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THE GERMAN VENTURE CAPITAL MARKET

HOW HAVE INVESTMENT STRATEGIES AND VALUATION METHODS IN THE GERMAN
VENTURE CAPITAL MARKET RESPONDED TO RECENT MACROECONOMIC AND GEOPOLITICAL
DYNAMICS?

Individual title:

THE GERMAN VENTURE CAPITAL MARKET

IMPACT OF MACROECONOMIC FACTORS AND TRENDS ON INVESTMENT STRATEGIES
THROUGH SEED, EARLY, AND LATE STAGE

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Abstract:

German venture capitalists are facing challenges due to macroeconomic factors and current geopolitical dynamics. Through a systematic analysis of the literature and interviews with German venture investors, this paper investigates how investment strategies and valuation methods of German venture capitalists are adapting to macroeconomic factors in an uncertain market environment. Results indicate that investment strategies of German venture capital investors are mainly influenced by two factors. The influence of these main factors varies in the different investment phases of VCs. The results suggest that past crises have also affected venture capital firms' investment vehicles, portfolio assessments and valuation methods.

Keywords: Venture capital, Germany, Entrepreneurial finance, Investment strategies, Investment stages, Investment instruments, Convertibles notes, Valuations

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1 Introduction

1.1 Scope and objectives

Throughout the 21st century, Germany has become an increasingly attractive destination for some of the most promising startups, cementing its position as one of the top four European countries in terms of the number of startups per country (Kabbara and Hagen 2023). Backed by a robust network of funding sources, most notably the German venture capital (VC) sector, Germany has firmly established itself as a strong anchor for startup expansion in Europe (Besanceney 2022). Recently, the German VC ecosystem has been facing turbulent times. This has put the dynamics and resilience of the German VC market to an unprecedented test against the backdrop of current macroeconomic and geopolitical changes (Kraemer-Eis and Croce 2023). Recent crises, such as the global Covid-19 pandemic, political and military conflicts within continental Europe's borders, and economic challenges including interest rate hikes and inflation, have introduced uncertainties into the multi-layered environment that continues to influence venture capitalists' investment behavior and valuations at various stages (Tech 2018). In a constantly shifting landscape, it is critical to understand how investors are adapting their strategies to optimize their investments and how valuation methodologies are evolving to capture the unique characteristics of start-ups.

This paper provides an examination of the German VC market, with a particular focus on the changes in investment strategies and valuation methodologies. The main objective is to observe the evolving investment strategies and valuation methodologies of German venture capitalists. In doing so, the paper also takes a closer look at how these strategies develop during different investment phases. In addition to the current valuation methods of venture capitalists, the different investment vehicles are also examined and analyzed in detail. Beyond the primary objective of this study, this paper provides a theoretical

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foundation with an in-depth examination of the VC ecosystem in Germany, its importance within the national economy, examining recent investment trends and the interplay of VC dynamics on the German startup scene. The aim is to identify potential conclusions regarding the current state of the German VC market and establish a foundation for subsequent primary research questions.

1.2 Research questions

To provide a detailed examination of the German venture capital market with a particular focus on the transformation of investment approaches at different stages of investment, current valuation techniques, and the various investment instruments used by venture capitalists, this thesis has established four key research questions. These questions form the foundation of this study and are the central objects of investigation addressed in this paper:

- RQ (1) How and by what recent factors are investment strategies in the German venture capital market being shaped and changed?
- RQ (2) How do current factors impact the investment strategies of German venture capitalists at different stages (seed, early-stage, late-stage)?
- RQ (3) Implications of recent market changes and trends on the investment vehicles for the German VC market
- RQ (4) Implications of recent market changes and trends on the underlying valuation models for the German VC market

1.3 Structure & Methodology

The paper begins with a (1) introductory section that outlines the relevance of the paper, introduces the research questions, and provides a concise overview of the paper's structure. It also highlights the two primary methodological approaches: the literature

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review and the expert interviews. In the subsequent section (2), entitled ‘Foundations’, basic concepts and current trends in the German venture capital landscape are explained. This contextual information is crucial for an understanding of the subsequent research questions and conclusions. In the following chapter the paper addresses the first two research questions. First, it establishes key concepts related to VC investment strategies and constructs a theoretical framework for different VC investment stages. These basic concepts form the basis for answering research questions about (3) the change of investment strategies and the in different investment stages. The (4) subsequent chapter focuses on the two remaining research questions, specifically related to investment instruments and valuation methods. Here, a theoretical underpinning is provided to facilitate the subsequent investigation of these research questions. The (5) final chapter of the paper is dedicated to presenting the results of the research, consolidating the answers and conclusions drawn from the study. It offers an overarching view of the research findings. Additionally, this section discusses limitations of this paper and suggests potential areas for future research.

This paper presents an overview of the current state of the field by conducting a systematic literature review and expert interviews with German venture capitalists to address the research questions. The aim of this paper is based on two central pillars. First, the current literature on the German venture capital landscape is systematically selected, reviewed, analyzed, and synthesized to draw conclusions on the four fundamental research questions. Second, interviews with leading experts in the German VC landscape are conducted to gain more precise insights into current changes, trends, and strategies through targeted inquiries. The results of these two central pillars of the methodology presented here are subsequently integrated to provide precise answers to the previously

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defined research subjects and offer detailed insights into the German venture capital landscape within the context of macroeconomic and geopolitical dynamics.

1.3.1 Literature review

The process of literature review, which plays a central role in answering the pre-determined research questions, proceeds in five distinct phases described in the guidelines proposed by vom Brocke (vom Brocke et al. 2009).

In the first step (1), the focus is determined, which sets the scope of the literature to be reviewed. In a second step (2), research keywords are sought to precisely define the conceptual framework of the research. In the next step (3), these keywords are used to search the available literature in selected databases and catalogs. During the fourth step (4), the gathered literature is evaluated based on predetermined criteria to determine its relevance in addressing the defined research questions. In the fifth and final step (5), the synthesized information from the literature review is used to provide answers to the defined research questions (see the process detailed in *Appendix A: Figure 1-3*) (vom Brocke et al. 2009).

1.3.2 Expert interviews

Expert interviews are conducted as the second pillar to obtain answers to the research questions. In addition to the focused review of relevant literature, these interviews are intended to provide comprehensive insights from experts anchored in the German VC landscape. The objective is to offer comprehensive and qualitative responses to the predetermined research questions by means of a structured interview process following Majid's guidelines. The interview process will follow the different phases described in the developed methodology for conducting a thorough interview (Majid et al. 2017).

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In the first step (1), specific interview questions will be derived from the existing research questions to facilitate the extraction of qualitative responses. For each research question, two interview questions are formulated to facilitate later discussion in interviews without biasing the interviewee in any direction. Next (2), the created interview questions are reviewed by other experts, while appropriate interviewees are selected (3). The current top 20 German venture capital firms will be contacted (Deutsche Startups 2023). They will be asked for interviews to discuss the specific research questions. At the same time, introductions from founders and experts within the German startup scene will be used to contact additional German venture capitalists. This approach aims to mitigate potential interview refusals while ensuring a more diverse pool of interviewees for this paper. It is crucial to include interviewees with different focuses on investment phases, as these perspectives are fundamental to answering the second research question in chapter 3.3. After positive feedback, 30-minute interviews will be conducted with a selection of experts from the German venture capital landscape (4). The interviews are transcribed and then anonymized to ensure accurate responses from interviewees to sensitive questions about strategy and valuation methodologies. During the final phase (5), it is possible to make and record minor adjustments and changes to the interview questions based on the lessons learned during the early interviews. For a detailed overview of the expert interview process and the venture capital firms interviewed, see *Appendix B: Figure 1-3*.

2 Foundations of the German Venture capital market

2.1 Introduction and historical overview

The following chapter provides a historical overview of the German venture capital market. The basic characteristics of a venture capital market were established in the Federal Republic of Germany in the late 1960s (Fohlin 2003). At that time, in the

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communist-influenced east of the country, any form of capital participation was unthinkable. Since Berlin was still a politically unstable city, the first German venture capital institutions began to emerge in Munich, Hamburg, and Frankfurt. These initial venture capital companies were founded on the initiative of banks and private investors, who became increasingly active in the investment companies since the mid-1970s. During the 1980s, numerous publications about the American VC market and its success stories appeared in Germany. As a result, the term VC became more and more established in Germany. At that time, many independent and privately-owned venture capital companies were strongly influenced by their American counterparts (Shafie, Liedtke, and Asghari 2021). From the mid-1990s onwards, the German VC market experienced a period of significant growth (Metger 2020). The first corporate VCs were founded and were soon well-established in the market. During this decade, large and established companies, such as Deutsche Telekom, BASF, and Siemens, initiated the creation of their own venture capital investment entities. Meanwhile, conservative investors, including well-established insurance companies and utility providers, expressed a growing interest in this new type of investment (Weber and Weber 2005). In the middle of the decade, a boom in newly founded ventures took place in Germany, driven mainly by new technologies. Those ventures were mainly in the information technology, biotechnology, and medical equipment sectors. However, the rapid growth experienced before the turn of the millennium ended suddenly as a result of the dot-com crisis (Weber and Weber 2005).

Like the rest of the world, the dot-com crisis hit the German venture capital market hard. Venture capital market activities and the number of new startups declined significantly as a result. At the lowest point of this downturn, capital outlays on venture capital in Germany nearly equaled the 1991 volume (Huberty 2006).

