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Dualistic analysis of mutual attraction and (e)valuation of impact start-ups and venture capital investors in Germany: The perspective of impact start-ups

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Abstract

Numerous reports and major conferences highlight an urgent need for accelerated efforts to achieve the Sustainable Development Goals. Impact start-ups, being a provider of such innovative solutions, require venture capital (VC) investors. Through early-stage funding, VCs serve as an important growth enabler. Consequently, this interview-based study aims to highlight the attractiveness of VC investment for impact start-ups. This approach reveals impact start-up's desire to attract VC investment. However, the insufficient availability additionally requires impact funding alternatives.

Keywords: Venture capital, Impact Start-ups, Funding Attractiveness, Funding Characteristics, Funding Alternatives

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List of abbreviations

B2B	Business to business
BVK	Bundesverband Deutscher Kapitalbeteiligungsgesellschaften
ECB	European Central Bank
EIF	European Investment Fund
ESG	Environmental, social and governance
EVPA	European Venture Philanthropy Association
FED	Federal Reserve System
GIIN	Global Impact Investing Network
GmbH-GebV	Gesellschaft mit gebundenem Vermögen (new legal form)
IPO	Initial public offering
KPI	Key performance indicator
LP	Limited partner
SDG	Sustainable development goals
SFDR	Sustainable finance disclosure regulation
SIB	Social impact bond
SME	Small and medium-sized enterprises
US	United States
VC	Venture capital

1. Introduction

Recently the United Nations discussed the status of the climate goals and strategy adjustments at the 28th Conference of Parties in Dubai. The formulated outcome of the conference is the commitment to "transition(ing) away from fossil fuels" and increase the global capacity of renewable energy sources by threefold and energy efficiency by twofold till 2030 (UN FCCC 2023, 5). This agreement falls short of the expectations held by many, particularly European parties, which aimed for a more drastic formulation regarding the transition. Considerable progress is required to not only achieve the ambitious energy transition goal, but also the other 16 Sustainable Development Goals (SDG). As of now, none of these goals targeted by the United Nations at the COP21 is on pace to be achieved in 2030 (UN 2023, 19).

To close this significant gap, innovative solutions across all sectors are necessary. One contributor to these could be so called impact ventures, more specifically impact start-ups, as they target a positive environmental or social return alongside the financial one. Substantial financing is required for impact start-up to provide scalable solutions to the society. The importance to financially support these measures has also been highlighted in the COP28.

One of the most prominent funding sources for start-ups is venture capital (VC), as venture capital investors provide significant financial and non-financial support allowing good scalability of the solution, which has been acknowledged by various authors (Large and Muegge 2008; Lin 2022). However, due to the dual mission of impact start-ups some researchers question the profitability of investment and therefore the possibility of impact start-ups to attract venture capital funding (Gaddy et. Al 2017; Michelfelder et. al, 2022).

Further difficulties arise from the current economic conditions with global conflicts in various parts of the world and a high interest rate environment leading to a decrease of absolute investment in impact start-ups. What gives hope is that the relative share of venture capital

financing for impact start-ups has tripled in the last five years and will reach 31% in 2023 (Dealroom.co., ImpactCity The Hague and Danske Bank Growth 2023).

Nevertheless, research analysing the attractiveness of venture capital funding for impact start-ups is limited. Therefore, this paper seeks to explain the current perspective of impact start-ups regarding the use of venture capital investment. From an impact start-up perspective, the availability and appeal of venture capital investment and the potential of other impact specific funding sources are examined. Thereby, this paper focuses on the German market.

Before highlighting the perspective, this paper provides (1) a short introduction, (2) relevant fundamentals about impact investing, (3) an overview of the German ecosystem for start-ups and (4) the venture capital industry. To analyse the perspective, the current conditions, challenges, and possible solutions are examined based on literature and expert interviews.

2. Impact investing

This chapter starts by highlighting key historical events that emphasise the growing importance of social and environmental concerns in investments. Afterwards, impact investing is defined and distinguished from related terms. Lastly the current impact investing market is examined.

2.1 History of investment with social and environmental considerations

Sustainable business practices emerged in the 18th century, with the concept and expression first arising in forestry. Hans Carl von Carlowitz emphasized the importance of safeguarding forests and ensuring responsible harvesting by planting new trees (Du Pisani 2006). This early consideration of environmental sustainability marked the beginning of a conscious approach to resource management. In the 18th century John Wesley's sermon about the use of money further considered social aspects in investing (Renneboog, Ter Horst, and Zhang 2008). Wesley emphasised that we should "Gain all we can without hurting our mind (… through) sinful trade

(… or) our neighbour" (Boruff 2021, 12-13). Around two centuries later, in 1928, the Pioneer Fund was the first to take socially responsible criteria into account (Renneboog, Ter Horst, and Zhang 2008). 50 years later, after the Vietnam War sparked an anti-war and civil rights movement and calls for the exclusion of tobacco and arms industries, Joan Bavaria founded the first asset manager dedicated to socially responsible investing in 1982 (Trelstad 2016).

Another important milestone for the consideration of sustainable practices was set by the Brundtland Commission with the publication of the report "Our Common Future". The report addressed "poverty, inequality, and environmental degradation" and presented strategies for sustainable development (Brundtland 1987, 7). Building on this foundation, the UN Conference on Environment and Development in Rio de Janeiro, five years later, acknowledged in the "Agenda 21" that sustainable development requires the simultaneous pursuit of "economic, social and environmental" goals (UN 1992, 64). These principles were further articulated in the Millennium Development Goals, adopted at a UN conference in New York in 2000, paving the way for the subsequent establishment of the SDG in 2015 (UN DESA n.d.). The SDGs serve as a crucial guide for impact investors. The term "impact investing" was officially introduced at an event organized by the Rockefeller Foundation in 2007, marking a key moment in the formal recognition and promotion of investment practices with measurable positive social and/or environmental impacts (Kania, Kramer, and Russell 2014).

2.2 Differentiation between impact investing and similar terms

Today, there are numerous terms associated with environmental and social investment. One of the most known terms is sustainable investing. However, the definitions for sustainable investing vary significantly. Sometimes it is seen as a synonym for impact investing and socially responsible investing (S&P Global 2020), or as an umbrella term for other investments which consider social and environmental factors in addition to financial objectives (Fulton, Kahn, and

Sharples 2012 ; Busch et al. 2021; Lin 2022; Figure 1). Furthermore, some investors mistakenly use the term "sustainable" interchangeably with long-term financial profitability, misinterpreting its original meaning (Bocken 2015, 7).

ESG-investing is used to evaluate potential investments considering the three factors environment, social and governance along the financial ones (Caplan, Griswold, and Jarvis 2013). Many companies receive ESG scores from various rating agencies, however there are partly large deviations between their scores (Avramov et. al 2020). Some agencies measure the company's resilience to long-term environmental, social, and governance risks and not the company's impact on the earth and society (MSCI 2020; Sustainalytics 2021) leading to critiques of the term (Simpson, Rathi, and Kishan 2021). Some critics see impact investing as a solution, as it solves the accountability and measurability problem (Gordon 2022).

Both impact investing and socially responsible investing can be seen as approaches which have higher requirements regarding the environmental and social impact of a company. Similar to ESG-investing socially responsible investing refers mainly to public investments while impact investing mainly focuses on private investments (Agrawal and Hockerts 2019; Hornberger 2023). While socially responsible investing uses mainly negative screening to avoid investment in certain industries or stocks, impact investors follow a more forward-looking approach, similar to positive screening (Caplan, Griswold, and Jarvis 2013; Agrawal and Hockerts 2019). Impact investments are 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." (GIIN, n.d.b, para. 2). Impact investing can therefore be seen as the approach which goes the furthest out of the three sustainable investment strategies, which is why this thesis focuses on these types of investments.

According to the GIIN impact investing has four core principles (GIIN, n.d.a, 1):

- "Intentionality"
- "Use Evidence and Impact Data in Investment Design"
- "Manage Impact performance"
- "Contribute to the growth of the industry"

2.3 Impact investing market

The GIIN estimates that in 2022 over 3349 organizations managed $1.164 trillion in impact investing worldwide, 55% of which managed in Europe (Hand, Ringel, and Danel 2022). Impact investors mainly use the specific targets for each of the 17 SDG as a framework to guide their impact strategies (Hand, Sunderji, and Pardo 2023b). Since there is still a large funding gap of USD 3.9 trillion (OECD 2022) to achieve the SDG, further growth of the impact investment market is necessary. For the measurement and management of the impact the investors mainly use IRIS+[1]. Almost every investor (94%) assesses their impact at least once a year (Hand, Sunderji and Pardo 2023b). Impact investing is still a quite nascent industry, requiring further improvement in among others the harmonization of impact measurement frameworks (Hand, Sunderji and Pardo 2023c).

Because the definition of the GIIN is relatively broad in terms of whether the financial return or the impact return is more important, there are various types of investors (Figure 2), who pursue different returns (Hand, Sunderji and Pardo 2023d). This said, a large majority of investors (74%) are aiming for market returns (Hand, Sunderji and Pardo 2023d; Figure 3). In a report recognised by the GIIN, these are categorised as "financial first (impact) investors", while those that prioritise impact are classified as "impact first (impact) investors" (Freireich

[1] IRIS+ is a tool for impact investors developed by the GIIN to "measure, manage and optimize their impact" (GIIN 2019, para.1).

and Fulton 2009, 31; Figure 4). Financial first investors, who can also be categorised as "investors with impact", are not ready to give up their targeted financial return for a greater impact. They invest in profit-oriented ventures which have an intended and measurable positive impact (EVPA n.d.b). Impact first investors can be seen as "investors for impact" and typically invest in social purpose organisations (SPO). These organisations match the investors idea of willing to give up financial return for impact created and can either operate as a charity, a non-profit organisation or a social enterprise[2] (EVPA n.d.b).

Concluding from these two possible investor perspectives, the term impact start-ups in this paper refers to "mission driven for-profit enterprises" and social enterprises that have at least the potential to be self-sustaining (Figure 4).

3. Germany as an ecosystem for start-ups

Germany received the seventh best score within Startup Blinks 2023 Global Startup Ecosystem Index report. This index ranks the ecosystem of 100 countries and 1000 cities using an algorithm that takes three main factors into account: The "quantity score", "the quality score" and the "startup business environment score" (StartupBlink 2023, 37; Figure 5). Germany is ranked third in Europe behind the United Kingdom and Sweden. Further countries ahead of Germany are the United States, Canada, Israel and Singapore (StartupBlink 2023; Figure 6).

In Germany, the software and analytics start-up sector receive the largest share of funding, followed by the mobility and financial/insurance technology sectors. Energy and education, two impact-related areas, get the fourth and eleventh most funding, respectively (Prüver 2023;

[2] "A social enterprise is an operator in the social economy whose main objective is to have a social impact rather than make a profit for their owners or shareholders. It operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. It is managed in an open and responsible manner and, in particular, involves employees, consumers and stakeholders affected by its commercial activities." (European Commission n.d., para. 3)

Figure 7). Due to Germany's federal structure, municipalities receive more autonomy, resulting in an ecosystem where different sectors are better promoted in different areas of Germany. Munich and Berlin, the two biggest impact hubs in Germany, perfectly show this difference. While Berlin offers a good ecosystem for many different start-up sectors especially fintech ventures, Munich start-ups primarily concentrate on business-to-business, hardware and the internet of things[3] (StartupBlink 2023).

A big advantage for German start-ups is that their ideas contribute to by far the strongest economy in Europe, which also has a lot of foreign trade partners all over the world, meaning a good scalability potential for great start-up ideas (StartupBlink 2023). For the initial phase of start-ups, there are various federal, national, and EU-wide organizations that provide public funding and overall development support to start-ups. Established corporations like Telekom and Allianz further support several German start-ups financially, however recent research by the Financial Times, figured that these big corporations invest significantly more in US start-ups than German start-ups (Partington 2023a; Figure 8).

The United States offer by far the "best" ecosystem for start-ups (StartupBlink 2023). Reason for their good score is the far higher risk tolerance of investors compared to for example Germany, which is supported by favourable bankruptcy laws, allowing entrepreneurs to fail and restart. Many now established corporations were founded in the United States and there is a lot of capital available for venture capitalist leading to a higher number of potential investors and healthy competition, which are both highly beneficial for start-ups (StartupBlink 2023).

[3] "The term Internet of Things generally refers to scenarios where network connectivity and computing capability extends to objects, sensors and everyday items not normally considered computers, allowing these devices to generate, exchange and consume data with minimal human intervention." (Rose, Eldridge, and Chapin 2015, 5)

A main point of criticism of the German ecosystem is the high level of bureaucracy connected to founding a start-up and obtaining funding (Interview Consensus 2023; StartupBlink 2023). The current coalition recognized this and the limited funding possibilities for ventures in the capital-intensive scale-up phase in their start-up plan published last year. The plan addresses the involved bureaucracy associated with the foundation and funding of start-ups and pledges to fasten the process (Federal Government 2022b). While for early-stage financing Germany is well positioned as mentioned, the strategy seeks to mobilise 30 billion euros till the end of 2030 with several private investors to strengthen the venture capital sector and develop new financing instruments to support start-ups. Part of this 30 billion future fund is the €1billion investment of Germany in the European Tech Champions Initiative (BMWK 2022). This initiative is initiated by the European Investment Group and four other European member states, which will support the European venture capital ecosystem with up to €3.75 bn (EIF 2023). The recently introduced 'Growth Fund Germany' is another important component of the future fund and intends to support German and European venture capital funds financially (Partington 2023b).

So-called "public welfare-oriented start-ups", which follow the definition of social enterprises[4] (Federal Government 2023), should also benefit from better conditions and new appropriate financing instruments, developed in consultation with European funds, so that they can expand their social contribution (Federal Government 2022b; BMWK 2022).

A ten-point strategy for Germany as a business location was also presented by the German chancellor, the minister of finance and the minister of economic affairs and climate protection at a cabinet meeting in Merseburg at the end of August 2023. In addition to the previously stated objectives of streamlining regulatory procedures and cutting down on bureaucracy, the strategy also takes into account a shortage of skilled workers, lagging digitalization, and a delayed

[4] As explained in chapter 2.3

energy transition. The ten-points further include two new regulations that should enhance the German start-up ecosystem (Scholz, Habeck and Linder 2023). While the Zukunftsfinanzierungsgesetz (engl. Financing for the Future Act), where Start-ups are directly addressed, was accepted by the parliament and the federal council (Kraemer 2023), the Wachstumschancengesetz (engl. Growth Opportunities Act) is still heavily discussed (Spiegel 2023). The former aims to lower barriers to entering the capital market through a series of steps that will increase the attractiveness of going public in Germany, resulting in yearly benefit of 1 billion euros (Scholz, Habeck, and Linder 2023). The latter aims to provide a number of tax incentives to encourage innovation and investment, which would result in an annual relief for SMEs of almost seven billion euros (Scholz, Habeck, and Linder, 2023).

These strategies and initiatives have a good chance of improving Germany's entire start-up ecosystem and the German venture capital market, as the government has currently identified a lack of investment. It remains to be seen whether the measures adopted will lead to a higher risk tolerance among investors.

