations	5	8	3	1	4,3
th	5	Considers ESG	Yes	Yes	Yes	No	-		
th	15	Relevancy in deal screening <sup>9</sup>	[1]	[4]	[5]	[3]	3,3		
th	16	Relevancy in due diligence	[2]	[4]	[4]	[3]	3,3		
cn	6	Integration in the investment process	Negative screening Full integration in valuation Materiality assessment	NA	Other: Product structuring with focus on ESG	Positive Screening	-		

**Table 2:** Survey's results (H1)

<sup>8</sup> "th": theoretical/conceptual question; "cn": control question

<sup>9</sup> Scale: [1] Very unimportant; [2] Unimportant; [3] Somewhat unimportant; [4] Somewhat important; [5] Important; [6] Very important



**Figure 5:** ESG framework, source FTSE Russel

The firm Y states that it does not consider ESG factors into investment decisions. However, it engages in positive screening (control Q6) – invest in companies that perform well in terms of selected ESG criteria. Since its inception, the fund Y has practiced a proactive ESG mindset, it employs a standardized list of metrics to monitor the most material ESG topics within the firm and for relevant fund investments, during the ESG due diligence, stewardship, monitoring, and reporting processes.

Examining the intrinsic importance of ESG in deal screening and deal evaluation (Q15 and Q16), without considering other criteria, the results vary. On average, funds tend to view it as somewhat unimportant. The respondent from Fund X emphasized the challenge of quantifying ESG factors consistently, that is the reason for rating ESG due diligence as less critical compared to deal screening. The Firm V acknowledges that investments not initially aligning with ESG principles won't be rejected, with potential for future alignment reconsideration.

Firm V and Y have a more systematic approach to ESG, but surprisingly, consider it less important in deal careening and due diligence compared to the other firms. This can be related with the results shown on the Table 3. Fund V is driven by ethical or social responsibility considerations and strongly agrees on

the influence of regulatory requirements on ESG engagement. Fund Y, on the other hand, is primarily motivated by investment performance, followed by regulation, recognizing its influence. We can conclude that firms applying ESG more consistently are those that recognize the influence of regulatory requirements at a higher level but do not necessarily attribute higher importance to ESG.

Based on the findings, it can be concluded that while all firms in the study incorporate ESG factors to varying extents in their investment process, mostly on the deal screening stage, they do not prioritize it and perceive as somewhat unimportant which supports H1. Moreover, no difference noted between the UN PRI signatory firm and non-signatories.

### 3.2. Investment returns

Why do VC firms consider ESG? Two out of four firms integrate ESG factors in the investment process due to market opportunities (Q7, Table 3). Fund V highlights ethical or social responsibility considerations as the primary motivation, consistent with nonpecuniary motives, such as altruism or the “warm glow”, noted by Hartzmark & Sussman (2019). Alignment with LP and/or stakeholders’ preferences ranks on average, in second, which is in line with Liang et al. (2022) conclusion that fund managers engage in responsible investment practices to meet investors’ preferences. Investment performance as a driver for ESG investing ranks third, suggesting a positive perception of the relationship between ESG considerations and investment returns. However, there is significant variation in the results, with Fund Y ranking it as the main motivation and Fund V as the least relevant.

Fund V, X and Y disagree that ESG integration enhances risk-adjusted returns (Q18), even though Fund Y believes that it leads to better long-term performance (Q14). Fund W somewhat agrees that it enhances risk-adjusted returns but does

not express an opinion on long-term performance. The positive perception of ESG's impact on investment returns is not uniformly held within and across the firms that compose the sample. Only Fund V provides a clear view that it does not believe ESG enhances risk-adjusted returns or leads to better long-term performance, and it does not consider performance a motivation for ESG investing. Therefore, the results are not solid enough to confirm Hypothesis 2: *Venture capitalists perceive a positive relationship between ESG considerations (included in deal screening and evaluation) and investment returns.*

Funds W, X and Y perceive a growing investor demand for ESG-aligned investments (Q12), though the partner from Firm X notes this demand was more explicit in the past – they believe the topic remains active, but less prominently than in 2019/20, when it was a novelty. The investor from Firm X reinforced that the theory that ESG funds outperform non-ESG funds has not been proven, citing higher associated costs that impact performance and a consequent slowdown in demand. This affirmation corroborates the results of H2.