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After the devastating dot-com crisis, the German venture capital market experienced a slow but steady recovery from 2003 onwards (Shafie, Liedtke, and Asghari 2021). The financial crisis in 2008 changed this once again. Like all other major economies, the financial crisis hit Germany hard and the global confidence in equity investments fell dramatically (Iqbal and Kume 2014). Many companies' valuations fell extremely quickly within a short period of time, while the number of new ventures also dropped significantly. Due to the prompt intervention of the German and European governments to rescue European financial institutions, the German economy fared well in comparison to its international peers during the crisis (Reisenbichler and Morgan 2012). The German venture capital market experienced a period of expansion from the 2010s onward, which resembled the surge of the 1990s. During this period, Germany established itself as one of the most important innovation centers in Central Europe. Berlin, in particular, became the undisputed center of venture capital (Conti et al. 2019).

After a decade of recovery, the Corona crisis resulted in a drastic reduction of activities on the venture capital market once again. As in previous crises, it was predominantly riskier early stage investments that suffered most from the deterioration in the macroeconomic environment (Mason 2020). During the COVID-19 pandemic, the number of deals closed in Germany decreased by almost 50% in one quarter, which was consistent with other European economies at the time. The deal volumes and number of closed deals recovered relatively quickly, returning to pre-crisis levels within a few quarters, which is noteworthy. However, this momentum came to a sudden halt due to another major macroeconomic shock and Russia's invasion of Ukraine (Bellavitis, Fisch, and McNaughton 2022).

The conflict in Ukraine, along with global price increases and logistical constraints, has put pressure on the VC market in Germany. However, it is evident that the crises of the

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past three years do not reach the extent of previous crises, such as the dot-com or financial crises. The general market activity did not collapse on such a massive scale and was always characterized by a comparably fast recovery (Lavender, Moore, and Hull 2023). The current situation is mainly characterized by its changed monetary conditions, which primarily have a significant negative impact on exit opportunities and fundraising. However, despite potential challenges, many venture capitalists maintain a positive outlook for the future. Subjective expectations of the market environment in Europe and Germany are more positive for the next twelve months than at any time in the past three years (Kraemer-Eis et al. 2023). The extent of a renewed escalation of the conflict in the Middle East cannot yet be assessed, but it will create further macroeconomic challenges. It therefore remains unclear whether the German VC market will experience a period of prosperity or a period of decline in the next years.

2.2 Importance in the German economy

The following chapter provides an overview of the significance of the venture capital market in Germany. The intention of the chapter is to illustrate the importance of the venture capital market for Germany to underline the relevance of our research questions. A comparison of Germany's innovation output with other international economies shows that Germany consistently ranks in the upper midfield. Germany ranks among the top countries in the world, surpassed only by the USA, China, Singapore, Sweden, Norway, Finland, the Netherlands, and Switzerland (Dutta et al. 2023). Germany's innovative strength is a primary reason for its high level of venture capital activity in comparison to other countries. In terms of the volume of VC investments in relation to total GDP, Germany ranks 25th among the world's 133 largest economies in 2023. Although Germany is widely recognized for its innovation excellence, historically, it has never been a country of entrepreneurs (Audretsch and Keilbach 2007). In international comparisons,

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Germany has a significantly lower ratio of entrepreneurs to its population. However, since the 2010s, there has been a noticeable shift in this regard. For instance, a new company is founded on average every 20 hours in 2023 in Berlin. This innovation strength, combined with the growing entrepreneurship in Germany, creates a good long-term growth potential for the entire German venture capital sector (Dutta et al. 2023).

Despite the positive development of the German venture capital market in recent decades, it still lags behind many similar developed economies. When compared to the size of their respective economies, the VC markets in France and the UK are larger than that of Germany. In recent years, the VC market has been 1.5 times larger in France and 2.1 times larger in the UK. The comparison with the largest non-European economies, particularly the USA and China, is even more unfavorable. Therefore, despite Germany's strong economic position and its innovative power, the venture capital market in Germany still has significant potential for growth, especially in an international comparison (Metger 2020).

The German government has recently highlighted the significance of the venture capital sector for the long-term prosperity of the German economy. The 'Zukunftsfond' (Future Fund) announced in 2019 by the former Minister of Economics, Peter Altmaier, was launched in 2021 and was provided with 10 billion euros by the current government (Röhl 2021). The aim is to enhance and reinforce the German startup and venture capital ecosystem, thereby providing long-term support to the German economy. The Future Fund will consolidate the various smaller funding programs, while also reducing existing bureaucratic barriers. The Future Fund itself has no specific sector exclusions and, unlike before, is also intended to support ventures in later stages with larger investments (Friesendorf and Mir Haschemi 2023). The current German Finance Minister Christian Lindner hopes that the Future Fund will make German society, which historically has a

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strong aversion for risk (see chapter 2.3.), more aware of the opportunities offered by venture capital. The main objective is to positively influence the German population's attitude towards venture capital investments, in addition to directly funding ventures in Germany (Röhl 2021).

2.3 Venture Capital Ecosystem in Germany

The chapter outlines the venture capital scene in Germany, exploring its potential advantages and disadvantages as a destination for venture capital investment. The aim of this chapter is to analyze the German venture capital ecosystem's ability to withstand macroeconomic or geopolitical uncertainties. This, in turn, can serve as a foundation to tackle strategic decision-making issues for venture capitalists and acquire relevant findings that support addressing the predefined research questions.

In 2023, the German economy shows remarkable perseverance, achieving record employment levels despite significant uncertainties caused by wars, energy prices, and weak global economic growth. In parallel, Germany faced a historically high inflation rate of 7.9% in 2022, a challenge that the German government continues to try to mitigate (BMWK 2023). The country is undergoing a transition towards a climate-neutral, innovation-driven economy, which requires not only innovation, but also investment to make this transition a success (BMWK 2023). The involvement of venture capital financing is becoming a crucial factor in the successful implementation of this change. This funding approach is essential for maintaining and expanding Germany's competitiveness as a leading technology location (Stresing et al. 2017). Despite the uncertain outcome of the revision strategy and the prevailing economic instability, Germany's economic situation remains robust. In terms of key metrics such as gross domestic product and export volume, Germany is among the leading nations in the EU (BMWK 2023). Additionally, the German venture capital market stabilized again in 2023

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and recorded two consecutive quarters of rising transaction volumes, with an increase of around 25% in the second quarter. With this increase in transaction volume, Germany outperformed major comparable markets such as France and the United States (Viète and Metger 2023). In the second quarter of 2023, the number of German unicorns increased further through the startup "1Komma5°". The startup, which was funded by venture capital, provides products and infrastructure for the carbon-neutral expansion of domestic properties. This example highlights the significance of venture capitalists in helping the shift towards a climate-neutral and innovation-led future, as mandated by the German government (Viète and Metger 2023).

To ensure the mentioned shift to a climate-neutral, innovation-oriented economy and preserve Germany's status as a top technology hub, the German government acknowledges the significance of venture capital funding (see chapter 2.2.). In recent years, government programs have been launched to support the objective of supplying venture capital for the development of innovative activities for startups in early and late stages. Specifically, the German government, in collaboration with the European Investment Fund, has made deliberate and focused efforts to supply venture capital for the development of innovative activities for startups in early and late stages (Shafie, Liedtke, and Asghari 2021). In addition, the 'European Recovery Programme', which is managed by the German 'Kreditanstalt für Wiederaufbau (KfW)', aims to promote innovation activities in Germany through venture capital (Shafie, Liedtke, and Asghari 2021). Efforts to promote a culture of innovation in Germany through targeted government programs are a strong indication that the German government values the significance of venture capital for the future of the German economy (Friesendorf and Mir Haschemi 2023). Various regulations related to taxation and legal aspects have been implemented to strengthen the German venture capital landscape. Specifically, the tax-

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based research funding law was enforced on January 1, 2020, with the aim of increasing Germany's attractiveness as a center for research and innovation (Shafie, Liedtke, and Asghari 2021). Venture capital funds in Germany are entitled to tax benefits based on specific criteria outlined in the independent tax law. However, Germany lags behind other countries as a venture capital hub in terms of value-added tax (VAT), which places German venture capital providers at a substantial disadvantage (Stresing et al. 2017).

A notable cultural aspect that has a significant impact on the venture capital ecosystem in Germany is the deeply embedded risk aversion in the German business landscape (Aly and Galal-Edeen 2021). The opportunities for innovative startups are limited by the fear of failure and the preference for realism over idealism. This is particularly influenced by the mindset of German SMEs, resulting in fewer investments from German venture capitalists compared to other business locations (Shafie, Liedtke, and Asghari 2021). The German tendency to stringently avoid risks and potential failure regularly leads to missed opportunities in the German venture capital landscape, although other entrepreneurial virtues such as dedication and commitment are often recognised as being more pronounced in the German economy than in other comparable business locations (Fuerlinger, Fandl, and Funke 2015). One issue stemming from cultural tendencies and barriers to high-risk investments is the lack of large-scale venture capital funds in Germany. In Germany, institutional investors often overlook small-volume funds due to their risk-averse nature. This hinders the expansion of small-volume funds and ultimately results in a failure to make crucial investments (Stresing et al. 2017). As a result, a cyclical pattern emerges that presents significant obstacles that need to be overcome, leading to considerable financing deficits, especially in the late stage. Although challenges such as the risk aversion of investors in earlier investment stages may find resolution through the mentioned government support programs, a financing bottleneck persists for potentially

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successful and innovative startups in Germany, especially in the late stage (Röhl 2021). In comparison to other funding phases, it is noticeable that investments in the late stage have declined as a proportion of the entire German venture capital market. Consequently, companies often source their growth capital from non-European investors for extensive expansion of their business models (Stresing et al. 2017).

