



# Assessing the Effects of High Interest Rates on German Venture Capitalists Investment Selection of Technology Startups

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## **Abstract**

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**Title of the dissertation:** Assessing the Effects of High Interest Rates on German Venture Capitalists Investment Selection of Technology Startups

This dissertation investigates how high interest rates affect the selection of technology start-ups by German venture capitalists. Since venture capitalists are often the first source of capital that drives economic growth and innovation, the topic is relevant in entrepreneurship. Despite the existing research on venture capital, the effects of interest rates on the decision-making processes of VCs remain underexplored. This paper draws upon a substantial body of literature in macroeconomics, venture capital, entrepreneurship and finance examining venture capital investment decisions-making and the effects of interest rates on these decisions. A qualitative research methodology was employed, utilising semi-structured interviews with industry professionals.

Findings include that higher interest rates have led to increased hesitancy, reduced capital inflows, price revaluations and a more rational approach to risk-taking. The caution in the market is leading to a shift towards a buyer's market, longer transaction times and stricter investment criteria. VCs place greater emphasis on financial metrics and profitability, insisting more on proof points and deeper business models with real problem-solving potential.

Practical implications can be drawn for entrepreneurs seeking funding, venture capitalists maneuvering through macroeconomic changes and policymakers promoting entrepreneurship.

### **Keywords:**

[Early-stage - Interest Rates - Investment Activity - Investment Behavior - Macro Economics - Selection Criteria - Start-up - Venture Capital]

## **Resumo**

**Autor da dissertação:** Kai Blumenberg

**Título da dissertação:** Análise dos impactos das altas taxas de juros na seleção de investimento de capitalistas de risco alemães em startups de tecnologia

Esta dissertação investiga como as altas taxas de juros afetam a seleção de startups de tecnologia por investidores de capital de risco alemães. Considerando que esses investidores são frequentemente a primeira fonte de capital que impulsiona o crescimento econômico e a inovação, o tema é de grande relevância para o empreendedorismo. Embora já existam estudos sobre capital de risco, os efeitos das taxas de juros nas decisões desses investidores continuam pouco explorados. Este trabalho baseia-se em uma vasta literatura sobre macroeconomia, capital de risco, empreendedorismo e finanças, examinando a tomada de decisões de investimento e os efeitos das taxas de juros nessas decisões. Utilizou-se uma metodologia qualitativa, com entrevistas semi-estruturadas com profissionais do setor.

Os dados indicam que as altas taxas de juros resultam em maior hesitação por parte dos investidores de capital de risco, redução das entradas de capital, reavaliação de preços e uma abordagem mais cautelosa aos riscos. A cautela no mercado está conduzindo a um mercado de compradores, transações mais longas e critérios de investimento mais rigorosos. Os investidores de capital de risco estão dando maior ênfase aos indicadores financeiros e à rentabilidade, priorizando evidências concretas e modelos de negócios aprofundados com verdadeiro potencial de resolução de problemas.

Implicações práticas podem ser extraídas para empreendedores em busca de financiamento, capitalistas de risco enfrentando mudanças macroeconômicas e para formuladores de políticas que promovem o empreendedorismo. Essas mudanças exigem adaptação e estratégias mais robustas para navegar no ambiente econômico em transformação.

### **Palavras-chave:**

[estágio inicial- taxas de juros - atividade de investimento - comportamento de investimento - macroeconomia - critérios de seleção - start-ups - capital de risco]

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## List of Abbreviations

CVC	Corporate Venture Capital
GP	General Partner
GVC	Government Venture Capital
IPO	Initial Public Offering
IP	Intellectual Property
IRR	Internal Rate of Return
IVC	Independent Venture Capital
LP	Limited Partner
MBGs	Mittelständische Beteiligungsgesellschaften
MOIC	Multiple on Invested Capital
MVP	Minimum Viable Product
NVP	Net Present Value
ROI	Return on Investment
SaaS	Software-as-a-Service
SME	Small and Midsize Enterprises
VC	Venture Capital
VCs	Venture Capitalists
ZIRP	Zero Interest Rate Policy

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## **1. Introduction**

### **1.1 Background**

“Drastic decline in global venture capital investment” (KPMG, 2023). This headline from KPMG's Venture Pulse Report for the last quarter of 2023 describes the challenging global landscape for the venture capital (VC) industry. Globally, annual VC investment plummeted to a five-year low in the fourth quarter of 2023 (KPMG, 2024). After reaching highs of \$331.1 billion in the first half of 2022, investments halved to just \$163.6 billion in the first half of 2023. This nearly matches the downturn seen during the pandemic in 2020, when investments totaled \$156.6 billion. Europe was more impacted, marking a 61% decrease to \$27.9 billion, while Germany saw a 53% decline in VC investments, totaling \$3.95 billion raised in the first half of 2023 (KPMG, 2023). The deal number and average round size in Germany decreased by over 40% from 2022, alongside a decline in the expected Internal Rate of Return (IRR) for Early-Stage investments, dropping to an average of 31% from 36% (Honold, et al., 2023).

Concurrently, the German VC market has undergone a series of crises in recent years starting with Covid-19, which triggered a socio-economic fallout that prompted the European Central Bank to respond with quantitative easing measures (European Central Bank, 2024). Inflation reached a historic all-time high of 10.4% in October 2022 (Statistisches Bundesamt, 2024b), caused by various factors including supply chain disruptions and a subsequent spike in freight prices and a supply-demand imbalance (Lan Nguyen & Liu, 2023). Also, significant oil supply cuts by the OPEC+ group (Reuters, 2022), along with the wars in Ukraine and the Middle East, have added to inflationary pressures (International Monetary Fund, 2022). To tackle global inflation, the ECB implemented monetary tightening in July 2022 (Economic Governance and EMU Scrutiny Unit, 2023). This action was in line with the Federal Reserve's decision to raise the Fed Funds rate at the fastest pace since the Federal Open Market Committee began targeting inflation in 1982 (Federal Reserve Bank of Richmond, 2023). In line with the monetary policy update of October 2023, the ECB has left the key interest rate steady at 4.5%, a level last seen at the beginning of the 2000s (Statista, 2024). After a 0.3% downturn in GDP in 2023 (Statistisches Bundesamt, 2024a), Germany's economic landscape remains overshadowed by the threat of a recession in 2024. The interplay of geopolitical tensions, rising interest rates, a global economic slowdown, and internal challenges is weakening the prospects for corporate investment (Roland Berger, 2024).

As the era of Zero Interest Rate Policy (ZIRP) and negative bank rates in the European Union concluded (Heider, et al., 2019), large technology corporations engaged in hiring freezes and

widespread layoffs. Silicon Valley Bank, a prominent tech sector bank, collapsed. It experienced a threefold increase in deposits in two years, reaching \$189 billion by 2021 and a significant portion of bank assets were invested in long-term debt instruments with a “hold to maturity” duration. Since bond prices and interest rates are inversely correlated, prices declined as the Fed raised rates. Disruptions in initial public offerings for startups and liquidity needs caused SVB clients to withdraw funds, triggering a bank run. SVB was forced to sell long-term liabilities, resulting in realized losses (Oaktree Capital Management, 2023; Roumeliotis, 2023).

VCs are a key funding source for early-stage businesses (Lerner & Landa, 2020), as banks commonly require a certain level of creditworthiness (Hyun & Lee, 2022). The effects of rising interest rates bear upon VC activity (Lerner & Landa, 2020). VC fosters entrepreneurship, innovation, absorptive capacity (Romain & van Pottelsberghe de la Potterie, 2004a), employment growth, and making a positive contribution to the overall economy (Samila & Sorenson, 2011). With higher interest rates, returns on less risky asset classes rose, negatively impacting the supply of Venture Capital Funds by diminishing their attractiveness.

Considering the demand side of VC, the situation is not straightforward. As interest rates rose, costs of capital were driven upward, reducing capital spending and demand, slowing down economic activity as well as the formation and growth of start-ups. At the same time, higher interest rates offer entrepreneurs an incentive to seek start-up financing through VCs instead of from traditional debt financing (Pacheco, et al., 2012). But equity-based financing is still seen as less mature in Europe, resulting in a higher reliance on bank financing compared to the US (Walther, 2024).

## **1.2 Research Objective and Topic Significance**

Given the substantial dependence of both private and public capital markets on interest rates, this study seeks to analyze the effects of higher interest rates on tech-focused Venture Capital firms in Germany. Monetary policy is a frequently neglected area within entrepreneurship finance studies (Bellavitis, et al., 2024). While research on the effects of high interest rates on venture capital supply and demand is available, empirical evidence regarding the pre-investment phase, especially in the selection and valuation of early-stage technology startups in the German-speaking region, remains limited. This study seeks to examine ongoing challenges posed by high interest rates, particularly their impact on tech-focused VC firms in the German context. The following research questions will be interrogated:

**Research Question:** *In what way do higher interest rates impact the selection and funding of early-stage tech startups for German VCs?*

German VCs are increasingly concentrating on tech start-ups (Kraemer-Eis & Croce, 2023) and it's interesting to examine how tech-focused VCs choose their portfolio companies in the current economic climate. With inflation expected to remain high for several more years, ECB interest rate policy is not a short-term measure (European Central Bank, 2023). This represents a significant emerging secular trend expected to have a significant impact on venture capital, as described by Sam Lessin in what he calls the “new world” (Lessin, 2023). Responses to monetary policy changes can provide inferences into the adaptability, resilience and functionality of the entrepreneurial ecosystem in Germany. Insights drawn from this analysis can offer practical implications for both entrepreneurs and investors and may help strategic decision-making in a challenging macroeconomic environment.

## **2. Literature review**

### **2.1 Introduction into Venture Capital**

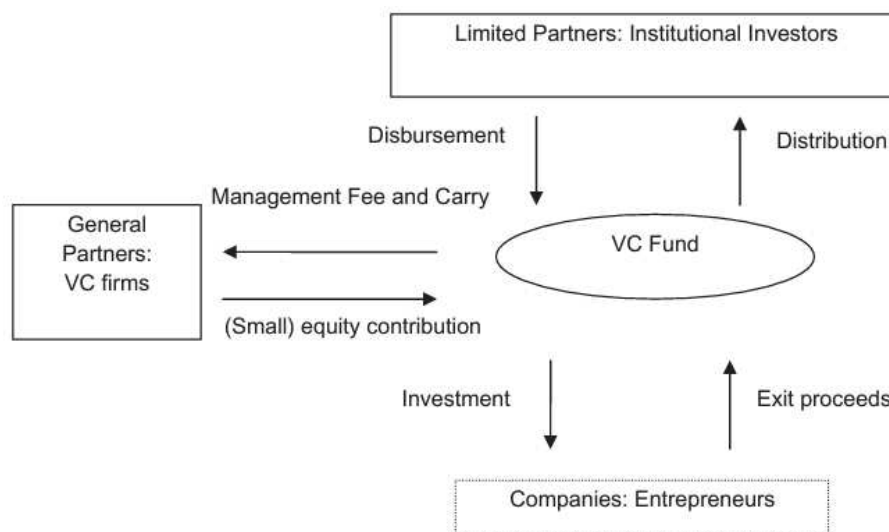
Venture capital relates to investments in equity or equity-linked securities in early-stage growth or expanding privately owned companies. Private equity, classified within alternative investments, differs from traditional investments in stocks and bonds (Achleitner, et al., 2004; Metrick and Yasuda, 2021), as it entails “unregistered equity and equity-linked securities sold by private (and sometimes public) companies or partnerships to financial buyers” (Vanacker & Manigart, 2013). Investors seek to gain access to potentially lucrative investments unavailable via traditional channels (Fuchs, et al., 2021). Gompers and Lerner (2001a) describe VCs as “independent, professionally managed, dedicated pools of capital focusing on equity or equity-linked investments in privately held, high-growth companies”. With lower liquidity, limited monitoring, regulatory oversight and disclosure requirements, the cost of capital for unlisted companies tends to be higher than for their listed counterparts, requiring a higher expected return from a private equity investor (Caselli & Negri, 2021).

### **2.2 Venture Capital firm structure**

Diverse investor types are investing in the venture capital market, ranging from independent (IVC) to captive VCs such as corporate (CVC), governmental (GVC), and bank-affiliated venture capitalists. Figure 1 below shows the relationship structure for VCs, who serve as the general partner (GP) within a limited partnership structure. A contractual agreement sets out the terms and

conditions with the fund providers. Fund providers, also known as limited partners (LPs), are made up of individual and institutional investors. The total capital pledged by the LPs during the entire term of the fund is referred to as the fund's committed capital (Sahlman, 1990; Rin, et al., 2013; Bertoni, et al., 2015; Metrick & Yasuda, 2021).

VCs are commonly organized as a management company that actively oversees several funds with a mutually agreed investment strategy, each reflecting a distinct legal limited partnership. GPs normally contribute relatively minor amounts, around 1%, to each fund's total capital. In exchange for their active fund management, VC GPs receive management fees and, contingent upon success, also earn carried interest that corresponds to a percentage of profits generated during the term of the fund, typically up to 10 years (Sahlman, 1990; Tykvová, 2018; Ramsinghani, 2021). Since the majority of VC funds adopt a closed-end structure, there are usually no subsequent capital raises or outflows of capital from limited partners following the fund's launch (Townsend, 2015).



**Figure 1:** *Venture Capital Model*  
**Source:** Rin, Hellmann, and Manju Puri (2013)

VC funds operate within an institutional and legal context shaped by government regulations and policies (Guilhon, 2020). A new fund usually follows a standard investment pattern where, in the initial phase, the so-called “investment phase” of VC investments, the VCs select companies and sign contracts with them. After investment allocations, VCs monitor their investment portfolios and make further investments over the investment period, typically between 3-5 years (Rin, 2016; Acevedo, et al., 2016). Each venture that benefits from VC funding is labeled a “Venture-Backed Company” (Caselli & Negri, 2021). Success depends on the ability of these ventures to survive the financing phase until they achieve commercial viability (Pradhan, et al., 2020).

In the end phase of VC investment, also referred to as the “harvest period”, VCs shift their focus towards preparing portfolio companies for potential exits before the fund is eventually liquidated and closed. This tight timeframe puts portfolio companies under considerable pressure to achieve rapid growth and maturity. If high growth is not achieved, there is risk of closure or a drop in the exit price (Rin, 2016). Investors focus on opportunities with high ROIs, via initial public offerings (IPOs), sales to other investors, or acquisitions (Metrick & Yasuda, 2021).

Given the short holding period and the small percentage of ventures growing to a size where they are attractive to sell, VCs tend to focus on high-tech industries. These offer the potential for new products to scale rapidly (Metrick & Yasuda, 2021). Nonetheless, due to high risks involved, the odds of failure outweigh successes, which means that investors need to be compensated for losses (Acevedo, et al., 2016). Besides financial resources, VCs may use management expertise or other non-financial means to support portfolio companies and influence the strategy of ventures (Hellmann & Puri, 2002). An investment's financial return is assessed based on the IRR and the multiplier on invested capital (MOIC), with the former emphasizing the time component and the latter the total return achieved (Ramsinghani, 2021). LPs tend to place greater emphasis on total performance over risk-adjusted returns (Gompers, et al., 2016).

### **2.3 Financing Stages of Venture Capital**

Startups progress through different phases of a life cycle and consequently enter different financing stages. VCs often specialize in specific funding stages, sectors, or markets, depending on their investment strategy and risk appetite (Norton & Tenenbaum, 1993). VC firms are generally less likely to specialize under either very high or very low competition, while the likelihood of VC firms specializing in certain stages of investment is highest in moderately competitive markets (Cabolis, et al., 2023). As portfolio companies develop, so does the relationship with VCs, which affects both risk preferences of the VCs and mutual dependency of VCs and startups (Park & Tzabbar, 2016). Initial phases of a company's life cycle can be divided into four stages, namely pre-seed, seed, early, and late stages (Lukkarinen, et al., 2016; Molnár & Jáki, 2020; Puca, 2020).

During pre-seed and seed investment phases, entrepreneurs commonly reach out to friends, relatives, angel investors, and other alternative sources for very early-stage financing. In this phase, the entrepreneur sets up a business plan or builds a prototype (Bonini & Capizzi, 2019; Hyun & Lee, 2022). In recent years, angel investors have established themselves as significant providers of early-stage financing (Hellmanna & Thieleb, 2015). Usually wealthy individuals, often with

entrepreneurial backgrounds and are characterized by high risk tolerance. They often participate in syndications and take an active role in guiding and mentoring founders (Kerr, et al., 2014; Block, et al., 2019). Once the startup has formulated a business plan, the next natural step involves transitioning from the seed stage to the early stage and actively seeking investment from VCs. Funding secured is allocated towards product development, operational expenses, and go-to-market efforts. Total funding and ticket volumes increase from the seed to later stages (Series A, B, C...), typically in an inverse relationship with the uncertainties related to the startup's future cash flow and survival chances, resulting in a decrease in overall investment risk (Cochrane, 2005; Puca, 2020).

A good balance is needed between diversifying investments and retaining sufficient ownership in successful ventures to ensure substantial returns. Due to the inherent trade-off risk, early-stage VCs coordinate and adjust their investment strategies according to the investment preferences of later-stage investors, recognizing the crucial role of the latter for the success of ventures (Nanda & Rhodes-Kropf, 2017). The multi-stage funding structure can also explain why early-stage investors are sensitive to economic cycles (Howell et al., 2021).

## **2.4 Interest Rates and the impact on Venture Capital**

As interest rates have a direct impact on the cost of capital, they are presumed to influence decisions to engage in entrepreneurship and also affect the supply and demand dynamics within the VC industry (Romain & van Pottelsberghe de la Potterie, 2004b; Pacheco, et al., 2012). Interest rates stand out as a determining factor in the dynamics of entrepreneurship (Gompers and Lerner, 1999; Romain and van Pottelsberghe de la Potterie, 2004b; Félix et al., 2013). Beginning with the supply side of VC, the initial funding stage of VC firms is influenced by interest rates (Bellavitis, et al., 2024). A VC's required rate of return depends on the risk-free interest rate, the degree of systematic risk linked to the asset being invested in, and its market risk premium. Furthermore, there is the liquidity of the asset and total remuneration for value-adding activities that should be taken into consideration (Sahlman, 1990). In addition to the last two factors, Cochrane (2005) argues that if the investments represent a significant portion of an investor's wealth, all three factors can explain why VCs may require a higher return than public equity investments.