4. The venture capital industry

Venture capital firms, operating as key financial intermediaries, specialize in investments, in non-public early-stage (seed stage to second stage (Ruhnka and Young 1987) ventures, typically in exchange for equity (Metrick and Yasuda 2021). These firms source their funds from limited partners (LPs), who mostly are private and institutional investors, and strategically invest into early-stage firms characterized by high risk, high reward (Sahlman 1990). Within the industry of venture funding, VC plays a significant role, as they provide small firms with capital and hereby close the equity gap (Figure 9; Mason and Harrison 1994). Moreover, their engagement extends beyond financial investment, as they contribute to the long-term value creation within ventures, with positive effects enduring even after their exit (Croce, Martí and Murtinu 2013).

VC firms are distinguished by their proactive involvement in portfolio companies, which sets them apart within the investment landscape (MacMillan, Kulow and Khoylian 1989). This involvement includes, for example, enhanced governance, general monitoring, involvement in the management, venture professionalization, productivity growth and participation in the start-ups board (Gompers, et al. 2020; Sørensen 2007; Hellmann and Puri 2002; Amornsiripanitch, Gompers und Xuan (2019); Metrick and Yasuda 2011; Croce, Martí and Murtinu 2013). This is described more detailed in chapter 6.2.1. Combining all effects like a boost in growth, productivity, one can derive, that VCs stimulate the success of ambitious young companies.

VCs are primarily driven by the expected proceeds that are realized during the exit event (through sale or initial public offering (IPO)), where the VC sells its share of the company (Metrick and Yasuda 2021). KfW Research (2023b) even states, that the anticipated exit scenario of a VC is key to their investment decision. To maximize their chances of long-term success, they choose to “operate in environments where their relative efficiency in selecting and monitoring investments gives them a comparative advantage over other investors.” (Amit, Brander and Zott 1998, 441). Within those environments, VCs further screen for opportunities offering relatively lower selection, screening and agency costs. (Amit, Brander and Zott 1998)

4.1 Inception and development of venture capital in Germany

The first signs of a venture capital industry can be found in 1965, when the first (unsuccessful) funds were established (Fiedler and Hellmann 2001). Afterwards the industry needed a long time to develop and gain traction. Even initiatives by institutions and the government, e.g., the introduction of the Deutsche Wagnisfinanzierungsgesellschaft (WFG) in 1975, didn’t change the landscape. Instead, they were seen as complete failure (Becker and Hellmann 2005). Factors such as cultural norms, alternative financing sources, legal frameworks, a negligible start-up culture, and the characteristics of the strong German "Mittelstand", which is not characterized

by the need for fast capital and growth, contributed to the industry's slow development. (Fiedler and Hellmann 2001; Franzke, Grohs and Laux 2003).

The landscape began to change with the introduction of "Neuer Markt" in 1997. Firstly, a new exit opportunity via IPO was created, secondly, there was a trend towards fast paced business models within the scope of the internet, which was accelerated by a deregulation of the telecom market. All these factors led to an increased need of VC financing, enabling the industry to gain traction. (Fiedler and Hellmann 2001; Franzke, Grohs and Laux 2003; *Figure* 10)

By 1999, the amount invested in early stage gained about 1300% over a time period of 4 years up, with venture capital funding totalling DM2.0B (Fiedler and Hellmann 2001). When looking at Figure 11 and Figure 12 one can still see the difference in the market characteristics between Europe and the USA, with the US having a much stronger VC market. It additionally was different regarding the investors. In contrast to the 50% of German VC funding originating from banks in 1998, almost 0% of US-venture capital originated from banks (Figure 11; Figure 12).

4.2 Principal agent, information asymmetry and moral hazard in VC

The dynamics of venture capital financing are profoundly influenced by the concepts of adverse selection, moral hazard, and information asymmetry (Amit, Brander and Zott 1998). Amit, Brander and Zott (1998) as well as Houben (2002) argue that those elements are fundamental to the venture capital industry. Central to this discussion is the principal-agent framework, as outlined by Reid (1999). According to Reid (1999) the relationship between a VC investor and start-up entrepreneur can be described via the concept of principal-agent, which is used in the context of contracts that involve risk, fragmentary information and the agent's ability to act on the principal's behalf (Reid 1999; Reid 1996). The principal-agent problem emerges in situations of information asymmetry combined with misaligned incentives (Shah 2014).

According to Amit, Brander and Zott (1998), there are two kinds of information asymmetry. While hidden information refers to a situation, where buyer and seller are not aware of the same information about the good (and have an incentive to hide it in order to obtain better conditions), hidden action refers to the inability of one party to observe the others' actions (e.g., regarding decision making and work pensum). While the first leads to adverse selection, the latter causes moral hazard. (Amit, Brander and Zott 1998)

Adverse selection is tried to be reduced by venture capitalists, since they as principals bear the associated agency costs (Bellavitis, Kamuriwo and Hommel 2018). These costs can be reduced by VCs through utilization of the signalling theory by identifying and interpreting signals of quality by target companies. (Connelly et al. 2011). According to Connelly et al. (2011), signals communicated by targets are an effective measure to draw attention from VCs. Therefore, they signal information about their start-up characteristics, that cannot be observed by the other party by conduction actions which are observable (Mas-Colell, Whinston and Green 1995).

Upon funding allocation, the entrepreneur has the ability to allocate the given resources according to his will, without the financier being able to observe. In this setting the entrepreneur, if unfaithfully willed, (1) may use the capital to his/ her own benefit or (2) may avoid the tedious process of identifying the most efficient use of the financier's money, therefore reducing the efficiency of allocation (Bergemann and Hege 1998). Amit, Brander, Zott (1998) find that the higher the ownership share of the venture capitalist, the more exacerbated the issue becomes. They argue that the correlation between equity share and agency problems exists due to the entrepreneurs shrinking incentive to perform well when his ownership share is lowered.

To counter moral hazard, venture capitalists employ strategies such as imposing control rights (Bellavitis, Kamuriwo and Hommel 2018), active participation in the business operations (Reid

1999), monitoring (Bellavitis, Kamuriwo and Hommel 2018; Amit, Brander and Zott 1998) and being active in the start-ups board (Metrick and Yasuda 2011). According to Reid (1999), venture capitalists are well able to handle situations, where information asymmetry is present, and according to Amit, Brander and Zott (1998) the VCs competitive advantage is their ability to mitigate agency costs regarding informational asymmetries. Hereby, (Bellavitis, Kamuriwo and Hommel 2018) point out that VCs carefully weigh (dis)advantages involved in addressing agency conflicts. Advantages being improved chances of having a successful exit (Cumming and Johan 2008) and disadvantages being costs (Bellavitis, Kamuriwo and Hommel 2018).

Interesting to know is that European VCs tend to be less involved in their portfolio companies compared to their US counterparts (Schwienbacher 2008), which ultimately might have an effect on the VCs ability to mitigate agency problems. To say this with certainty, this topic would need further attention among researchers.

4.3 Current numbers and development

A major external shock for the industry was created by the COVID-19 pandemic in 2020. Similarly to most other industries, VC wasn't immune to the impact. As measured by Metzger (2020), by evaluating the opinion of hundreds of expert members of the BVK, the German market sentiment severely fell to a level that hasn't been seen in over 15 years. This was the case for most variables, including business climate, situation and expectation, fundraising and exits. Contrasting to that the sentiment on entry valuation became, expectedly, even better. (Metzger 2020)

The industry saw a brief recovery phase up to Q4 2021 but faced new challenges due to geopolitical tensions and interest rate spikes. The FEDs announcement to increase the interest rate, in a manner as drastic as it hasn't been the case for 30 years, had a spillover effect to Europe and Germany via the ECB. For VC investors, that have been accustomed with the low

interest rates this was a change of paradigm (Metzger 2022a). Hence, the investors sentiment plummeted again, while still being barely positive in Q1 2022, before becoming negative in Q2 2022 (Metzger 2022a; Metzger 2022b; KPMG Private Enterprise 2023).

Compared to 2021, in 2022 global investments declined by over $200B to ~$500B (-32%) (KPMG Private Enterprise 2023). While the decline in Europe with -21% wasn't as sharp, in Germany the trend still was -27% (to $13.2B) with Berlin plummeting -43% (KPMG 2023).

The current state of the German VC market shows signs of recovery. The exit environment is improving (Metzger 2023a), but full recovery in exit conditions, especially via IPOs, is not anticipated until mid 2024 (Reiche, Wacker and Honold 2023). Regarding funds invested, the market currently records a high, when disregarding the outlier year of 2021 (Köhler-Geib 2023; KfW Research 2023b), with the expected number of deals in 2023 being 40% lower than in the previous year (Reiche, Wacker and Honold 2023).

According to the (Reiche, Wacker and Honold 2023) venture capital market study of Germany, a higher number of bankruptcies and lower exit valuations can be recorded. Investors therefore must adjust their prospective exit returns (Reiche, Wacker and Honold 2023) and according to Metzger (2023a) they will. A higher amount of negotiations between investor and entrepreneur regarding capital to be invested and target ownership was identified, underlining the difficult situation of the VC industry (Reiche, Wacker and Honold 2023). On the positive side, with VCs rather administrating their current portfolio start-ups instead of investing in new ones, corporate venture capital divisions do have a great opportunity to invest in companies with better entry conditions (Reiche, Wacker and Honold 2023; Reiche 2023). Metzger (2023a) states that once FED and ECB moderate their interest policy, they expect the VCs to release their dry powder towards new investments. Noteworthy is the macro-trend in VC-Germany towards B2B companies and impact investments (Reiche, Wacker and Honold 2023).

4.4 Impact venture capital

Impact venture capital, though lacking an official definition and academic consensus, can be conceptualized based on (1) the affiliation to the venture capital industry (by name) and (2) Hand, Sunderji and Pardo's (2023a) definition of an impact investor. In essence, impact venture capital can be seen as a VCs with dual objectives (positive societal impact while simultaneously having good financial returns) that solely target impact ventures. (Hand, Sunderji and Pardo 2023a; Interview Consensus 2023)

Global funding in impact venture capital has shown remarkable growth, rising from $3.4B in 2010 to $34.7B in 2020. For 2021 the industry witnessed a dramatic spike to $80.8B. Although there was a small set-back in 2022 and 2023, the expected levels for 2023, being $48.1B, still well exceed 2020 levels. (Figure 13) In Europe, since 2016, the amount of impact funding in almost sixfolded to ~$15B in 2023 (Figure 14), while the percentage in comparison to the total VC funding more than tripled from ~9% to 31% (+22%) with a steep rise in the last two years (Figure 15). In absolute terms, Europe is catching up to the USA. While in 2017 having 50% of the absolute volume invested compared to the USA, in 2022 it was 87% (Figure 16). When analysing this in relative terms to the respective local VC market, North America lacks behind with 9% being VC impact investments. A level, which Germany reached in 2016 (Figure 15).

Impactful for the venture capital industry, especially impact VCs, in Germany and Europe is the recent SFDR (Sustainable Finance Disclosure Regulation) (European Union 2019). The regulation by the European Commission took effect on 10th March 2021 and was a step towards providing transparency regarding asset managers and their products sustainability implementation (KPMG 2021; Morgan Stanley Investment Management n.d.). It consequently also is applicable to venture capital funds. While sustainability/ ESG is broader than the specific aspects of "impact", it can be and is an important signalling tool for impact VCs towards

investors and start-ups. For them it seems important to comply with the highest standards. (Interview Consensus 2023)

The SFDR divides funds into three categories: Article 6,8, and 9. The baseline is set by the classification as Article 6 fund, where no such sustainability/ ESG considerations apply to the investment process (Celsia 2023). An Article 8 fund is characterized by the consideration of sustainability/ ESG Characteristics, while the Article 9 fund explicitly has those as investment objective (EFAMA 2023; Goldman Sachs Asset Management n.d.; European Union 2019).

An advantage of this classification for venture capital funds and especially impact venture capital funds is the already spoken about signalling effect and the marketing potential through differentiation and an increased transparency/ credibility (Interview Consensus 2023; Deloitte Ireland LLP 2021). The reporting burden (regarding complexity and costs), which becomes increasingly higher from Article 6 to Article 9 can be seen as the disadvantage. (Interview Consensus 2023; European Union 2019; Celsia 2023). Since the regulation took effect in 2021 one can see a steady rise in Article 8 funds (Figure 17). In Germany specifically, in Q4 2022 15.8% of total UCITS and AIFs were Article 8 and 0.2% were Article 9 funds (Figure 18; Figure 19). When analysing these numbers and development it is important to note, that the SFDR has a much broader scope than only venture capital funds (60% impact funds and 40% ESG funds (Scheitza and Busch 2023)). Currently there is a petition initiated by leading impact investment companies to further improve regulation regarding this issue (Ring Capital 2023).

5. Structure and methodology

The following section describes the origin and the approach chosen to answer the research question. Although Germany is fostering an ecosystem for impact start-up in which environmental impact start-ups in particular can thrive, it is yet to keep up with the rapid development and rising need for suitable funding options. One possibly viable financing

method to bridge the funding gap of impact start-ups is venture capital. With venture capital traditionally being single focused on financial returns, the question arises, how start-ups with a dual objective (having impact while generating financial returns) fit into or expand that traditional roster. To investigate the matter of attractiveness, a research question was formulated and will be answered in the following chapter. To answer the research question, a total of four hypotheses were formulated.

Research Question: How attractive and available are venture capital investments for impact start-ups in Germany under the current conditions and are there potential alternative impact funding sources?	
H1 – Impact Start-ups	*Germany offers a good regulatory and funding ecosystem for impact start-ups.*
H2 – Impact Start-ups	*Venture capital investment is a desirable funding source for impact start-ups.*
H3 – Impact Start-ups	*Impact venture capital investment is more interesting for impact start-ups than traditional venture capital investment.*
H4 – Impact Start-ups	*The availability of venture capital investment for start-ups that prioritize impact over financial profitability is limited, which is why impact funding alternatives are needed.*

Table 1: The research question and the corresponding hypotheses of this study

With the topic being deeply rooted in practice, a qualitative study design was chosen to answer the research question. Through interviews and survey submissions, expert knowledge was gathered. These insights were cross referenced and correlated with current literature research to capture all relevant information. Current relevant data about VCs, (impact) start-ups, the current ecosystem and trends were derived from interviews and supplemented with the latest articles, reports and legislations. With the geographical focus of this work being Germany, interviews were held, and surveys distributed accordingly. All interviews were recorded and transcribed. The transcribed text was summarized and therefore, links between research objectives and contents could be drawn. The analysis was based on the general inductive research approach, according to Thomas (2006). With this information, a framework was established, which categorizes and assorts insights that can be drawn from the raw data. This approach allowed to systematically analyze the interviews in a straightforward manner, while

extracting and linking the most important information (Thomas 2006). To ensure coherence in personal experiences and assessments, an interview consensus was established.