2.4 Venture Capital Trends in Germany

The following chapter provides an overview of the major trends in the German venture capital landscape. The objective is to complete the overview of the status quo in line with the previous chapters and, if possible, deliver an insight into the future of the German VC industry. The majority of the 472 VC companies surveyed in 2023 by the EIF believe that the venture capital market environment will develop positively over the next 12 months. According to most respondents, Germany, the UK and France are likely to benefit the most from this in a European comparison. The main reason for this trend in Germany is the strong deal flow of the past, combined with a stable and sizeable market. The German government's planned increase in support and de-bureaucratization of the venture capital market is expected to have a positive impact on the industry's future. Germany is already a leader in cleantech innovation and climate technology solutions. If the German venture capital market continues to prove robust in the coming years, Germany's leadership in these sectors should also persist in the long term (Kraemer-Eis et al. 2023).

The leading sectors financed by venture capital companies in Germany are mobility, fintech, technology, B2B software, B2C applications and retail. Over the past decade, the German market has established itself as a global leader in these sectors and successfully created a significant number of ventures in these areas. Trade Republic, N26, Inflabi, and Delivery Hero are good examples of the strong sectoral focus of successful German ventures in recent years. It is likely that the majority of early-stage investments in

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Germany will continue to flow into these sectors in the future (Shafie, Liedtke, and Asghari 2021).

The manufacturing and robotics sectors are well behind when comparing the deal volumes with other countries (Estolatan et al. 2018). However, these sectors are already strongly represented in the German economy and the market. Numerous family-owned German companies, which frequently serve global demand with their niche solutions, are already world market leaders in their manufacturing or robotics activities. In addition to the classic German blue-chip companies, German small and medium-sized enterprises (SMEs) have also been increasingly investing in startups in recent years. The entry of new investors, combined with the existing strong know-how in the German economy, could lead to significant growth in the German venture capital market for the manufacturing and robotics sectors. The disparity between Germany, the USA, and China is especially pronounced in the fields of digitalization, big data, and artificial intelligence. Although there are positive examples of progress in Germany, such as Aleph Alpha, it is unlikely that Germany will soon overtake the US or China in these sectors. In contrast to robotics and manufacturing, Germany lacks a strong focus on SMEs in these areas, and unlike the US and China, these sectors are not explicitly supported by investment to the same extent, even though they represent a market trend (Shafie, Liedtke, and Asghari 2021).

The German venture capital market has demonstrated resilience in previous crises. If the global economy steadily recovers in the coming years and Germany maintains its leading position in various sectors, it is expected that the German venture capital market will continue to thrive in the next decade.

3 Investment strategies and phases in the German VC market

3.1 Theoretical framework and definitions

This chapter introduces venture capital investment strategies and the different phases of the investment process. The aim is to facilitate a general understanding of the first two research questions on the investment strategies and investment phases of VC investors in Germany in the following chapters. The first chapter explains how VCs construct their investment strategies. The following chapter briefly explains the various investment phases, their subdivisions, and specific characteristics.

3.1.1 Venture Capital Investment Strategies

The selection of the right investment strategy is a crucial step in the investment process for any venture capitalist and can have a significant impact on the success or failure of a venture capital fund in the short or long term. (Weber and Weber 2005). Adjustments to venture capitalists' investment strategies are significantly more frequent during crises or uncertain market conditions than during stable periods. These adjustments play a critical role in improving performance in times of economic disruption. (Conti et al. 2019). Fundamentally, the concept of a VC investment strategy can be defined as a plan that outlines how a venture capitalist allocates capital among different investment opportunities (Venture Capital Coffee 2023). To answer this fundamental question, venture capitalists first develop their investment thesis. The investment thesis primarily answers the question of in which sectors, at what stage of investment or through what type of deals future investments should be made. Each venture capital fund has its own investment philosophy that shapes its perspective on potential investments in startups. The decision to invest or not to invest in a startup depends on these individual philosophies (Bai and Zhao 2021). Other important factors that influence venture capitalists' decision making process when defining their investment strategy include their

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risk tolerance, diversification, deal flow and resource constraints (Venture Capital Coffee 2023). The interplay of all these decisions and factors shapes the investment strategy of a venture capitalist and contributes significantly to the varying performance of different venture capitalists due to their different approaches and focus in investing (Kumar and Sharma 2020).

Within the German venture capital landscape, the most notable sectors in the second quarter of 2023 are healthcare, fintech, enterprise software and the energy industry. The approach to deals in the German venture capital landscape has remained consistent, relying primarily on equity financing (Viete and Metger 2023). German venture capital investment philosophies continue to favor seed and early-stage investments, which are the focus of most German VC investments. However, there is still a need to catch up in the late-stage sector as described in chapter 2.3. (Shafie, Liedtke, and Asghari 2021). When considering the willingness of venture capitalists in Germany to take risks, it's important to note the persistently higher tendency towards risk aversion. This risk aversion is more pronounced in the German venture capital landscape than in other Anglo-Saxon countries (Stresing et al. 2017). This cultural aspect can significantly influence the investment strategies of German VCs. It's important to understand that the majority of a VC's returns come from a very small number of companies in the portfolio especially in the seed stage (see chapter 3.3.1.). The high returns from a successful startup can compensate for previous failures (Toptal 2023). However, due to their risk aversion, German venture capitalists tend to place a higher value on failed investments, even in seed and early stage. The success of German venture capitalists' investment strategies can be significantly affected by this fact (Stresing et al. 2017).

3.1.2 Venture Capital Investment Stages

Venture capital investments can generally be categorized into different stages based on the financial needs or development status of startups. (Friesendorf and Mir Haschemi 2023). Venture capital funding of a startup typically involves three distinct phases: seed, early stage and late stage (Stresing et al. 2017). The *seed stage (1)* is the very first phase in which a startup company raises venture capital and can be further divided into pre-seed and the actual seed stage. The pre-seed phase is the period during which the decision to start a business is made and the first steps are taken towards its formation, legal structure, or location. At this stage, the founders encounter the initial expenses of establishing the business, which they aim to finance through pre-seed investors (Friesendorf and Mir Haschemi 2023). Investments in the seed phase are typically more uncertain than in later stages, as companies are still in the early beginnings of their life cycle (see *Appendix C: Figure 1*) (Bellavitis, Fisch, and McNaughton 2022). The actual seed stage is characterized by the preparation for starting a venture and developing business ideas before any operational activities take place (Friesendorf and Mir Haschemi 2023).

The *early stage (2)* marks the presence of the first operational product or service, as well as the first modest or moderate revenues generated by the startup, although it often remains unprofitable at this point (Stresing et al. 2017). At this stage, the risks to investors remain high, but these early stages offer the opportunity for significant returns in future growth as investors continue to see the value in the startup (Damodaran 2009). The early stage can be further divided into Series A and Series B, which represent the first two rounds of funding in this phase. Both rounds represent the first significant inflow of capital for startups to facilitate growth and scale the business (Stresing et al. 2017).

The Late stage (3) is the third stage of investment. It refers to advanced investment rounds that build on the earlier Series A and Series B investment rounds. By this stage, companies have well-established business models and robust revenues or profits (Tech 2018).

Investments in this stage are typically less risky than in the previous stages, but they are also significantly higher because the company has been through significant development by this point (Kumar and Sharma 2020). During this phase, there may be larger financings that are not necessarily referred to as Series C or later rounds. The purpose of these financings, for example, is to prepare the company for a potential initial public offering (IPO) (Friesendorf and Mir Haschemi 2023).

3.2 Change of Investment Strategies

The following chapter is dedicated to the first research question and uses expert interviews to analyze the factors influencing the investment strategies of German venture capital companies. The aim is to identify factors that influence investment strategies in the German venture capital market based on the foundations developed in the chapters 2.1 to 2.4. The results should provide insights into the strategic behavior of German venture capitalists in a turbulent market environment characterized by macroeconomic factors.

3.2.1 Drivers of investment strategy change

To identify the main drivers of investment strategy change, experts in the German venture capital market were interviewed on the subject. A comprehensive list of the drivers highlighted in these interviews can be found in the appendix (see *Appendix D: Figure 1-3*). According to the experts, the influences can be divided into two main categories: *macroeconomic factors (1)* in conjunction with global geopolitical events, and *market trends (2)*, such as technological innovations. Each interviewed venture capital firm highlighted *macroeconomic factors (1)* such as the Covid-19 crisis, the ongoing Ukraine conflict, as well as inflation accompanied by the impending interest rate shift as drivers for the transformation of their own investment strategies (Expert Interviews 2023). The

macroeconomic factors lead to either active or reactive changes in the investment strategies of German venture capitalists (see chapter 3.2.2.). Despite its robustness, the German venture capital landscape is vulnerable to adverse economic, monetary or geopolitical developments. Negative impacts often overshadow promising technological trends and entrepreneurial opportunities within the German venture capital market (Viete and Metger 2023). At the same time, such macroeconomic factors or global geopolitical events can also offer a new perspective on other trends or ideas that subsequently become relevant for the strategic orientation of German venture capitalists (Expert Interviews 2023). This doesn't always have to be a short-term, reactive response, but can influence the long-term investment strategy of venture capitalists (Nolting, Visic, and Singh 2021). Within the second dominant group, venture capitalists described several (2) *market trends* like technological innovations that led them to change their strategy. Advances in artificial intelligence, breakthroughs in healthcare and biotechnology, and climate change technologies were the most frequently mentioned (see *Appendix D: Figure 3*). The AI sector is an example of how technological breakthroughs can affect investors' investment strategies. Previously, German venture capitalists held the belief that AI was a highly technical subject that would require a significant amount of time to develop (Expert Interviews 2023). The widespread and user-friendly application of Chat GPT and other AI trends has generated significant interest among German venture capitalists in AI startups, an interest that persists to this day (Lavender, Moore, and Hull 2023) . *Market trends (2)* and technological influences that drive venture capital investment strategies are often the result of *macroeconomic factors (1)* and global geopolitical events. Thus, the two sets of drivers of investment strategy change are often interrelated (Expert Interviews 2023). For example, there was a notable increase in venture capital funding for AI startups following the launch of Chat GPT, or an increase in healthcare investments

during and after the Covid-19 pandemic (Seetharaman and Jin 2023). In addition, societal changes or demands may cause German VCs to adjust their investment strategy. Some of the German VCs interviewed stated that they also adjust their strategy based on changes or ideas that are of interest to society. German venture capitalists identify potential investment opportunities by analyzing trends and changes in the German society, particularly in the early stages of investment (Expert Interviews 2023). An example of this is the latest German unicorn, 1Komma5°, which was able to grow thanks to German venture capital. This happened at a time when climate change was also becoming an increasingly central social issue (Lavender, Moore, and Hull 2023).