When interest rates rise, there are higher return expectations because the opportunity cost of investing in less risky asset classes also increases (Romain & van Pottelsberghe de la Potterie, 2004b). Consequently, investments in VC funds may become less attractive. As VC fulfills a complementary investment role alongside asset classes with lower risk profiles such as bonds or other debt instruments, fund providers demand a risk premium. This varies depending on the

attractiveness of alternative investment opportunities. In other words, fund providers tend to allocate capital to asset classes that promise the optimal tradeoff between potential returns and risks (Gompers & Lerner, 1999; Cochrane, 2005; Füss & Schweizer, 2012; Bellavitis, et al., 2024).

In low-interest-rate environments, there was a shift in liquidity from debt-to-equity investments, resulting in capital outflows from traditional investments and an inflow into alternatives. This incentivized VCs to expand fundraising efforts and potentially transition towards riskier investments (Bernanke & Reinhart, 2004; Nicolò, et al., 2010; Apel & Claussen, 2012; Bellavitis, et al., 2024). It also led to more competition for the best deals, resulting in higher entry valuations and lower returns (Ramsinghani, 2021). LPs tend to allocate less capital to venture funds in economies experiencing difficult economic conditions, as measured by a rise in unemployment. In addition, LP investment is negatively affected by the amount of VC already present in the country. As a result, LPs are more reluctant to allocate more capital to VCs when the industry already has a significant amount of “dry powder”, leading to increased competition among VCs (Bellavitis & Matanova, 2017).

Shifting to the demand side which reflects the entrepreneur's behavior, periods of higher interest rates result in increased entrepreneurial demand for VC (Gompers & Lerner, 1999). For entrepreneurs, the short-term interest rate is of greater importance as they primarily require short-term funding. This suggests that during periods of higher interest rates, VC demand should rise as entrepreneurs theoretically find it more expensive to borrow money (Füss & Schweizer, 2012; Bellavitis, et al., 2024). But it can be argued that higher interest rates slow economic growth by increasing funding costs, reducing risk-taking and lending, and potentially reducing people's willingness to start new businesses (Heider, et al., 2019; Félix, et al., 2023; Bellavitis, et al., 2024). So, the demand for VC can be influenced either positively or negatively by interest rates, depending on which effect predominates (Félix, et al., 2013).

Gompers and Lerner (1999) stated that changes in interest rates potentially affect both the supply and demand sides of VC financing. This lies in the fact that the influence of interest rates on VC investments depends on whether the impact is more dominant on supply or demand (Gompers & Lerner, 1999; Romain & van Pottelsberghe de la Potterie, 2004a; Félix, et al., 2013). It can be argued that funds may see an increase in demand for VC as a result of rising interest rates and therefore potentially intensify their fundraising efforts (Fisch et al., 2024; Bellavitis, et al., 2024). It has been shown that the fundraising activities of VC firms increase when interest rates become negative (Bellavitis, et al., 2024). On the other hand, economic theory assumes an inverse

relationship between VC investments and long-term interest rates. In the event that interest rates rise, the level of VC investments is likely to fall as the number of investment opportunities with a positive net present value decreases (Füss & Schweizer, 2012).

While the effects of interest rate changes on VC investments are not straightforward, the majority of findings show a positive net effect between interest rates and VC investments. An interest rate change boosts VC as a funding source, implying that the demand effect outweighs the negative effects on supply and lower entrepreneurial activity (Félix, et al., 2013). Studies by Gompers & Lerner (1999), Romain & van Pottelsberghe de la Potterie (2004b), Pacheco, et al. (2012), Félix et al. (2007, 2013) and Bellavitis & Matanova (2017) confirm these positive effects about the attractiveness of VC investment.

Venture Capital Journal's "*LP Perspectives 2024*" study, which focuses on institutional investors, found that interest rate hikes will have the greatest negative impact on private markets portfolios over the next 12 months. Jim Strang, Chairman of HgCapital Trust stated that LPs are reassessing the risk exposure and liquidity of their portfolio companies in response to high interest rates. LPs have become cautious about timing their use of the secondary market for liquidity generation and avoiding aggressive divestment of high-quality assets (Neveling, 2023).

Uncertainty is also being felt by VCs, as observed by Kevin Kaiser, senior director of Wharton's Harris Family Alternative Investments Program. He notes that VCs are hesitant to invest, mainly because of market uncertainty and high price levels. Before the rate hike, falling interest rates drove valuations higher; however, inflation and subsequent rate hikes reversed this pattern, leaving VC firms struggling to justify investments at these valuations (Kaiser, 2024). William Craig, Investment Director of Wellington Management, along with Mark Watson, an Investment Specialist, refer to this shift in valuations as an indirect consequence of higher discount rates. This leads to lower valuations and a higher valuation risk for businesses that plan to raise subsequent rounds of financing or consider an IPO (Craig & Watson, 2024).

On the other hand, VC firms with new funds available see these valuations as a good entry opportunity. Also, firms with positive free cash flow were less affected by declines in valuation, signaling the insulating effect of liquidity reserves against interest rate risk (Craig & Watson, 2024). Bill Gurley, GP at the VC firm Benchmark, went even further, emphasizing that the criteria for success, levels of risk, and profitability thresholds have all shifted (Jin & Rattner, 2024). PitchBook's VC Dealmaking Indicator for Q1 2024, which analyzes average deal-level data,

describes the environment as investor-friendly, signaling an increase in demand relative to supply of capital (PitchBook, 2024a).

## **2.5 Venture Capital in Germany**

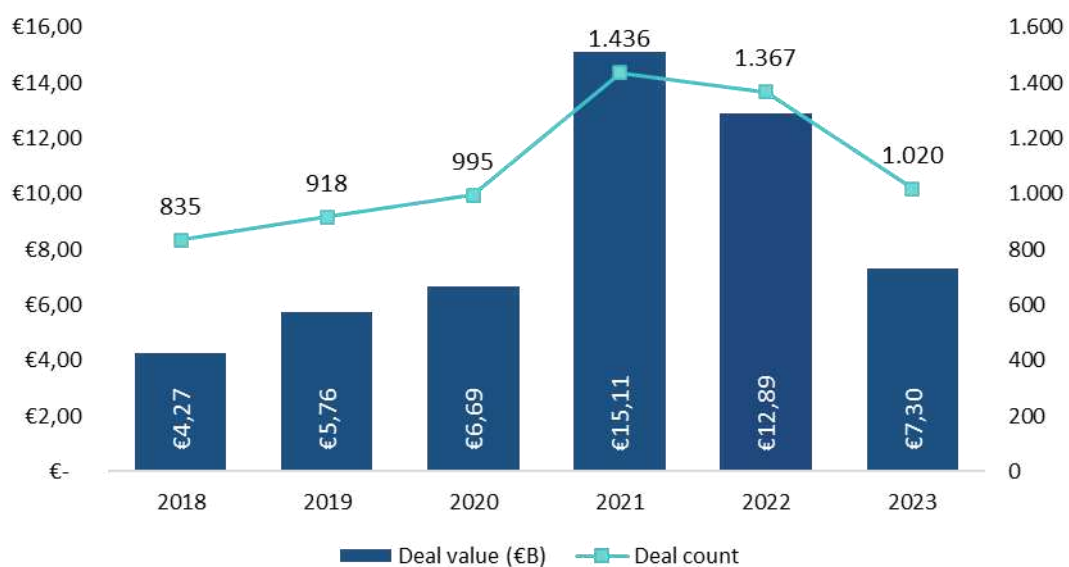
In 1946, following the Second World War, VC organizations began to emerge in America. They developed distinctive ways of assessing, monitoring, and supporting promising new businesses. At the time, investment and commercial banks, along with institutional investors, showed little commitment to providing financial support for startups. Therefore, novel venture capital practices emerged as a countervailing force, advocating independent entrepreneurship in an economy characterized by larger, well-established corporations (Reiner, 1991).

Germany's first VC activity dates back to the 1960s (Wuppeifeld, 1997). Several banks set up business investment companies in response to the equity deficit in the Small and Medium Enterprise (SME) sector. The objective was to offer equity financing to privately held SMEs. Despite this intention, they deviated from the desired objectives by not prioritizing investment in young companies. During the early 1970s, a second phase of German VC was characterized by substantial government intervention to support SMEs, led by the Federal Ministry of Economics and the European Recovery Program Special Fund. While these initiatives provided low-interest financing, the critical need for VCs in technology-based companies persisted. This led to the establishment of the “*Mittelständische Beteiligungsgesellschaften*” (MBGs) in the 1970s and 1980s across all of Germany's federal states. Among shareholders of the MBGs are the development banks of the federal states, chambers, insurers, banks and cross-industry trade associations. MBGs remain a unique element of the German private equity market, aiming to support businesses they finance, usually through silent partnerships ranging from €300k to €500k (Wuppeifeld, 1997; Acevedo, et al., 2016).

During the early 1980s, the German VC market transitioned into its third phase, inspired by the success of the American model. Traditional German investment firms began funding tech startups, and international VC firms also began entering the market. This phase was marked by rapid growth, with volumes increasing sevenfold from 1983 to 1995, reaching over 5.6 billion Deutsche Mark, and the number of participants nearly tripling (Wuppeifeld, 1997). VC activity increased in the late 1990s, led by the creation of the “*Neuer Markt*”, marked by the entry of numerous small VC-backed firms, providing a striking contrast to the preceding, while both IPO and VC activities were still relatively modest compared to the US (Deutsche Bundesbank, 2000; Franzke, et al., 2003).

The relatively modest level of VC activity can be attributed to a multitude of factors, ranging from mentality, regulatory and tax policy, alternative financing options and the exit environment (Günter & Frommann, 1998; Becker & Hellmann, 2000; Betsch, et al., 2000; Franzke, et al., 2003). This mentality is reflected in the statement by Franz Müntefering, a former Vice-Chancellor, about private equity firms, which he describes as “swarms of locusts that attack companies and fleec them before they move on” (Gifford, 2020; Besanceney, 2022). Following the peak in 2000, VC investments reached a low point in 2003 before rebounding until 2008. During the financial crisis, fundraising activity slowed until 2011, when government intervention helped prevent early-stage VCs from running dry. One of the measures was the establishment of the “*High-Tech Start-up Fund*” by the German government, and KfW, a public-private partnership seed capital fund, eased the financing situation for startups. An increased supply of venture capital was crucial for establishing a sustainable startup ecosystem (Acevedo, et al., 2016).

Over the last decade, there has been a positive shift, corresponding to an increase in deal volume and better access to investment opportunities (Aztec Group, 2020; Besanceney, 2022). Annual VC Investment has increased (see Figure 2) from EUR 4,27 bn in 2018 to EUR 7.3 bn in 2023 (Pitchbook, 2024b). Low-interest rates and supportive fiscal policy led to global momentum, particularly in 2021. Rising stock markets made it easier for VC funds to sell their investments and secure more capital. Moreover, the emergence of unicorns and major tech companies likely drew investors' interest to this niche (Demertzis & Guetta-Jeanrenaud, 2022; Walther, 2024).



**Figure 2:** Germany VC deal activity from 2018 to 2023

**Source:** Own Illustration based on Pitchbook Q4 2023 Germany Market Snapshot

Previously, western cities such as Frankfurt, Hamburg, and Munich were the most attractive to venture capital firms. Although Berlin ranks among the top cities in the 2023 European VC surveys, equity capital in Germany's SME sector still takes a backseat, with investment volumes below the EU average relative to the country's economic strength (Mendonça, 2019; PitchBook, 2021; Besanceney, 2022). KfW's chief economist, Dr. Fritzi Köhler-Geib, warns of a potential international backlog, particularly in critical technology sectors, due to the slow pace. She suggests that conditions for institutional investors and growth for startups need to be strengthened to enable larger independent funding rounds while retaining businesses and expertise domestically (KfW, 2020). To put this into perspective, the share of VC investments in relation to GDP is ten times higher in the US compared to Europe. One reason for this is that the market or country risk premium in EU countries like Germany is about four percentage points above the US. Countries that rely more on equity financing often experience greater levels of economic growth (Demertzis, et al., 2021; Walther, 2024).

Several EU countries, including Germany, have initiated the “*European Tech Champion Initiative*” in 2023 to address the issue of smaller financing rounds for growth companies, with an investment volume of EUR 3.75 billion. This initiative supports large VC funds that provide growth financing for later-stage technology businesses in Europe, thereby discouraging takeovers by foreign (non-European) investors. Furthermore, the “*Zukunftsfonds*”, a government initiative in Germany aimed at enabling larger investment rounds, is set to invest 10 billion euros by 2030 (European Investment Fund, 2023; Bertuzzi, 2023; Walther, 2024). In particular, deep tech startups based on cutting-edge science or breakthrough technologies depend on a developed VC market comprised of larger-sized funds for scale-up (Dealroom, 2023; Walther, 2024).

## **2.6 Venture Capital Activities**

Activities of a VCs can be viewed as an interconnected and cyclical process. After origination/sourcing, screening, evaluation, structuring, investments must be managed by monitoring and value-adding activities and then, ideally, accomplishing exits and returning capital to LPs (Gompers & Lerner, 2004; Zacharakis & Shepherd, 2007; Kollmann & Kuckertz, 2010; Metrick & Yasuda, 2021). VCs, acting as active financial intermediaries, try to mitigate the inherent risks associated with venture investments through meticulous selection, contracting, and post-investment monitoring (Lerner & Gompers, 2001b; Clercq & Manigart, 2007; Hsu, et al., 2014).

## **2.7 Pre-Investment Phase of Venture Capital**

All VC activities leading up to the closing of a deal, including all necessary preparations to ensure the success of the investment process, are carried out in the pre-investment phase (Zacharakis & Shepherd, 2007; Darchia, 2022). The success of a VC firm is often contingent upon the ability to generate a high-quality deal flow. VCs draw on various quantitative sourcing methods and networks, as well as proactively generating deals (Klonowski, 2010; Gompers, et al., 2020).

The deal funnel entails conducting deal screening to filter out proposals that do not meet the VC firm's internal criteria or appear unpromising (Klonowski, 2010). Upon passing the screening hurdle, further evaluation is conducted, including meetings with management (Kollmann & Kuckertz, 2010; Moritz, et al., 2022) and if the opportunity proves promising, more in-depth due diligence will be conducted. While the screening decision is typically made quickly (Fried & Hisrich, 1994; Zacharakis & Meyer, 2000; Cumming, et al., 2010; Moritz, et al., 2022), the evaluation phase may take months. At each of these stages, a significant number of investments are eliminated (Dhochak & Sharma, 2015; Cumming & Zambelli, 2017; Gompers, et al., 2020; Moritz, et al., 2022).

Petty and Gruper (2011) discovered that roughly 20% of venture proposals successfully navigate the screening phase. In contrast, Gompers et al. (2020) claim that approximately 99% of venture proposals face rejection at this early stage (Gompers, et al., 2020; Moritz, et al., 2022). As the selection process progresses, the level of uncertainty in the evaluation decreases. In the deal structuring stage, the VC, together with the entrepreneur, work out terms which culminates in a draft term sheet (Kollmann & Kuckertz, 2010).

### **2.7.1 Selection criteria**

VCs face various risks, beyond market risk, when selecting potential entrepreneurial ventures, especially adverse selection and moral hazards (Fried & D., 1994; Muffatto & Ferrati, 2021). Adverse selection can occur when a VC either chooses to invest in a venture that ultimately fails (type 1 error) or misses investing in a successful one (type 2 error). A moral hazard is the risk that the entrepreneur reduces his commitment or changes initial plans in such a way that risks related to the business increase, potentially resulting in suboptimal returns for VCs over time. Therefore, the VC tries to minimize the information asymmetries (Mishra & Zachary, 2014a; Muffatto & Ferrati, 2021).

Research on the investment criteria of VCs found that factors pertaining to an investment decision are not static. Criteria and their weighting can change based on market conditions, industry, development stage, investment size, geography, fund lifecycle or the experience level of individual VCs (Zacharakis & Shepherd, 2007; Champenois & Engel, 2007; Kollmann & Kuckertz, 2010; Petty & Gruber, 2011; Gompers, et al., 2020; Moritz, et al., 2022). Investment criteria may extend to 400 factors, which forces researchers to restrict themselves to the most relevant factors, given time and resource constraints. This makes it almost impossible for empirical studies to cover the entire list (Kollmann & Kuckertz, 2010). Even with diverse criteria, certain core categories remain unchanged, spanning elements like product viability, competitive landscape, entrepreneurial and market characteristics, and more (Zacharakis & Shepherd, 2007).

Academic literature organizes criteria into different themes. For example, Granz et al. (2020) have three themes (Financial, Business, Management Team), while Ferrati and Muffatto (2021) categorize four main domains (Venture, Investor, Environmental, and Risk Assessment factors). Ferrati and Muffatto (2021) looked at 53 journal articles published between 1984 and 2017 focused on the US, Europe, and Asia. They identified 208 unique criteria and organized these into 4 main domains of analysis. Ferrati's and Muffatto's criteria have been adopted for the following section (Granz, et al., 2020; Muffatto & Ferrati, 2021).

### **2.7.2 Venture specific criteria**

#### *Entrepreneur and management team*

The entrepreneur and the management team include various criteria such as the entrepreneur's personality, experience, expertise, motivation, commitment, reputation, demographics, investor fit, as well as the team and its network (Muffatto & Ferrati, 2021). For example, Gompers et al. (2010) suggest that an entrepreneur's previous success is an influential differentiator that VC firms favor. Industry experience, followed by educational background, carries considerable weight for VCs, who also prioritize diverse educational and functional backgrounds in teams (Franke, et al., 2008; Muffatto & Ferrati, 2021). Gompers et al. (2020) also state that VCs tend to place more emphasis on the entrepreneurial team (the "jockey") rather than factors related to the business (the "horse") (Kaplan, et al., 2009; Gompers, et al., 2020). Other studies of VC decision-making support the notion of the entrepreneur and team being a key determinant, particularly for early-stage companies where there is limited historical track record (Franke, et al., 2006; Franke, et al., 2008; Kollmann & Kuckertz, 2010; Warnick, et al., 2018).

Often regarded as the father of venture capitalism, Georges Doriot formulated the famous principle that it is better to invest in an A-team with a B-idea rather than a B-team with an A-idea (Timmons & Spinelli, 2003; Zacharakis & Shepherd, 2007). In literature, there is no consensus on this subject (Granz, et al., 2020). Soft skills such as problem-solving, the entrepreneur's integrity, and personal drive are important factors (Schefczyk & Gerpott, 2001). Integrity and ethics are especially relevant when investors have faith in the underlying technology (von Burg & Kenney, 2000; Zacharakis & Shepherd, 2007). The entrepreneur's commitment, for example equity stake in the company, reputation, and quality of references are often cited as relevant criteria (Macmillan, et al., 1985; Dubini, 1989; Granz, et al., 2020; Muffatto & Ferrati, 2021). Block et al. (2021) also found that authenticity is an important selection criterion for VCs.