Research question: *How attractive and available are venture capital investments for impact start-ups in Germany under the current conditions and are there potential alternative impact funding sources?*

To answer the research question, semi-structured online interviews were conducted, and a survey was distributed with 14 main questions and a maximum of 8 additional question, which were asked based on previous answers (Table 2). The group of experts was approached via LinkedIn, with more than 500 start-up representatives from environmental and social impact start-ups contacted. As of the submission date of this thesis, 11 semi structured interviews were held, 19 representatives answered the survey and three answered a few short questions via mail. Both the survey and the interviews were mainly answered by individuals with leading (finance) positions in their respective impact start-ups, with the majority of these impact start-ups being environmental impact start-ups (Table 3; Table 4). All of the interviewed and survey start-ups claimed to at least follow one SDG, showing its great importance for impact start-ups. For the interviews, a guide with 19 questions was developed and resulted in each online interview lasting 20 to 40 Minutes.

The following chapter comprise the qualitative research conducted to answer the research question and corresponding hypotheses.

6. Funding landscape for impact start-up in Germany: characteristics, attractiveness of venture capital and potential impact funding alternatives

This chapter examines the current funding environment for impact start-ups in Germany, focusing especially on the attractiveness of venture capital funding for impact start-ups and on potential catalytic capital funding alternatives. These are funding sources especially tailored for impact start-ups.

6.1 Current regulatory and funding landscape for impact start-ups in Germany

After providing an overview of the German start-up ecosystem in chapter 3, taking into account the risk aversion of investors and the current efforts of the government, this chapter examines the current regulatory and political situation as well as the current economic conditions for impact start-ups. These are further explained, as they are recognized as important enablers for the growth of impact start-ups (Horne and Fichter 2022).

6.1.1 Current regulatory landscape for impact start-ups in Germany

An environmental awareness study from 2022[5] has shown that, in principle, people in Germany are in favour of an environmentally friendly economy and that the protection of the climate is one of the most important political topics among social topics like education, healthcare and social justice (BMUV and UBA 2022; Figure 20). As all these topics seem to be of deep importance politically, regulations which indirectly benefit impact start-ups apart from direct funding initiatives could be expected.

The German strategy for sustainable development provides a framework with targets in various areas and measures to achieve them. However, in 2021 less than half of these 75 targets were

[5] The study was recently published by the German Environmental Agency and the Federal Ministry for the Environment and shows that 91% are in favour of transforming the economy (BMUV and UBA 2022).

on pace to be achieved. A focus on the environmental perspective of sustainability can be identified, as only one out of the six main areas is focused on social topics (Federal Government 2020, 48-60; Figure 21).

The sustainable development strategy shows Germany's ambitious aims for the energy transition and overall climate change. These targets are among others manifested with the renewable energy sources act (Federal Government 2022a) and the federal climate change act (Federal Government 2021). As Germany relies on companies that actively contribute to achieving these significant targets, these regulations could provide valuable market opportunities for environmental impact start-ups. They are recognized as the most important market actors in providing revolutionary environmental advances (Fichter and Clausen 2013, 275), which could further increase their appeal to investors. As a side effect due to the war in Ukraine the transition to renewable energy sources gained even more importance (BP 2023). Additionally, if the in chapter 3 described Growth Opportunities Act is adopted, environmental impact start-ups are set to benefit from an investment premium, which is a profit-independent tax investment of the government and covers 15% of the companies' spending on energy efficiency measures (Scholz, Habeck, and Lindner 2023).

Social enterprises, which are mostly focused on social impact, on the other hand feel a lack of support by the government. One critic is the lack of suitable legal forms (Kiefl et. al 2022). This issue could be addressed by the introduction of a new legal form, the GmbH-GebV (Die Gesellschaft mit gebundenem Vermögen n.d.), which is currently discussed. This form sees entrepreneurs as fiduciaries of the company without access to the profits encouraging reinvestment (Rittmann and Kosner 2023). This introduction is part of the government's strategy, which targets to improve the legal environment, simplify the funding process (Federal

Government 2022b) and offer "suitable financing instruments" for social enterprises (Federal Government 2022b, para.7).

In the European Union, one potential favourable regulation for impact start-ups is the European Green Deal and related legislation, like the F-gas regulation, which proved valuable for one particular start-up interviewed (Interview Consensus 2023). Another potential favourable regulation is the Sustainable Finance Action with its centrepiece, the Sustainable Finance Disclosure Regulation (SFDR), which is explained in more detail in chapter 4.4. Especially the institutional pressure for funds to invest in impactful solutions could convince them to invest in impact start-ups and fulfil the connected higher reporting obligations, as explained earlier.

6.1.2 Current funding landscape for impact start-ups in Germany

Similar to almost all other start-ups, environmental and social impact start-ups are greatly impacted by the current high interest rate environment. Start-ups receive lower valuations, and some LPs of VCs decide against potential investment and keep funding reserves, leading to a lower liquidity in the venture capital market. This creates an especially hard environment for pre-revenue start-ups, as they bear the highest risk (Interview Consensus 2023).

As shown in chapter 4.4 the impact sector in Europe showed great resilience to the current market conditions and Europe is the region where the highest share of venture capital money is allocated to impact investments with 31% (Figure 15). In the Netherlands specifically the share is even higher with 35% (Dealroom.co, ImpactCity The Hague and Danske Bank Growth 2023; Figure 15). While the exact percentage for Germany isn't published it can be expected to be similar. The share of green start-ups[6] in Germany is 35% and the percentage of green start-ups, which used VC is only one percent less than non-green start-ups with 19% (Fichter et. al 2023).

[6] While not every green start-up can be considered as an environmental impact start-up, the number can give an approximate picture.

Globally a focus on funding environmental impact can be identified, as in the last five years SDG 13 Climate Action and SDG 7 Affordable & clean energy were by far the most funded SDGs (Dealroom.co, ImpactCity The Hague and Danske Bank Growth 2023; Figure 22).

Compared to the relatively still high usage of venture capital for green ventures, only 3.7% of social enterprises used venture capital and only 14.3% received the amount they aimed for. Social enterprises also attracted far less business angels than both green start-ups and non-green start-ups. These numbers are however significantly biased as all social enterprises prioritize impact over financial targets and nearly half of the covered social enterprises are non-profits organizations (Kiefl et. al 2022, 25; Figure 23). Non-profit organizations have significant tax advantages and some further benefit from lower start-up requirements in financial and legal terms (Council on Foundations 2022). In return, however, they are more dependent on grants, as a big part of the non-profit's revenue could be connected to government funding (Arena et.al 2018; Peng, Liao, and Lu 2019). One impact start-up representative argued that this dependency leads to a limited growth and ultimately lower impact potential (Interview Consensus 2023).

Interestingly social enterprises named the complexity of obtaining public funding as the biggest challenge in 2021, with more than one in four social enterprises struggling to obtain initial investment (Kiefl et. al 2022, 72). That partly contradicts the governments opinion, as according to them there isn't a lack of public sources for the early stage of start-ups (BMWK 2022). Several start-ups interviewed confirmed the existence of various European sources like the European Horizon program and several nationwide funding programs from ministries and foundations (Interview Consensus 2023). As of the submission date of this thesis, however, the biggest funding source for the modernisation of the economy, the Klima- und Transformationsfonds" (engl. climate and transformation fund), which should invest in total €212 Billion between 2024 and 2027 (BFI 2023) was cut by €45 billion (MDR 2023). This is

the direct consequence of the temporary budget crisis triggered by the Constitutional Court's declaration that the reallocation of 60 billion to the fund originally set up to deal with the coronavirus crisis is unconstitutional (Tillar 2023).

Follow-up financing is considered as an even bigger challenge for social enterprises. Instead of venture capital in this stage, social enterprises are far more dependent on internal financing and crowdfunding, which is further explained later. Green start-ups regard capital raising as a significant obstacle as well, with 46% citing it as one of the top three current challenges for them, which is 12% higher than non-green start-ups. They are hoping for higher venture capital investment and less bureaucracy (Fichter et. al 2023), which was further confirmed by various interview partners (Interview Consensus 2023). The current start-up strategy was implemented to address those difficulties, the success of the program especially for social impact start-ups has to be seen.

6.2 Attractiveness of venture capital funding for impact start-ups

In the following chapter the attractiveness of venture capital investment for impact start-ups is analysed. First the advantages of venture capital investment for impact start-ups are highlighted. Subsequently, the challenges of venture capital funding for impact start-ups are outlined, which may explain why both green start-ups and social enterprises consider raising capital to be a major problem. Finally, potential solutions for these challenges are explained.

6.2.1 The benefits of traditional venture capital for impact start-ups

Several articles (de Lange 2017; Gaddy et al. 2017) hypothesise that apart from grants, impact start-ups have a harder time getting funding. This is because investors like venture capitalists are too focuses on financial profitability and impact start-ups are less interesting for them. Nevertheless, the majority of the interviewed and surveyed representatives of impact start-ups acquired venture capital funding and find it rather desirable (Interview Consensus 2023). Some

articles also emphasised the instrumental role venture capital investment plays in funding the transformation to a more sustainable economy (Bocken 2015).

Impact start-ups have the opportunity to attract venture capital investment at different start-up stages and it has been shown that the sooner start-ups receive venture capital funding, the better they perform (Jeong et. al 2020).

Venture capital investment offer significant financial support for start-ups, as the median venture capital deal size in the angel & seed stage Europe is $1.3 million, $2.2 million in the early VC and $5 million in the later VC stage (KPMG Private Enterprise 2023, 51; Figure 24). Additionally, to this substantial financial support the investee receives various non-financial benefits through venture capital investors. As shown by Large and Muegge, these can be categorised into eight different inputs, the first two being external ones and the remaining six being internal (Large and Muegge 2008, 40-44):

(1) "Legitimation" is an external input, which refers to the benefits a start-up receives through its connection to a venture capital fund. Potential benefits are the increased legitimacy, reputational advantages, and the validation of the investee.

(2) "Outreach" is the other external input and refers to the venture capital investor's proactive assistance to build a valuable network through promoting and connecting with various external stakeholders such as customers or other investors.

(3) "Recruiting" is the first internal input through which venture capital investors help the start-up to find, attract and potentially recruit talented individuals, which can be especially difficult for new ventures due to their novelty.

(4) "Mandating" activities helps the start-ups to concentrate on the key performance goals through control and incentive mechanisms.

(5) "Strategizing" efforts of the venture capital investor help start-ups to achieve future objectives through foundational support in the strategic planning and the establishment of the business concept.

(6) "Mentoring" describes the spontaneous and ongoing support of managers of the company through efforts like guidance, coaching and motivation.

(7) "Consulting" support of venture capital investors is similar to mentoring; however, it is often based on request and therefore more focused on the planned provision of expertise maybe even through external sources.

(8) "Operating" means the direct support of venture capital investors in the ongoing business activities, as they can create added value through temporary operational involvement as part of management.

Other sources like Lin 2022 and Jeong et. al 2020 confirmed the importance of the non-financial support through venture capital investors, connected to the above-mentioned inputs. Venture capital investors help investees to overcome the "liability of newness" (Baum and Oliver cited in Jeong et. al 2020, 3), which refers to the difficulty to attract employees and develop a network in the industry. If the start-up performs as intended, the investor might offer follow-up financing, giving also further legitimation to the start-ups and attracting other investors. This offers a motivation for the venture's managers to try their best to meet the venture capital investor's goals (Lin 2022).

Various interview partners additionally named the availability of such big amounts in relatively early stage as an important factor of attraction. Corporate venture capital, a special form of venture capital through a big corporation, is mentioned as an interesting option as well; however, it was only used by 5 out of the 19 surveyed start-up. This already shows the limited availability (Interview Consensus 2023).

6.2.2 The challenges of traditional venture capital for impact start-ups

While venture capital investment is seen as somewhat desirable, current market conditions complicate the process to attract it. The availability of venture capital investment decreased significantly because of the high interest rates. A representative of an environmental impact start-up mentioned venture debt[7] as a now more necessary option in Germany, following the United States (Interview Consensus 2023). Start-ups are indeed more interested in venture debt, as European tech ventures raised a record €30bn from venture debt in 2022 and almost double the value of 2021 (GP. Bullhound 2023). Debt investment overall is however seen as less appealing compared to venture capital investment because of the lack of support in terms of expertise, the difficulty to attract new investors and the need to become profitable sooner. Additionally, various start-ups lack some sort of collateral at the early stage (Interview Consensus 2023).

Several sources mentioned the general lack of investment in impact-oriented solutions, which can lead to the described financing gap in the realisation of the SDGs (Cumming, Henriques, and Sadorsky 2016). One challenge associated with venture capital is the lack of attention to the impact created, as markets fail to reflect social costs of environmentally damaging production (Rennings 2000). Start-ups which prioritize impact over profitability have a harder time finding venture capital investors, as their mission and values do not align as shown in the social enterprises report (Kiefl et. al 2022). The lower profitability potential of these start-ups makes them less interesting for investors and a change of business model is likely needed if they would like to attract those investors (Interview Consensus 2023).

[7] "Venture debt is a loan to an early stage company that provides liquidity to a business for the period between equity funding rounds. Venture debt is rarely used as a long-term financing solution. Typically, these loans are repaid within a period of 18 months or sometimes up to two-three years. Most often, private venture debt providers (funds or banks) expect to be repaid from the proceeds of the next funding round. However, venture debt providers stay very closely linked to venture capital investors and it is not unusual to see a being provided with such loans multiple times during its development" (Stoykov 2022, para.2)

A further significant challenge for the investment relationship of impact start-ups and venture capital investors is the exit stage, showing a further potential lack of mission alignment between investor and impact start-up. The goal of venture capital investors is to sell their shares at some point with a significant return (Orasto, Randjelović, and O´Rourke 2003), while impact start-ups are more hesitant to exit options than traditional ventures, as they fear a potential mission drift. The proportion of green start-ups that state an exit valuation is 8% lower than for conventional start-ups (Fichter et. al 2023). It can be expected to be even lower for social enterprises.

Some papers and interview partners also mentioned the higher investment requirements of hardware cleantech investment in particular and the less attractive overall risk-return ratio (Gaddy et. al 2017; Interview Consensus 2023; Michelfelder et. al 2022). One reason for the less appealing risk-return ratio is the inability of investors to capture all the benefits generated by cleantech start-ups, as their solutions offer benefits for the entire society SDGs (Cumming, Henriques, and Sadorsky 2016). Start-ups which provide hardware solutions suffer from this perception and have difficulties to attract enough funding to scale. Investment solutions are urgently needed since hardware solutions are at least as crucial as software solutions in achieving net zero (Interview Consensus 2023).

6.2.3 Impact venture capital as a partial solution

In recent years several impact venture capital funds have emerged to specifically respond to the growing number of social and environmental impact start-ups and in the survey 5 out of the 19 start-ups received impact venture capital funding. As explained in chapter 4.4, their investment thesis binds them to invest in companies that have a significant social or environmental impact. Most of the impact venture capital investors track their impact. In Europe, they even have to fulfil reporting obligations under the SFDR, which are steadily increasing from Article 6 to

ultimately Article 9 funds, which is also further explained in chapter 4.4. Impact KPIs are therefore of great importance to them, but still secondary to financial ones.[8] Even though the tracking of impact requires initial investment, nearly all interviewed and surveyed start-ups claimed to track their impact. They are seen as an important proof and quantification of their impact, which is important for some investors (Interview Consensus 2023).