3.2.2 Changing investment strategies

Building on the previous chapter, this section aims to answer the first research question and show how the macroeconomic factors and market trends identified are leading to a change in the investment strategies of German venture capitalists. According to the experts surveyed, the most noticeable change in the German VC landscape is the selection of sectors and regions (Expert Interviews 2023). For example, the current Middle East crisis in Israel is preventing many promising investments in a region that has produced many fast-growing startups in recent years, particularly with its thriving startup hub in Tel Aviv (Tan 2023). During times of uncertainty, German venture capitalists tend to avoid investing in regions with complex political situations or instability caused by various macroeconomic factors. In these situations, there is a shift in the selection of specific sectors. Certain sectors are avoided while others receive more attention and become the focus or even a trend for venture capital investments (Expert Interviews 2023). An example is the conflict between Russia and Ukraine on Europe's continental border. Due to its proximity to Europe, this conflict triggered a new need for security and raised awareness of defense measures in German politics and among the population

(Bardt and Gromling 2022). As a result of this societal change, the German venture capital market is increasingly investing in defense technologies, a sector that was not previously a focus of the German VC landscape. For example, in 2023, Berlin-based German VC firm Project A led a pre-seed round for technology and defense startup ARX (Project A 2023).

Changes in consumer behavior triggered by macroeconomic factors have resulted in another shift in strategy in the German venture capital market. The persistently high inflation of recent years has led to a noticeable change in consumer spending habits due to the resulting price increases. German venture capital investors are realizing that consumers are less inclined to spend money on expensive consumer goods and technologies (Expert Interviews 2023). This has a direct impact on startups in the consumer goods and technology sectors, both favored sectors in the German VC market (Honold, Reiche, and Wacker 2023). For example, an increase in energy prices due to geopolitical events (such as a gas embargo against Russia) may have led people in Germany to save more money and use less expensive delivery services for consumer goods (Kuchenbecker et al. 2023). This, in turn, had a direct impact on companies in the quick commerce sector. As a result, the German quick-commerce company ‘Gorillas’ also got into difficulties with its excessively high-cost structures. The once-prominent German unicorn, which quickly reached a billion-dollar valuation mainly through German venture capital, was eventually acquired at a significantly lower price than its valuations suggested after initial billion-dollar discounts (Klasgen 2022). German venture capital investors who held quick commerce companies in their portfolios pursued a more conservative and diversified investment approach in 2021. This change is due to write-downs in their own portfolios and the result of the ‘Gorillas’ acquisition (Expert Interviews 2023).

In recent years, German venture capitalists have shifted their focus towards their own portfolios and away from excessive investments. Due to significant changes in the macroeconomic environment and recent major crises, growth prospects are no longer as strong as they were a few years ago (Expert Interviews 2023). German venture capital funds still have considerable capital reserves, but they are being more cautious in their investments than before the major crises (Lavender, Moore, and Hull 2023). German venture capital investors are currently prioritizing their existing portfolios over making new investments, which has become more challenging compared to pre-crisis times (Expert Interviews 2023). Funds are focusing on their assets under management, which means that investors are currently relying on the success of the current fund to raise a larger fund in the near future (Conti et al. 2019). In addition to their performance-based compensation, venture capital investors also make money from a new fund through their management fees (Gruenderszene 2015). Less money is now available on the market for startups in the next round of financing, as the companies that were financed at disproportionately high valuations at pre-crisis times have not been able to grow into the valuations due to the changed macroeconomic environment. This has resulted in a shift from very founder-friendly to more investor-friendly conditions (Expert Interviews 2023).

Simultaneously, a shift in strategy has occurred due to macroeconomic factors affecting liquidity and exit plans. In a more challenging environment of inflation and interest rates, venture capitalists are primarily confronted with altered exit strategies and reduced return expectations (Tonies and Fischer 2013). The difficulty for German venture capitalists lies in the fact that it is more challenging to sell companies at a reasonable price during uncertain times (Expert Interviews 2023). German VC investors are holding on to their investments for longer or considering alternative exit options due to this uncertainty (see

chapter 3.3.3) (Conti et al. 2019). Conventional exit options may be limited, requiring an adjustment of expectations for exit (Honold 2021). A focus on long-term strategies such as strengthening company value and positioning for future market conditions is gaining in importance, which in turn again entails a stronger focus on the venture capitalists' own existing portfolio (Lavender, Moore, and Hull 2023).

3.3 Macro and trend influences in VC investment stages

The impact of macroeconomic factors and trends on the investment strategies of German venture capital investors should be assessed differently based on the investment stage. The extent of their influence and effects differs significantly between different investment phases. This chapter focuses on the second research question and examines the various effects and consequences that macroeconomic influences and trends have on the investment strategies of German VC investors in the three phases described in chapter 3.1.2. The objective of this chapter is to identify the variations in the impact of macroeconomic factors and trends across the three investment phases.

3.3.1 Seed Stage

The seed stage, due to its characteristics described above, such as the lower investment volume as the very first round of financing in a startup's lifecycle, poses fewer challenges to investors with respect to a changing macroeconomic market situation (Expert Interviews 2023). Although political instability, tension, or conflict still lead to avoidance of certain sectors and regions, as described in chapter 3.3.2, macroeconomic factors such as inflation and associated interest rate changes have a lesser impact on valuations and investment strategies in the seed phase compared to the other two investment phases (Damodaran 2018). However, macroeconomic factors are also considered at the seed stage, but the focus at this stage for German venture capitalists is more on the team and

the projected market size when selecting potential investments (Bellavitis, Fisch, and McNaughton 2022). Amid macroeconomic shifts, the German venture capital landscape is increasingly emphasizing the potential for startups to reach profitability sooner rather than later, as well as assessing the team and projected market size. Whereas in 2021 many seed-stage startups were funded solely based on their future vision, there is now an earlier focus on evaluating future profitability in the investment selection process for young startups. However, this focus remains significantly stronger in later stages of investment (Expert Interviews 2023). However, German venture capital investors generally place less emphasis on macroeconomic changes in the seed stage than in the early or late stage.

It is important to note that German venture capital investors often prioritize trends that result from societal changes, as described in chapter 3.2.1. During the seed phase, greater emphasis is placed on current market trends compared to later investment phases (Expert Interviews 2023). This is indirectly related to the lower investment volume for deals in the very first investment phase and the strategy described in chapter 3.1.1. that investing in a successful startup can offset losses from other less successful investments in the portfolio and also generate high returns for the fund (Toptal 2023). What is decisive are the so-called "home runs", meaning investments which, in addition to the investment failures, also mean an extremely high return for the fund of a German venture capital investor (Toptal 2023). This dynamic can result in early investments in a promising startup, which later achieves great success, yielding a more attractive return than investments at a later stage, when the company's valuations are already higher (Damodaran 2009). To increase the chances of such an investment in a later successful startup, German venture capital investors are increasingly focusing on the prevailing trends in the market. It is assumed that these trends will continue to exist in the future or, in the best case scenario, that they will become even more important in the market or in

the society in order to ensure a strong growth of the investments already made (Expert Interviews 2023). In order to achieve this, German VCs are increasingly focusing on potentially capital-efficient and sustainable business models in addition to market trends as early as the seed phase (Honold, Reiche, and Wacker 2023). Currently, the most prominent trends are in the areas of artificial intelligence and machine learning, as well as sustainability, as these topics are predicted by German investors to be of great importance in the market and society in the future (Honold, Reiche, and Wacker 2023). However, the investment strategy of identifying companies in the seed phase that will ensure a successful future for venture capital funds by using market trends can be hindered by the prevailing risk aversion in the German economy (Shafie, Liedtke, and Asghari 2021). The experts interviewed from the German venture capital market revealed that the fear of a failed investment, even with lower investment volumes such as in the seed phase, is still quite pronounced in their own funds (Expert Interviews 2023).

3.3.2 Early Stage

German venture capital funds show a significant change in investment behavior from Series A, the first round of early-stage financing. Starting from Series A, the macroeconomic environment becomes increasingly significant compared to the seed phase (Expert Interviews 2023). In times of a changing macroeconomic environment and geopolitical uncertainties, German venture capital investors are becoming more conservative and selective in their investments. They prefer capital-efficient and sustainable business models (Honold, Reiche, and Wacker 2023). Criteria such as a proven product-market fit and a clear path to profitability for potential investments are particularly important for German venture capital investors (Expert Interviews 2023). The risk aversion and selective investment priorities discussed earlier (see chapter 2.3) may lead to a decline in the investment climate in the German VC market. However, startup

valuations are adjusting to the more challenging macroeconomic environment. (Expert Interviews 2023). During uncertain periods, venture capital firms tend to focus on their own portfolio of companies (Lutz et al. 2013). In chapter 3.2.2, it is described that German venture capital investors are placing more emphasis on the success and growth of companies in their existing portfolio. This is due to the increasing difficulty they face in making new investments (Expert Interviews 2023).