				Question (Q)	Firms				
					V	W	X	Y	Average
H2 H3	th <sup>10</sup>	7	Motivations for considering ESG	Ethical or social responsibility considerations	1	5	5	6	4,3
				Alignment with LP and/or stakeholders'	2	2	3	5	3,0
				Positive reputational signal	5	6	6	7	6,0
				Risk Management	6	3	4	4	4,3
				Investment Performance	7	4	2	1	3,5
				Market opportunities	4	1	1	3	2,3
				Regulatory compliance or specific initiatives	3	7	5	2	4,3
H2	th	18	ESG integration	Enhances risk-adjusted returns <sup>11</sup>	[2]	[4]	[2]	[3]	2,8
	cn	14		Leads to better long-term performance	No	Not sure/No opinion	No	Yes	-
H3	th	17	Regulatory requirements	Influences focus on ESG factors	[5]	[4]	[6]	[4]	4,8
	cn	10		(specific) directly influenced ESG engagement	Yes	No	No	No	
	ds	9		How challenging to comply with <sup>12</sup>	NA	[4]	[4]	[3]	3,7

**Table 3:** Survey's results (H2 and H3)

<sup>10</sup> "th": theoretical/conceptual question; "cn": control question; "ds": descriptive question

<sup>11</sup> Scale question 18, 17 and 10: [1] Strongly Disagree; [2] Disagree; [3] Somewhat Disagree; [4] Somewhat Agree; [5] Agree; [6] Strongly Agree

<sup>12</sup> Scale question 9: [1] Very Easy; [2] Easy; [3] Somewhat Easy; [4] Somewhat Difficult; [5] Difficult; [6] Very Difficult

### 3.3. Policy and regulatory developments

Analyzing the survey responses, regulatory compliance and specific initiatives (e.g., UN PRI) rank, on average, fourth out of eight factors (Q7, Table 3). This indicates that the regulatory environment is not the primary driver for incorporating ESG considerations into the investment process. However, based on subsequent questions, the efficacy of the implemented regulation, particularly the SFDR's role in mobilizing capital towards sustainable investments, as concluded by Becker et al. (2022), cannot be dismissed.

Analyzing results from Q17, all interviewed funds agree, although to different extents, that regulatory developments influence firms' focus on ESG. Moreover, as concluded on chapter 3.1, firms applying ESG more consistently are those that recognize the influence of regulatory requirements at a higher level. These three conclusions together support H3.

Fund V highlights three main challenges to ESG investing (Q13), all connected to regulatory issues. First, the respondent argues that there is excessive subjectivity and a lack of clarity about reporting requirements. The second concern is the insufficient information regarding the actual relevance of ESG measurements, raising doubts about their real impact. The respondent noted that these measures often seem to be implemented primarily for the benefit of investors or regulators. Third, states that regulatory requirements are frequently disconnected from practical implementation, resulting in artificial, non-organic processes that may lead to unintentional greenwashing. This observation appears to be in line with the findings of Brandon et al. (2022), which found that US PRI signatories have poorer ratings than US non-PRI investors, attributed to stronger commercial incentives for US firms to become PRI signatories and

regulatory uncertainty about the alignment of ESG investing with fiduciary responsibilities.

Fund X's main challenge is quantifying ESG factors. The venture partner argues that ESG themes are qualitative, making it difficult to incorporate ESG factors into evaluations and subsequent returns, leaving them somewhat ambiguous. Additionally, there is uncertainty about which ESG factors to consider in the investment process, as these factors vary across industries, resulting in different impacts.