### Product / Service offering

The product or service includes considerations such as whether the venture has a working prototype, employs cutting-edge technology, or leverages intellectual property (IP) assets (Muffatto & Ferrati, 2021). Patents, for example, can be perceived as quality signals and productive assets for VCs (Hoenig & Henkel, 2015; Lahr & Mina, 2016). Kaplan et al. (2009) studied 50 VC-backed firms that went public, exploring the jockey/horse distinction. They found that a firm's non-human assets, like unique products/services, technology, or IP, are key to success, remaining stable even with management changes. Hence, having a solid business at the outset might not guarantee success on its own, but it seems to be indispensable for long-term success. Block et al. (2021) found that proof of concept is also considered as a milestone for VCs as it reduces uncertainty.

Once founders had laid the foundation of non-human assets, they became replaceable, and capable successors grew the businesses leveraging those non-human assets. This suggests that VCs may need to focus more on the business and less on the management team when making investment decisions (Kaplan, et al., 2009). Similarly, Petty and Gruber (2011) stated that management qualities may be secondary to product, market, and financial evaluations, based upon the belief that skilled managers can be brought in later if necessary. As the valuations are contingent upon the demonstrated quality of a product, it stands to reason that this is significant (Petty & Gruber, 2011). VCs usually target high-tech investments and consider technological advancement as an investment criterion (Hsu, et al., 2014). Investors expect at least a working prototype, assess the readiness of the technology, consider its stage in the lifecycle, and evaluate the time to market. Besides the product offering, the underlying business model and strategy must be sound (Muffatto & Ferrati, 2021).

### Market characteristics

VCs tend to favor sizable, high-growth markets, particularly tech-related businesses, while shying away from saturated markets with low value creation potential (Bachher & Guild, 1986; Kollmann & Kuckertz, 2010; Petty & Gruber, 2011). Additionally, VCs prioritize markets that promise sustainable, long-term profitability (Hall & Hofer, 1993; Boocock & Woods, 1997; Granz et al. 2020). Furthermore, they may analyze demographics, economic cycles, industry and social trends, policy measures, and so on (Kollmann & Kuckertz, 2010; Muffatto & Ferrati, 2021). In addition, assessments include the competitive landscape in terms of market structure, the ability of the business to build entry barriers, and the competitiveness of the product (Wells, 1974; Khan, 1987; Petty & Gruber, 2011; Muffatto & Ferrati, 2021). In Germany, the Software-as-a-Service (SaaS) market was in before and after the interest rate hike the most invested sector for VCs (Honold, et al., 2020; Honold, et al., 2023). SaaS business models offer cost efficiency by reducing operational expenses while providing scalability and often predictable income streams (KPMG, 2016).

### Financial Side

The financial assessment of ventures is often limited by a lack of financial track record, so more focus is placed on other factors such as the entrepreneur and their team, the product, or the market. Some criteria include profit margins projections, as well as revenue growth over time (Bachher, et al., 1986; Muffatto & Ferrati, 2021). Gompers et al. (2020) found that 31% of early-stage funds do not prepare cash flow forecasts. Instead, the focus centers more on understanding the underlying monetization strategy and revenue model. For funds that prepare forecasts, the median forecast period is typically 3 to 4 years, with a relatively longer forecast period for later-stage funds (Gompers, et al., 2020). VCs also consider capital requirements, financing costs like the “*burn rate*” (the cash a firm consumes over time), and the “*runway*” (the duration a firm can operate before encountering liquidity issues). Other criteria include time to break-even and overall financial sustainability (Albert, et al., 1985; Knockaert et al., 2010; Mishra et al., 2017; Mason, 2020; Muffatto & Ferrati, 2021; Block et al., 2021).

### Venture proposal

When considering an investment proposal, VCs pay particular attention to the completeness and accuracy of information. An investment proposal is evaluated based on the overall quality of the proposal (Kollmann & Kuckertz, 2010; Muffatto & Ferrati, 2021).

### 2.7.3 Investor specific criteria

#### Financial Metrics

Various financial metrics may be employed by VCs, such as the expected return on investment, to assess the investment and compare it with alternative opportunities. Moreover, they only make investments when the IRR exceeds the required rate of return, which is generally set to reflect the illiquidity risk assumed by venture capitalists. Using the Capital Asset Pricing Model, VCs can calculate the appropriate required rate of return, which considers the market risk and illiquidity premium, the risk-free rate of return, and specific risks associated with the particular investment. Having these metrics on paper does not imply that an accurate valuation has been calculated, but they tend to be a prerequisite for investment decisions (Fried & Hisrich, 1994; Wright & Robbie, 1996; Kollmann & Kuckertz, 2010; Petty & Gruber, 2011; Nunes, et al., 2014; Granz, et al., 2020). The typical benchmark for evaluating the expected return on investment is "10 in 5", which represents a multiplier of 10 over a time horizon of 5 years (Zider, 1998; Petty & Gruber, 2011). The absolute return of the investment is also a relevant aspect, as some investments do not generate the returns needed (Fried & Hisrich, 1994; Mishra, et al., 2017).

Gompers et al. (2016) showed that PE investors mainly use IRRs and MOICs for valuation purposes and seldom use the net present value (NPV) approach. Gompers et al. (2020) also discovered that 17% of early-stage investors utilized no financial metrics. Among VC firms applying metrics, 64% adjusted their targets for risk factors, while a significant majority (78%) either made no risk adjustments or treated all risky factors equally. Therefore, only a small proportion of VC firms distinguish between different types of risk or align their financial ratios accordingly. Most notably, only 5% address systematic risks, while only 14% consider idiosyncratic risks. There is typically a higher tendency for later-stage VCs to incorporate risk in their investment decisions by using more technical instruments (Gompers, et al., 2020).

#### Exit potential

The time to exit and expected follow-on investment rounds are important. VCs have a forward-looking view on liquidity and tend to avoid tying up capital beyond the typical timeframe of the investment fund, as this reduces the likelihood of an exit (Macmillan, et al., 1987; Van Deventer & Mlambo, 2009; Nunes, et al., 2014; Mishra, et al., 2017; Muffatto & Ferrati, 2021). Gompers et al. (2020) found that half of VCs adjust for time to liquidity, arguing that longer-term investments require higher returns due to the time value of money or the finite lifespan of investment funds (Gompers, et al., 2020). External capital market cycles have been found to have a modest influence

on VC investment decision-making, but a greater influence on the timing of exits (Gompers, et al., 2020).

### Contractual terms

Contractual arrangements help mitigate risk. Terms can include various rights, including cash flow targets, voting rights, board composition, liquidation, and other control mechanisms that determine the level of control and involvement in the venture (Gompers, 1995; Strömberg & Kaplan, 2003; Beck, et al., 2003). Bengtsson and Hand (2013) compared founder-controlled and VC-controlled companies and found that the latter offer greater incentives to entrepreneurs in the form of cash and equity (Bengtsson & Hand, 2013). In such VC-controlled cases, VCs tend to impose conditions and performance targets on the entrepreneur that must be met to receive full equity entitlements and further funding commitments (Kaplan & Strömberg, 2003). How cash flow rights are shared between VCs and entrepreneurs varies depending on the relative bargaining power of the parties (Kaplan & Strömberg, 2003; Heughebaert & Manigart, 2012; Tykvová, 2018). A study by Cumming and Dai (2011) found that larger funds are associated with increased bargain power.

#### **2.7.4 Risk assessment criteria**

Risk factors include market, agency, country and ecosystem risks. In terms of market risks, implementation risks are a predominant risk for early-stage funding. Although the business idea sounds promising, the likelihood of execution failure remains high (Landström, 2007; Muffatto & Ferrati, 2021). The lean startup methodology to reduce the burn rate and mitigate uncertainty is often recommended (Ries, 2011). Further risks may include bail-out risks, the risk of a total loss, as well as risks associated with competition (Landström, 2007; Muffatto & Ferrati, 2021).

Potential risks associated with agency issues may include mismanagement and leadership failure. Whether the entrepreneur has the necessary skills to manage the business or is capable of leading a team makes a huge difference (Landström, 2007; Muffatto & Ferrati, 2021). Country and ecosystem risks relate to how more stable political environments are associated with better economic conditions. Other risks such as sociocultural risks, trade risks and exchange rate risks also bear upon the decision to invest (Muhammad, et al., 2017; Muffatto & Ferrati, 2021).

#### **2.7.5 Environmental criteria**

Various international and national factors include the macroeconomic environment, government regulations, the tax rate on capital gains, and others (Muffatto & Ferrati, 2021). Economic cycles

also play a role as they influence VC fundraising, supply and demand dynamics. Tighter monetary policy, for instance, leads early-stage investors to make fewer risky bets and reduces overall spending in research and development for cyclical businesses, ultimately slowing down the financing of innovation (Bellavitis & Matanova, 2017; Lian, et al., 2019; Yueran & Zimmermann, 2023). Similarly, it is argued that innovative and risky technologies require hot markets to secure financing, a phenomenon that may be influenced by interest rates (Nanda & Rhodes-Kropf, 2013; Bellavitis & Matanova, 2017; Nanda & Rhodes-Kropf, 2017; Tykvová, 2018). In hot markets, where worthy projects are limited and valuations are elevated, returns on investment are adversely affected (Gompers & Lerner, 2000; Gompers & Lerner, 2001a; Michel, 2014). Macroeconomic conditions can also influence the development of the VC industry and vice versa (Tykvová, 2018).

### **3. Management Theory**

#### **3.1 Venture Capital and Agency Theory**

The roots of agency theory can be traced to the 1960s, when the literature on risk discussed the agency problem arising from diverging objectives and the conflicting duties between cooperating parties (Ross, 1973; Jensen & Meckling, 1976).

An agency relationship is formed between at least two parties when one of the parties, known as the agent, either acts for or on behalf of the other, referred to as the principal (Ross, 1973). Agency theory describes the relationship using the contract metaphor. Agency problems arise when there is a delegation of work and decision-making authority from a principal to an agent. When both parties pursue utility maximization potential conflicts of interest arise (Jensen & Meckling, 1976). Innovation is associated with uncertainty (Jahanshahi & Zhang, 2015), including for those who contribute to its success with financial and non-financial support (Sahlman, 1990; Fiet, 1995; Van Osnabrugge, 2000; Arthurs and Busenitz, 2003). A principal-agent relationship is formed when an entrepreneur seeks financing from a VC (Sahlman, 1990; Arthurs & Busenitz, 2003). Especially in the pre-investment phase, VCs are concerned with minimizing agency costs by addressing risks before the actual investment (Van Osnabrugge, 2000).

In this regard, VCs take on the role of financial intermediaries, acting as principals, while the entrepreneur is the agent (Sapienza & Gupta, 1994). In view of the information asymmetry between the entrepreneur and the VCs, the entrepreneur holds superior knowledge due to his daily involvement with the venture, whereas the VCs lack access to granular levels of information (Klonowski, 2010). Agency problems can include adverse selection risks, moral hazard, and potential future conflicts of interest (Strömberg & Kaplan, 2004).

Adverse selection is a central issue in the selection process (Clercq & Manigart, 2007), as VCs face information asymmetries in assessing the true quality of entrepreneurs and ventures. This uncertainty causes challenges for sorting low-quality projects from high-quality ones (Mishra & Zachary, 2014b). In high-tech ventures where the entrepreneur has extensive knowledge of the underlying technology, monitoring can be difficult for VCs (Sapienza & De Clercq, 2000).

Moral hazard risks may also arise for VCs, as entrepreneurs may not maximize the value of the venture once the funds have been invested (Strömberg & Kaplan, 2004). An entrepreneur may not make the same effort as he would if he held full ownership of the venture (Mishra & Zachary, 2014a). The Moral Hazards Approach suggests that greater information asymmetry should be addressed with stronger performance-related compensation (Strömberg & Kaplan, 2004). Possible divergence between the interests and objectives of the VCs and the entrepreneur can lead to suboptimal returns and may endanger the success of the venture (Klonowski, 2010).

Other agency risks, such as “hold-up” risk when the entrepreneur threatens to leave the venture, can result in loss of human capital for the business. VCs can introduce a vesting schedule for the entrepreneur's shares to mitigate this threat (Hart & Moore, 1994; Strömberg & Kaplan, 2004).

In general, several mechanisms can be employed by VCs to minimize agency risks through screening, conducting thorough due diligence, setting high investment return requirements, relying on a trusted third party-sources, and applying staged financing (Mishra & Zachary, 2014b). Staging investments offer the option of gathering information and monitoring the company's progress while at the same time allowing VCs to abandon the investment. Through this approach, VCs can reassess the project, managing the trade-off between potential agency and monitoring costs (Sahlman, 1990; Gompers, 1995; Ibrahim, 2008). On one hand, actively monitoring portfolio firms can be costly in terms of both financial resources and time commitment. On the other hand, the mechanism of staging investments can also be costly, particularly in terms of negotiation efforts and contracting expenses (Kaplan & Strömberg, 2003; Kaplan & Strömberg, 2005; Chemmanur, et al., 2009; Tian, 2011).

Some other mechanisms, such as the syndication of investments, the investment structure, and control rights, can also be used to minimize agency risks. Syndication can facilitate risk-sharing, increase portfolio diversification, and potentially enhance deal screening through an additional second opinion (Brander, et al., 2002; Strömberg & Kaplan, 2004; Cherif & Elouaer, 2008). Agency risks can also be addressed using financial contracts, with control theories built upon the incomplete

contracting literature (Kaplan & Strömberg, 2000). Contracts may also serve as a screening instrument. By structuring remuneration of the agent as a function of performance, VCs dissuade less competent agents from entering into contractual agreements (Lazear, 1986; Kaplan & Strömberg, 2000).

According to traditional principal-agent models, the assumption is that the actions of the agent are observable and verifiable by the principal. In control theories, however, it is assumed that actions are observable but not verifiable (Kaplan & Strömberg, 2000). Concerning control rights, these are usually contingent on the performance of the venture, so if the business performs poorly, the VC is given further rights, and vice versa (Tykvová, 2000; Kaplan & Strömberg, 2000). VC control mechanisms concentrate mainly on outcomes such as business performance and finances, rather than the behavior of the entrepreneurial team. This outcome-oriented approach aligns the objectives of the VC and entrepreneur efficiently (Eisenhardt, 1989; Granz, et al., 2020). Control rights can include board rights, buyout options, cashflow rights, exclusivity rights, liquidation rights, veto rights, voting rights, and others (Kaplan & Strömberg, 2000). For instance, board seats can be considered an effective control right that grants VCs a direct role in the governance and decision-making of the venture (Ewens, et al., 2022).

### **3.2 Dynamic Capabilities**

Simply relying on a resource-based view that centers on the internal perspective of an organization by accumulating high-value assets, followed by protecting and leveraging those assets, may not always be enough to stay ahead of the competition. Businesses who exhibited long-term success were those who effectively responded to external changes by adjusting their organizational processes and strategies, while coordinating and redeploying both internal and external competencies promptly. This approach was introduced by Teece et al. (1997) and referred to as “dynamic capabilities”, which is the ability of a firm “to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece, et al., 1997).

Barreto (2010) conducted a systematic literature review on dynamic capabilities as diverse research streams existed and summarized them as an organization's potential to “[...] systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base” (Barreto, 2010).

When applied to the perspective of VCs in the pre-investment phase, dynamic capabilities can be related to the ability to respond strategically to changes in the business environment. This includes

timely and market-oriented identification of investment opportunities, along with flexibility in resource allocation (Teece, et al., 1997; Eisenhardt & Martin, 2000; Lee & Kang, 2015). Theories of dynamic capabilities suggest that possessing greater cumulative experience enables a more adept response to changes (Zajac & Kraatz, 2001; Zollo & Winter, 2002; Baron, 2006; Ambrosini & Bowman, 2009; Darmani, 2015). For VCs, this experience might come from making numerous investments or from working in specific industries, giving them valuable insights into the necessary adjustments required in the internal resource base of the VC firm (Arthurs & Busenitz, 2006).

Information asymmetries also exist between LPs (principals) and VCs (agents), as VCs serve as intermediaries on behalf of LPs. To mitigate these potential agency issues, a contractual relationship is established between both parties (Sahlman, 1990; Balboa & Marti, 2007; Cumming, et al., 2007).

In summary, dynamic capabilities can be considered a multidimensional construct that addresses the question of how firms can master a changing business environment (Edwards, 2001; Barreto, 2010).

### **3.3 Power Law**

Many phenomena in life, whether in theory or practice, may follow a normal distribution (i.e. Gaussian), represented by a symmetrical bell curve. Typically, most data points in this distribution cluster around the average, with fewer points as you move away from it, reducing the frequency of occurrence. In contrast, in early-stage VC investments, the distribution is non-normal and skewed, often following a "*power law*" where outliers, such as highly successful investments, significantly impact the average return (Crawford, et al., 2015; Mallaby, 2022). Descriptive and inferential statistics in entrepreneurship, which generally rely on the normality assumption, can be misleading in this case, as crucial outliers, necessary for understanding the nature and dynamics of that phenomenon, are often treated as anomalies to be removed (Abbott, 1988; Dean, et al., 2007; Andriani & McKelvey, 2007; Aguinis, et al., 2013; Crawford, et al., 2015).

The rationale behind this phenomenon can be demonstrated by examining 7,000 investment data points from Horsley Bridge spanning from 1985 to 2014. It was found that only 6% of the investments yielded a return of at least 10 times the initial investment yet accounted for 60% of all returns. When VCs invest, the focus is not on the potential for failure but on the outcome if the idea succeeds (Evans, 2016). It's the few outliers that generate this highly skewed power law distribution, accounting disproportionately to the overall output of the distribution (Crawford, et al., 2015). Therefore, it's about identifying and owning these extreme outliers which equal or outperform all other investments (Coats, 2024).

## **4. Methodology**

### **4.1 Method and the Research Design**

To investigate the impact of the high-interest rate environment on the selection of funding for early-stage technology-based startups in the German VC market, a qualitative approach was employed which suits the topic (Almeida, et al., 2017). This research approach embraces an inductive-deductive research style (Creswell, 2008). An inductive approach primarily uses “detailed readings of raw data to derive concepts and themes” (Thomas, 2006), and is commonly referred to as “*bottom-up*” and is associated with qualitative research (Younas & Barrett, 2024). As indicated, deductive reasoning draws a certain conclusion based on general theories, often viewed as a “*top-down*” approach (Younas & Barrett, 2024). Employing both deductive and inductive research allows qualitative data to be analyzed in the context of existing theory (Andersson, et al., 2022; Younas & Barrett, 2024). The combination of both research approaches can be seen as abductive, offering flexibility by bridging the gap between deductive and inductive methods (Tavory & Timmermans, 2014; Thompson, 2022).