In the early stage, the focus on prevailing market trends decreases compared to the seed phase, although they remain a factor for the future growth of potential investments. German venture capitalists try to strike a balance between macroeconomic factors and investment trends, while at the same time being more selective due to the higher investment volume in this phase and the increased risk of potential investments (Expert Interviews 2023). All of these factors contribute to a shift away from a founder-friendly atmosphere and toward more investor-friendly conditions in investment negotiations (see chapter 3.2.2.)

The experts interviewed noted that while companies may be more reasonably valued in uncertain economic times, the supply of investment opportunities for venture capitalists is declining, which creates new challenges for German venture capitalists (Expert Interviews 2023). In addition to the selective behavior of venture capitalists in the VC market, some companies that have already completed a seed round may be less willing to enter a new investment round at the early stage. Especially when compared to times of low interest rates that allowed for high valuations and attractive investment conditions for startups (Expert Interviews 2023). In a market environment that is now much more selective and focused on profitability, startups are trying to delay their Series A financing as much as possible in order to prevent investment rounds that cannot be completed or can only be partially completed in times of macroeconomic uncertainty (Viete and Metger

2023). Startups that raise but fail to close investment rounds as they transition from seed to early stage send a negative signal to the market (Expert Interviews 2023). The interviewed experts consider the market to be transparent enough, allowing German venture capital investors to quickly become aware of successful or unsuccessful rounds of a company in the early stage. The visibility of such events affects trust within the German venture capital landscape, causing investors to view the market opportunities and potential of such a company with skepticism (Expert Interviews 2023).

3.3.3 Late Stage

During the later stage, macroeconomic factors become the most important and have the strongest influence on the investment strategies of German venture capitalists. German VC investors face significant challenges when determining their investment strategies due to market fluctuations and uncertain economic periods (Expert Interviews 2023). German VC investors perceive companies in the late stage, with proven business models, as safer investments during times of macroeconomic uncertainty compared to other investment phases. This represents a compromise with the risk aversion prevalent in the German VC market (Nolting, Visic, and Singh 2021). However, exit opportunities for German venture capitalists in these phases are often limited due to uncertain economic conditions that can lead to a decline in traditional exit channels, such as mergers and acquisitions (M&A) or initial public offerings (IPOs) (Tonies and Fischer 2013). Macroeconomic factors such as rising interest rates, inflation or geopolitical developments are less critical to the investment strategy of German venture capitalists due to the declining risk of investing in proven late-stage companies. However, they hold much greater significance in the strategic considerations of finding a suitable exit strategy for potential investments (Lavender, Moore, and Hull 2023). Different industries or market trends play a less significant role in the investment decisions of German VCs

compared to other investment stages. They are given attention only to some extent when the specific trend aligns with the investment thesis and focus of the VC in that industry (Expert Interviews 2023).

The high investment volumes in the late stage, primarily driven by the lower risk associated with potential investments in established companies, combined with the delay in exits, further exacerbate the previously highlighted funding gap in the German venture capital market (see chapter 2.3) (Honold 2021). Furthermore, companies that received high valuations and financing under founder-friendly terms prior to crises often face challenges in validating or achieving those valuations during periods of macroeconomic difficulties (Expert Interviews 2023). Due to the more selective approach of German venture capital investors, companies in the later stage now face the challenge where new potential investors are hesitant to invest at high valuations. Meanwhile, existing investors in the current capitalization table of such a company are reluctant to accept a lower valuation or a down round. (Tonies and Fischer 2013). This situation causes a discrepancy between supply and demand in the German venture capital market. The supply is represented by companies that heavily rely on late-stage investment, while the demand is represented by potential new investors who are highly selective and cautious (Expert Interviews 2023). In summary, macroeconomic factors have a significant impact on the investment strategies of German late-stage venture capital investors. This impact occurs through changes in expected exits within their existing portfolios or when selecting potential new investments by adjusting valuations. German venture capital investors are becoming more selective in their investment choices, prioritizing promising exits, but even well-established companies in the market may not guarantee a successful exit in difficult economic times.

3.4 Results

This paper analyzes the changes in investment strategies within the German venture capital landscape. It explores the driving factors behind these changes and their impact on investment strategies. Furthermore, it highlights the different impacts of these factors on different investment stages of German VCs. The paper aims to address the first two research questions: (1) *Current factors* and (2) *changes in investment strategies*, as well as (3) *the influence of factors across investment stages*. To investigate the research questions, we conducted interviews with top experts from German venture capital firms and systematically reviewed the literature.

Investment strategies in the German venture capital market are primarily influenced by two factors: (1) *macroeconomic conditions* and (2) *market trends*. Furthermore, social changes and demands frequently lead to an adjustment of the VCs' own investment strategy.

Changes in investment strategies in the German VC market are primarily reflected in the avoidance of unstable regions and a reorientation towards certain sectors. Furthermore, a shift from riskier to more conservative investment approaches can be observed among German venture capitalists, accompanied by a stronger focus on investments in their own portfolios and a more selective selection of potential investments with exit opportunities due to uncertain economic conditions.

It can be observed that the impact of macroeconomic factors and trends varies in the different investment phases, although both aspects can have a certain influence on the investment strategies of German VC firms in all phases. Trends are more prevalent in the seed phase, while there is a balance between the two in the early phase, and macroeconomic factors dominate in the late phase (see *Appendix E: Figure 1*).

4 Conclusion

4.1 Overview research output

The purpose of this paper is to examine how recent macroeconomic factors and crises have affected the investment behavior of German venture capital firms. It aims to understand *various factors that cause changes in investment strategies (1)* and their *impact on different investment stages (2)*. In addition, this paper examines the *impact of macroeconomic crises on the choice of investment instruments (3)* and their *influence on portfolio valuations and the underlying valuation methodologies (4)*. In order to find answers to these focal points, a research question was developed for each of them. The four research questions were then discussed in interviews with experts from German venture capital firms and, in conjunction with a systematic literature review, led to the following results:

- RQ (1) How and by what recent factors are investment strategies in the German venture capital market being shaped and changed?

The investment strategies of German venture capitalists can be influenced by a variety of factors. However, two main categories can be distinguished as significant factors: macroeconomic factors and market trends. Geopolitical events such as crises, conflicts, or pandemics can influence the macroeconomic environment and, consequently, the state of the German venture capital market and are therefore closely linked. Furthermore, investment strategies of German venture capitalists are significantly influenced by current market trends. Technological breakthroughs, such as those in the AI sector, and new demands or requirements arising from a changing society, lead to corresponding adjustments in the investment strategies of German venture capital investors.

Changes in investment strategies can be observed through a shift in investment focus towards new sectors or the avoidance of regions affected by crises or political instability.

Group Part

Moreover, macroeconomic factors that worsen the market situation may lead to a strategic change in investment approaches, which has an impact on the risk orientation or investment activity of German VCs. During times of economic uncertainty, venture capitalists tend to prioritize their existing investment portfolio and become more selective about potential new investments.

- RQ (2) How do current factors impact the investment strategies of German venture capitalists at different stages (seed, early-stage, late-stage)?

German venture capital investors attach varying levels of importance to the two main categories of drivers of change, namely macroeconomic factors and market trends, during different investment phases.

German VCs are more influenced by current market trends during the seed stage, as these trends can increase the chances of an early investment in a later successful startup. Macroeconomic factors are less important at this stage, as they are less decisive for the later success of a seed startup. This excludes the influence of crises or conflicts on venture capital investors' strategy for investing in a particular region.

During the early stage, macroeconomic factors and market trends hold equal importance in influencing the investment strategies of German VCs. The emphasis on market trends decreases while macroeconomic factors gain significance in determining potential investments. During times of macroeconomic challenges, market conditions become increasingly difficult, resulting in a less favorable investment climate. As a result, VCs tend to focus more on their existing portfolios during this phase.

During the late phase, macroeconomic factors have the greatest impact on investment strategies. At this stage, German venture capitalists focus on potential exits for their investments and may struggle to find suitable exit channels in uncertain market

Group Part

conditions. German VCs only partially consider market trends in their investment strategy during the late stage.

- RQ (3) Implications of recent market changes and trends on the investment instruments for the German VC market

Recent macroeconomic crises have had a significant impact on the choice of investment instruments by German venture capital firms. In general, large new investments are increasingly being postponed. The focus is now on the management and support of existing portfolio companies. In the current environment, many of these ventures require bridge financing, which venture capital firms are increasingly offering. In this context, convertible notes are also being increasingly used in Germany in 2023. Even investors who previously only made direct equity investments are demonstrating an increased interest in implementing and using convertible notes.

There are two main reasons for the increased use of convertible notes compared to other financing instruments. First, the risk associated with the use of convertibles is lower than the risk associated with direct equity investments. This is mainly due to the fact that convertibles rank higher than direct equity investments in the possible event of liquidation of the venture. In addition, the greater flexibility in comparison with other investment instruments has also been mentioned as a reason for implementing convertible notes more often.

- RQ (4) Implications of recent market changes and trends on the underlying valuation models for the German VC market

The valuations of portfolio companies are also strongly influenced by the changing macroeconomic environment. Growth targets had to be adjusted for an above-average number of portfolio companies among the venture capital firms interviewed. As a result, portfolio valuations decreased significantly in Germany. However, the impact of the

Group Part

changing market environment on the valuation methods used is minimal among those surveyed. The preferred valuation approaches continue to be multiples and the DCF model. Overall, there is a growing interest in more innovative valuation models among German venture capital firms. Changing macroeconomic conditions may have an influence on this trend, but other factors, such as managerial directives, appear to be much more important.