Consequently, several interview partners agreed that impact VCs solve the mission alignment problem, as they are more engaged with the start-up's values and business model than traditional VCs (Interview Consensus 2023). The pursuit of the same mission can lead to additional non-financial benefits for impact start-ups. Impact VC investors are likely to have a better network and expertise in the impact space than traditional venture capital investors and share the start-up's aspiration to avoid mission drift on exit (Holtslag, Chevrollier, Nijhof 2021). However, the interview partners mentioned that they do not offer significantly different financial conditions, as they still mainly look at the profitability (Interview Consensus 2023). The difficulty for hardware start-ups to attract enough funding therefore remains.

To better match start-ups with venture capital investors, which have the same mindset and mission, intermediaries or network events could be a helpful addition and are mainly seen positively from interview partners (Interview Consensus 2023). Sweden for example offers the Demo Day, where investors and start-ups can network (StartupBlink 2023, 89).

6.3 Alternative catalytic capital funding sources for impact start-ups

While there are solutions to various challenges that start-ups face when seeking venture capital funding, the complexity of venture capitalists' risk aversion and the funding gaps for social enterprises in particular persist. Following the German start-up strategy outlined in chapter 3,

[8] While in some Venture capital funds, the managers compensation may be influenced by the impact achieved by investment, the impact start-ups apparently do not get incentives if certain impact goals are reached. (Interview Consensus 2023).

promoting competition among venture capital investors and diversifying funding sources in Germany could therefore prove beneficial. Besides some impact investing companies offering traditional financing sources such as incubator or accelerator solutions specifically for impact start-ups, there are various other impact financing alternatives.

All the mentioned instruments can be considered as catalytic capital[9], which is a broad term described by a Tideline report as: "Debt, equity, guarantees, and other investments that accept disproportionate risk and/or concessionary returns relative to a conventional investment in order to generate positive impact and/or enable third-party investment that otherwise would not be possible." (Leijonhufvud and Locascio 2019, 2).

One of the more prominent financing solutions specifically for impact start-ups, which is already used by several social enterprises in Germany, is **crowdfunding** (Kiefl et. al 2022). Crowdfunding enables a large number of individuals to invest small amounts of capital through an online platform, aggregating funds for a project or company. As social and ecological ideas have the potential to inspire many people, crowdfunding is a suitable instrument for start-ups in the environmental and social impact sector (Meyskens and Bird 2015, 1-2). Crowdfunding is commonly categorized into four distinct types: Reward-based, equity-based, donation-based, and debt-based crowdfunding.

(1) Reward-based crowdfunding: In this model, Investors receive some form of compensation, often product-related, for their initial investment.

(2) Donations-based crowdfunding: In this model the investors don't receive any financial return, as their investment is considered as a donation.

[9] The European Venture Philanthropy Association (EVPA) lists organisations which provide at least one of the following mentioned sources (EVPA n.d.a)

(3) Equity-based crowdfunding: This approach involves investors becoming shareholders in the funded venture. It is less commonly used, potentially due to the associated risks.

(4) Debt-based crowdfunding: This is the most prevalent type, operating similarly to a traditional bank loan, because investors receive a fixed interest rate for a set period of time (Böckel, Hörisch, and Tenner 2020, 4; Bapna 2019).

The answers of several social enterprises shows that crowdfunding is already a good alternative in Germany for impact start-ups particularly social impact start-ups, especially if venture capital funding is an unrealistic, unavailable or even unwanted option. However, compared to the United Kingdom and especially the United States the availability of crowdfunding could still be improved (Ziegler at. al 2021, 191).

Another financing instrument which is especially interesting for among others social enterprises is **venture philanthropy**. "Venture Philanthropy (VP) is a high-engagement and long-term approach whereby an investor *for* impact supports a social purpose organisation (SPO) to help it maximise its social impact" (EVPA n.d.b, para. 1), according to the European Venture Philanthropy Association. It is a mixture of venture capital and traditional philanthropy, as foundations which offer venture philanthropy are impact-first investors, which share the venture capital approach of substantial involvement in ventures and want to see measurable results. Unlike traditional venture capital, venture philanthropy has a longer investment period, typically up to ten years, and venture philanthropists often maintain their engagement without pursuing full exits (OECD 2014).

Venture philanthropy organizations offer a range of financing instruments with grants, debt, equity and hybrid solutions which are specifically tailored for the organizations they support (EVPA n.d.b). These instruments have advantageous conditions for impact start-ups, as venture philanthropy organisation can offer terms that wouldn't be offered by commercial institutions

(Balbo et. al 2010). The potential significant funding amount combined with the VC-like additional non-financial support and the beneficial conditions, makes venture philanthropy an interesting funding alternative for impact start-ups. However, the availability of organizations which provide venture philanthropy is currently very limited in Germany (Interview Consensus 2023). BonVenture can be seen as a so far lonely pioneer (BonVenture n.d.).

Another interesting longer-term financing option for impact start-ups is **patient capital.** Due to limited research, there is no clear definition of the term which already indicates the limited availability. Patient capital is often viewed as an investment in the form of equity or debt, where investors sacrifice short-term return for long-term growth and further support the venture alongside its journey. This shows the higher risk tolerance of patient capital investors, who also often target social or environmental impact (Sharma and Sharma 2019; Acumen n.d.).

Hybrid loan and grant systems, such as the European Fund for Southeast Europe (EFSE) from Finance in Motion (Finance in Motion n.d.), are a further possible instrument, in this case for start-ups, which are in an earlier stage. They can be considered as a **blended finance** approach, which according to the OECD is "the strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries" (OECD n.d., para. 1). The strategy is specifically focused on closing the SDG funding gap and enables two or more investors to invest alongside each other while simultaneously pursuing their own goals.[10] One could be a private investor seeking market returns, while the other could be a public or philanthropic source. Blended finance solutions offer substantial benefits for impact start-ups across various stages, potentially expanding the investor base. Profit-oriented

[10] Some researchers see venture philanthropy and crowdfunding as a blended finance approach. The GIIN however mentions that the approach requires minimum two investors. Venture philanthropy is a model with only one investor, while crowdfunding has a large number of various investors, however they don't necessarily have a different level of risk. Therefore, in this paper venture Philanthropy and crowdfunding are not considered as blended finance instruments.

investors may find investments in social or ecological organizations more appealing, given that co-investors help mitigate investment risks. However, the procurement of blended finance investments is a time-consuming endeavour, as the existence of different investors complicates and prolongs the negotiation process (GIIN n.d.c).

Nevertheless, Allianz SE's CEO Oliver Bäte sees blended finance methods as an important tool to achieve the ambitious net zero goals and mentions AfricaGrow as a role model. However, he believes that the conservative approach to the use of innovative financial instruments, as well as some current restrictions, represent obstacles to the usage of blended finance in Germany. These must be overcome to make blended finance instruments a viable choice for impact start-ups (Bäte 2023).

Another hybrid combination, which is even directly considered as a potential financing source for social enterprises, is **quasi-equity**[11] (Bugg-Levine, Kogut, and Kulatilaka 2012). Quasi-equity shares equity and debt characteristics, which is why the risk associated with its investment is lower than equity investment but higher than debt. Compared to debt quasi-equity offers higher flexibility and a longer repayment period while being more costly and challenging to manage and not suitable for short-term financing (FI-Compass 2022). The key characteristic of quasi-equity is the repayment based on the company's success and its unsecure nature in case of default. Therefore, quasi-equity can be subordinated debt, meaning it has lower repayment priority than senior debt or even convertible debt (FI-Compass 2022). Convertible debt, which was named by various interview partners (Interview Consensus) as a good alternative, is a debt instrument, that can be converted to equity at a later stage with a previously agreed conversion rate (FI-Compass 2022).

[11] "Quasi-equity is also known as mezzanine capital or mezzanine finance" (FI-Compass 2022, 4).

One really innovative financing instrument is a **social impact bond (SIB)**[12]. SIBs are a prevention tool to decrease social problems and to minimize potential investment of the public sector to solve those in the future. To accomplish this, the government enters into an outcome-based contract with a service provider and investors either directly or indirectly through an intermediary. After the investors commit to finance the operations of the service provider through the intermediary or directly, the service provider tries to use this capital to deliver the targeted outcome. If the outcome is achieved, which is assessed by an independent evaluator, the investors receive an additional return from the commissioner or indirectly through the intermediary, further shown in Figure 25 (Galitopoulou and Noya 2016). While this funding instrument was initially used to solve a social issue and is still primarily used for it today, there are now also **environmental impact bonds** and **development impact bonds** that follow the same principle (Tiikkainen, Pihlajamaa, and Åkerman 2022). Impact bonds are still mainly used for projects and therefore rarely a realistic option for impact start-ups, which would have to act as the service provider (Galitopoulou and Noya 2016).

A company called "Roots of Impact GmbH" developed an "**impact-linked finance"**-model, which builds on the outcome-based approach of the SIB. They created social impact incentives (SIINC), which is a blended finance instrument "that rewards high-impact enterprises with time-limited premium payments for achieving social impact" (Roots of Impact n.d.). As Roots of Impact is based in Germany, it can be a valuable funding addition especially if the approach is adopted by further institutions, but not an alternative to venture capital as such.

After examining all the alternate catalytic funding sources, it can be concluded that there are numerous venture capital alternatives, each with unique benefits and drawbacks in relation

[12] They are called "payment-for-success bonds" in the USA or "pay-for-benefits bonds" in Australia (Galitopoulou and Noya 2016, 4). They are not considered as a Blended Finance approach in this paper, as there are not necessarily various investors with a different level of risk.

to Venture capital (Figure 26). At the same time, it is clear that the federal government's efforts are definitely necessary, as their availability in Germany is still very limited.

6.4 Conclusion

Venture capital investment is one of the most desirable funding sources for many impact start-ups in Germany. It is first of all one of the only available funding sources at an early stage, when an investment in ventures still involves considerable risks for the investor. Additionally, start-ups benefit not only from a high amount of capital but also from various non-financial benefits, enabling them to experience substantial growth with expert support.

However, the current difficult conditions with the overall decrease of venture capital, require more support for impact start-ups in Germany. In contrast to traditional venture capital impact venture capital investors address the mission alignment challenges faced by impact start-ups. Nevertheless hardware-oriented impact start-ups and social enterprises, need further support to finance their operations. More impact venture capital investors and the introduction of new alternative impact financing instruments could prove beneficial.

Various catalytic capital sources (Figure 26) could become a valuable option for impact start-ups at various lifecycle stage. In particular, venture philanthropy and hybrid financing solutions like blended finance instruments and quasi-equity could be promising alternatives to venture capital investment. However, these financing alternatives other than crowdfunding are not yet readily available in Germany, as the survey further confirms, with only two start-ups receiving any form of catalytic capital (Table 4). Both the number of venture capital investors and the lack of current financing alternatives is being addressed by the German federal government, which additionally pushes a transition to more environmentally friendly solutions, from which related start-ups could further benefit in the future.

7. Concluding remarks

7.1 Recapitulation of key results

This paper seeks to explore the attraction of VC investment for impact start-ups. Additionally, potential alternatives to venture capital for impact start-ups are discussed. To answer the research question (Table 1), four hypotheses were formulated, investigated and answered through expert interviews and literature research.

Answer to the research question: How attractive and available are venture capital investments for impact start-ups in Germany under the current conditions and are there potential alternative impact funding sources?

H1- Impact start-ups: Germany offers a good regulatory and funding ecosystem for impact start-ups. Given the recognized importance of both the regulatory and funding ecosystem for start-up success, confirming this hypothesis would be valuable. The conducted research, however, shows that the current conditions predominantly benefit environmental impact start-ups, while impact start-ups that pursue profitability as a secondary objective struggle and feel a lack of support. Germany's federal government has acknowledged that especially for these impact start-ups, the availability of venture capital and potential alternatives needs to be further improved.

H2- Impact start-ups: Venture capital investment is a desirable funding source for impact start-ups. This hypothesis is validated by various interview partners and the current literature, as venture capital offers impact start-ups not only significant financial benefits, but also the following eight non-financial benefits: (1) Legitimation benefits, (2) outreach benefits, (3) recruiting benefits, (4) mandating benefits, (5) strategizing benefits, (6) mentoring benefits, (7) consulting benefits and (8) operating benefits.

H3- Impact start-ups: Impact venture capital investment is more interesting for impact start-ups than traditional venture capital investment. Both the literature and the experts asked in the interview and survey confirmed this hypothesis. Impact venture capital investors address the potential lack of mission alignment between traditional venture capital investors and impact start-ups, which is why impact venture capital investment is seen as more appealing.

H4 – Impact start-ups: The availability of venture capital investment for start-ups that prioritize impact over financial profitability is limited, which is why impact funding alternatives are needed. This hypothesis is supported by a report about German social enterprises, which are exactly those organizations which prioritise impact over financial profitability. However, not only social enterprises need further alternatives. Hardware-oriented impact start-ups struggle significantly as well. Unfortunately, currently there is a lack of funding alternatives in Germany, which the federal government realized and aims to solve with their start-up strategy. Various catalytic capital financing sources could be used to close the funding gap: (1) One of the four forms of crowdfunding, (2) venture philanthropy, (3) patient capital, (4) one form of Blended Finance, (5) quasi-equity or outcome-based financial instruments like (6) social impact bonds and (7) impact-linked finance models (Figure 26).

In conclusion, impact start-ups are striving for and relying on VC funding to enable strong growth. Continuous progress in fostering a good regulatory and funding environment for impact start-ups can be identified, as the current federal government developed and continuously extend measures to improve these aspects for impact start-ups in Germany. Given the limited availability of suitable funding sources for impact start-ups, VC and especially impact focused VC poses an attractive funding source.

7.2 Critical appraisal and research outlook

Within the scope of the research, this thesis is subject to certain limitations. While a one-dimensional view on the issue is provided, the geographical focus on Germany begs the question, if and to what extent the findings can be applied to other markets within and especially outside of Europe. Furthermore, this study offers a cross-sectional view on the current situation in Germany. To further understand trends, developments, ongoing adaption as well as thought and change processes, a longitudinal study design could yield further insight. Additionally, the 11 Interviews and 19 survey submissions, while being a good starting point, could be further extended. A larger pool of experts would limit the possibility of personal bias and subjective opinions. Moreover, the interview partners were all male, while a more diverse gender distribution could potentially lead to different or additional results. Lastly, additional value could be added by analysing quantitative funding data of both, venture capitalists and impact start-ups.

This paper can be seen as starting point in understanding the current ecosystem and the attraction of venture capital funding for impact start-ups. Further research can be conducted by addressing the limitations of this research paper. In order to validate the results of the study, the methodological procedures should therefore be expanded, preferably with a more diverse sample and in other countries. Possible further research also could investigate differences in valuation methodologies used for impact and conventional start-ups, tracking and evaluation of impact goals, impact-based remuneration for start-ups from the VC investor and a more detailed comparison of venture capital, impact venture capital and other sources of funding for impact start-ups.

Group Part

The results of this study, the limitations and the recommended directions for future research emphasize the importance of deepening understanding. This is especially true due to the fast-paced growth and development of the impact start-up and venture capital industry.