Semi-structured expert interviews were conducted with VCs to address the underlying research question of the paper (Azungah, 2018). It offers a more “open-ended view of the research process” (Bryman, 2015), allowing the researcher to remain receptive to various forms and interpretations of information (Bryman, 2015). A major advantage of this approach is that it allows for flexibility, as it offers the opportunity to explore one of the predefined questions in more depth with industry experts. (Almeida, et al., 2017).

### **4.2 Data Selection and Collection**

Identification of potential interview partners began via LinkedIn and personal networks. Selection criteria included individuals holding job titles such as “*managing partner*”, “*general partner*”, “*investor*”, “*founding partner*” or “*director*” within VC firms specializing in early-stage firms and operating in Germany. Specifically, potential interview partners were identified who had expertise or involvement in the financing decision-making process and investment experience in early-stage technology-based firms. Potential interviewees were contacted directly through LinkedIn, WhatsApp, and email. Out of more than +200 potential VC interviewees contacted, 12 interviews were successfully conducted. The interviews covered investors from various sectors and industries focusing on investments in Germany in fields such as B2B-tech, energy-tech, health tech, deep tech, and other digital technologies. All 12 interview partners worked in different VC firms with varying experience levels (see Table 1).

<b>Interview Partner</b>	<b>Position</b>	<b>Experience (years)</b>	<b>AUM (€ millions)</b>	<b>Investments (#)</b>
VC1	Founding Partner & CEO	10+	<100	200+
VC2	Investment Analyst	<5	<100	<50
VC3	Managing Partner & General Partner	20+	300 - 400	250+
VC4	Founding Partner & General Partner	15+	1000+	300+
VC5	Investment Manager	5+	600 - 800	100+
VC6	Founding Partner & CEO	20+	<50	50+
VC7	Investment Manager	<5	<50	<50
VC8	Investment Manager	5+	200 - 300	<50
VC9	Founding Partner & General Partner	<5	<50	<50
VC10	Investment Manager	5+	<100	<50
VC11	Investment Manager	<5	600 - 700	200+
VC12	Founding Partner & Managing Director	<5	200 - 300	<50

**Table 1:** Information table of interview partners

**Source:** Own illustration

The interviews were conducted in English and German using the online video conferencing service Google Meet, with the audio data recorded and later transcribed with the consent of the participant. The interviews lasted on average 48 minutes. The choice of online video conferencing was driven by the geographical distance separating the interviewer from the interviewee and the flexibility it offered the interviewee.

## 5. Data Analysis and Empirical Findings

As mentioned above, a qualitative analysis was carried out using semi-structured expert interviews, which were recorded and transcribed to analyze the data in the next step. The obtained information from each interview was clustered into themes and subthemes, with related text passages being assigned accordingly and then further analyzed (Mayring, 2010; Sheppard 2020).

### 5.1 Findings to Environmental criteria

**Overall Investment Sentiment.** All 12 interview partners observed a shift in investment sentiment among both LPs and VCs, noting a general hesitation in the market since the rise in interest rates. However, it was emphasized that this sentiment should be examined more closely depending on sectors (VC1, VC2, VC4, VC5, VC9, VC11) and stages (VC4, VC5, VC9, VC11), as there were exceptions that might not have been influenced by interest rates, or at least not to the same extent. This differentiation and the reasons for it were further explored under the next theme, “competition”, as it directly related to it. VC4, with extensive prior experience in the investment banking industry and now in relationship and fundraising management with LPs, emphasized that “[...] interest rates are the central element around which everything revolves”. Furthermore, VC4

underscored that "[...] not observing, understanding, and incorporating them into calculations is negligent".

***LPs Investment Sentiment.*** Regarding LPs, the most mentioned reason (10 out of 12) for their investment hesitation was caused by a shift in asset class allocation for LPs (VC2 – VC8, VC10 – VC12). Before entering the high-interest-rate environment, LPs faced a scenario of negative interest rates and loose monetary policy. This had led to "cheap" money, and investments had flowed out of relatively low-yield asset classes into more promising alternative investments (VC4, VC6, VC7, VC8, VC10, VC11). VC4 argued that neither the "bond market nor the money market" had yielded anything. As a result, more capital than ever before had flowed into the equity market, with the private market being relatively overweight compared to the public market (VC12). Since the rise in interest rates, investments in venture funds have plummeted. Higher interest rates had prompted investors to reallocate their portfolios, making less risky assets more attractive and reducing the willingness to invest in VC (VC2 – VC8, VC10 – VC12). VC4 had noticed varying hesitation levels among different investor types. Business Angels, wealthy individuals, and family offices tended to be more hesitant, while larger professional institutional investors like fund of funds, pension funds, insurance companies, and bank asset managers showed a more determined approach. VC4 argued that timing the market and hesitating was irrational, reflecting procyclical tendencies and potentially leading to losses in private markets, which were hard to enter and even harder to exit. VC3 and VC11 also underlined this cyclical nature in the VC market. VC4 mentioned that attempting to time the markets might work in public markets, where “[...] you could buy and sell easily, but even there, the concept often fails”, stating that it was “[...] impossible to apply this strategy in private markets”.

Interviewee VC1 described that LPs invested when the sentiment was good. He gave an example that during the COVID-19 pandemic, every time a lockdown occurred, they couldn't secure any investments from LPs. VC3 noted that when examining cycles retrospectively, the optimal vintage years for VC funds occurred when the market was declining, and a new fund was raised shortly beforehand. From the conversations, it emerged that LPs did not directly influence the investment decisions of VCs (VC1 - VC3). VC1 and VC9 also stated that despite increased interest rates, there were no changes in hurdle rates or carry, as LPs either allocated to VC funds or they didn't. However, VC6 cautioned that while raising capital from LPs, these funds represented “[...] commitments rather than immediate liquidity”. As LPs needed to be called upon for investments as needed, VC6 had noted that since changes in the interest rate environment, there had been a rise in the frequency of capital calls where LPs had challenges meeting them.

**VCs Investment Sentiment.** While interest rates had remained positive in the US from 2016 to the beginning of 2020, Europe had long been accustomed to zero interest rates. In 2019, recession fears had emerged, followed by the pandemic, prompting a significant easing of monetary policy. This attempt to artificially delay the consequences had made the transition to positive interest rates even more challenging. Many VCs had been unsettled by the interest rate shift (VC4), leading to a pause and reduction in investments (VC1 - VC6, VC8, VC10, VC12).

Several reasons were identified for why the investment sentiment had become more hesitant. The *first reason* was that VCs found it harder to raise new capital due to LPs reallocating to other asset classes, leading to more cautiousness in deploying new investments (VC2, VC5, VC10 - VC12). Given this uncertainty in the market, VC11 stated that he knew "[...] several hundred-million-dollar VC funds that hadn't made a single investment in 18 months after the interest rate shift". Meanwhile, they had continued to collect management fees, which LPs found not amusing. VC5 claimed that return expectations had changed for LPs, and some VCs could not deliver on these, leading to fewer investments. VC4 noted that "this environment would prevail for a long time", and there were VC firms that were significantly reducing their fundraising targets, stopping their fundraising efforts entirely, or even selling their VC firm altogether, like "La Famiglia".

The *second reason* identified was that refinancing incurred costs, which had curtailed growth (VC4, VC10, VC11), and shaken up various business models, leading to increased default rates for portfolio firms (VC2, VC4, VC6). This had led VCs to prioritize their own portfolios, frequently using bridging rounds rather than taking on new investments (VC6, VC10, VC11). Moreover, VCs had placed greater emphasis on capital efficiency (VC2 - VC4, VC6, VC10, VC12), resulting in a reduced willingness to invest in ventures deemed not capital-efficient (VC7, VC6, VC10).

The *third reason* stated was that higher interest rates had negatively impacted consumer behavior, leading to a lower top-line for corporates and increasing their caution for new investment (VC4). VC11 had observed this investment restraint, which negatively impacted the exit market and further dampened VCs' investment sentiment. He had highlighted "*Distributions to Paid-In Capital*" as crucial metrics in fund valuation that measures actual returns. In an ideal scenario, funds would generate high returns, allowing reinvestment of profits. However, with few exits occurring, VCs are receiving limited returns, reducing liquidity and new investment. VC3 argued that during periods of poor economic sentiment, large corporates tended to become less innovative. Budgets have been frozen, costs have been cut, and employees had become more risk-averse, refraining from pursuing highly innovative projects. This has led to an innovation gap within large corporates, emphasizing

that startups should maintain their radical innovativeness during these crises because, in two to five years, large corporations might face an accumulated innovation vacuum, necessitating new acquisitions.

The *fourth reason* identified was that valuation models had now reintroduced a discount factor (VC4, VC6, VC10), prompting a reassessment of valuations and leading to investment restraint (VC4, VC11). VC11 had stated that VCs sought liquidity for new investments by selling existing holdings in the secondary market, as IPOs and strategic acquisitions were more challenging. However, these sales often occurred at significant discounts, reducing their willingness to sell and diminishing trust in current valuations. VC11 had further elaborated that valuations had seen a significant decline, especially noticeable in Series A financing rounds. Companies that had received funding at peak valuations between 2020 and 2022 had encountered challenges. Even companies that experienced significant growth, such as tripling in value, faced obstacles if their initial valuations were much higher. Investors in new rounds had been only willing to accept valuations that were roughly the same or slightly lower than the previous round, resulting in so-called "*flat rounds*" that had often been insufficient to sustain these firms. In addition, companies experiencing lower than expected growth had often found themselves in "*down rounds*" or structured rounds with liquidation preferences, resulting in significant dilution. Investors, shielded by protections such as convertible loans or uncapped clauses, had often resorted to bridge financing to protect their investments, prioritizing portfolio security over new ventures. This shift in strategy had required tighter management of reserves and had contributed to reduced market activity.

The *fifth reason* identified, unrelated to interest rates, had been the prevailing market uncertainty caused by conflicts and unrest in Europe and the Middle East, alongside the rise in energy costs. These factors had led to VCs being more cautious and less inclined to make new investments (VC3, VC8, VC11). However, all three interview partners had stated that this observation had not been the primary driver of change; it had rather added to it.

**Competition.** Prior to the interest rate shift, the negative interest rates had created an unprecedented period that had inflated the VC market. The surge in liquidity within VC funds had exerted pressure on VCs to engage in investments, subsequently driving valuations upward (VC4, VC6 - VC8, VC11). VC3 and VC4 had observed that before the interest rate shift, there had been a trend of later-stage VCs transitioning to early-stage ones. They stated that this shift had been driven by steep ticket prices, prompting VCs to enter deals sooner, increasing competition in the early stage. VC4 had emphasized that these excessive prices paid should not be equated with the inherent value of the venture. This liquidity had also attracted more competition, as VC8 had mentioned that before the

interest rate hike, many new funds had been raised without a prior track record. Additionally, VC4 and VC8 had stated that numerous large international VC funds, many from the US, had entered the DACH region, leading to intensified competition that had put pressure on valuations. VC2 had described that time as a “hot price game”, where deals had needed to be signed quickly; otherwise, “you were out”.

Since the shift in interest rates, several observations regarding competition have been made.

The *first observation* highlighted is that overall competition has reduced, a view shared by all interview partners. VC8 and VC4 observed an increase in non-European funds withdrawing from the German and European markets. VC2 pointed out that deals tended to be in active fundraising for a longer period, allowing more time before making an investment decision.

The *second observation* highlighted a reduction in competition, which tended to decrease further in the later stages, also reflecting in the valuations (VC4, VC5, VC9, VC11), with VC11 noting this trend for investments with “shorter expected holding periods”. VC11 argued that relatively high valuations in early VC phases (Pre-Seed and Seed) could be attributed to several factors. Many new funds had been established in recent years and were still in their early stages, not yet focused on or experienced with exits and valuations. According to VC11, there was a significant amount of capital in Seed funds that needed to be invested, leading to dry powder and pressure on fund managers to deploy this capital to satisfy investors. Fund managers faced pressure to invest capital rather than return it to investors, especially if they hadn't made many investments recently. Additionally, Seed-phase investments often had a horizon of six or more years until exit, with uncertainty about future market conditions leading to speculation that future valuations might improve. VC3, VC4, and VC11 also noted that there had been no change in later-stage VCs transitioning to early-stage investments since the interest rate shift.

The *third observation* was that there were always trends in history where competition and valuations were high regardless of macroeconomic trends, as seen in “AI”, “Climate Tech”, “Deep Tech”, “Energy Tech”, and “Quantum Computing” (VC1, VC2, VC4, VC5, VC9, VC11). VC2 stated that this had less to do with the interest rate environment and was driven by other factors such as “subsidies”, “market trends”, or “research”.

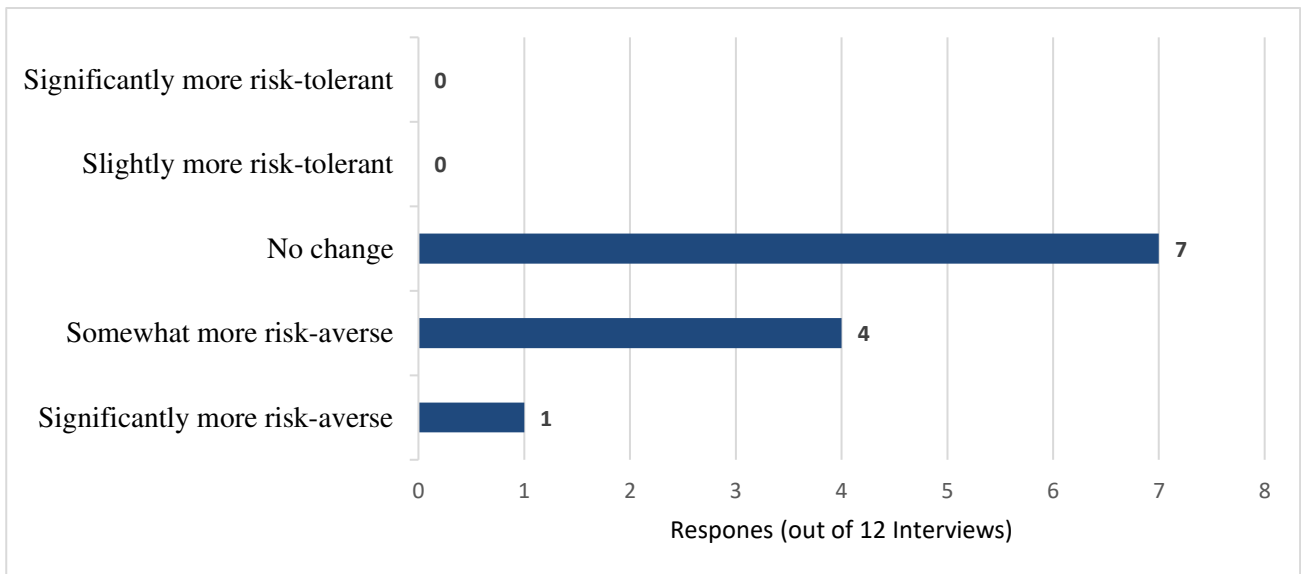
**VC Funding Demand.** When questioning the interview partners about whether they had experienced a change in the demand for VC, opinions were divided. One group said they had not noticed any changes since the interest rate shift (VC1, VC2, VC4 - VC7). For example, VC4 mentioned that they had almost as many pitch decks in 2023 as they did in the year 2021. One

interview partner remarked that it's a combination of reduced supply and demand, therefore remaining the same (VC6).

Another interview partner was unable to provide any figures (VC3), while others observed a decline (VC8 - VC12). VC8 stated that “demand is a function of what you can get”, and many did not seek funding in 2023 due to unfavorable conditions but argued that founder numbers probably stayed the same. VC3 also agreed on the restrained demand behavior in 2023 due to the unfavorable conditions. VC11 stated that because of the cautious sentiment among VCs, a lot of money is flowing into the market currently through state initiatives to encourage founders to seek funding and ease the unfavorable conditions. In contrast, VC9 argued that founder numbers dropped due to stricter funding, leading many to rethink starting businesses. Previously, the startup scene was hyped, leading to unsustainable ventures receiving funding that they wouldn't have received after the interest rate shift.

***Venture Quality Assessment.*** When it comes to assessing the perceived quality of ventures since the interest rate shift, much like VC demand, there was no clear consensus. VC1, VC2, VC5, and VC8 stated they experienced no difference, while VC6 experienced a decline. Meanwhile, others noted a drive towards more qualitative projects (VC4, VC7, VC9, VC10). VC4 mentioned that overall, throughout the entire deal flow, the quality improved, highlighting that 2022 revealed the presence of “tourist investors” and “tourist founders” who weren't fully committed. As the interest rate hiked, these “tourist founders” were “swept out” of the market due to the more challenging conditions, a trend positively welcomed. VC4 argued that this shift created more room for talented founders to thrive and led to better selection for VCs. Similarly, VC9 noted an “automatic selection” occurring, especially in the early stages, with many now reconsidering founding, as it was “hype”, where “nearly everyone” received funding for their ideas, even those lacking sustainable success. However, VC3, VC11, and VC12 noted that in 2023, fewer top-tier ventures pursued external fundraising due to adverse conditions. Despite this, truly exceptional teams still managed to secure funding, making it difficult to determine a clear trend. VC11 remarked that “the quality has balanced out again”.

***Risk-taking behavior.*** The question of how much the risk-taking behavior in the investment decision approach has changed since the interest rate shift resulted in a clear picture, revealing a tendency towards no change and increased risk aversion. The overview of the responses from the 12 interview partners is visualized in Figure 3.



**Figure 3:** Risk tolerance levels

**Source:** Own illustration

The largest group stated that they didn't change their level of risk-taking. VC3 argued that VC is a “hunting game for outliers”, explaining that risk-taking is needed to hit the outliers. VC4 added that a VC who doesn't take risks has no place in the VC market, noting: “If we don't take risks, the LP doesn't need us, they can do it better themselves”. He also emphasized that “[...] out of 10 investments, we lose 8”. In contrast, VC6, somewhat more risk-averse, explained that while theoretically, more risks should be taken to counteract the interest rate increase, in practice, safer business models are preferred. VC11 believed that there was a lot of uncertainty in 2023, making people more risk-averse, yet in 2024, this trend appears to be shifting. However, VC7 noted that after the interest rate shift, more emphasis was placed on profitability because the default risks were lower, and there was less aggressive speculation in the market. It was noticed that prior to the interest rate shift, the negative interest rates created an unprecedented period that distorted risk perceptions in the market (VC3, VC4, VC7, VC8). Due to the high entry valuations required to secure deals, there was a risk that investors might not even recover their investment (VC8). VC4 compared risk-taking in the zero-interest rate phase to a college party stating: "Half an hour before closing time, another drunk guest arrives – that was Tiger Global. You know he's already drunk, throws a round for everyone, and most people have a certain feeling of invincibility until someone falls off the balcony".