In conclusion, it can be stated that recent crises and macroeconomic dynamics have influenced the investment behavior of German venture capitalists. The interviews show that macroeconomic dynamics have a significant impact on the investment decisions of German venture capital firms, confirming the results found in the reviewed literature. The influence of macroeconomic factors on the investment strategies and valuation methods of the German venture capital landscape varies across different investment phases.

4.2 Evaluative analysis and future research perspectives

This study analyzes the influence of recent macroeconomic and geopolitical events on the investment behavior of German venture capital firms. It is crucial to note that this study has limitations, which are discussed below.

Firstly, the study is restricted by the one-dimensional nature of the interviews. The research only interviewed venture capital firms in Germany, without including German startups, which could have provided a broader perspective. Additionally, the potential for subjective statements and inconsistencies in the answers of the venture capital investors interviewed cannot be ruled out, as they only represent one perspective on the venture capital market. Interviews with an even broader selection of venture capital firms would have provided a more comprehensive understanding of changing investment behavior in this case. Unfortunately, due to limited resources available for this paper, a broader range of potential interviewees was not possible.

Group Part

While this work provides a basis for a better understanding of macroeconomic factors and their impact on the German venture capital market, it also offers opportunities for a more in-depth analysis by including new perspectives. Further interviews with German venture capital firms, startups, angel investors or other market participants could enrich the study. In addition, valuable insights could be gained through a comparison with more diverse geographical regions or by including later investment phases such as private equity. Future research could investigate how to use the gained insights to ensure the success of venture capitalists' investment behavior in future crises. By recognizing that current crises and macroeconomic factors have varying influences on investment behavior, focusing on different investment phases could help venture capitalists to find a kind of blueprint for their investment behavior in uncertain market phases. In future research, it is recommended to adopt a perspective from both the investor's and founder's viewpoints to better understand both sides and examine the influence of current crises and macroeconomic factors on the overall venture capital market.

Appendix

Appendix A: Literature research process

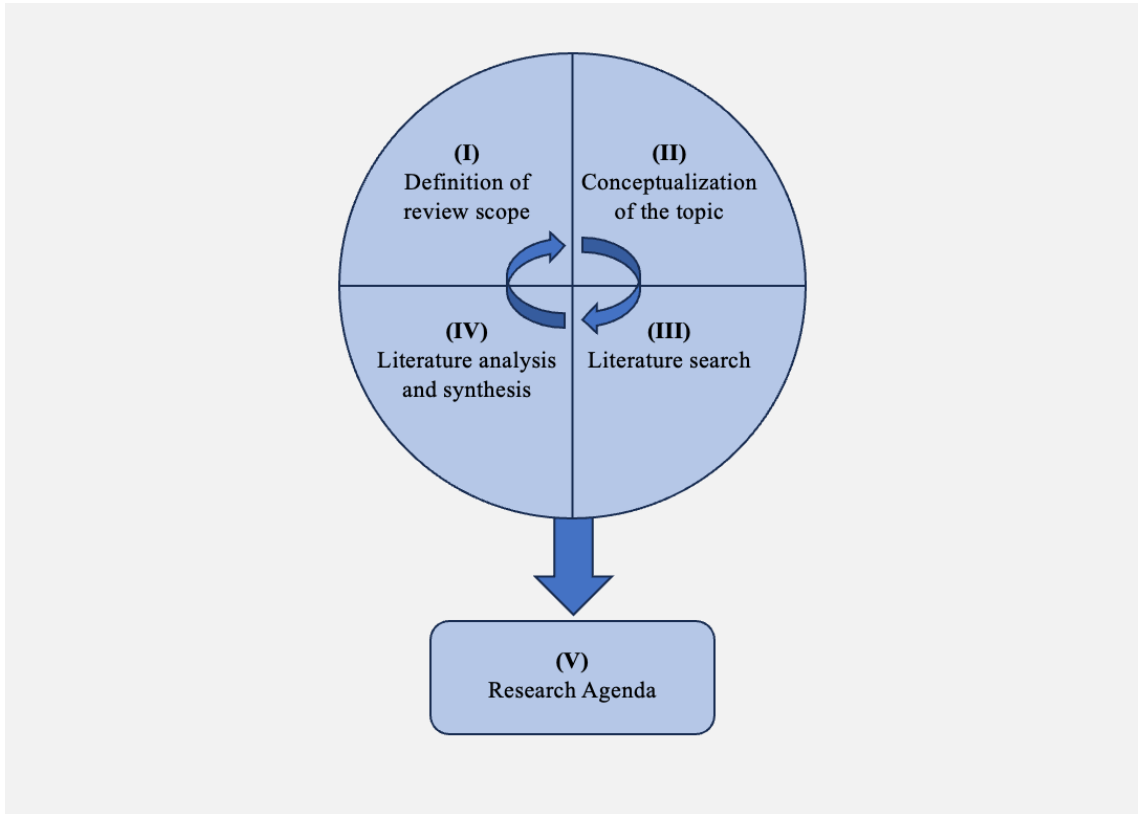


Figure 1: Framework for literature reviewing (own illustration based on vom Brocke et al. 2009)

Characteristics		Categories			
(1)	Focus	Research outcomes	Research methods	Theories	Applications
(2)	Goal	Integration	Critic	Central issues	
(3)	Organization	Historical	Conceptual	Methodological	
(4)	Perspective	Neutral representation	Espousal of position		
(5)	Audience	Specialized scholars	General scholars	Practitioners	General public
(6)	Coverage	Exhaustive	Exhaustive and selective	Representative	Central

Figure 2: Scope and extent of the literature review (Source: based on Cooper, 1988)

Database	Search terms and keywords	Literature found and reviewed	Selected literature after selection phase
Nova Discovery	Venture Capital, Venture Capital Germany, Investment Strategies, Investment Stages, Macroeconomic changes, recent macroeconomic crises, Valuation methods, convertible notes	32	17
Google Scholar		53	28
Elsevier		20	13
Total	-	105	58

Figure 3: Literature search and selection process (own illustration)

Appendix B: Interview process & partners

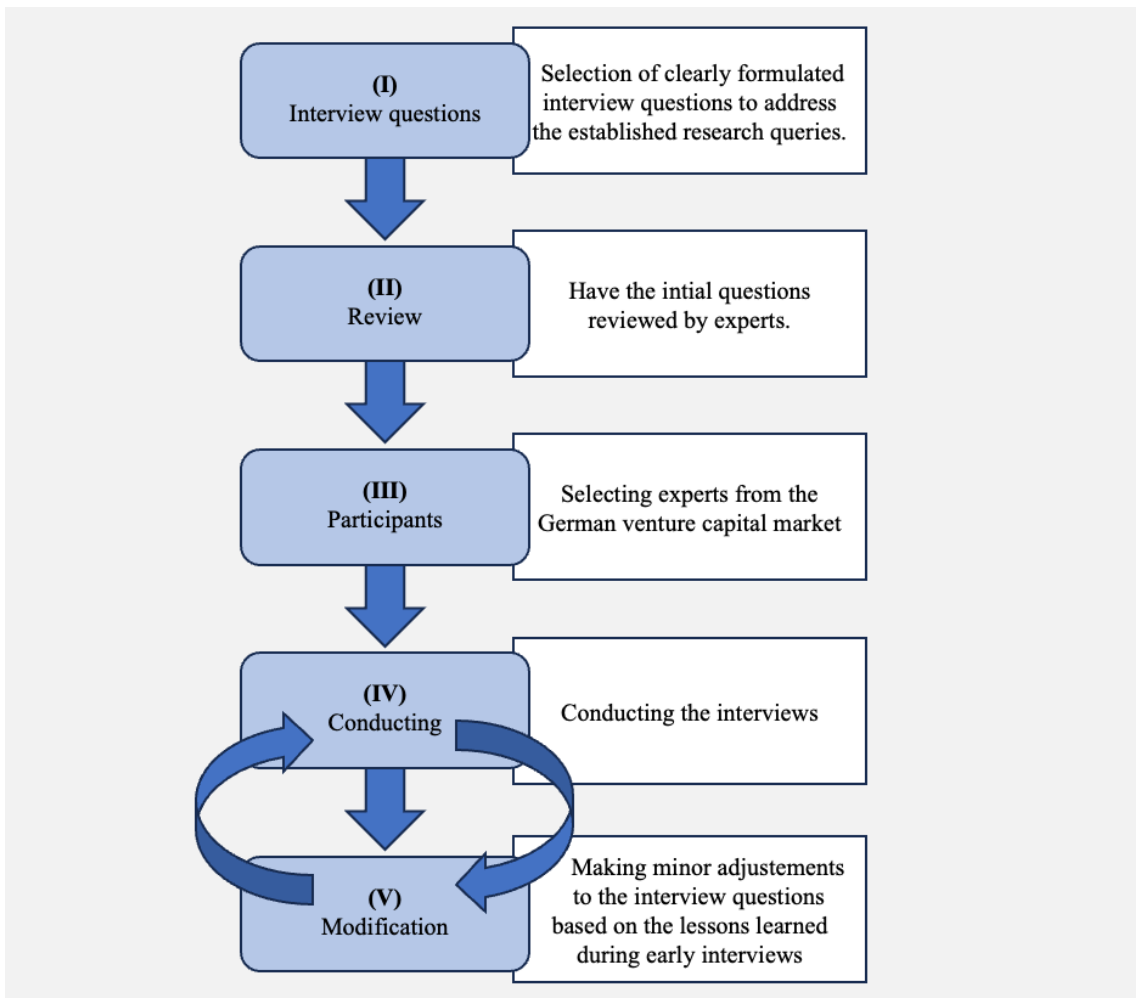


Figure 1: Steps in conducting interviews in qualitative research (own illustration based on Majid et al. 2017)