Fund V considers that only funds claiming to be ESG face the challenge to develop and implement procedures to comply with regulation (“Not applicable”). Still, it recognizes the influence of regulatory requirements, as recently had to specify the firm’s policy. On the other hand, Fund W and Fund X both find it somewhat difficult to comply with regulatory requirements. Specifically, Fund X states that the difficulty arises not from the implementation itself, but from the continuous stream of new regulations and the required follow-up. Firm Y considers it somewhat easy to comply with regulatory requirements. Given that it has implemented an ESG mindset since its inception, it is plausible to argue that the firm may have more resources to comply with regulation.

# Conclusion

The output of academic research related to the broad topic of “sustainability” is growing exponentially, given by the negligence of natural and human resources (Coqueret, 2020). As a result, SF emerges as a new frontier in the research field of VC investing (Cumming et al., 2023). The article sheds light on the intersection of sustainable development and VC, focusing on VC fund managers’ motivations for integrating ESG criteria into pre-investment activities.

While there is a vast literature on macroeconomic factors that induce VC activity, research on GPs selection of ventures is scarce, with divergent opinions, mainly, on the weighting of "jockey" vs. "horse". Through the clinical study conducted, it is evident that the three most considered factors are related to the entrepreneur and management team, followed by product or service value proposition and market characteristics. Although participants incorporate ESG factors, mostly in deal screening (e.g. negative and positive screening and materiality assessment), they do not prioritize it, perceiving it as somewhat unimportant, which supports the hypothesis that VCs do not consider ESG integration as a criterion factor. Moreover, firms that apply ESG more consistently recognize the influence of regulatory requirements at a higher level but do not necessarily attribute higher importance to ESG. No differences were noted between UN PRI signatory and non-signatory firms. At the core of ESG investing lies a dichotomy between sustainability and profitability (Coqueret, 2020). The research contributes to VCs discussion on whether ESG considerations materialize into higher returns by analyzing motivations for including ESG criteria in pre-investment activities. The positive perception of ESG’s impact on investment returns is not uniformly held within and across the sample. The results are not solid to confirm that VCs perceive a positive relationship between

ESG considerations and investment returns. Regulatory environment is not the primary driver for incorporating ESG considerations into the investment process. However, VCs engagement with ESG factors is positively associated with the level of policy and regulatory developments.

This research offers insights into critical investment criteria for fund seekers and expands VC's and LP's awareness the weights attached by their peers along with clarification of SF related concepts. It also provides a comprehensive overview of VC in the EU and Portugal. The study is particularly relevant for regulators and governments due to identified key barriers to ESG investing. Respondents highlight challenges related with ESG integration, including excessive subjectivity, lack of clarity, and difficulty in quantifying ESG factors, particularly for reporting requirements. This leads to doubts about the actual relevance and impact of ESG measurements. There is also uncertainty about which ESG factors to consider, as they vary across industries. VCs also share that regulatory requirements are frequently disconnected from practical implementation, leading to artificial processes and potential unintentional greenwashing. In general, firms struggle with regulatory compliance and find it challenging to keep up with regulatory dynamism. These conclusions reinforce CMVM's assessment that there remains a significant need for resources (human and technical) and expertise. CMVM identifies weaknesses among VC fund managers in understanding and ensuring compliance with SFDR Regulation and the Delegated Regulation. Therefore, more initiatives and awareness are needed to align, facilitate and encourage entities to adopt procedures aligned with SF standards, promoting uniformity. Despite understanding the importance of sustainability topics, the difficulty in understanding their impact generates distrust.

Given the qualitative nature of clinical study methodology, the research was conducted through personal interviews, supported by a questionnaire.

Although undoubtedly the best approach to capture motivations, the main difficulties faced were relying on firms' availability to contribute to this research, which limited the sample size. The absence of a public information source listing funds and the SFDR regulations they are subject to was also a limitation of the research.