**Investment Approach.** All VCs signaled that the investment approach regarding syndication, diversification, and transaction size and volume had not changed. VC1 explained that they didn't drastically change their investment approach toward early-stage startups based on past events. Also, it was acknowledged that continuous adaptation occurs in evolving markets while still maintaining

a consistent approach because consistency over many years yields good performance (VC1). VC4 underlined that the target allocation for the portfolio construction had not changed, stating that they invest where it is feasible and step out where it is not feasible. VC3 explained that the fund model a priori sets certain parameters, such as investment size, which remain unchanged. All respondents indicated that syndication and diversification are typically practiced in the early-stage sector, regardless of an interest rate shift. VC2 explained that diversification also includes expanding innovations in existing markets and pursuing disruptive innovations. In terms of volume, all respondents agreed on the importance of investing in a certain number of ventures for the power law to function. The quantity of investments mentioned varied from a minimum of “20” (mentioned by VC3) to more than “30” investments (mentioned by VC9). However, VC9 and VC11 noted that some major players didn't make any investments in 2023 due to high uncertainty caused by the interest rate shift, raising questions about the effectiveness of this approach. VC4 reiterated that it is impossible to time markets, especially the venture capital market. Therefore, one can only influence which investments to make, develop expertise in certain areas and then buy consistently in the market, essentially practicing dollar-cost averaging.

***Stringency of Selection Criteria.*** The interview partners concurred that they maintained the stringency of their selection criteria, or even strengthened it, in response to the interest rate shift. Those who maintained their stringency level expressed that they were also never involved in extremely risky projects or projects that did not address a significant problem (VC1, VC3, VC4, VC11). Other respondents who believed that the selection criteria became stricter mentioned that higher traction is expected (VC8, VC12), with exceptions for serial founders and hype topics (VC8). Additionally, there is a greater focus on cost structure and a stronger consideration of realistic growth prospects (VC10). VC7 mentioned that they tend to search less for reasons to approve deals and more for reasons to reject them. VC2 highlighted that with a slower pace in deal selection, they have a broader spectrum of companies in the same market, enabling better comparison with competitors and thus allowing for more scrutiny of criteria. Similarly, VC10 described that they were conducting more thorough due diligence.

## **5.2 Findings to Venture specific criteria**

***Entrepreneur and business.*** When asked if priorities have shifted between the entrepreneur and the business, all respondents agreed that the entrepreneur and the management team are still the most important factors regardless of the macroeconomic situation. This was justified by the fact that it is still at an early stage, often consisting solely of product ideas or prototypes with little to no revenue.

For instance, VC8 asserted that the founding team is the crucial variable, and that the underlying business only reflects the quality of the founders. Consequently, they prioritize top teams, even in the face of potential business challenges, based on their conviction in the team's capacity to drive further development. Similarly, VC4 argued that the only thing one can rely on in this stage is the ability to assess the potential of an individual or team. VC7 stated that every founder could have raised capital prior to the interest rate shift. With regard to the entrepreneur and the team, V6 and VC2 explained that VCs are now paying closer attention to whether the entrepreneur has been a founder before and has already had an exit.

VC5, VC9, and VC6 asserted that, in light of the interest rate shift, the business and underlying business model underwent a more rigorous and comprehensive analysis. To provide an example, VC6 argued that prior to the interest rate shift, an excellent salesman who didn't solve a real problem still had a relatively higher chance of finding a willing buyer at a high valuation. VC4 and VC5 provided the example of the delivery services business model, which attracted significant investor money before the interest rate shift. The argument was put forth that there is a move towards deeper technologies and business models with a wider moat that help solve real problems.

Since the interest rate shift, VC10 experienced a high demand for business models that increased sales or reduced costs, but less demand for business models that increase convenience. VC8 mentioned that during the time before the interest rate shift, riskier investments were often made, often away from proven business models. VC3 described the last two years before the rise of interest rates as "total overhype" akin to VC4's depiction of it as "the craziest period where all sorts of, even the most unfit business models, received capital".

The discussion about the importance of start-ups having a proven minimal viable product (MVP) concluded that the requirement for an MVP was either unchanged, or it leaned towards requiring more traction. VC3 and VC4 postulated that at the pre-seed stage, there was still no requirement for an MVP, with VC4 noting that they entered the phase of the so-called "*Founder Market Fit*". Nevertheless, VC6 argued that since the interest rate shift, initial traction was now more often required even at the pre-seed stage. V7 didn't focus on a specific stage in his argumentation, rather he argued that an MVP was simply another proof point for VCs. Whether it was a Letter of Intent (LOI), preliminary contracts, pilot projects, or customers, these were all proof points that had become more important. Since the interest rate shifts, start-ups had to demonstrate more that they had found solutions to specific problems in order to gain the investment of VCs. In agreement with VC7, other interview partners acknowledged the overall growing significance of traction (VC1,

VC2, VC5, VC8, VC10, VC11). However, VC7 maintained that it was still preferable to have either little traction or a lot of traction rather than moderate traction. This indicated the “*valley of death*”, as one might have had medium traction but not as dynamically as desired.

***Target Market and Sector.*** To gain a deeper understanding of how the interviewees perceived the market and the sectors, interviewees were asked whether they had observed any market or sector changes as a consequence of the increase in interest rates. The majority agreed that the market was a pivotal investment criterion and indicated that the shift in interest rates had not caused notable market or sector shifts. For example, VC2 argued that changes were more likely due to subsidies, research, and market trends. However, VC2 also noted an even stronger shift towards SaaS solutions in the B2B market since the interest rate shift. Admitting that companies in the B2B sector had become more cautious with investments, but once secured a contract, it usually had a higher value, longer duration, and higher switching costs. In contrast, VC2 argued that the B2C market was quite saturated, with high customer acquisition costs (CAC) and more uncertain returns. VC9 supported the statement about a shift towards more B2B SaaS solutions, reasoning that it could be scaled faster with less capital. VC2 and VC3 backed the opinion of VC9's opinion that asset-light industries found it easier to secure funding. VC11 expressed skepticism about the general and conventional wisdom that interest rates significantly impacted the preferences of less capital-intensive sectors. For example, increased interest rates should theoretically negatively affect capital-intensive sectors, such as those involved in “AI infrastructure”, “Climate tech”, “Hardware”, and “Quantum Computing”, yet they were thriving. VC11 pointed out that in some founding rounds nearly half of the capital raised was flown directly towards Nvidia chips, which contradicted the expected behavior. Therefore, VC11 concluded that interest rates might not have the same effect for all sectors and industries, as evidenced by the examples of more trendy sectors.

The topic of scalability was also addressed, with VC2 stating that they focused on the broader market because of their target market, which was unaffected by the interest rate shift. Similarly, VC1's view on market specialization remained unchanged, emphasizing that the best markets are those that start niche and then grow large. All interviewees agreed that the market needs to allow for scaling. VC1 also said that the focus on businesses that are scalable to international markets is preferred and unchanged, reasoning that the exit market is not large enough in Germany alone. In contrast, VC6 stated that since the interest rate shift, internationalization was not as high a priority as before the interest rate shift. It used to be possible to raise more capital with this focus, but now it is seen more critically due to associated risks and higher costs.

**Financial Side.** In terms of the financial aspects of the venture since the interest rate shift, 11 out of 12 interview partners attributed a greater significance to cost-related figures, while VC1's perspective remained unchanged. The most frequently mentioned reason for this shift was the necessity for startups to operate more capital efficiently to ensure sustainable economics, especially given the challenging environment for raising funds for the next financing round (VC2 - VC4, VC6, VC10, VC12). VC10 outlined a prior focus on top-line growth but noted a shift in 2022 with the interest rate change, where the cost structure is given much greater consideration. For instance, VC6 observed that there has been a notable shift in focus towards the financing horizon. This shift is of considerable significance, as during the period of negative interest rates, the length of the financing horizon was largely irrelevant. When funds were depleted, the valuations were typically twice as high. Nevertheless, it is now indispensable to ascertain whether the financing horizon will allow for an increase in the valuation and whether additional funds can be raised. In their calculations, VC4 and VC10 included an extension of the startup runway to six months. VC4 asserted that the financing round ideally lasted between 12 and 18 months, with a typical duration closer to 18 months. However, following the interest rate shift, the runway was extended to 24 months.

VC4 added that a process of realization had set in, so all these business models that primarily existed because money was cheaper tomorrow than today, no longer worked. Similarly, VC6 highlighted that business models characterized by excessive cash burn rates and long time periods to exit were no longer viable.

VC7 prioritized profitability to a higher degree again, as this reduced the risk of default. VC10 also mentioned that he was willing to accept a decrease in scalability to preserve the runway. VC6 noted that in Series A, much more attention was paid to break even and burn rate, aspects that were largely irrelevant before the interest rate shift. Even going one step further, VC6 called the current period after the interest rate turnaround the "years of efficiency". VC11 and VC5, for instance, observed that other VCs had regained a better understanding of profitability and financial metrics. It was stated that KPIs such as burn multiple, which lost significance during the hype cycle, were being reconsidered, along with healthy unit economics such as gross margin and positive contribution margin. VC8 observed that prior to the interest rate shift, startups rapidly constructed extensive organizational frameworks, only to realize the product-market-fit alignment wasn't as wished. Nowadays, the focus is more on buying time to pinpoint the perfect product-market fit. Subsequently, resources are allocated accordingly, without immediately ramping up organizational structures. Also, all interviewees stated that they hadn't done any financial forecasts, even after the interest rate change, due to the very early stage at which they invest.

### 5.3 Findings to Investor specific criteria

**Financial Metrics.** Of all interviewees, VC4 was the only one to mention that interest rates were factored into the multiple target calculation, while the others stated that their targets remained unchanged without taking interest rates into account. VC4 highlighted the importance of discount factors in investment decisions for early-stage investors, as they assessed potential future values and ensured returns justified initial investments. It was crucial to evaluate expected future profits, irrespective of whether one may generate more top line or bottom line, particularly when interest rates were unfavorable, as it could erode profitability over time. VC5, VC7, VC8, and VC11 identified that LPs could achieve relatively good returns with minimal risk, challenging VCs business model. Therefore, they argued that VCs needed to stand out by theoretically requiring even higher multiples before investing and taking on more risk to achieve those higher returns, but this didn't happen in practice. Nevertheless, VC5 claimed that the financials and plans would be examined in greater detail. VC10 suggested that a higher expected return was not a viable strategy, as it tended to increase the risk of default through very risky investments. VC11 argued that 3% to 4% interest rates were not an overwhelming factor compared to what they achieved. Also, VC11 argued that their capital balanced out over vintages, meaning they diversified across vintages.

**Exit market.** When asked about the assessment of the exit market and its influence on investment practices since the interest rate change, all interview partners indicated that sentiment in the exit market has worsened. According to VC5, VC7, VC8, VC11, and VC12, investors have become more selective regarding exits, making it harder to sell. VC11 mentioned that many VCs have turned to the secondary market to achieve exits, but these are professional financial investors who scrutinize numbers rigorously and often acquire stakes at significant discounts.

VC1 noted that the interest rate change had no influence on his investment approach. The focus was always on maintaining liquidity and repaying investors, given that the funds run for ten years. He acknowledged not knowing what the market would be like in ten years, emphasizing the importance of the fund's long-term nature. Similarly, VC2 and VC3 expressed that it is not possible to plan the timing of an exit. Either an exit will be successful, or it will not.

VC4 emphasized that they always worked backward in their calculations, having an idea of what the venture could be worth, as otherwise, the exercise wouldn't work. Additionally, VC4 mentioned that this process always involved prospectively preparing and planning possible exit scenarios and coordinating with late-stage and strategic investors. However, since the interest rate shift, VC4 stated that this coordination and potential exit planning had become much more actively pursued

and a more prominent part of the discussion when considering whether to make a certain investment or not.

***Contractual terms.*** The initial question posed to the interviewees was whether the power dynamics between VCs and founders had changed in general following the interest rate shift. All respondents indicated that the balance of power had shifted towards the VCs, creating a buyer's market. VC4, VC5, and VC6 underlined that although a buyer's market generally dominated, there could be exceptions depending on the sector. VC2 noted that bargaining power was stronger, and both VC5 and VC12 mentioned that negotiations took longer.

Regarding the question of whether the use of control mechanisms and overall involvement had changed, the response was that nothing had changed. However, many interviewees mentioned changes to more investor-friendly terms since the interest rate shift, but not in the early-stage. In later-stage investments (VC4, VC7, VC10), and particularly in “rescue investments” there have been significant shifts towards more investor-friendly terms such as 2 to 3 times liquidation preferences and drag-along or exit rights, as well as other rights to mitigate risks (VC4). VC6 observed a general trend in venture capital towards prioritizing liquidation preference over valuation. This strategic move was designed to mitigate devaluation risk while maintaining valuation stability. Nevertheless, VC8 asserted that strong teams need not accept these terms, as the relative market standards have not undergone significant change despite the interest rate shift in the early-stage sector. Additionally, VC8 emphasized that the objective of early-stage VCs is to maximize potential gains, rather than minimize potential losses, by using liquidation preferences. VC11's perspective was that liquidation preferences offer a false sense of security. If an investor agrees to a liquidation preference but subsequently a new bridge financing round with a higher liquidation preference occurs and the investor does not participate, the expected value is zero.

VC6, VC10, and VC11 also noticed an increase in stage financing. However, VC11 criticized this control mechanism, arguing that it puts tremendous pressure on founders. He pointed out that there is always a debate about achieving milestones, which are often perceived differently by various stakeholders. Nevertheless, VC11 observed a tendency towards a greater focus on reporting and governance issues. Investors became more active in scrutinizing reports, closely monitoring cash burn rates, and reacting rapidly to deviations from targets. In contrast to the prevailing sentiment in 2022, which regarded investors as adding no value when occupying board seats or engaging in activities, there has been a shift in this perception since the rise of interest rates. This is evidenced by an increase in the number of investors actively using their board seats to participate in

governance and decision-making processes. Additionally, VC10 also observed a bit more investor control, such as stricter vesting requirements.

## **6. Discussion**

The discussion section links the findings obtained from the interviews with the existing literature and compares them. This section emphasizes and discusses the most significant theoretical and empirical results in relation to the research question. The objective of this research study was to examine the influence of higher interest rates on the selection and funding of early-stage technology startups by German VC firms. The research question guiding this study was as follows: “In what way do higher interest rates impact the selection and funding of early-stage tech startups for German VCs?”.

### **6.1 Environmental criteria discussion**

***Overall Investment Sentiment.*** Both the interviewees and the academic literature recognized the macroeconomic influence of interest rates on the VC market (Gompers & Lerner, 1999; Romain & van Pottelsberghe de la Potterie, 2004b; Bonini & Alkan, 2011; Félix et al., 2013). Interviews and academic works recognized the mutual influence between macroeconomic conditions and VC industry development (Tykvová, 2018). While the literature provided a more theoretical, general overview of these effects, the interviews highlighted practical observations and variations across sectors and stages. This suggested that the effects in practice could be more nuanced and complex in nature. In the literature, the German market, which was addressed directly in the interviews, was not specifically analyzed on this topic.

***LPs Investment Sentiment.*** The rise in interest rates and the associated increase in the cost of capital was recognized as a negative effect on the supply side both by the interviewees and in the literature. The literature showed that LPs reassessed their portfolio allocations in response to rising interest rates, shifting from riskier VC investments to more attractive, liquid, and less risky assets (Gompers & Lerner, 1999; Romain & van Pottelsberghe de la Potterie, 2004b; Cochrane, 2005; Füss & Schweizer, 2012; Bellavitis, et al., 2024). Interviewees also shared the view that the most prominent reason for this drastic decline in venture fund investments was the reallocation of assets from LPs. The empirical findings from the interviewees added depth by highlighting variations among different types of investors and the sensitivity of investors to external events aside from macroeconomic conditions. Also, it showed that the funds raised are representing commitments

rather than immediate liquidity, which might distort the picture when conducting a quantitative analysis about the supply-side effects of VC.

Another reason identified in the literature for LPs hesitancy was their inclination to decrease capital allocation to VC funds in countries facing economic challenges, measured by the unemployment rate (Bellavitis & Matanova, 2017). Only one interviewee addressed this issue, indicating that LPs tended to invest when market sentiment was favorable, which included considering economic conditions. The combination of a generally pessimistic economic outlook and higher interest rates in Germany may have contributed to the withdrawal of international investors from the German market. In addition, Bellavitis & Matanova (2017) argued that LPs investment was negatively affected by the existing amount of VC (dry powder) in the market. This held true particularly in the early stages, where there was an excess of “dry powder” accumulated until the interest rate shift. Prior to the interest rate shift, the private market was relatively overweight compared to the public market. These factors may also have played a role in the LPs' investment sentiment, indirectly or directly influencing the VCs investment sentiment.

***VCs Investment Sentiment.*** The literature suggested that VCs were negatively affected by higher interest rates, as the cost of capital and the opportunity cost of investing in less risky asset classes increased. This, in turn, led to higher return expectations (Romain & van Pottelsberghe de la Potterie, 2004b). From the interviews, it emerged that LPs return expectations had changed, and some VCs couldn't meet them, leading to fewer investments. Sahlmann (1990) incorporated the risk-free interest rate in his required rate of return calculation, which was also partly highlighted by interviewees, as valuation models had changed, affecting the exit market, which in turn affected new investments.

As noted by Füss & Schweizer (2012), when interest rates rise, the level of VC investment is likely to decrease due to a reduction in the number of investment opportunities with a positive net present value. This indirect confirmation was supported by the interviews, which showed that VCs were placing more emphasis on capital efficiency, resulting in a reduction in suitable investment opportunities.

Contradicting to the findings by Gompers and Lerner (1999), Romain and van Pottelsberghe de la Potterie (2004b), Bonini and Alkan (2011), Pacheco, et al. (2012), Félix et al. (2007, 2013), and Bellavitis and Matanova (2017), all of whom showed a positive net effect between interest rates and VC investments, all interview partners confirmed a general decline in total VC funding. The discrepancy between the literature and the interview results could be explained by several factors.