Expert interviews with German VCs					
Venture Capital	Position	Headquarter	Investment Stages	Sectors	Total Fund Raised
(1)	Analyst	Munich, Bayern, Germany	Seed, Early Stage, Late Stage	Healthcare, Enterprise, Fintech, B2B, Food, E-Commerce, Consumer, Mobility, Retail	≈ €2.5B
(2)	Associate	Berlin, Germany	Seed, Early Stage, Late Stage	Software, E-Commerce, SaaS, Financial Services, Health Care, Information Technology, FinTech, Blockchain, Internet	≈ €700M-€750M
(3)	Associate	Berlin, Germany	Seed, Early Stage, Late Stage	Internet, AI, Fintech, Technology, Energy Transition, Enterprise Software, Digital Consumer	≈ €600M-650M
(4)	Associate	Berlin, Germany	Seed, Early Stage, Late Stage	Fintech, Software, Health Care, Technology, SaaS, Financial Services, AI, Internet, Energy	≈ €500M-550M
(5)	Partner	Munich, Bayern, Germany	Seed, Early Stage	Health Care, Health Tech, AI, Software, Medical, Mental Health, Health Diagnostics	≈ €50-60M
(6)	Associate	Munich, Bayern, Germany	Early Stage, Late Stage	E-Commerce, Financial Services, Software, FinTech	-

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(7)	Partner	Frankfurt, Hessen, Germany	Seed, Early Stage	E-Commerce, Retail, Fintech, Health Care, Financial Services	≈ €10M-15M
(8)	Analyst	Berlin, Germany	Seed, Early Stage, Late Stage	Software, SaaS, E-Commerce, FinTech, Internet, Information Technology, CRM	≈ €500M-550M
(9)	Analyst	Berlin, Germany	Early Stage, Late Stage	Software, Information Technology, Artificial Intelligence, Health Care, Internet, Fintech, SaaS	≈ €2B
(10)	Associate	Munich, Bayern, Germany	Seed, Early Stage	Software, Information Technology, SaaS, Artificial Intelligence, Automotive, Energy, Health Care	≈ €350M

Figure 2: Details on the German venture capital experts interviewed (own illustration based on Expert Interviews, 2023)

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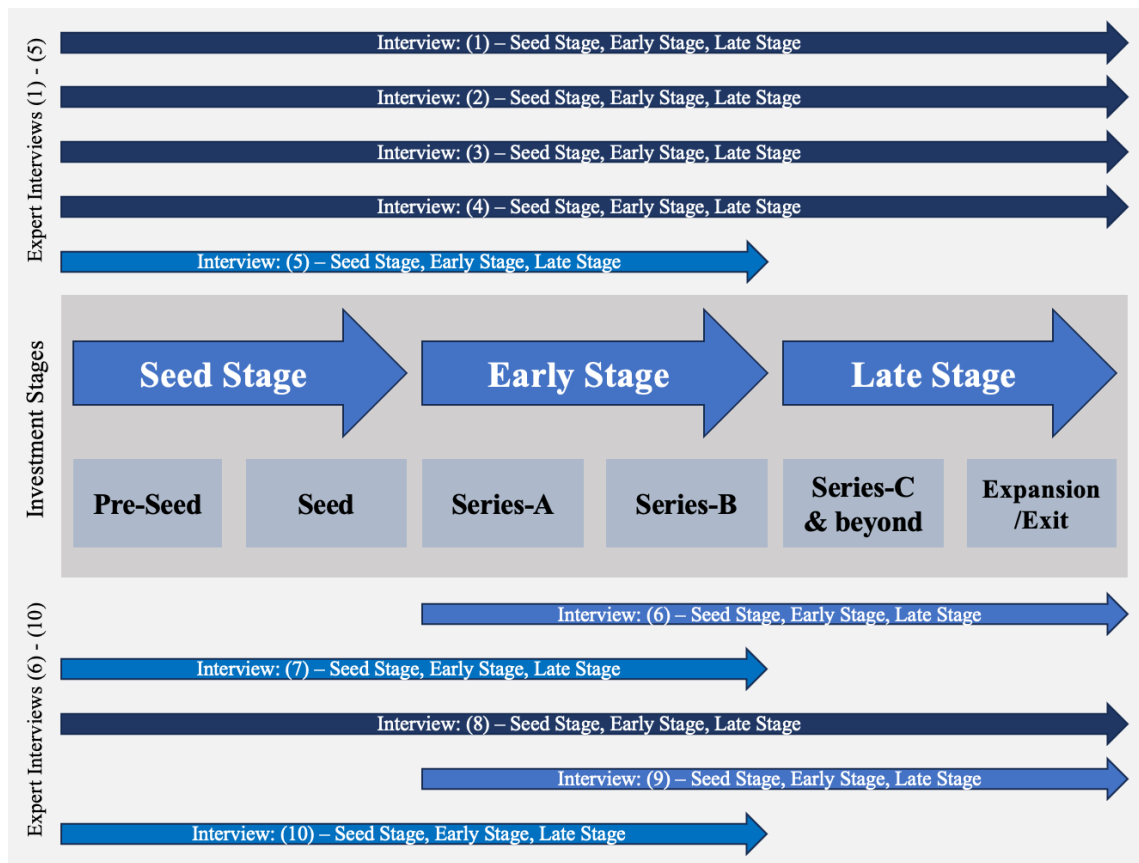


Figure 3: Investment Stages of the interviewed VCs (own illustration based on Expert Interviews, 2023)

Appendix C: Startup lifecycle and investment stages

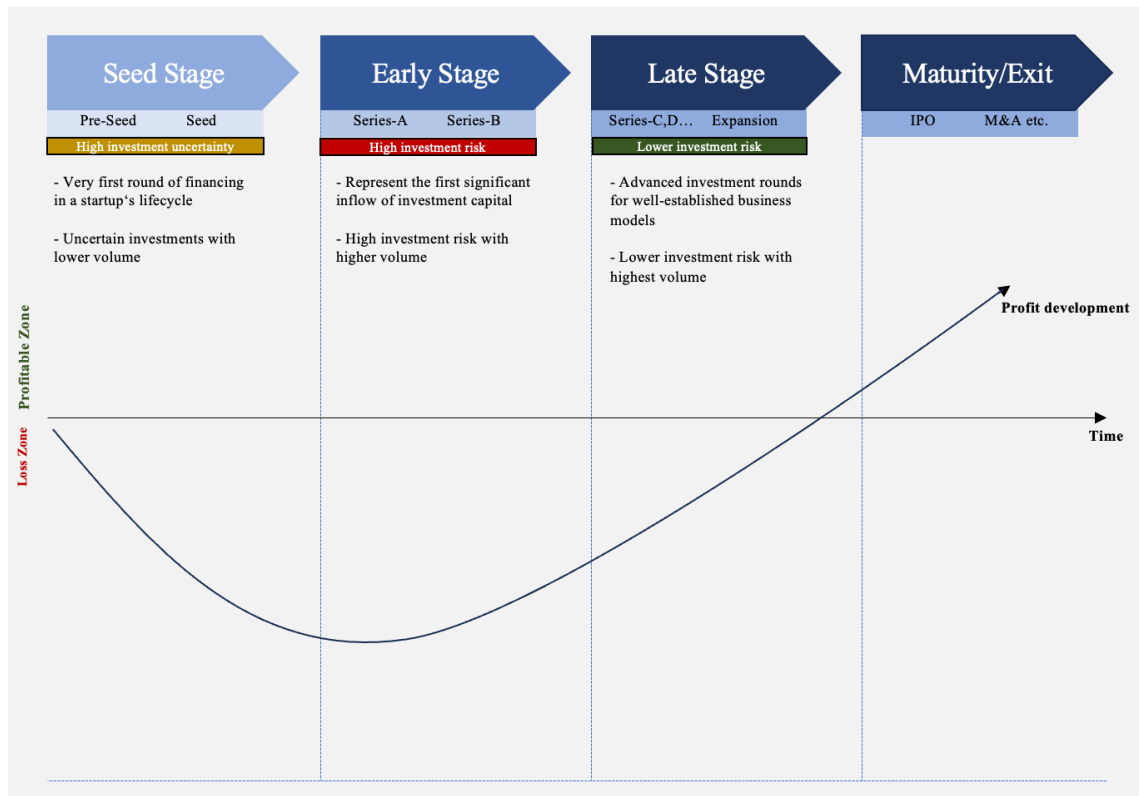


Figure 1: Profit development and investment risk within a startup investment life cycle (own illustration based on Stresing et al. 2017)

Appendix D: Drivers of investment strategy change

Expert interviews (Macros & Market trends)			
Venture Capital	Position	Macroeconomic factors & geopolitical events	Market trends
(1)	Analyst	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis, Energy Embargo against Russia, Tech-crash	AI, Climate Change Technology, Health Care & Biotech, Sustainability, Energy Transition
(2)	Associate	Covid-19, Inflation, Change in Interest rates, War in Ukraine, China-Taiwan conflict, Silicon Valley bank collapse	AI, Climate Change Technology, Health Care & Biotech, Sustainability