Appendix

Survey Questions	Main Question	Additional Question
What is the current stage of your company?	x	
In which industries does your company operate?	x	
What is the gender share of your company (male/female)?	x	
Which SDGs (Sustainable Development Goals) does your company target?	x	
How much total funding did you receive so far (approximately)?	x	
Which sources of financing have you already used?	x	
If you chose an alternative investment source, please specify the source(s)		x
If you received public funding, please specify the source(s)		x
Why didn't you choose (Impact) Venture Capital as a funding source? / Why did you choose (Impact) Venture Capital as a funding source?		x
In which country is your company located?	x	
Do venture capital investors provide certain incentives when your impact goals are met?	x	
How attractive is a Venture Capital investment for an impact company?	x	
Is it harder to find investors as an impact company, especially in the early growth stage where Venture Capital Firms are investing?	x	
When considering Venture Capital as a funding source: Do you think there are better financing options available? If yes, which ones?	x	
Which difficulties/barriers exist for regular Venture Capital funding for impact companies?	x	
How would you solve or reduce those difficulties/barriers?		x
Do Impact Venture Capital investors solve those difficulties/barriers?		x
Do you have Impact-KPIs to measure your impact? If so, which ones?	x	
What is your current achievement rate of your impact goals?		x
How much do Venture Capital Investors care about your impact goals?		x
Do venture capital investors influence the intensity of impact goals and the likelihood of achieving them?		x
How good is the impact start-up ecosystem in your country?	x	

Table 2: Questions asked in the survey to impact start-up representatives (Individual Part: Julian Marcel Wecker 53562)

Position of Interview Partner	Type of Impact Start-up	Location
CFO	Environmental Impact	Hamburg
Senior Finance Manager	Social Impact	Berlin
Controller & Founder's Associate	Environmental Impact	Darmstadt
Head of Finance	Environmental Impact	Berlin
CEO	Social Impact	Wuppertal
CFO	Environmental Impact	Berlin
Strategic Development Manager	Environmental Impact	Netherlands (Amsterdam)
Financial Controller	Environmental Impact	Netherlands (Amsterdam)
Head of Sustainable Finance	Environmental Impact	Berlin
COO	Environmental Impact	Netherlands (Amsterdam area)
Finance and Investor Relations Lead	Environmental Impact	Norway (Oslo)

Table 3: Information about the representatives of impact start-ups interviewed (Individual Part: Julian Marcel Wecker 53562)

Survey insights	No. of environmental impact start-ups	No. of social impact start-ups	Total	Further info
Survey answered	16	3	19	Mainly answered from CFOs, HoFs and founders
Received VC investment	13	0	13	Apart from one, those who didn't were too small to attract it or received corporate venture capital
Received Impact VC investment	5	0	5	
Received corporte VC investment	5	0	5	
Received investment from Catalytic Capital source	2	0	2	Patient capital, equity crowdfunding
Target at least one SDG	16	3	19	
Have Impact KPI	14	3	17	

Table 4: Insights gained through the survey for representatives of impact start-ups (Individual Part: Julian Marcel Wecker 53562)

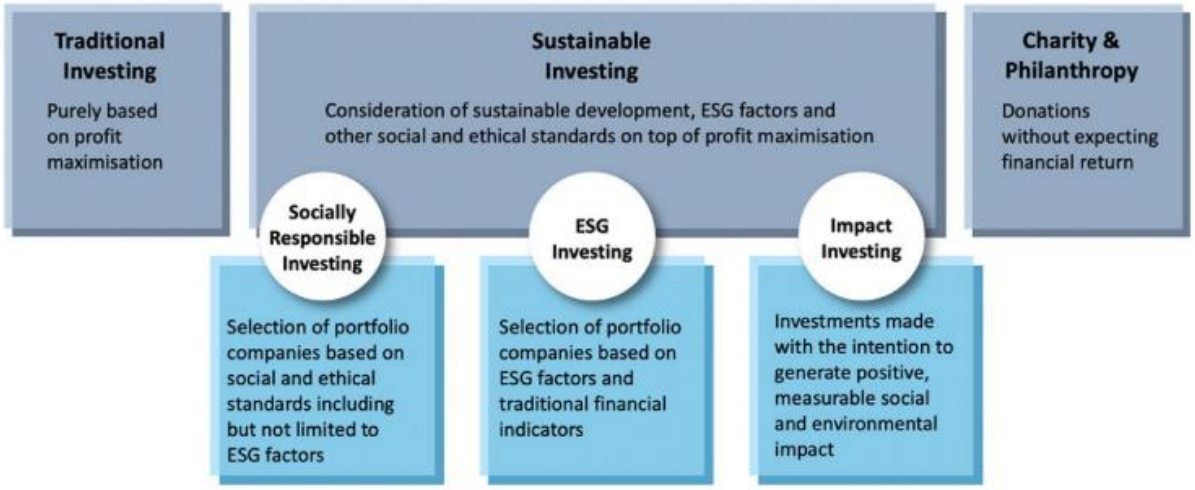

Figure 1: Approaches to sustainable investing (Lin 2022, 69)

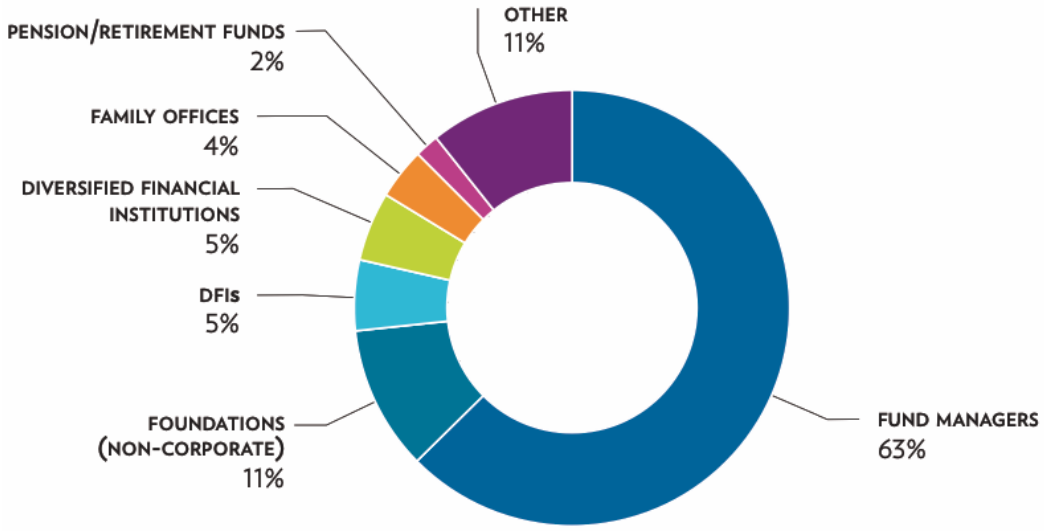

Figure 2: Different type of impact investors (Hand, Sunderji and Pardo 2023d, 3)

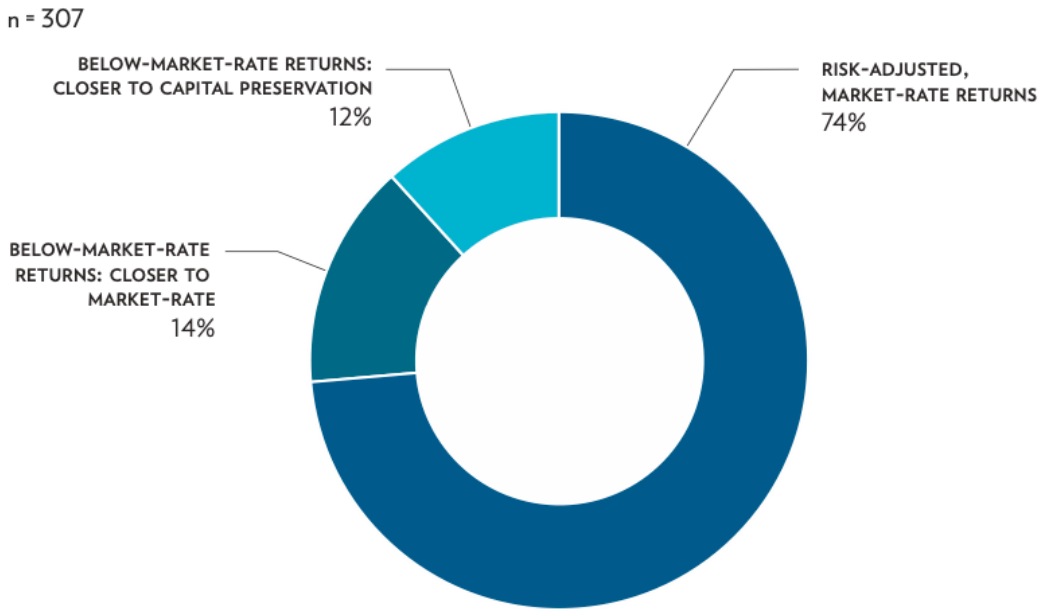

Figure 3: Target Financial returns of impact investors (Hand, Sunderji and Pardo 2023d, 7)

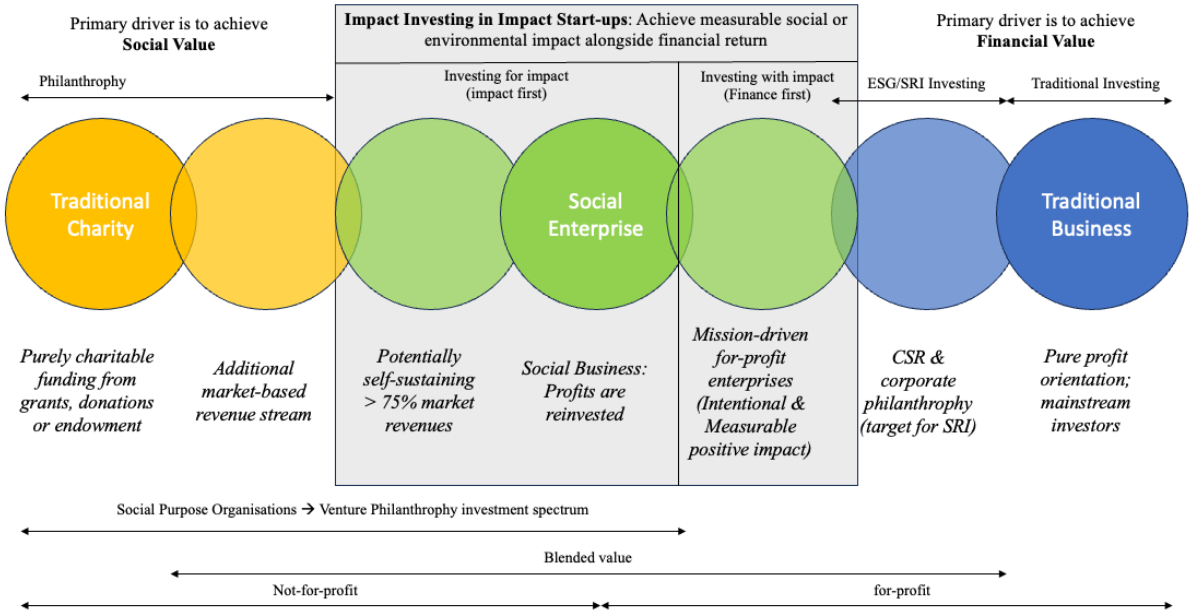

Figure 4: The Impact Business model spectrum (own illustration based on J. Kingston Venturesome, CAF Venturesome, and European Venture Philanthropy Association 2015 cited in Ryder and Vogeley 2018)

Quantity Score

The core question of the quantity score is: how many?

A robust startup ecosystem includes much more than startups: it must have supporting organizations that provide resources, networking, and access to capital. The quantity score ranks the activity level of an ecosystem by assessing these stakeholders and other key players, including:

- Number of startups
- Number of investors
- Number of coworking spaces
- Number of accelerators
- Number of startup-related Meetups

Some of this data is supplemented from our Global Data Partners, in addition to the sampled data showcased on the StartupBlink Global Map.

Quality Score

We use numerous integrations with partners, such as SEMrush, Crunchbase, and Brightdata, and hundreds of thousands of data points to analyze the qualitative results of each startup ecosystem.

Among the elements taken into account for the calculation of the quality score in each startup ecosystem are:

- Total accumulated private sector startup investment
- Total accumulated number of startup sector employees
- Number and size of unicorns and exits above US$ 1 billion
- The traction of startups in each ecosystem (including traffic, domain authority, and customer base)
- Presence of strategic branches and R&D centers of international technology corporations
- R&D centers of multinational companies (e.g. Alphabet, Microsoft, Meta)
- Branches of multinational companies (e.g. WeWork spaces)
- Valuation of exits with a valuation below US$ 1 billion
- Number and size of global startup events and conferences
- Presence and impact of Pantheon members
- Presence and impact of Global Startup Influencers
- Number of startups accepted by top global accelerators per ecosystem
- Number and market capitalization of listed companies in technology sectors

Startup Business Environment

The third and final factor affecting the rankings is unique since it focuses on general indicators connected to infrastructure, business environment, ecosystem critical mass, and the ability to freely operate as a startup in the country.

The Startup Business Environment score, often abbreviated as simply business score, is focused on parameters at the country level, since national infrastructure, policies, and legislation generally affect all cities within a country.