First, the literature findings might have been based on analyses capturing different time periods and regions, possibly not reflecting the specific circumstances observed in Germany during the unprecedented period of zero and negative interest rates.

Secondly, external shocks such as the pandemic, which led to a rapid expansion of monetary policy, and the outbreak of conflicts, may have further increased the magnitude of the shock of extremely rapid interest rate changes, negatively affecting the supply side. Bellavitis and Matanova (2017) highlighted that higher interest rates have a strong positive effect on VC investment, but only under the condition that the supply of VC (availability of VC for investment) is equal to or higher than the demand (search for VC from the founder side). As the interviewees reported a decrease in the supply of VC, the demand side was mixed, suggesting no clear change in demand. This may therefore explain the lack of a net positive effect between interest rates and VC investment in this study.

**Competition.** Both the literature review and the interview findings highlighted how changes in interest rates affected the VC market. Low interest rates encouraged capital inflows, leading to higher competitions, valuations and lower returns, while recent interest rate increases made it difficult for VC firms to justify these valuations (Ramsinghani, 2021; Kaiser, 2024). Similarly, interviewees noted that negative interest rates led to an increase in liquidity, which forced VCs to invest and pushed up valuations.

The findings from Cabolis et al. (2023) that VCs are less likely to specialize in higher competition markets were indirectly supported by the interviews. Later-stage VCs were observed to increasingly engage in early-stage investments before interest rate changes, as competition was high, driving valuations up in later stages and making them less attractive. Additionally, the emergence of international VC funds entering the market was noted. Since the rate shift, there has been a noticeable decrease in competition, particularly evident in valuations, especially at later stages. Additionally, non-European funds have been withdrawn, and deals are now taking longer to materialize. However, in contrast to the literature, interviewees emphasized that there were exceptions in certain sectors where competition and valuations remained high regardless of the interest rate shift.

**VC Funding Demand.** The dual nature of VC demand response to higher interest rates, as highlighted by Félix et al. (2013), was not fully reflected in the interview findings. None of the interviewees mentioned the argument by Füss & Schweizer (2012), Félix et al. (2013), and Bellavitis et al. (2024) suggesting an upward shift in demand when interest rates rose due to higher

borrowing costs from financial institutions, nor was any increase in demand recorded. One reason for this may have been the early stage at which the interviewed VCs were investing, which made it difficult for founders to secure loans due to limited collateral at this early stage, mostly only with a prototype or a business idea. The counterargument to the decline in demand for VC was based on the notion that higher interest rates slowed economic growth by increasing the cost of capital, reducing risk-taking and lending, and potentially influencing the decision of individuals to engage in entrepreneurship (Romain & van Pottelsberghe de la Potterie, 2004b; Pacheco, et al., 2012; Heider, et al., 2019; Félix, et al., 2023; Bellavitis, et al., 2024). Only one interviewee indirectly agreed with this counterargument, stating that fundraising had become stricter, prompting many to seriously consider starting a venture and breaking the hype, especially among founders with unsustainable ventures who would have received funding before the interest rate shift. Another reason not represented in academic literature, but mentioned by interviewees, was that the number of founders remained the same, but the potential decline in demand was attributed to the fact that after the interest rate shift in 2023, demand behavior became restrained due to poorer conditions being offered to founders. Additionally, investors William Craig and Mark Watson from Wellington Management commented that since the interest rate shift led to higher discount rates, valuations decreased, causing higher valuation risk for businesses planning to raise capital. One reason for the potential decline may therefore have been that conditions, particularly in terms of valuation, had deteriorated since the interest rate shift, resulting in fewer founders seeking VC funding.

Also, the statement by Félix et al. (2013) that the demand for VC is either “negatively or positively affected” may be indirectly undermined by those interviewees who did not observe any changes. VC6 suggested that it was a “combination of reduced supply and demand”, resulting in unchanged demand. This assumption by VC6 could be plausible, as a decline in both supply and demand was noted in the interviews.

One interview partner claimed that there have been state interventions due to the poor investment sentiment. This means that it's likely that the exact demand shifts may not be fully discernible, as state interventions may have artificially altered the forces.

***Venture Quality Assessment.*** The venture quality had shown mixed opinions among the interview partners with no clear trends to recognize since the interest rate shift. On one hand, interviewees acknowledging higher quality ventures argued that founders who were not serious or had poor business ideas had been filtered out, while others who were not willing to commit fully to this argument partially refuted the notion of better-quality ventures. VC4 explained that “tourism

founders” referred to those who weren't fully committed to entrepreneurship but were driven by the exceptionally favorable and lax fundraising environment triggered by low interest rates. This injection of capital into the market benefited these unsuitable founders before the interest shift.

However, interviewees also mentioned that the good founders may not have shown themselves due to adverse conditions. Additionally, others identified no changes, while only one interviewee noted a decline.

While the literature did not directly address the quality issue, Füss & Schweizer (2012) point out that in the event that interest rates rise, the level of VC investments was likely to fall as the number of investment opportunities with a positive net present value decrease. This claim by Füss & Schweizer (2012) partially aligned with the interview finding, who stated that since the interest rate change, there had been an automatic selection towards higher quality projects, as business opportunities that were less likely to show sustainable success were directly or indirectly crowded out of the market. Sustainable success potentially also included profitability, which related to the view by Füss & Schweizer (2012) about a positive net present value.

***Risk-taking Behavior.*** The academic literature on risk-taking behavior in specific interest rate environments supports the findings from the interviews. In environments characterized by low interest rates, there tended to be a shift from debt-to-equity investments, potentially incentivizing VCs to pursue riskier investment opportunities (Bernanke & Reinhart, 2004; Nicolò, et al., 2010; Apel & Claussen, 2012; Bellavitis, et al., 2024). One interview partner mentioned that during the time before the interest rate shift, riskier investments were often made, often away from proven business models. The interviewees agreed on this point, noting that the period of low interest rates distorted risk perceptions, thereby fostering a more risk-tolerant approach. This shift resulted in less aggressive speculation in the market, aligning with the findings in the academic literature that investors tend to make fewer risky bets under tighter monetary policy (Bellavitis & Matanova, 2017; Lian, et al., 2019; Yueran & Zimmermann, 2023).

The low-interest-rate environment fueled demand for VC, intensifying competition, which in turn affected valuations. There was a high risk that VCs might not even recover their investment due to the initially high valuations paid. The interview findings align with the academic literature, indicating that high valuations adversely affect returns on investment (Gompers & Lerner, 2000; Gompers & Lerner, 2001a; Michel, 2014). Nevertheless, there were interviews where the level of risk remained the same, emphasizing that risk-taking was a fundamental part of early stage investing. Some interview partners made it clear that many investments made before the interest

rate shifts were predictable failures, arguing that this wasn't risk-taking but rather speculation and irrational investment behavior.

***Investment Approach.*** Interviewees consistently reported that their fundamental investment approaches remained unchanged despite the shifts in interest rates. They didn't change their approach to syndication, diversification, and transaction volumes, as these are classical components of early stage investing. The literature, as highlighted by Crawford et al. (2015) and Mallaby (2022), suggests that early-stage VC investments deviate from the normal distribution, often following a “power law” with significant outliers (Abbott, 1988; Dean et al., 2007; Andriani & McKelvey, 2007; Aguinis et al., 2013; Crawford et al., 2015). The findings of the interviews confirmed this, with all VCs maintaining their transaction volumes to capture the outliers necessary for success. In line with the literature's emphasis on owning extreme outliers (Coats, 2024), interviewees emphasized the role of risk-taking in identifying outliers. Despite the fact that some VCs in the market had neglected to invest for extended periods due to the uncertainty caused by higher interest rates. One interviewee reiterated that it was impossible to time markets, especially the VC market, equating his fundamental investment approach with the practice of dollar cost averaging.

***Stringency of Selection Criteria.*** According to scholarly sources, rising interest rates could induce VCs to become more selective and demand higher returns to compensate for the shift in the risk and return tradeoff. In order to make sure that investments fulfill stricter profitability and risk management requirements, VCs are anticipated to conduct a more thorough and stringent examination (Sahlman, 1990; Füss & Schweizer, 2012; Félix et al., 2013; Bellavitis, et al., 2024). Interviews confirmed that many VCs had indeed increased the stringency of their selection criteria in response to higher interest rates. They now require greater traction, more realistic growth prospects, and stronger cost structures. However, some VCs maintained their existing criteria as they had always had high standards. The overall trend showed a cautious approach with a focus on due diligence and thorough valuation to mitigate risk. The interview results were consistent with the literature suggesting that higher interest rates had led to stricter selection criteria among VCs. This alignment underscored a common understanding that in times of economic uncertainty and higher cost of capital, greater scrutiny and higher standards in investment decisions were essential to ensure the viability and potential success of the startups being funded.

## 6.2 Venture specific criteria discussion

**Entrepreneur and business.** Regarding the question of whether the importance between the entrepreneur (jockey) and the business (horse) has shifted, all interviews emphasized that the founder and their team remained the most important criterion regardless of the interest rate shift. This is also aligned with the findings by Gompers et al. (2020). Both academic literature and interview findings indicated that early-stage ventures had a limited historical track record, making it challenging to evaluate the business. However, the interviews revealed that both criteria, entrepreneur and business, were being examined more closely. Also, closer attention was paid to whether the founder had previously been an entrepreneur or had an exit. This was consistent with Gompers et al. (2010), who highlighted that previous success, such as a prior exit, was favorable. On the business side, a trend towards deeper technologies and business models with a wider moat had been observed. This trend towards high-tech investments and considering technological advancement for early-stage VCs existed prior to the interest rate shift (Hsu et al., 2014). The interview findings showed that since the interest rate shift, there was, in general, a greater focus on proof points, which were also partly identified in the literature (Hoenig & Henkel, 2015; Lahr & Mina, 2016; Muffatto & Ferrati, 2021).

**Target Market and Sector.** Interview findings didn't indicate a significant market or sector shift caused by interest rates; however, more demand was observed for the B2B market, especially SaaS solutions, as they could be scaled faster with less capital. The preference for B2B was justified by its higher contract value, longer duration, and higher switching costs compared to B2C, which had become saturated with high customer acquisition costs and more uncertain returns since the interest rate shift. While there was no literature specifically discussing the impact of interest rates on B2B or B2C markets, SaaS solutions were already the most invested technology before the interest rate shift, as seen in PwC's Venture Capital Market Studies (Honold et al., 2020; Honold et al., 2023). The perspective on the scaling potential of a market had not changed and remained an important criterion, as also highlighted in the literature (Bachher & Guild, 1986; Kollmann & Kuckertz, 2010; Petty & Gruber, 2011).

**Financial Side.** From the interview findings, it became clear that since the interest rate changes, VCs had been more attentive to financial metrics, aiming to avoid the risk of the venture going bankrupt before the next funding round. Additionally, VCs seeking ventures that showed a clear path to profitability. Financial metrics such as runway, burn rates, break-even points, and financial margins were mentioned in detail. Interview findings show that Series A investors look for

investments heading towards break-even and lower burn rates, factors largely irrelevant before the interest rate shift. The implication is that even earlier-stage investors must adjust their investment strategies according to the preferences of later-stage investors. This coordination approach from VCs has also been confirmed by the findings of Nanda and Rhodes-Kropf (2017).

Also mentioned by the interviewees was the shift from top-line growth to capital efficiency, more cautious ramping up of organizational structures, and a generally higher prioritization of capital management. While these financial metrics and the general profitability aspect were also present in academic literature in the context of selection criteria for VCs (Albert et al., 1985; Bachher et al., 1986; Knockaert et al., 2010; Mishra et al., 2017; Mason, 2020; Muffatto & Ferrati, 2021; Block et al., 2021), it wasn't evident how interest rates affected them. However, one could infer that when interest rates increased, the cost of capital also increased (Romain & van Pottelsberghe de la Potterie, 2004b; Pacheco et al., 2012), making financial metrics more important as money was no longer "free". Additionally, a discount factor could be introduced, which reduces investment opportunities when the net present value decreases (Füss & Schweizer, 2012).

In comparison to Gompers et al. (2020), who found that nearly one-third of early-stage VCs did not prepare cash flow forecasts, interviewees mentioned that such forecasts were not used because they made little sense at the early stage.

### **6.3 Investor specific criteria discussion**

**Financial Metrics.** Contrary to Füss & Schweizer's (2012) claim that rising interest rates reduce investment opportunities due to the lower net present value of some investments, 11 out of 12 interviewees indicated that this did not influence their decisions regarding multiple requirements. The same held true for the hurdle rates or carry, as they experienced no changes since the increase in interest rates. Only one interviewee highlighted the importance of discount factors in investment decisions for early-stage investors. This is against the view of Sahlman (1990) and consistent with the findings of Gompers et al. (2016), as VCs mainly use IRR and MOIC and rarely use the NPV approach. Interviewees also mentioned that, in theory, VCs should differentiate themselves by demanding even higher multiples before investing and taking more risks to achieve these higher returns, but in practice, this didn't happen. One reason for this is that higher return requirements increase the risk of default even more, and their investments balance out over vintages where interest rates were lower.

**Exit market.** The exit market and its considerations of limited fund lifespan have always been an important investment criteria for the interviewees. These interview findings are consistent with the

academic literature, which emphasizes a forward-looking view on liquidity and the avoidance of tying up capital beyond the typical investment fund timeframe (Macmillan, et al., 1987; Van Deventer & Mlambo, 2009; Nunes, et al., 2014; Mishra, et al., 2017; Muffatto & Ferrati, 2021). Contrary to Gompers et al. presumption that VCs often adjust for time to liquidity, arguing that longer-term investments require higher returns due to the time value of money or the finite lifespan of investment funds (Gompers, et al., 2020), none of the VCs mentioned this. In fact, it was mentioned that the timing of an exit was not feasible, which consequently undermined the return requirement point. However, the finding from Gompers et al. (2020) that external capital market cycles have a modest influence on VC investment decision-making, while having a greater influence on the timing decision of the exit, is also shared by the interviewees. Interview findings revealed that their coordination and potential exit planning had become much more actively pursued and that many exits are postponed due to poor exit market conditions or low valuations.

***Contractual terms.*** While academic literature doesn't directly discuss the effects of interest rate changes on the principal-agent relationship and contractual terms, it's plausible that higher capital costs have lowered VC investment inflow, dampened sentiment, and heightened investor risks. This is indicated by interview findings and partially supported by the literature (Füss & Schweizer, 2012; Honold, et al., 2023). The response to the increased investment risk identified by some interviews can be mitigated through investor-friendly terms. This observation from some interviews aligns with academic literature, which shows that contractual arrangements are used for minimizing downside risk (Gompers, 1995; Strömberg & Kaplan, 2003; Beck, et al., 2003; Honold, et al., 2023). While interviewees noticed a shift in power dynamics towards VCs, creating a buyer's market aligning with the findings from PitchBook (2024a), they did not observe significant contractual changes in early-stage investments. However, more investor-friendly term changes were noted in later stages including an increase in liquidation preferences and other exit rights to mitigate risks.

However, the lack of contractual changes in the early-stage sector despite the buyer's market shift contradicts the argument that the distribution of cash flow rights between VCs and entrepreneurs varies depending on the relative bargaining power of the parties (Kaplan & Strömberg, 2003; Heughebaert & Manigart, 2012; Tykvová, 2018). One potential reason for this is that competition in the early stage is still relatively high, as indicated by the interviewees, and therefore strong teams do not need to accept more investor-friendly terms. Additionally, it was noted that the objective of early-stage VCs is to maximize potential gains, rather than minimize potential losses, by using liquidation preferences. One interviewee even described liquidation preferences as a false sense of

security, questioning their usefulness, which Kaplan and Strömberg (2000) described as a control mechanism.

Another trend observed by the interviewees includes control mechanisms such as board rights, vesting rights, and stage financing, which mitigate potential future conflicts of interest and hold-up risks, as per the agency theory literature (Sahlman, 1990; Hart & Moore, 1994; Gompers, 1995; Strömberg & Kaplan, 2004; Ibrahim, 2008; Mishra & Zachary, 2014b). Since the interest rate shift, VCs have been more frequently involved in the governance and decision-making processes of the venture, using their board seats to participate, which is seen as an effective control right in the literature (Ewens, et al., 2022).

However, interview findings also addressed the drawbacks such as high costs, complexity, and pressure on the founder from control rights like stage financing, which are also partly mentioned in the literature (Kaplan & Strömberg, 2003; Kaplan & Strömberg, 2005; Chemmanur, et al., 2009; Tian, 2011).

In general, the interviews also revealed that stricter screening and more thorough due diligence are being carried out, partly also due to reduced competition, which allows more time for these processes. These screening and due diligence mechanisms have also been described in theory to minimize agency risks such as adverse selection (Clercq & Manigart, 2007; Mishra & Zachary, 2014a).

***Dynamic Capabilities.*** In the context of the VC landscape, the shift towards prioritizing profitability and portfolio management ahead of new investments can indeed be interpreted as a strategic response to the changing interest rate environment. By placing greater emphasis on profitability, VCs aim to mitigate the risks associated with higher interest rates, ensure the sustainability of their portfolio companies, and reduce capital outflows. Similarly, the changing dynamics of criteria and their weighting, as well as changes in contractual terms, reflect VCs' efforts to improve risk management and protect against potential defaults on their investments.

One interviewee stated that everyone who recognized the opportunity to secure funding more easily in a negative to zero interest rate environment, and perhaps anticipated that lax monetary policy and other factors would fuel inflation leading to higher interest rates, now has a significant competitive advantage in the current interest rate environment. This strategic, anticipatory fundraising was also mentioned by Fisch et al. (2024) and Bellavitis et al. (2024) and aligns with the dynamic capability's theory that Barreto (2010) described as the “[...] propensity to sense opportunities and

threats, to make timely and market-oriented decisions, and to change its resource base” (Barreto, 2010).

Overall, the interview results showed that VCs' responses to the interest rate shift were consistent with the principles of Dynamic Capabilities Theory. Teece et al (1997) finds that firms with dynamic capabilities can respond to external changes by adjusting their organizational processes and strategies, effectively redeploying both internal and external competencies.

However, some interviewees made it clear that they did not drastically change their approach to investing in early-stage start-ups in response to external events such as a rise in interest rates. Nevertheless, they acknowledged that in evolving markets there was constant adjustment, but they maintained a consistent approach because consistency led to good performance. Similarly, the concept of dollar cost averaging was shared by some, indicating that they continued to invest regardless of whether the market environment was favorable or unfavorable. In addition, it was noted that VCs are partly constrained in their actions as the fund model set certain parameters.