Individual Part: Philipp Sanger

(3)	Associate	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis	AI, Climate Change Technology, Sustainability, Energy Transition, Defense Technology
(4)	Associate	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Energy Embargo against Russia, Silicon Valley bank collapse, Climate change impacts	AI, Climate Change Technology, Healthcare & Biotech, Energy Transition
(5)	Partner	Covid-19, Inflation, Change in Interest rates	AI, Health Care & Biotech
(6)	Associate	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis, China-Taiwan conflict, Silicon Valley bank collapse, Tech-crash	AI, Climate Change Technology, Sustainability, Verticalization of Software, Cloud Solutions
(7)	Partner	Covid-19, Inflation, Change in Interest rates, Silicon Valley bank collapse	AI, Health Care & Biotech
(8)	Analyst	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis, Energy Embargo against Russia	AI, Climate Change Technology, Health Care & Biotech, Energy Transition
(9)	Analyst	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis, China-Taiwan conflict, Climate change impacts	AI, Climate Change Technology, Health Care, Sustainability, Defense Technology
(10)	Associate	Covid-19, Inflation, Change in Interest rates, War in Ukraine, Middle East crisis, Energy Embargo against Russia	AI, Climate Change Technology, Health Care & Biotech, Sustainability, Energy Transition

Figure 1: Drivers of investment strategy change mentioned by experts (own illustration based on Expert Interviews, 2023)

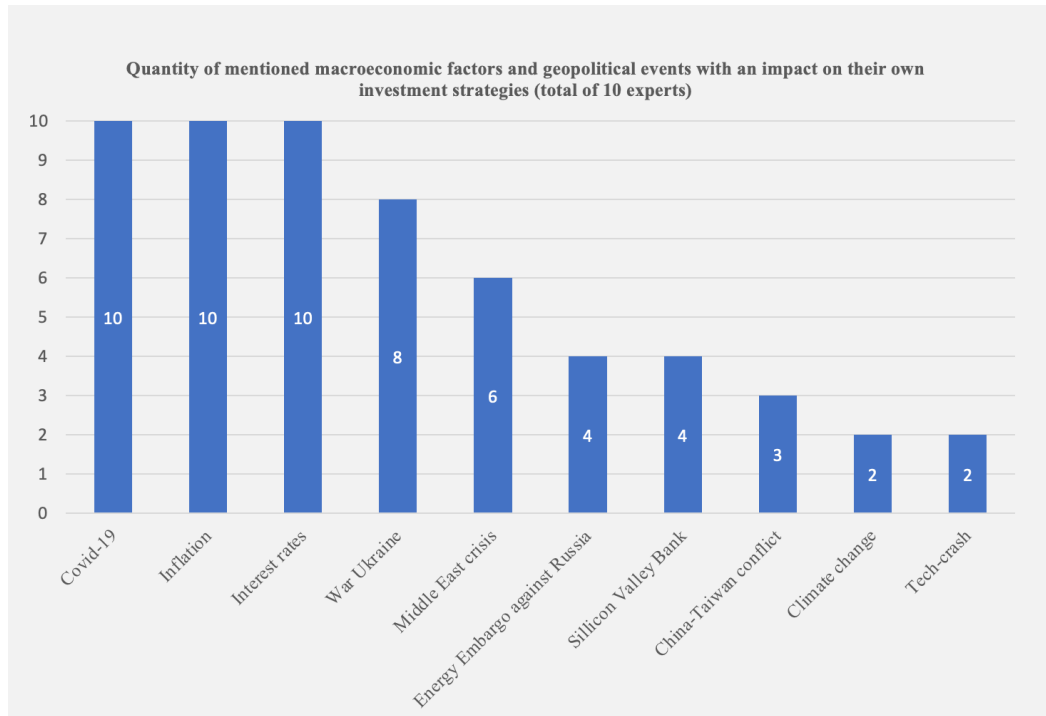


Figure 2: Macroeconomic factors and geopolitical events that drive a change in investment strategy (own illustration based on Expert Interviews, 2023)

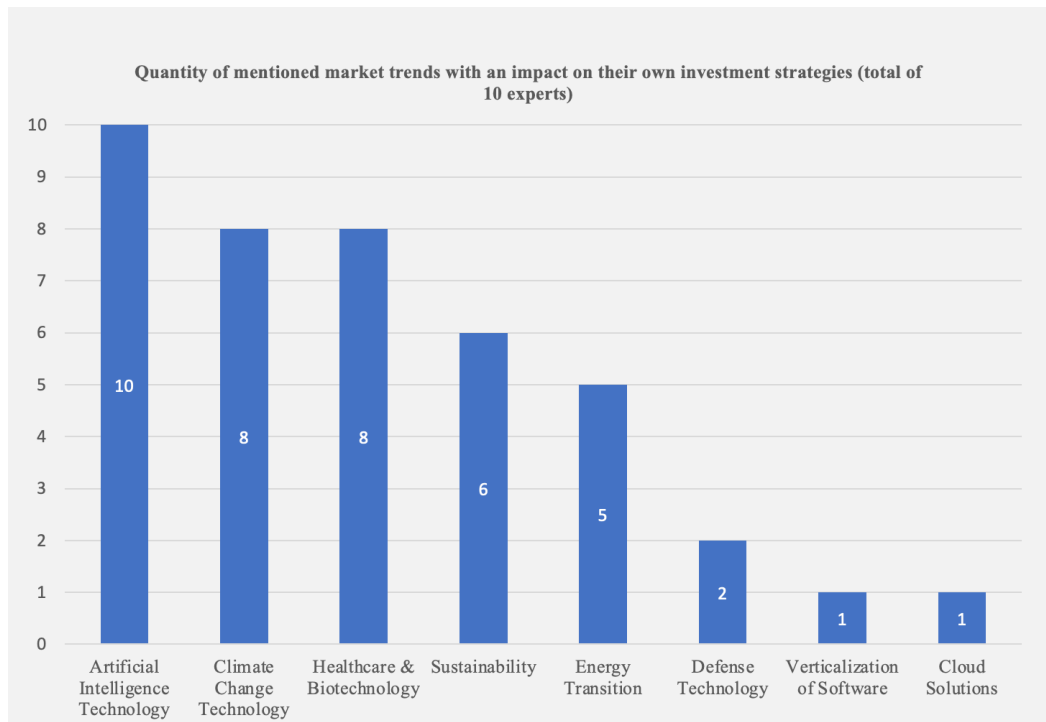


Figure 3: Market trends that drive a change in investment strategy (own illustration based on Expert Interviews, 2023)

Appendix E: Impact in different investment stages

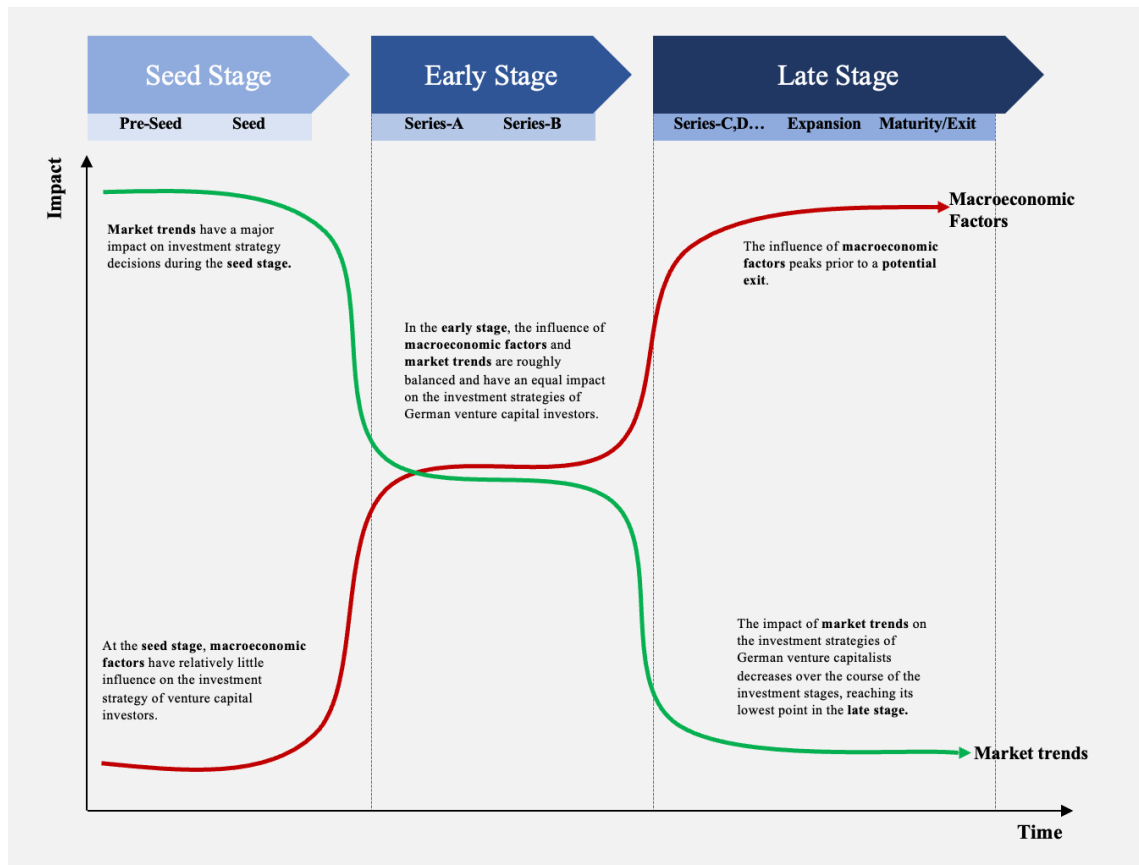


Figure 1: Macros and trends impact variation in different investment stages (own illustration based on Expert Interviews, 2023)

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