Among the elements taken into account for the calculation of the Startup Business Environment score in each ecosystem are:

- Diversity index
- Internet speed
- Cost of internet
- Internet freedom
- R&D investment
- Availability of various technological services (payment portals, ride-sharing apps, cryptocurrency)
- Level of English proficiency
- Passport strength
- Availability of startup or nomad visas
- Corporate tax rate
- Startup-friendliness of labor laws
- Corruption perception index
- Top universities per location

Figure 5: The factors taken into account by the Quantity Score, the Quality Score and the Startup Business Environment (StartupBlink 2023)

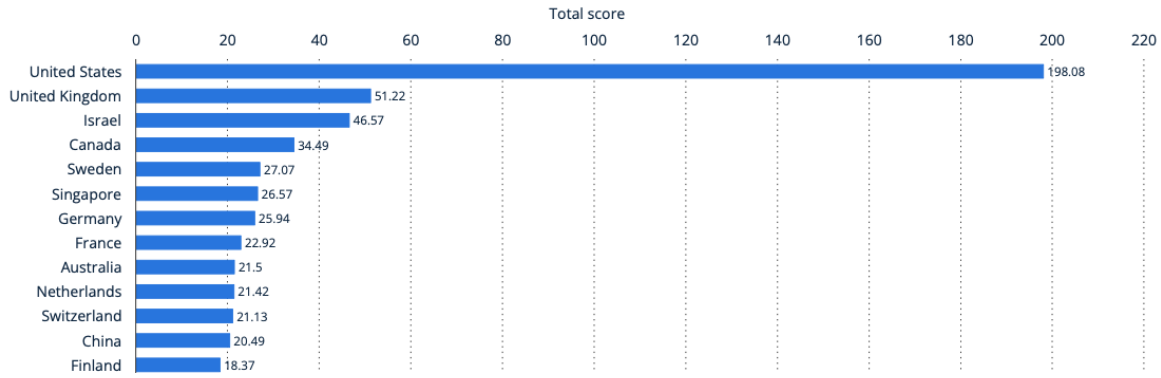

Figure 6: Leading countries for startup worldwide in 2023, by total score (Own illustration based on StartupBlink 2023)

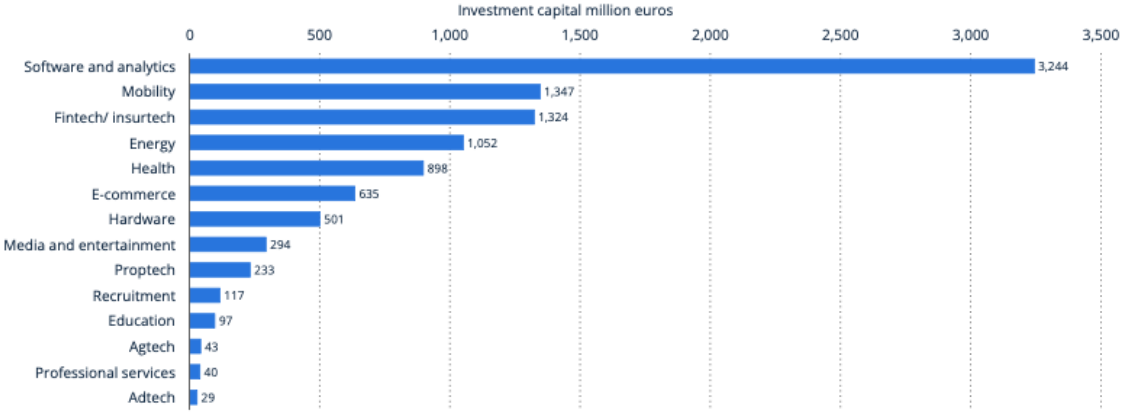

Figure 7: Sectors which received most funding in Germany (Own illustration based on Prüver 2023, 9)

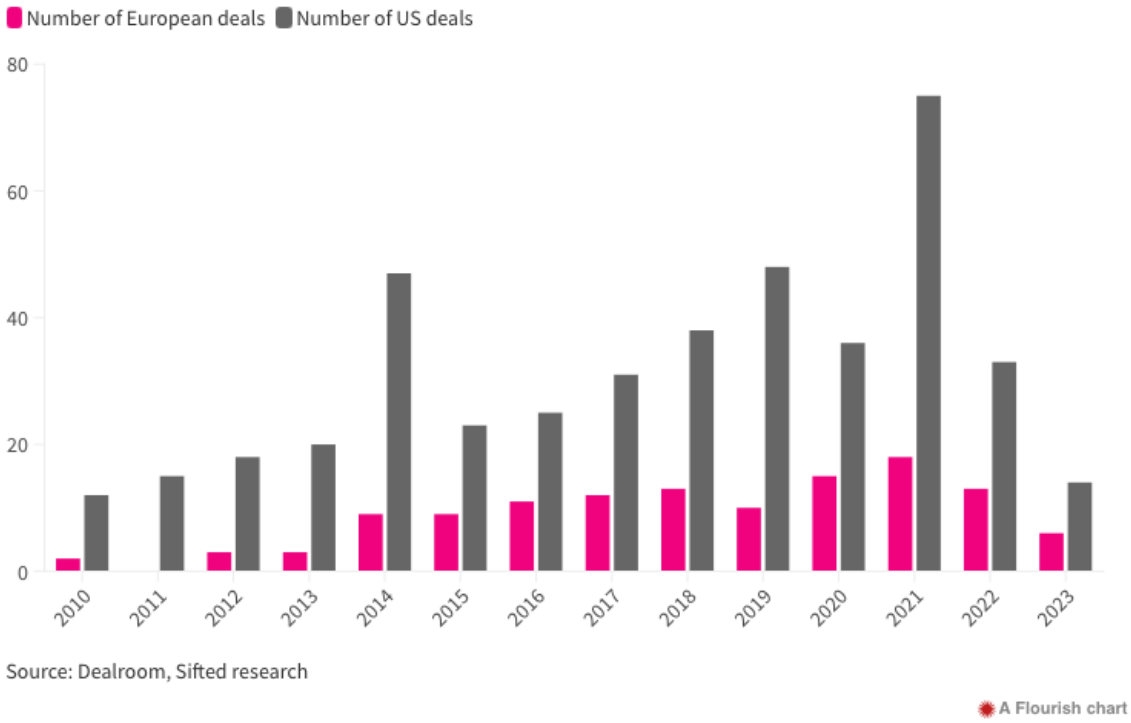

Figure 8: Number of Corporate-backed Venture European and US deals by Germany's top five corporations (Partington 2023a)

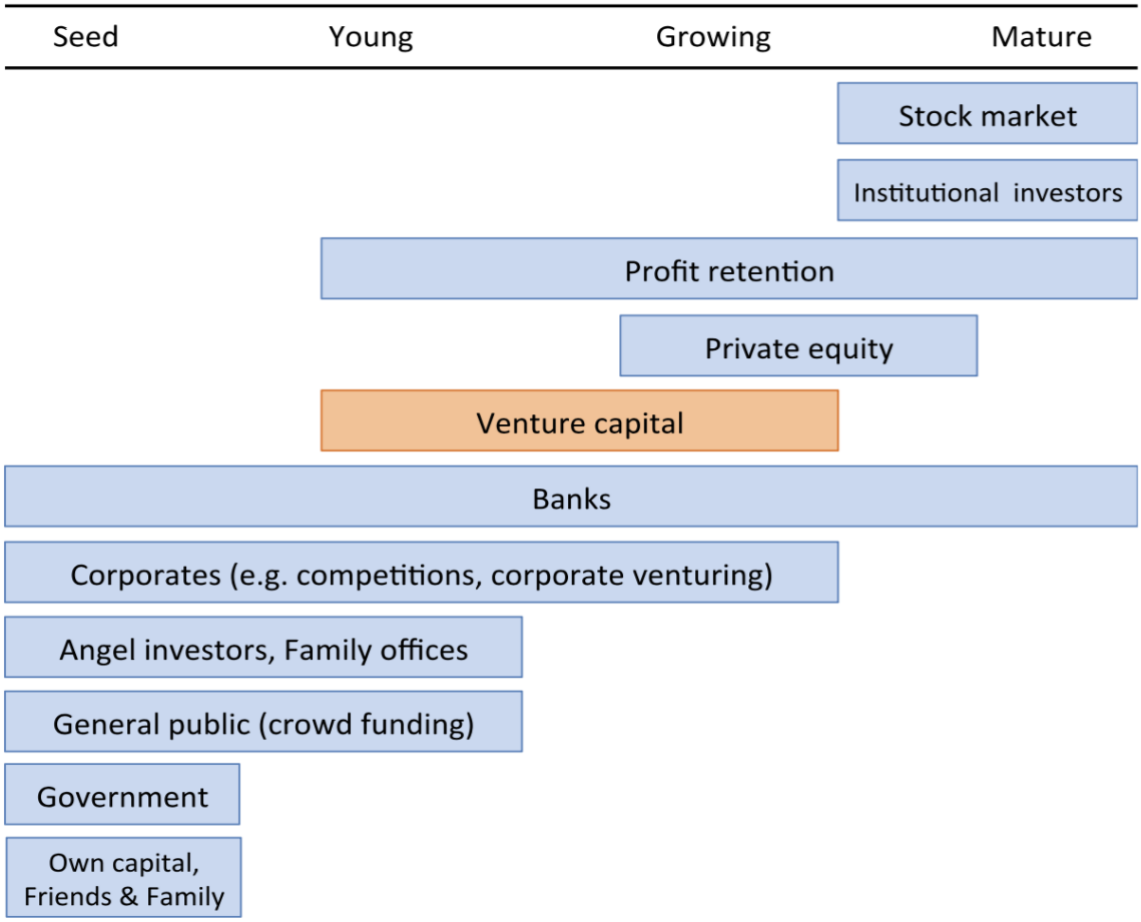

Figure 9: Venture capital in the context of funding methods (Bocken 2015)

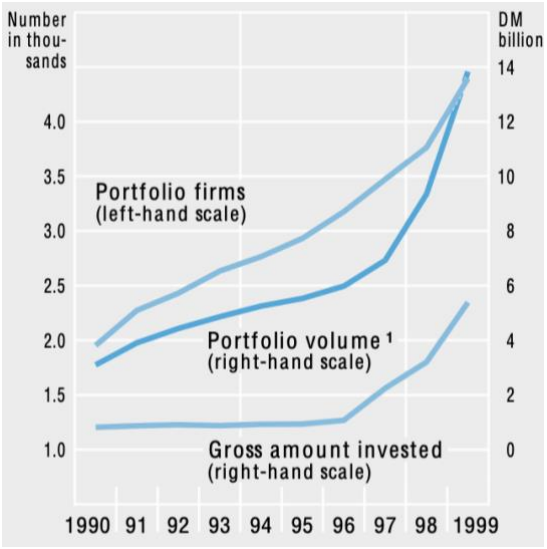

Figure 10: Portfolio growth of German venture capital investment companies (Deutsche Bundesbank 2000)

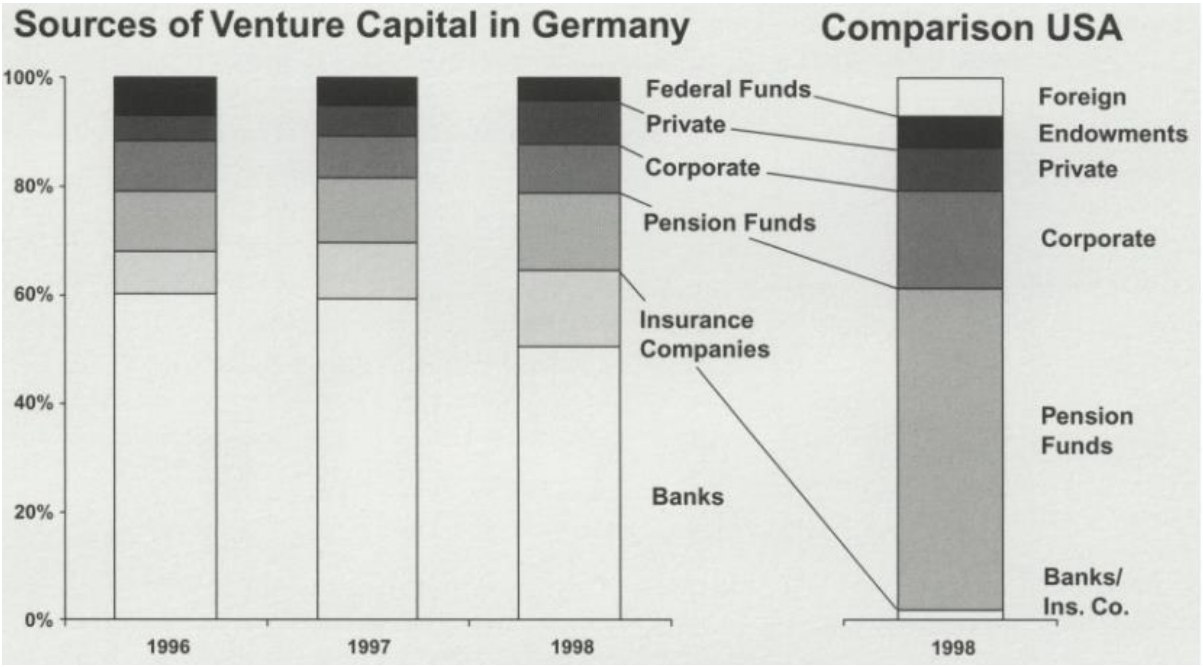

Figure 11: Source of venture capital in Germany (Fiedler and Hellmann 2001)

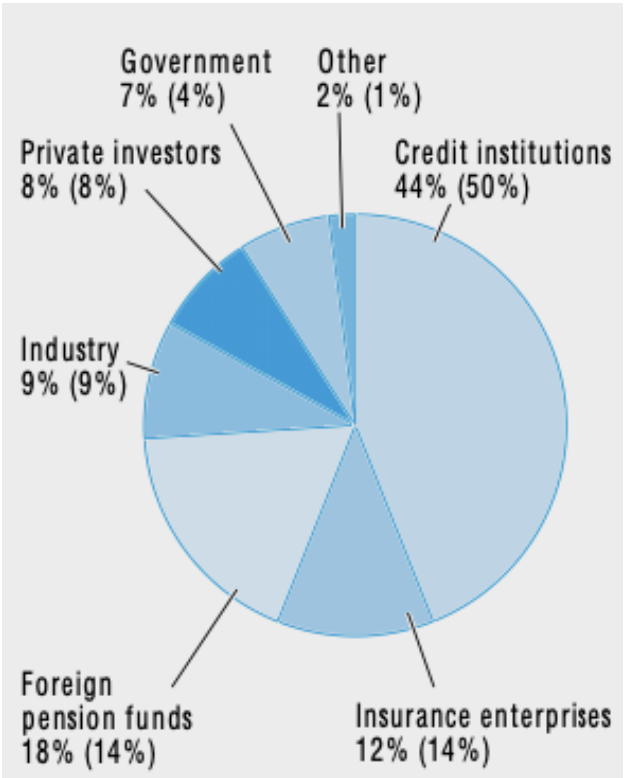

Figure 12: Sources of funds of venture capital investment companies (Deutsche Bundesbank 2000)

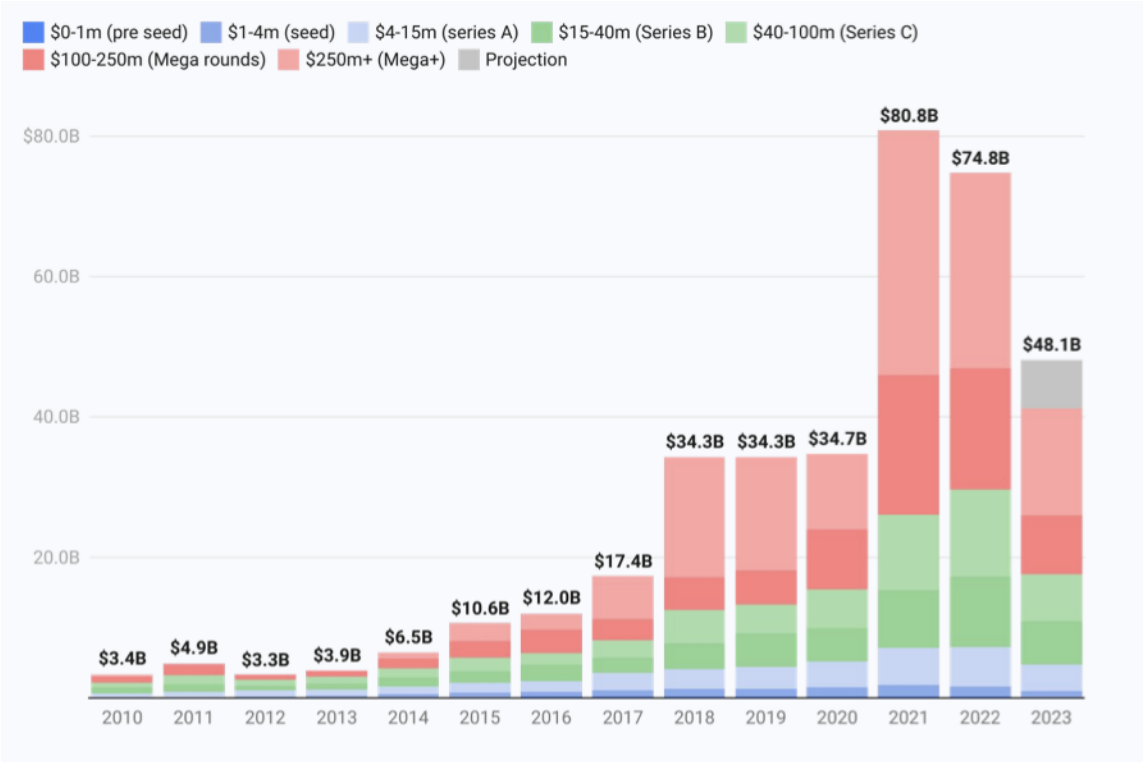

Figure 13: Impact start-ups global funding history (Dealroom.co., ImpactCity The Hague and Danske Bank Growth 2023)