#### **6.4 Research Implications**

The purpose of this study is to examine the impact of higher interest rates on VCs' investment behavior and funding decisions for early-stage technology start-ups. While general selection criteria used by VCs have been studied, interest rates have received very little attention in the existing entrepreneur literature, mainly in terms of supply and demand. However, the incorporation of interest rate changes into the selection decision framework is largely unexplored. Furthermore, previous research has mainly focused on the US VC market. Given the recent growth of the German VC market, extending the literature with a focus on Germany can open up new areas of research. The results of this study demonstrate that interest rates have a significant impact on VCs' behavior as well as their decision to invest.

Policy makers can use the research findings to gain a better understanding of the implications of interest rate changes on VC financing and to seek and resolve financing vulnerabilities to further support the entrepreneurial ecosystem in a changing macroeconomic environment. On a practical level, the findings may help VCs to optimize their fundraising, investment and risk management strategies. For entrepreneurs, the findings may provide a better understanding of the decision-making process of VCs to secure financing in a high interest rate environment. From a theoretical perspective, the findings can contribute to the discourse on how macroeconomic changes, in particular interest rates, influence VC investment decisions at the micro level.

## 6.5 Further Research and Limitations

The findings of the study are subject to several limitations, which also offer opportunities for further research on the largely unexplored domain of entrepreneurship and monetary policy. It is difficult to draw robust conclusions from this study, because of the relatively small sample size. Therefore, a larger sample size would be beneficial in the future, especially for testing specific insights of the study using quantitative research. However, as this paper explores an emerging area, qualitative research was deemed necessary to address this complex issue. In addition, conducting a survey would not be adequate as there is not a sufficiently knowledgeable general public cohort to make such a survey meaningful.

Although this study focused on interest rate changes and their impact on the investment behavior and decision making of VCs, other external or internal factors can have distorted the results (Zacharakis & Shepherd, 2007; Champenois & Engel, 2007; Kollmann & Kuckertz, 2010; Petty & Gruber, 2011; Gompers, et al., 2020; Moritz, et al., 2022). Furthermore, the interview partners were often under time constraints, which meant that some issues were only briefly covered.

The subjective nature of this research potentially introduces bias, which can affect the overall findings (Zacharakis & Meyer, 1998). It is also important to consider that VCs decision making may be influenced by heuristics and biases, which can lead to sub-optimal returns (Baron, 1998; Zacharakis & Shepherd, 2001; Zacharakis & Shepherd, 2007). Due to a very large number of selection criteria identified by researchers, the study may have overlooked certain important selection criteria (Kollmann & Kuckertz, 2010). Future research could quantitatively or qualitatively analyze a wider range of selection criteria.

One interviewee pointed out that it is critical to take a long-term view when investing in capital markets, whether private or public. As the findings are based on data that covers a relatively short-term view, they may not fully capture long-term trends and potential dynamics caused by interest rate changes. Future studies could analyze the long-term effects of interest rate changes on the investment decisions of VCs or sectoral movements.

Although VCs' point of view has been discussed, it is important to remember that LPs also have an indirect impact on VCs' decision-making processes. Therefore, more investigation may yield a more thorough comprehension of the underlying relationship during macroeconomic changes.

Interview findings revealed that interest rate changes have different effects on early-stage VCs compared to later-stage VCs. These differences could be further researched, additionally, a comparison between different fund sizes can be made.

Most interviewees had more than five years of experience in VC investing and had experienced several crises and macroeconomic shifts. An interesting question would be whether there are differences between more experienced VCs and newcomers. The interviews revealed that the German VC market has attracted many international VC investors in recent years, some of whom have also changed their strategies since the interest rate shift. The comparison of the decision-making between international VC investors and those based in Germany under macroeconomic changes could also be an interesting topic. Further research might explore more in detail specific aspects identified in this study, such as risk appetite, investment decisions and behavior, sector and business model resilience or contractual terms.

## **7. Conclusion**

In recent years, the German VC market has experienced an unnatural and extraordinary monetary policy of negative interest rates, followed by record high inflation and unprecedentedly rapid interest rate hikes. Since the VC market is influenced by macroeconomic events, the purpose of this dissertation was to investigate the impact of the shift from loose monetary policy to drastic interest rate hikes on the selection and funding of early technology start-ups by German VCs. Using a qualitative approach involving semi-structured interviews with industry professionals, this dissertation explores the complex relationships and dynamics between macroeconomic changes and VCs investment decision-making.

The rise in interest rates has led to market hesitation among LPs and VCs, with impacts varying by investor types, sector, and stage. The inflow of capital into the VC sector has fallen drastically, both in raising new funds as well as exit returns, including a rise in unfulfilled capital calls dampening investment sentiment. A more cautious investment behavior was identified since the interest rate hikes, with a greater emphasis on portfolio firms than on new investments.

Cost-related figures are increasingly looked at, with a revival of profitability and financial metrics, and a clear focus on the path to profitability. As interest rates have made it more difficult for ventures to secure funding, the priority for VCs is to extend their runway, which conversely means reducing their burn rate. The focus is less exclusively on rapid revenue growth, and businesses with high up-front costs are viewed more critically, except for certain market trends. The distorted risk perception prior to the interest rate has developed into a more rational risk appetite since higher interest rates, away from aggressive speculation in the markets. In this way, investors and the underlying business are more closely scrutinized, with a stronger insistence on proof points and in-

depth business models with real problem-solving potential. Higher refinancing costs caused by interest rates are slowing growth, and increasing insolvencies, especially for business models that existed because money was cheaper the next day. Also, the reintroduction of a discount factor is prompting a reassessment of valuations, especially at a later stage with shorter holding periods, often leading to flat and down rounds with significant dilution and worsened exit markets.

Competition and valuations have decreased as one progresses into the financing stages, with international and local VCs increasingly withdrawing from the VC market. Furthermore, lower competition has caused deals to take longer in fundraising, offering more time for VCs to compare the deals and to delve deeper into the investment criteria. Demand for venture capital remained unchanged as compared to the time prior to the interest rate hikes, but the quality of proposals has seen an increase. Return requirements have remained mostly the same, as has the hurdle rate or carry. The higher interest rates have led to a stronger buyer's market, which is already partly reflected in more investor-friendly terms.

Only a preliminary conclusion can be drawn at this stage, as the effects of the interest rate shift are still unfolding. The results of the study reflect that the VC market is currently undergoing a shift towards a healthier and more sustainable development, which will also bring its opportunities again in the future. However, to reach this state, more dedication, discipline and perseverance are required from both VCs and entrepreneurs. Overall, the work contributes to the understanding of the critical impact of interest rates on the selection and financing decisions of VCs.

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## Appendix

The questionnaire is presented first, followed by a summary of all interviews with venture capitalists in the subsequent section. I can provide the complete transcript upon request; however, due to page constraints, it cannot be included in the thesis.

### Interview Questionnaire for Venture Capitalists:

1. Have you observed any changes in investment sentiment?
2. Have you become more selective in your investment decisions?
3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?
4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:
  - (Option A) Significantly more risk-averse
  - (Option B) Somewhat more risk-averse
  - (Option C) No change
  - (Option D) Slightly more risk tolerant
  - (Option E) Significantly more risk-tolerant
5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?
6. Do you apply stricter criteria in the selection process?
7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?
8. Has the significance changed towards startups with an MVP?
9. Have your investment priorities changed towards capital efficiency over scalability?
10. Has your assessment of the target market, industry, or sector changed?
11. Have you noticed a change in competition when pursuing investment opportunities?
12. Has the importance of financial or growth figures changed for you?
13. Have the expected returns, IRRs and MOICs for investments been adjusted?
14. Have you prioritized financial forecasts or used them more frequently?
15. Do you place more emphasis on the exit potential when evaluating potential investments?
16. Has the bargaining power between investors and entrepreneurs changed?
17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?
18. Have you noticed changes in alternative financing options?

## **Interview Questions for Venture Capitalists (VC1)**

- 1. Have you observed any changes in investment sentiment?**
  - LPs invest when sentiment is good
  - During the COVID-19 pandemic, LPs did not commit to investments during lockdowns, but resumed investing when lockdowns ended
  - LPs do not influence VC investment decisions directly
  - There was a noticeable decrease in investments since interest rate rise
  - Experienced investors do not drastically change their approach based on short-term events
  - Successful long-term investment performance is achieved through consistency and adapting gradually rather than making abrupt changes based on recent developments
  - The experienced investor focuses on continuous development and adaptation in response to market evolution
- 2. Have you become more selective in your investment decisions?**
  - not more selective or cautious in the investment decision
- 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
  - experienced no change in demand or quality
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
  - (Option C) No change
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - No, stayed the same
- 6. Do you apply stricter criteria in the selection process?**
  - No, same as before the interest rate shift
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Same
  - No, either he can do it or he can't, you don't invest less money if you think the founder isn't good
- 8. Has the significance changed towards startups with an MVP?**
  - Yes, became more valuable
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - No, changes.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - The target market, industry, or sector changes constantly and is not influenced by interest rates.
  - Always aim to address markets that start as niches and then become huge.
  - There are approximately 18 business models categorically in humanity:
  - These models are inherently scalable.
  - The fundamental principles remain the same over time.
  - Specific company offerings may shift, but the core models do not change.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - 20 years ago, it was much less busy than it is now
  - Of course, the competition has become more intense over the last decade
  - Always certain topics that are of high competition
- 12. Has the importance of financial or growth figures changed for you?**
  - Stayed the same.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - Expected returns remain unchanged.

- The idea that higher hurdle rates are needed due to increased interest rates is questioned.
- LPs typically either invest in venture capital or they don't; there's no need to push for higher returns.
- There's a practical understanding that achieving higher returns isn't straightforward or necessarily feasible.

**14. Have you prioritized financial forecasts or used them more frequently?**

- We don't use financial forecasts

**15. Do you place more emphasis on the exit potential when evaluating potential investments?**

- The focus is on understanding and navigating the market rather than changing strategies based on short-term fluctuations.
- Ensuring liquidity in the fund and repaying investors have always been key considerations.
- Long-term fund structures mean that strategies cannot be easily changed based on short market fluctuations.

**16. Has the bargaining power between investors and entrepreneurs changed?**

- More of a buyer's market.

**17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**

- No changes.

**18. Have you noticed changes in alternative financing options?**

- Transaction costs for acquiring debt have decreased in recent years.
- However, these cost are increasing since the interest rate, leading to more equity financing.

**Interview Questions for Venture Capitalists (VC2)**

**1. Have you observed any changes in investment sentiment?**

- Fundraising for VC firms has become difficult
- LPs have no influence on investment decisions
- VCs have other options than VC

**2. Have you become more selective in your investment decisions?**

- Yes, due to companies facing fundraising challenges.
- Deals remain active in fundraising for longer, allowing more thorough evaluation.
- Companies, struggling with fundraising, focus more on entry valuations, leading to a self-selection process in the market.
- Selectivity increases due to a larger pool of options, though caution prevails over conservatism.
- Stricter criteria: lower valuations.

**3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**

- Quality remains steady; demand hasn't risen.
- More interesting projects, especially in the energy sector, likely due to subsidies.

**4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**

- Somewhat more risk-averse
- Reason: Increased focus on pricing due to lower exits in the energy segment.

**5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**

- Syndication: Always
- Diversification: Generally yes

- Transaction size and volume: No, our fund model dictates certain parameters which remain unchanged.
- 6. Do you apply stricter criteria in the selection process?**
    - Yes, the slower pace allows for a broader spectrum of companies in the same market, enabling better comparisons with competitors.
  - 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
    - Yes, there's more emphasis on the founder and team experience, including past exits.
    - Founder still the most important criteria.
    - Deep tech relies more on academic networks, while entrepreneurial activities are considered otherwise.
  - 8. Has the significance changed towards startups with an MVP?**
    - Higher customer pilot demands.
    - Yes, startups with pilot customers are highly regarded, indicating a strong product-market fit.
  - 9. Have your investment priorities changed towards capital efficiency over scalability?**
    - Yes, multi-stage VCs are becoming more critical regarding capital efficiency, prioritizing good metrics and profitability earlier in the process than before, but scalability is a must.
  - 10. Has your assessment of the target market, industry, or sector changed?**
    - Market trends and government incentives drive attractiveness, not interest rate changes.
    - Both expansion of innovation in existing markets and pursuit of disruptive innovations are pursued.
    - Portfolio includes both localized and internationally scalable products.
    - Changes in utility and energy sectors impact investment decisions.
    - Focus shifted to broader markets due to business model maturity.
    - SaaS B2B models are favored, while B2C faces challenges with customer acquisition costs.
    - Emphasis on research and IP in B2B due to higher contract values and retention rates.
    - Investment inclination towards less capital-intensive models.
  - 11. Have you noticed a change in competition when pursuing investment opportunities?**
    - Reduced competition among VCs noted.
  - 12. Has the importance of financial or growth figures changed for you?**
    - With fundraising becoming tougher, emphasis on these aspects has grown. Avoiding bankruptcy pre-next funding round is crucial, making capital-efficient operations vital.
  - 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
    - No, they have remained the same.
  - 14. Have you prioritized financial forecasts or used them more frequently?**
    - Not in this stage.
  - 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
    - Always the same, must be given 10x and customers who are willing to pay for it and time to exit is always the same
  - 16. Has the bargaining power between investors and entrepreneurs changed?**
    - Yes, more buyer's market, definitive, better bargaining position, more negotiable price and offer, longer negotiation period
  - 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
    - Not really, although the negotiating position has improved
  - 18. Have you noticed changes in alternative financing options?**
    - No changes for us.

## Interview Questions for Venture Capitalists (VC3)

### 1. Have you observed any changes in investment sentiment?

- Venture fund investments have collapsed after interest rate hikes, as has interest in new funds, but is expected to rebound in 2025.
- LPs investments in venture funds are tied to interest rates.
- Asset managers adjust allocations when interest rates change.
- Anticipated market downturn due to interest rate change.
- Seized opportunity to raise fund before downturn.
- Gained strategic advantage by timing fundraising activity.
- VCs have become more selective, and startups are typically more innovative than large companies during crises.
- Large companies tend to be less innovative during crises due to frozen budgets, cost-cutting measures, and a risk-averse culture.
- Many employees in large companies focus on preserving their jobs rather than aggressively pursuing new ideas, leading to an innovation vacuum. Conversely, startups find it exciting to be highly innovative during crises. This creates an innovation gap in large companies, which may need to acquire innovation from startups in the following years.

### 2. Have you become more selective in your investment decisions?

- More selective, yes, but strategy has not changed for us, but you can see that the investment behavior has changed.

### 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?

- Overall, since the interest rate change, there have been less ventures going into fundraising.
- Particularly, high-quality ventures have been cautious, avoiding risks through fundraising.
- Companies have extended their runway, anticipating the challenging conditions of 2023.
- Despite the downturn, strong teams with solid cases continued to secure funding.

### 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:

- No change, VC is a hunting game for outliers, you must take risks to hit outliers; however, there was much speculation before the interest rate change that we did not engage in.

### 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?

- Diversification - always important, unrelated to interest rate changes; portfolio must be diverse to avoid concentration risk. For instance, if you only invest in AI, you have a high concentration risk, but if a specific market takes off, you statistically have a higher probability of investing in outliers because that market produces outliers.
- Transaction sizes and volumes - valuations are decreasing, so rounds are also smaller, from seed to Series D. As valuations decrease, founder dilution must remain constant; power law value increases after having 20 companies in the portfolio.
- Strategy remains unchanged, but investment behavior adjusts accordingly.

### 6. Do you apply stricter criteria in the selection process?

- No, did not change.

### 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?

- More value is not placed on the experience or educational background of the entrepreneur.
- The importance of certain skills remains unchanged.
- There hasn't been a shift in importance between the entrepreneur (Jockey) and the company (horse); the venture has always been the priority.
- However, it must be noted that before the interest rate change, many startups were trying to solve problems that didn't actually exist.

- 8. Has the significance changed towards startups with an MVP?**
  - Pre-seed: No MVP required.
  - Seed: Possibly the first MVP.
  - Series A: Evaluation focuses on scalability.
  - Depends on the phase whether we want to see an MVP or not.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - Same, but many have woken up and are focusing more on capital efficiency.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - Specific types of products or services that have become more attractive due to the increased interest rates: SaaS, must solve significant problems.
  - The decision-making process between expanding innovations in existing markets and pursuing disruptive innovations remains the same.
  - Preference for products tailored to international markets due to limited major exits in Germany.
  - Assessment of the target market, industry, or sector remains unchanged.
  - Investment focus remains balanced between broader and niche markets.
  - No specific business models are considered more promising for successful investment outcomes.
  - Capital-intensive startups have faced greater challenges in the market.
  - Preference for certain monetization strategies and revenue models remains unchanged.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Shift from later stage VCs to early stage began before the interest rate change due to high ticket prices. We need to invest earlier because the Series A rounds were all above \$10 million. Investments are happening earlier and earlier.
- 12. Has the importance of financial or growth figures changed for you?**
  - Capital efficiency was important to us even before the interest rate change, for cases like Gorilla, Flink... They had difficulty raising money because they were unprofitable and capital inefficient. VC has therefore changed.
  - If investment sentiment decreases, increase your runway and reduce costs. The money is no longer lying on the street; it's harder to raise rounds.
  - Bessemer SAAS metric: Paying close attention to the Bessemer SaaS metric, particularly the Rule of 40. If you have 40% growth every year, you don't need capital. If you have 30% growth per year, you need to be 10% profitable.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - No, it did not change.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Not useful in that stage
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - Timing for exits cannot be planned.
  - Follow-on investments are becoming more important.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - Buyer's market after interest rate change.
  - Before interest rate change it was a seller's market, and the sky was the limit.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - No, stayed the same
- 18. Have you noticed changes in alternative financing options?**
  - Yes, revenue-based financing has become strong, and venture debt has become less attractive due to the high interest rates.