This research is focused on the motivations and challenges of VCs, there are opportunities for future research on how ESG investing affects the economy and sustainable development. Particularly, exploring how different investment strategies vary in their impact on investment returns. For this, VCs need resources to effectively measure impact, which may require engagement with regulators.

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# Appendixes

## Appendix A Academic Survey | Venture Capital, ESG and Impact Investing

### Respondent profile

Name: \_\_\_\_\_

Fund: \_\_\_\_\_ Role: \_\_\_\_\_

Prior work experience: \_\_\_\_\_

Location: \_\_\_\_\_ Date: \_\_/\_\_/\_\_

### Fund profile

Type of VC firm: \_\_\_\_\_ (private/ corporation affiliated)

Number of associates<sup>13</sup>: \_\_\_\_\_

Workforce gender distribution: \_\_\_\_\_

Workforce average age: \_\_\_\_\_

UN PRI signatory: \_\_\_\_\_ (yes/no)

1) Please indicate the amount invested in the last fiscal year.

	Mark with [X] your choice
0-5M	<input type="checkbox"/>
5-10M	<input type="checkbox"/>
10-15M	<input type="checkbox"/>
15-20M	<input type="checkbox"/>
20-25M	<input type="checkbox"/>
+25M	<input type="checkbox"/>

<sup>13</sup> Actively involved in venture funding decisions

**Investee Companies profile**

2) Which stage(s) receive the greatest percentage of investment allocation from your firm?

<b>Multiple selection possible</b>	
Seed stage	<input type="checkbox"/>
Early stage	<input type="checkbox"/>
Growth stage	<input type="checkbox"/>

3) Please indicate the three primary industries in which your firm focuses its investments.

<b>Please select at most 3 options</b>	
Technology	<input type="checkbox"/>
Biotechnology and life sciences	<input type="checkbox"/>
Clean technology and renewable energy	<input type="checkbox"/>
Healthcare	<input type="checkbox"/>
Consumer products and services	<input type="checkbox"/>
E-commerce	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>

4) Which three countries account for the largest portion of investment allocation from your firm?

<b>Please state up to 3 countries</b>	
Country 1: _____	
Country 2: _____	
Country 3: _____	

**ESG and Impact Investing**

5) Does the firm consider ESG factors in the investment decision-making process?

<b>Mark with [X] your choice</b>	
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Prefer not to answer	<input type="checkbox"/>

6) How is ESG integrated into the investment process?

<b>Multiple selection possible</b>	
Active ownership	<input type="checkbox"/>
Impact Investing <sup>14</sup>	<input type="checkbox"/>
Negative screening	<input type="checkbox"/>
Positive screening	<input type="checkbox"/>
Full integration into valuation	<input type="checkbox"/>
ESG-focused deal structuring	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>

7) Why does the firm consider ESG criteria during the investment decision process?  
Please rank the motives you consider applicable by level of importance from [1] to [7/8].

<b>Please rate on a scale from 1 [Not Important] to 3 [Very Important]</b>	
Ethical or social responsibility considerations	<input type="checkbox"/>
Alignment with limited partners and/or stakeholders' preferences	<input type="checkbox"/>
Positive reputational signal	<input type="checkbox"/>
Risk Management	<input type="checkbox"/>

<sup>14</sup> GIIN defines impact investing as “investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return”.

Investment Performance	<input type="checkbox"/>
Market opportunities	<input type="checkbox"/>
Regulatory compliance or specific initiatives (e.g. UN PRI)	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>

8) Considering the company's investment activity, please rank the following selection criteria from [1] to [8] according to their level of importance.