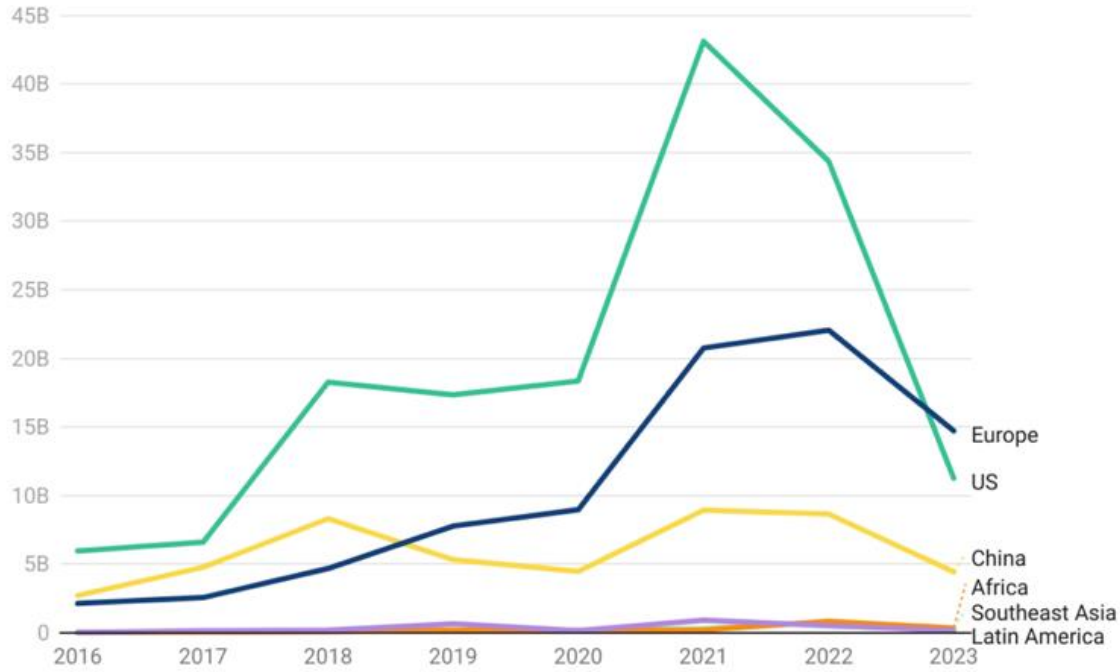

Figure 14 Impact VC funding by region in $ (Dealroom.co., ImpactCity The Hague and Danske Bank Growth 2023)

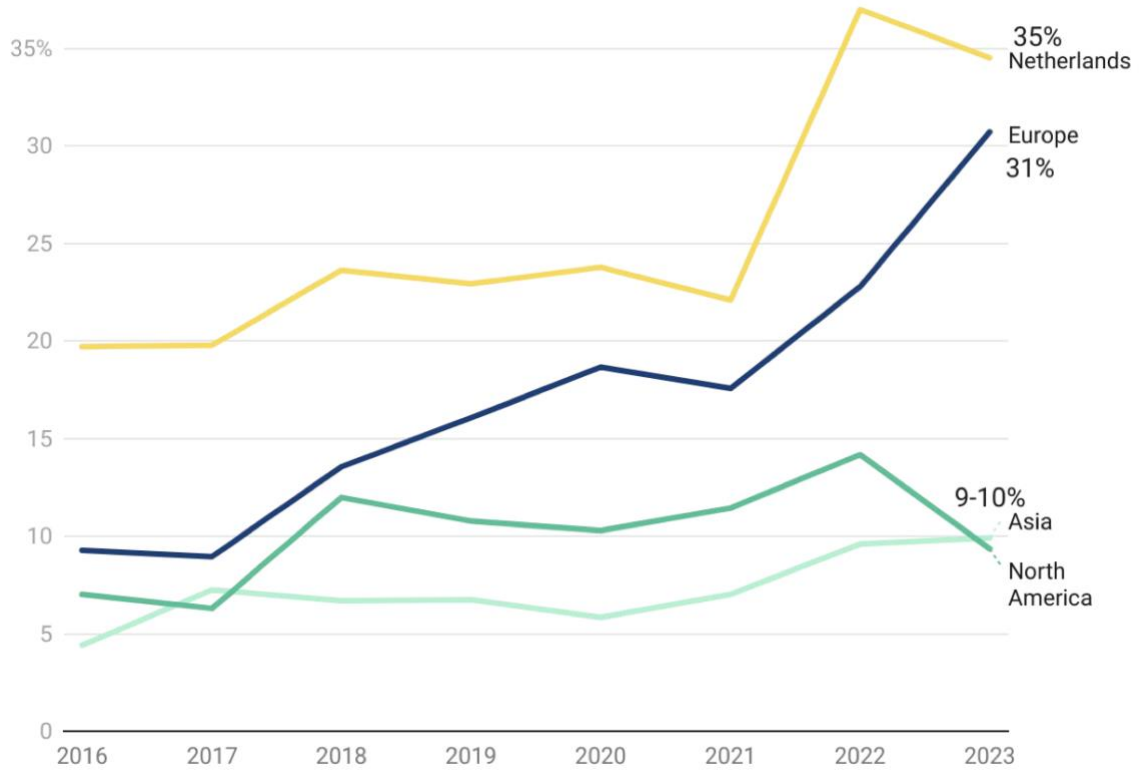

Figure 15: Impact investment as a percentage of total VC funding (Dealroom.co., ImpactCity The Hague and Danske Bank Growth 2023)

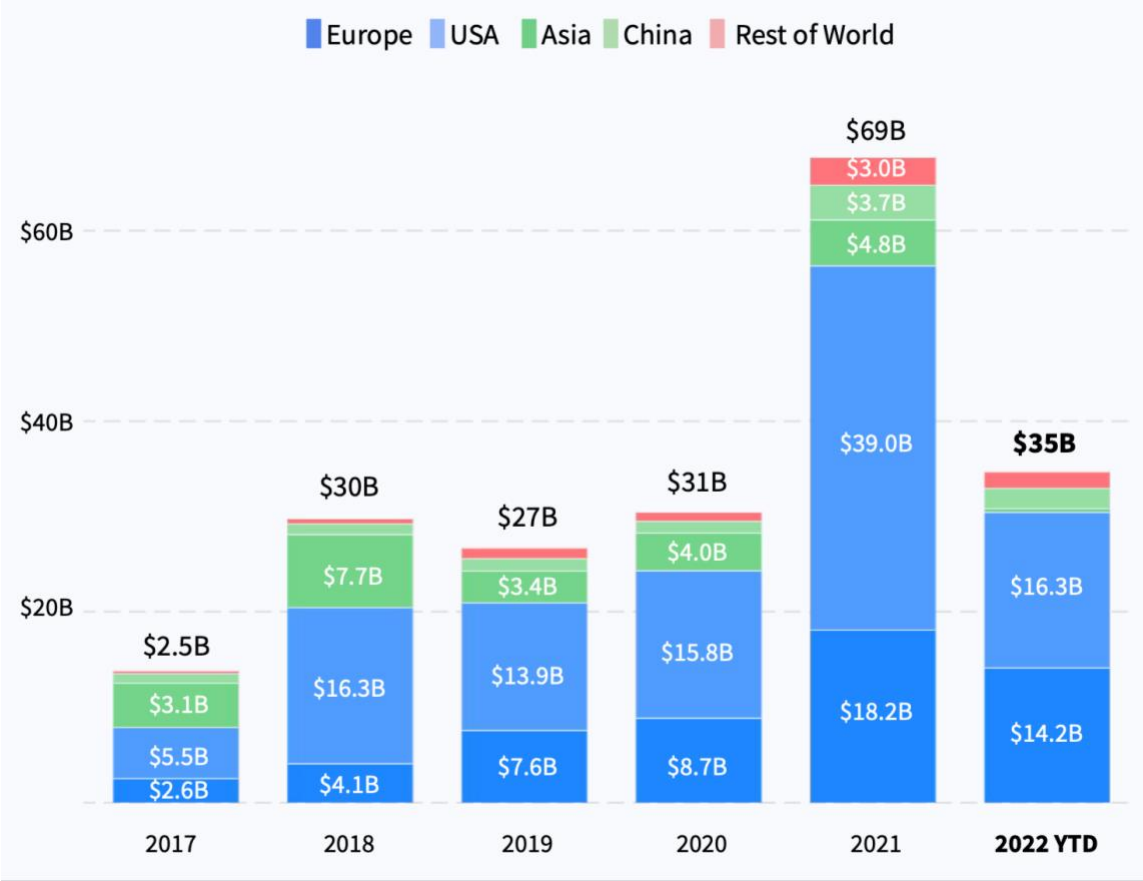

Figure 16: Investments into impact start-ups per HQ region (Dealroom.co et al., 2022)

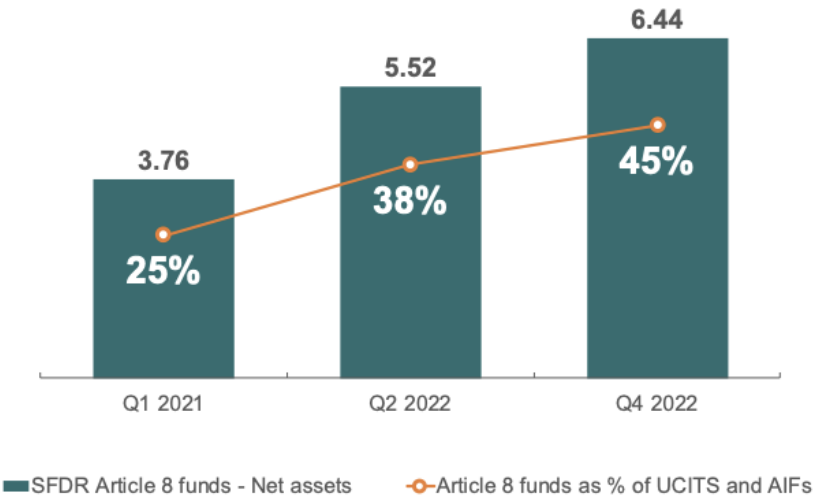

Figure 17: Net assets of SFDR 8 funds (in EUR trillions, % of total UCITS and AIF net assets) (EFAMA 2023)

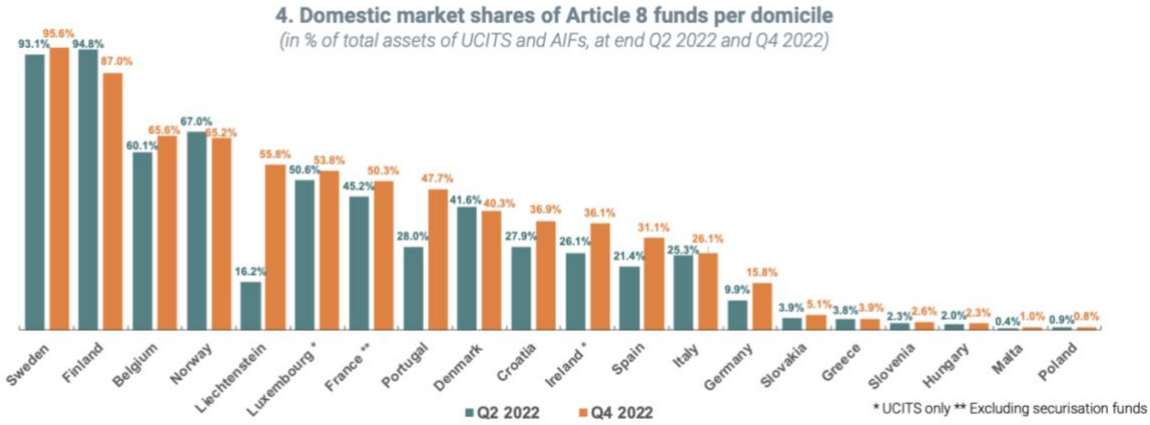

Figure 18: Domestic market share of Article 8 funds (EFAMA 2023)

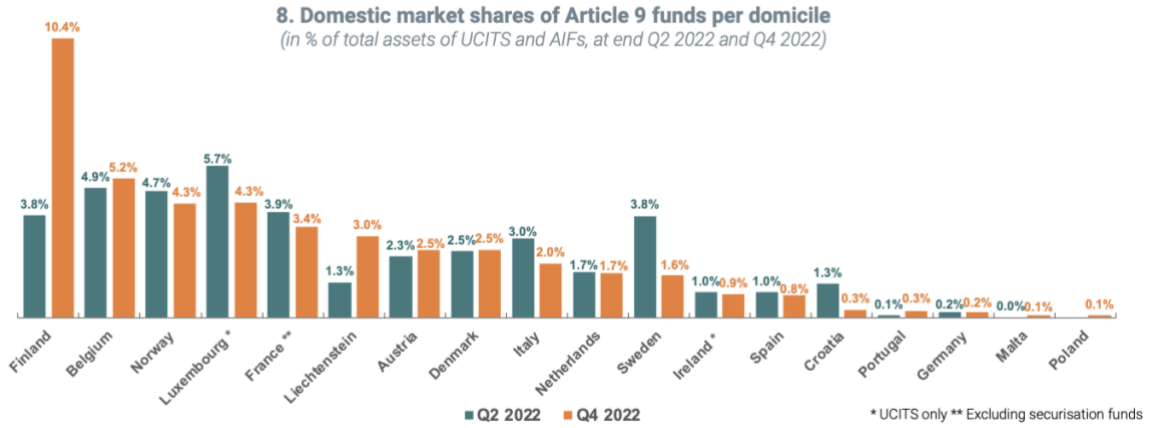

Figure 19: Domestic market share of Article 9 funds (EFAMA 2023)