**Please rate on a scale from 1 [Not Important] to 3 [Very Important]**

Entrepreneur and management team <sup>15</sup> (personality/ experience)	<input type="checkbox"/>
Product and/ or service value proposition <sup>16</sup>	<input type="checkbox"/>
Characteristics of the market <sup>17</sup>	<input type="checkbox"/>
Strategic fit in investment portfolio	<input type="checkbox"/>
Potential social and environmental return	<input type="checkbox"/>
Past performance / financial robustness	<input type="checkbox"/>
Referral by other investors	<input type="checkbox"/>
Financial considerations <sup>18</sup>	<input type="checkbox"/>

9) How challenging was it to develop and implement procedures to comply with EU requirements on sustainable investment?

**Mark with [X] your choice**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[1]	[2]	[3]	[4]	[5]	[6]
Very Easy	Easy	Somewhat Easy	Somewhat Difficult	Difficult	Very Difficult

<sup>15</sup> Personality: able to evaluate and react to risk well; attends to detail; capable of sustained intense effort; (...) Experience: familiar with the market targeted by venture; leadership ability; track record relevant to venture; referred as trustworthy source; reputation (...)

<sup>16</sup> Can be protected; demonstrated market acceptance; described as "high tech" (...)

<sup>17</sup> Significant growth rate; will stimulate an existing market; little threat of competition; will create a new market (...)

<sup>18</sup> High upside potential; high investment liquidity (...) whether or not they are involved in the first round of financing, whether or not they expect to make subsequent investments (...)

Not sure / No opinion	<input type="checkbox"/>
Not applicable	<input type="checkbox"/>
Prefer not to answer	<input type="checkbox"/>

10) Have you observed any specific regulatory requirements that have directly influenced your firm's engagement with ESG in deal screening and evaluation?

**Mark with [X] your choice**

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Not sure / No opinion	<input type="checkbox"/>
Not applicable	<input type="checkbox"/>
Prefer not to answer	<input type="checkbox"/>

11) Do you perceive an increase in investors' demand for investments aligned with ESG?

**Mark with [X] your choice**

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Not sure / No opinion	<input type="checkbox"/>
Prefer not to answer	<input type="checkbox"/>

12) Does your company have an established ESG policy?

- a) What shaped the formulation of your ESG policy and procedures? (e.g., Internal factors such as company values and culture, or External factors like regulatory requirements, investor expectations, market trends, ...)
- b) Does your company adjust the required rate of return for investments considering social and environmental factors? If so, what methodology is employed for this adjustment?

13) Which are the main barriers/challenges to ESG investing?

14) Do you believe that ESG integration leads to better long-term performance of venture capital funds?

**Mark with [X] your choice**

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Not sure / No opinion	<input type="checkbox"/>
Prefer not to answer	<input type="checkbox"/>

15) How relevant are ESG considerations in your deal screening criteria?

**Mark with [X] your choice**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[1]	[2]	[3]	[4]	[5]	[6]
Very unimportant	Unimportant	Somewhat unimportant	Somewhat important	Important	Very important
Not sure / No opinion					<input type="checkbox"/>
Prefer not to answer					<input type="checkbox"/>

16) How important are ESG considerations in your deal evaluation (due diligence) criteria?

**Mark with [X] your choice**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[1]	[2]	[3]	[4]	[5]	[6]
Very unimportant	Unimportant	Somewhat unimportant	Somewhat important	Important	Very important
Not sure / No opinion					<input type="checkbox"/>
Prefer not to answer					<input type="checkbox"/>

17) What is your degree of agreement with the statement: “The role of regulatory compliance significantly influences firms’ focus on ESG factors”?

**Mark with [X] your choice**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[1]	[2]	[3]	[4]	[5]	[6]
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

---

Not sure / No opinion

---

Prefer not to answer

18) What is your degree of agreement with the statement: “Integrating ESG factors in deal screening and evaluation enhances risk-adjusted returns”?

**Mark with [X] your choice**

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[1]	[2]	[3]	[4]	[5]	[6]
Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree

---

Not sure / No opinion

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Prefer not to answer