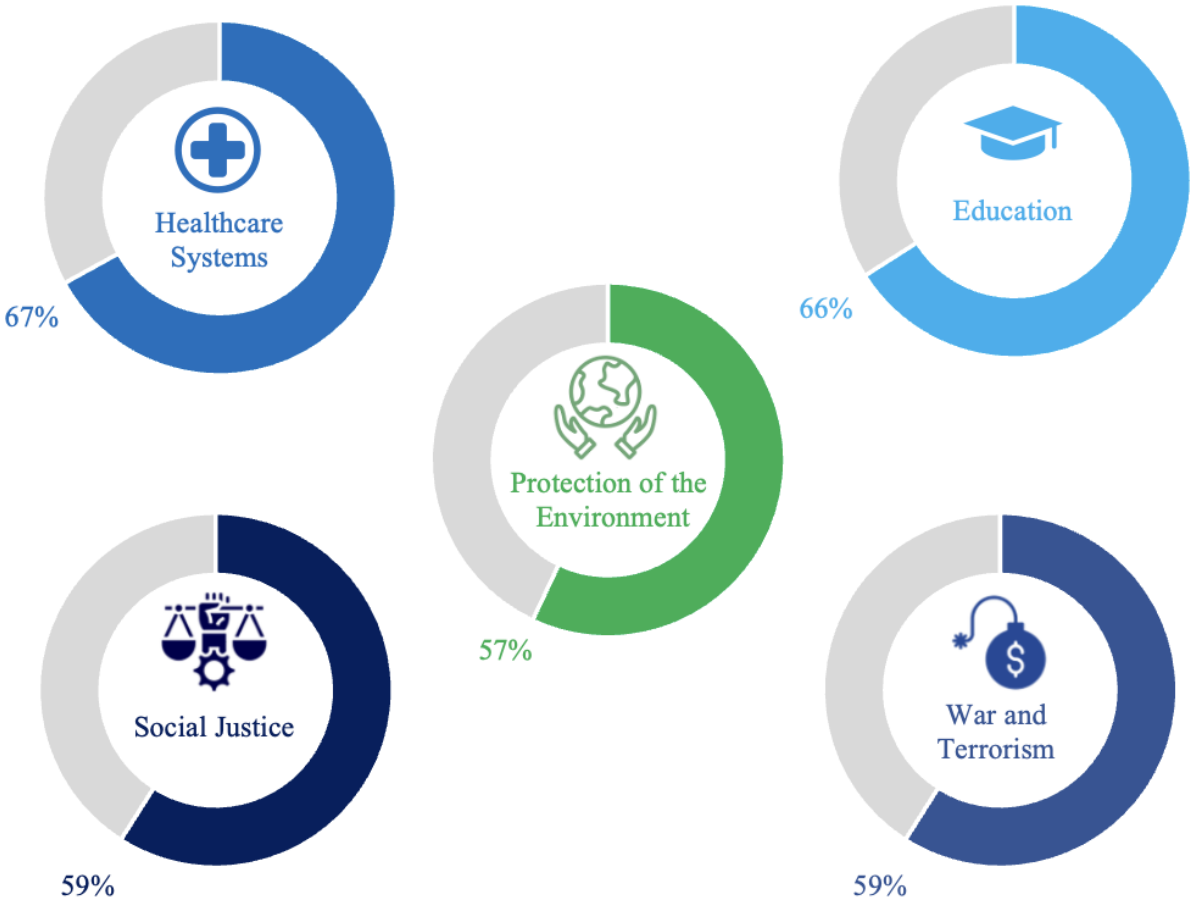

Figure 20: Importance of environmental and social topics in the German society (own illustration based on BMUV and UBA, 2022)

Figure 21: Areas of the German Sustainable Development Strategy (Federal Government 2020, 60)

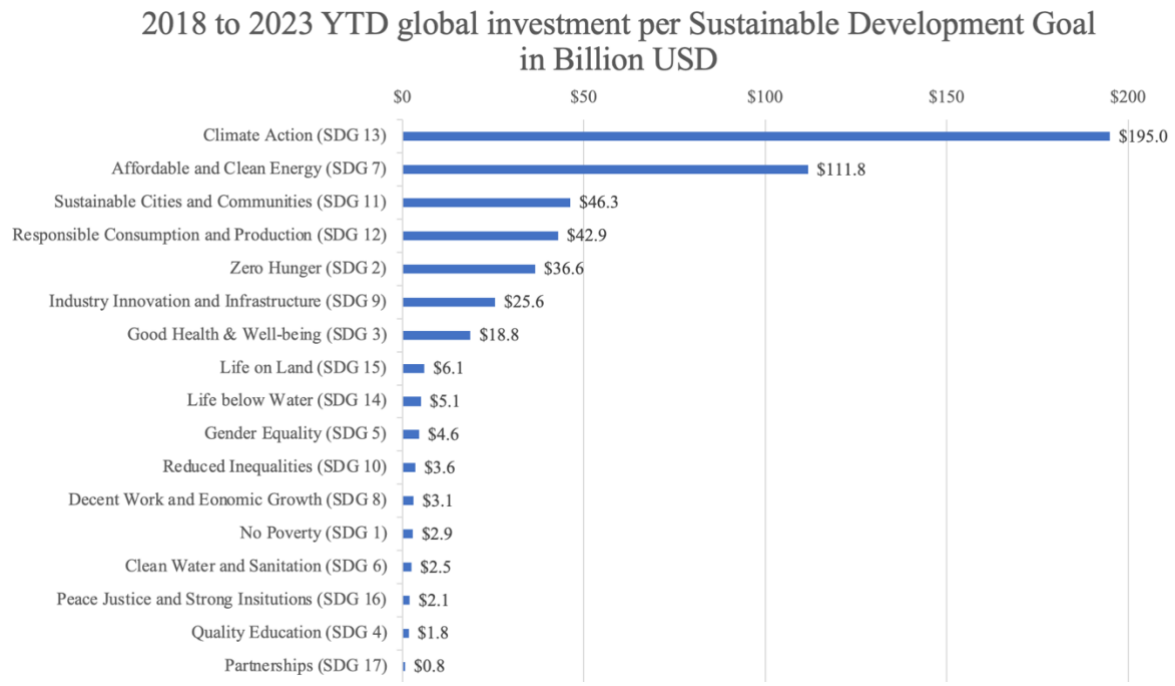

Figure 22: 2018 to 2023 YTD global investment per SDG in Billion USD (own illustration based on Dealroom.co, ImpactCity The Hague and Danske Bank Growth 2023, 11)

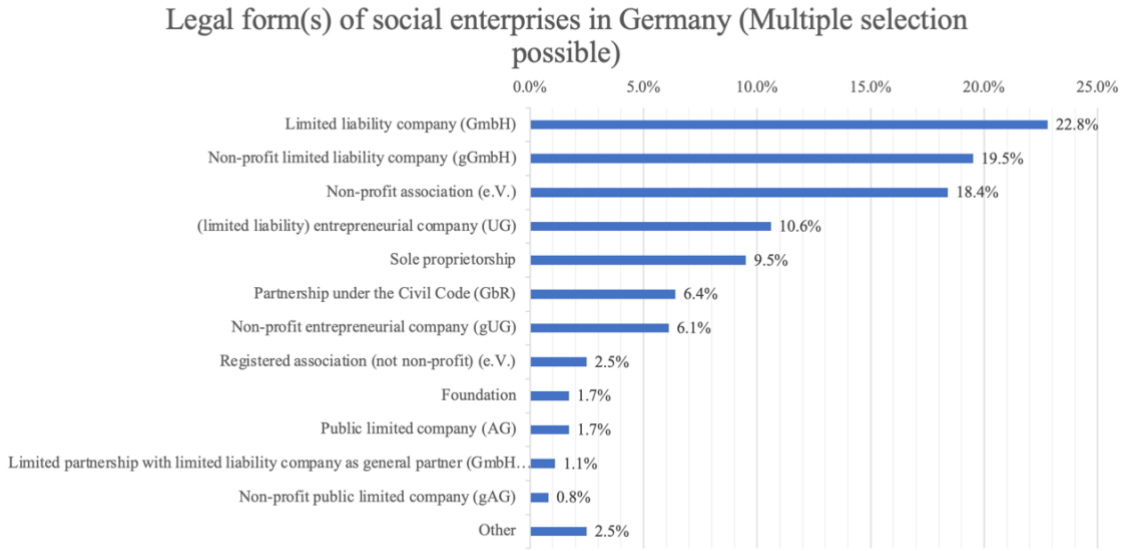

Figure 23: Legal form(s) of social enterprises in Germany (own illustration based on Kiefl et. al, 2022, 25)

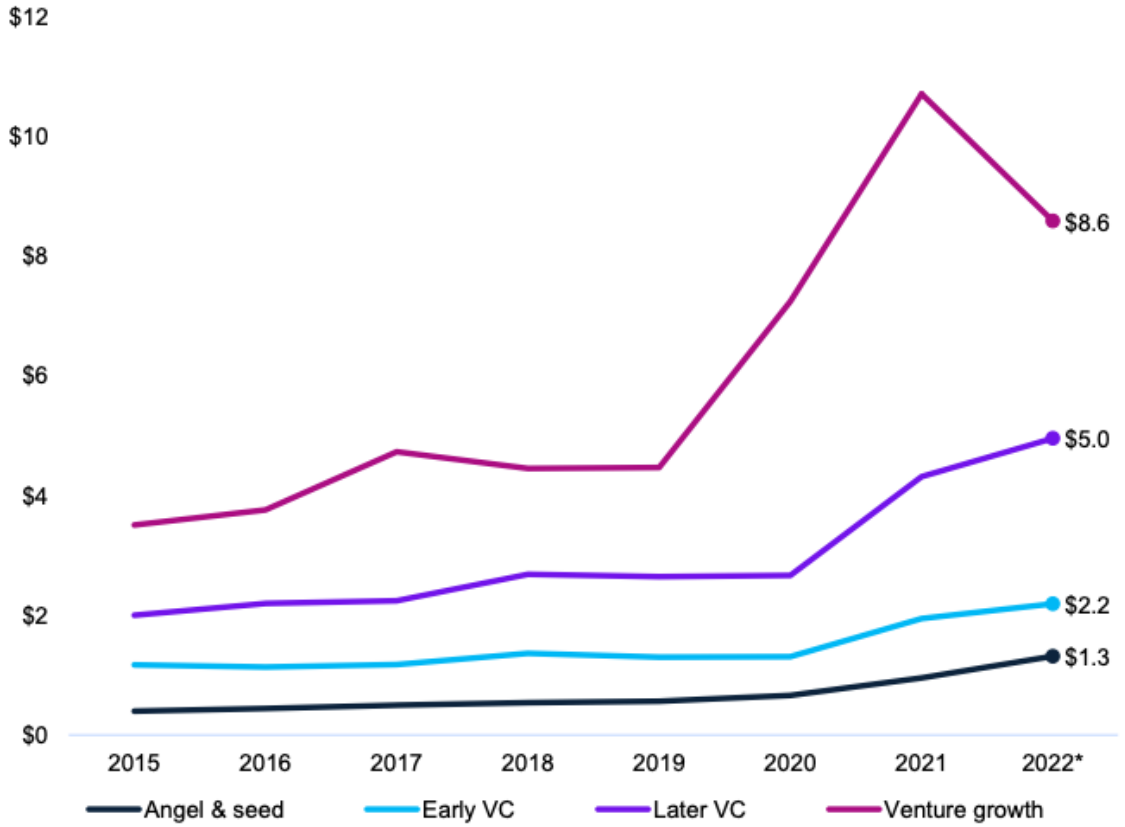

Figure 24: Median deal size in Europe by stage (in $M) 2015-2022 (KPMG Private Enterprise, 2023, 51)

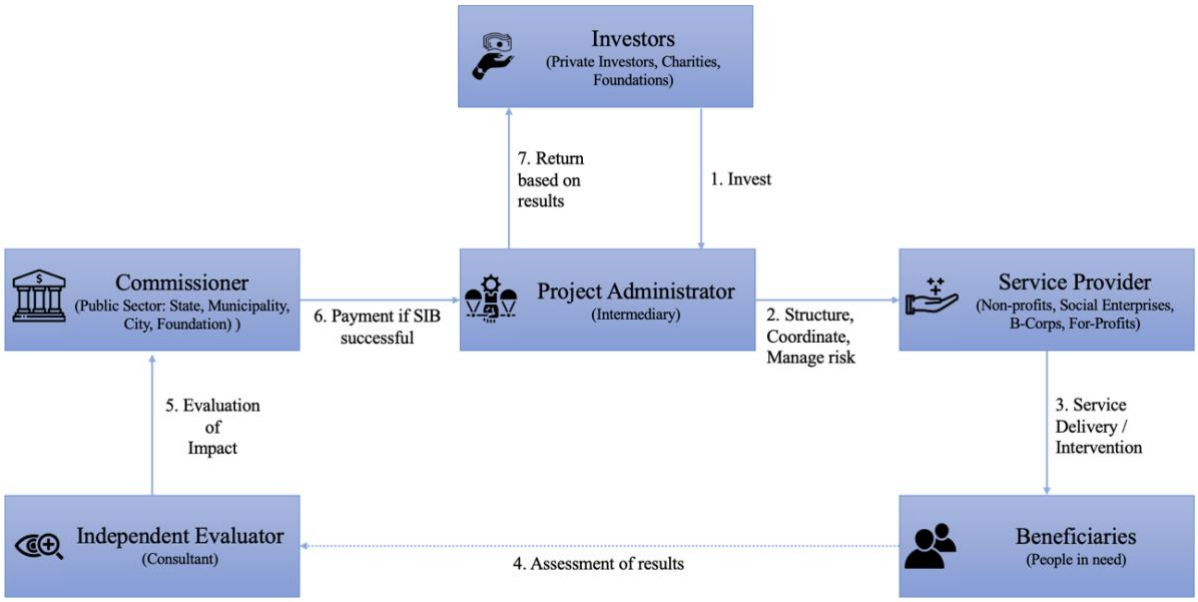

Figure 25: Overview social impact bond (SIB) (own illustration based on Burand 2013)

Alternative Catalytic Capital Financing Sources			
	Explanation	Advantages for Start-ups	Challenges for Start-ups
Crowdfunding	Aggregated Investment from large number of small amount investors typically through online platfom	Good availability for impact start-ups	Limited financial amount and lack of non-financial support
Venture Philanthrophy	High-engagement and long-term investment using range of financing instruments to maximise impact of SPO's	Offer of VC-like amounts and non-financial services possible with better financial conditions than VC's	Limited availaibility and no support for mission-driven for-profits as VP's focus currently only on SPO's
Patient Capital	Long-term investment with debt or equity or mix	Higher risk tolerance of investors combined with longer time until repayment + support of management	Less availability as more risky for investors
Blended Finance	Investment of two or more investors alongside each other, while pursuing own goals, targeted to close SDG funding gap	Benefit from lower risk for market-rate investor, as an investment alongside philanthrophic source improves their risk-return ratio	Limited availability, complex & time-consuming obtainment process
Quasi-Equity	Quasi-equity has characteristics of debt and equity, is not secured and it's repayment depends on the success of the investee	Less risky than equity and in some cases convertible to equity and higher flexibility than regular loan	Limited availability, challenging administation and costly compared to debt and not useable for short-term financing
Social Impact Bond / Environmental Impact Bond / Development Impact Bond	Involves a commissioner working with investors and service providers to deliver predetermined outcome, with investors receiving returns based on success	Service provider (in this case the start-up) receives capital without having any risk	Unlikely financing source as not tailored for start-ups
Impact-Linked Finance-model	Provides premium payments for achieved impact of impact venture	Payments based on impact achieved	Limited amount, rather an addition than an alternative to VC funding

Figure 26: Overview of alternative catalytic capital funding sources (own illustration based on Meyskens and Bird 2015; Ziegler at. al 2021; EVPA n.d.b; OECD 2014; Balbo et. al 2010; Sharma and Sharma 2019; OECD n.d.; GIIN n.d.c; Bugg-Levine, Kogut, and Kulat)

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