## Interview Questions for Venture Capitalists (VC4)

### 1. Have you observed any changes in investment sentiment?

- In markets where interbank business has negative interest rates, central banks increase money supply while simultaneously lowering interest rates, leading to excess liquidity.
- The overflow of money is driven into the equity market, resulting in skyrocketing prices, not values, reaching absurd levels.
- The private sector, including business angels, wealthy individuals, and family offices, has shown some hesitation in investing due to pro-cyclical behavior and the timing markets.
- Professional investors like fund of funds, pensions, insurance companies, and asset managers remain committed to private markets for the long term.
- Economic and business cycles in the USA and Europe differ, with the USA typically leading and experiencing more extreme fluctuations.
- It's essential to consider interest rates as a central element in investment decisions, especially in an environment of near-zero or negative interest rates.
- Klarna, a fintech company specializing in "buy now, pay later" services, struggled to be profitable amid constant interest rate declines, affecting consumer borrowing and default rates.
- Reduced focus on new investments, more emphasis on portfolio management.
- The current interest rate environment is likely to persist for the next two to three fund generations, leading some investment firms to downsize funds, suspend fundraising, or even sell their firms.
- Capital market investments, whether in private or public markets, should always be viewed with a long-term perspective. Short-termism doesn't help here; it must be seen in the context of 3, 5, 10-year comparisons.
- Often overlooked is that the interest rate cycle in the US ended in 2018 or 2019. We already had interest rates of 2-3 quarters of a percent in Q3, Q4 in the USA, while Europe was still at zero. Then recession fears arose, followed by the pandemic, prompting the Federal Reserve System to abruptly lower interest rates.
- Particularly those investing in later stages with shorter expected holding periods. Notably, investors like Tiger Global, who entered the market aggressively, are experiencing valuation corrections.

### 2. Have you become more selective in your investment decisions?

- We firmly believe that you cannot time markets in general, and certainly not the early-stage venture capital market. It's essential to carefully consider the investments you're seeking, focus on areas of expertise, and steadily invest in the market through dollar-cost averaging.
- Our previous fund, active throughout 2019, paid higher valuations toward the end of its investment period than at the beginning. Conversely, our subsequent fund, launched in 2022, is benefiting from much more reasonable valuations now.

### 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?

- What we're also seeing, which is what gives us confidence, is that overall, the quality of the deal flow has improved.
- In 2022, it became apparent that there were not only "tourist" investors but also "tourist" founders, who have now been swept out of the market. This is a positive development, as it makes room for those who are truly committed.
- There's now more space for founders who are genuinely talented to thrive, which benefits everyone involved.

- We've observed some market sectors where valuations are significantly lower, around 30-40% below 2021 levels, while in other areas, such as climate and AI, prices remain high.
  - We have recent data from our own operations showing that in 2023, we received almost as many pitch decks as we did during the crazy year of 2021. While 2022 was noticeably lower, it has started to rise again.
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
- No change
  - A venture capitalist who doesn't take risks has no place here. LPs don't need us if we're not taking risks; they can do it better on their own. We must be clear about this. Out of 10 investments, we lose 8. That's the risk we understand.
  - Risk during the zero-interest phase was like comparing it to a college party: everyone gets drunk, orders drinks, feels invincible until someone falls off the balcony. Before the interest rate change, there was irrational investment behavior among many investors, where we already recognized that many business models would fail, so we didn't jump on that hype.
  - That's part of the risk we take. We enter during the so-called Founder Market Fit phase. With our money, we aim to find Product Market Fit. Then comes Series A money, with which we and the remaining of our funds try to find Product Channel Fit. Then Series B money comes in. With their money, we move towards Execution Risk. The product takes center stage in the decision, but for us, that's completely secondary.
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
- Syndication, diversification and transaction size typically done in our phase.
  - Rare for us to solely fund a round.
  - It's never been easy; ultimately, it's a decision made in conjunction with the startup founder.
  - It's more the norm than the exception; portfolio model must function accordingly.
  - We participate where feasible; if unable to secure a sufficient allocation, we may withdraw.
- 6. Do you apply stricter criteria in the selection process?**
- It's become stricter; answering with a simple yes or no is difficult.
  - There has certainly been evolution; we now seek specific themes and founder personalities, with a more disciplined approach to selection.
  - It's stricter in a sense, but not with clear yes or no boundaries; rather, it's an important learning process for both sides.
  - Good founders know exactly which investors they need, which has taught the VC scene the importance of their own profile and positioning in the market.
  - Despite similarities in deal flow between 2023 and 2021, and selecting the same number of deals as usual, it doesn't feel harder. It's all part of staying engaged in the market.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
- More emphasis on the quality of the entrepreneur (jockey) and their integrity.
  - Experience and background are valued, but integrity is crucial; if there are doubts about the character of the entrepreneur, the deal is terminated.
  - In the early phase, the quality of the entrepreneur is the most important criterion, even more so than the business itself; it must align with the expertise of the investors.
  - Evaluating the potential of the founder is critical, considering factors such as past entrepreneurial experience, but no single criterion outweighs all others; rejection may result from various factors.
- 8. Has the significance changed towards startups with an MVP?**
- Always important
- 9. Have your investment priorities changed towards capital efficiency over scalability?**

- Scalability is always important, as we need the outliers, maybe a bit more towards capital efficiency.

#### **10. Has your assessment of the target market, industry, or sector changed?**

- Certain types of products or services that relied heavily on cheap and easy access to capital have become less attractive due to increased interest rates.
- Business models that are scalable, defensible, and led by impressive founders remain attractive regardless of the interest rate environment.
- The focus remains on innovation in both existing markets and disruptive innovations, as disruption can come from various sources and significantly reshape industries or niches in a shorter time frame.
- While pricing varies, some market sectors are notably cheaper by 30 to 40 percent compared to 2021 levels.
- In sectors like Climate and AI, valuations remain high, with some investors willing to pay any price.
- Concerns arise when valuations exceed realistic growth projections, making it challenging to achieve desired returns.
- Recent investments have included quantum technology, while AI investments require cautious evaluation, often waiting for market validation.

#### **11. Have you noticed a change in competition when pursuing investment opportunities?**

- The trend of increased competition and aggressive investment behavior was observed even before the interest rate shift, exemplified by players like Tiger Global etc.
- There has been a significant influx of capital into venture capital firms in recent years, leading to intensified competition in the market.
- Comparing the rise in capital inflow to the increase in deal flow, it's evident that more money has flowed into VC firms than the proportional increase in deal flow, indicating heightened competition in the VC space.

#### **12. Has the importance of financial or growth figures changed for you?**

- Evaluations have shifted, with funding rounds now expected to sustain startups for longer periods, typically around 24 months compared to the previous 12 to 18 months during the frenzy of 2021.
- There's a recognition that if the funding amount remains constant, the valuation must decrease, or conversely, if the valuation remains the same, the funding amount must increase. These are interrelated factors.
- This shift reflects a return to more normalized expectations.

#### **13. Have the expected returns, IRRs and MOICs for investments been adjusted?**

- Interest rates are a central element that influences everything, and ignoring or misunderstanding them is negligent, especially in a near-zero or negative interest rate environment.
- Discount factors are used in investment calculations to estimate future profits and determine present value, crucial for evaluating investments over time.
- Understanding the impact of interest rates is essential for investors to navigate the market effectively and plan for returns.
- Large investors, including family offices and development banks, prioritize ESG considerations in their investment decisions, contributing to societal debates.
- It's vital for investment managers to understand the needs and constraints of LPs, who provide capital for funds and influence investment strategies.
- With interest rates rising, investors must adapt their strategies to meet return targets while considering the changing economic landscape and LP requirements.

#### **14. Have you prioritized financial forecasts or used them more frequently?**

- Financial forecasts become increasingly important as companies develop.

**15. Do you place more emphasis on the exit potential when evaluating potential investments?**

- Reverse calculation is crucial for financial planning.
- Understanding potential exit scenarios is essential, especially in coordinating with late-stage and strategic investors.
- Exit planning has become more important.
- There's a heightened focus on exit strategies and coordination with late-stage and strategic investors.

**16. Has the bargaining power between investors and entrepreneurs changed?**

- More bargain power for investors.
- It may transition back to a seller's market, but generalizing may not fully capture reality.
- Some sectors are stronger in buyer's markets, while others lean towards seller's markets.

**17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**

- No changes in initial investments; standard terms remain consistent.
- Standard terms include 1x non-participating liquidation preference.
- Later-stage investments have evolved, especially in rescue investments.
- Investors may bring terms like 2-3x liquidation preferences, drag-along rights, etc.
- It's understandable due to the risk involved; catching a falling knife requires caution.
- The golden rule: he who has the gold makes the rules.

**18. Have you noticed changes in alternative financing options?**

- Revenue-based financing has gained traction, while venture debt has become less attractive due to high interest rates.

**Interview Questions for Venture Capitalists (VC5)**

**1. Have you observed any changes in investment sentiment?**

- LPs have alternative investments options that offer higher returns when considering the risk, since interest rate changes.
- Facing challenges in attracting co-investors.

**2. Have you become more selective in your investment decisions?**

- VCs are more cautious and selective in fundraising.
- Preference for smaller volumes and rounds.
- Decreased availability of capital.
- Adjusting return expectations due to low interest rates.
- Alternative asset classes benefit from low interest rates but face new benchmarks.
- Some VCs may struggle to meet adjusted return expectations.

**3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**

- No significant change in overall demand observed.
- Difficulty in accessing funds despite increased demand.
- Good companies still face challenges in securing funding, such as difficulty for angel investors to participate in rounds.
- Rounds were sometimes oversubscribed.
- No major shift in demand observed, especially for deep tech which remains capital-intensive due to research requirements.

**4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**

- Somewhat more risk-averse
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - Always the same.
- 6. Do you apply stricter criteria in the selection process?**
  - Yes, emphasizing the path to profitability.
  - Transaction size varies based on topic and quality.
  - Prioritizing profitability for attracting investors.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Overall package has always been important.
  - Adjusting the value attributed to specific skills.
  - Increased scrutiny on both the team and the business model.
  - Previously focused on hype industries; now prioritizing deeper technologies and problem-solving business models.
- 8. Has the significance changed towards startups with an MVP?**
  - Traction is more important, especially in low-tech sectors.
  - Previously, investors might have been satisfied with a deal regardless of traction.
  - Now, there's a focus on finding traction before making deals.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - Scalability is key in VC.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - No, changes.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Depends on the topic, but if it's the same topic, it has slightly diminished.
- 12. Has the importance of financial or growth figures changed for you?**
  - Profitability is important for other investors, and financial metrics are becoming more important - I see real progress there.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - Logically it should be, but theoretically it's a question.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Yes, financial plans and projections are being scrutinized in more detail, but not real predictable forecasts like in late stage.
  - KPIs are being scrutinized more critically for follow-up investments.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - Stayed the same.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - Yes, it is a buyer's market; thematically specific but generally, negotiations take longer.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - No
- 18. Have you noticed changes in alternative financing options?**
  - Shareholder structure: convertible or venture debt.

## Interview Questions for Venture Capitalists (VC6)

- 1. Have you observed any changes in investment sentiment?**
  - There is still plenty of dry powder that wants to be invested.

- However, this is not money already raised and sitting in accounts, but capital commitments.
  - Funds must call capital from LPs for investments.
  - In the past two years, there have been instances where LPs couldn't meet capital calls.
  - Investing during crises can partly be due to survival bias.
  - Previously, people would invest 200k because keeping it in the bank earned no interest.
  - Other asset classes also became attractive due to zero interest rates, leading to riskier investments that are no longer feasible.
  - GPs felt pressured to invest, pushing valuations higher.
  - Other investments have become more attractive since money isn't free anymore.
  - VC investments and follow-up financing have decreased, impacting the investment climate.
  - Existing startups often struggle to get follow-up financing.
  - Focus has shifted to existing investments, which are harder hit by rising interest rates, leading to fewer new investments.
  - Almost everyone received funding before interest rate shift.
  - Early-stage valuations remain relatively high.
  - Maintaining a minimum valuation is crucial to avoid excessive dilution for VCs.
  - Valuations have remained relatively constant in the early stages due to this factor.
  - However, valuations have significantly decreased in later stages, especially after Series A.
- 2. Have you become more selective in your investment decisions?**
    - Yes
  - 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
    - Over the past two years, the quality of startups has declined.
    - There is a combination of less supply and less demand, leading to no significant change in the demand for VC investments.
    - Founding a startup last year means you're either very bold with a great idea or not thinking clearly, given the challenging capital environment.
    - Differentiation is key: Greentech and AI are still getting funding due to their hype, while deeptech topics also fare well.
  - 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
    - Somewhat more risk-averse, In theory, VCs should be more risk-tolerant, but in practice, they prefer less risky business models.
    - For example, Series A investors now focus on break-even points.
    - Before high-interest rates, only revenue mattered, but now the bottom line is also scrutinized.
  - 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
    - Same.
  - 6. Do you apply stricter criteria in the selection process?**
    - Yes.
  - 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
    - The team was always important, but previously even inexperienced teams got funding. Now, there's a closer look at past founding or exit experience.
    - More emphasis on experienced founders.
    - Greater focus on the company itself. Previously, a great salesperson could secure high valuations. Now, the underlying substance is more critical.
  - 8. Has the significance changed towards startups with an MVP?**

- Pre-seed funding used to be primarily based on ideas rather than revenue. Now, even at this early stage, investors are looking for initial traction or customer acquisition.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - Capital Efficiency is getting more important, but scalability is always more important
- 10. Has your assessment of the target market, industry, or sector changed?**
  - Due to the increased interest rates, local markets have become more attractive, as internationalization entails higher risks and costs.
  - There is less emphasis on disruptive innovations and more on expanding innovations in existing markets.
  - There is a shift towards more sophisticated business models with a focus on DeepTech, but less due to the interest rate development itself and more due to mega-trends.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Still high competition for hot topics, but generally less intense compared to two or three years ago.
- 12. Has the importance of financial or growth figures changed for you?**
  - Yes, capital efficiency is more important.
  - Business models with high cash burn and long exit timelines struggle more now.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - Metrics are scrutinized more deeply now, but no adjustments.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Not useful in early stage.
  - Realistic potential for follow-on investment is considered.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - Stayed the same.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - The buyer market applies broadly, with exceptions for hot topics.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - Shifted focus from valuation to higher liquidation preference.
  - Milestone-based funding gaining popularity.
- 18. Have you noticed changes in alternative financing options?**
  - Revenue-based finance resembles factoring, offering less variability than convertibles.
  - Convertibles often set a "floor" price, but it's typically too low. If equity round fails to occur, conversion happens based on this floor.
  - Thus, a cautious approach to convertible securities advised to avoid significant valuation drops.

## **Interview Questions for Venture Capitalists (VC7)**

- 1. Have you observed any changes in investment sentiment?**
  - Low or negative interest rates drove investors into VC and PE markets, inflating valuations due to surplus capital.
  - Previously, investments prioritized growth over profitability; now, there's a shift towards profitability.
  - LPs have more flexible, liquid options due to higher interest rates, leading to increased risk assessment.
  - Established VCs with good track records find it easier to raise funds.
  - High-quality teams have better access to funding compared to weaker ones.

- 2. Have you become more selective in your investment decisions?**
  - Funding was abundant before the interest rate shift, but now only top-tier companies secure investment.
  - Investors are moving away from speculative bets, emphasizing profitability and prudent capital use.
  - Seasoned investors prioritize strong teams in the early stages to mitigate risk.
  - Ventures with tangible value propositions are favored over those reliant solely on marketing.
- 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
  - Demand has remained consistent, with no significant change in quality.
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
  - No change.
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - No change.
- 6. Do you apply stricter criteria in the selection process?**
  - Tendency to focus more on reasons to reject investments rather than reasons to accept them.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Entrepreneur is always more significant than business.
- 8. Has the significance changed towards startups with an MVP?**
  - MVPs are just one of many proof points VCs look for. LOIs, pre-contracts, pilot projects, and customer traction all play a role.
  - Startups need to demonstrate they've found solutions to specific problems, making various proof points more critical than just the MVP.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - Scalability is the goal, but efficiency is getting very important.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - Focus on AI and sustainability tech sectors has remained consistent.
  - Investment focus hasn't shifted between broader markets and niche markets due to changes in interest rates.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Decreased competition in the market.
- 12. Has the importance of financial or growth figures changed for you?**
  - Startups need to operate more efficiently, it's the year of efficiency.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - To justify reinvestment and differentiate themselves, investors need to take on more risk for higher returns, surpassing market interest rates, however not in practice.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Not helpful in the early stage as it may not even give you planning safety for the next two years.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - Same.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - Buyer Market.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**

- Late-stage investors are increasingly utilizing liquidation preferences to protect their investments.

**18. Have you noticed changes in alternative financing options?**

- No significant changes.

**Interview Questions for Venture Capitalists (VC8)**

**1. Have you observed any changes in investment sentiment?**

- With zero or negative risk-free rates, funds raised without a track record flooded the market, leading to riskier investments.
- Previously, investments were made in deals or niche topics that were not mainstream but often riskier.
- Before, growth at any cost was the mantra, disregarding cash burn. Now, there's a focus on cash efficiency alongside growth.
- Many Series A VCs have made only 1 investment last year.

**2. Have you become more selective in your investment decisions?**

- The double shock of interest rate hikes and the Ukraine situation led to a significant slowdown, causing many to hit the brakes.
- International funds previously invested heavily in the European market pre-interest rate hike, but now some are exiting.
- However, the situation is shifting as these funds need to deploy capital they raised.

**3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**

- Demand has remained the same or decreased slightly, as it is influenced by the availability you get. Therefore, it has likely decreased slightly.
- However, founders number probably stayed the same, as many have been reluctant to raise money under unfavorable terms.
- Quality companies have remained unchanged.

**4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**

- No change, Fund phase matters: Early stages allow more time for value realization, late stages less.
- Realization from existing portfolios is key.

**5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**

- Same.

**6. Do you apply stricter criteria in the selection process?**

- Expect more traction, not just a good team, except for serial entrepreneurs and hyped topics.

**7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**

- Founder teams are crucial variables, and the business model and underlying business give insights into the quality of the founders. It's more about having a top team despite potential problems, believing they can further develop because we trust in their capabilities.

**8. Has the significance changed towards startups with an MVP?**

- Traction has become more important, but it's still preferable to have either minimal traction or significant traction rather than moderate traction, as this is the "value of death." I'm gaining traction, but it's not yet super dynamic.

**9. Have your investment priorities changed towards capital efficiency over scalability?**

- Since the rise in interest rates, capital efficiency has become more important. However, scalability remains the key to success.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - Whether our investment focus has shifted to broader markets or niche markets remains to be seen. There might be a lag effect.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Before the interest rate hike, later-stage investments were already surpassing early-stage ones.
  - VCs who raised funds pre-rate change must prove themselves, although competition appears to be decreasing.
- 12. Has the importance of financial or growth figures changed for you?**
  - Pre-interest rate hike: Heavy focus on building large organizational structures.
  - Realization: Product-market fit might not align with expectations.
  - Current approach: Prioritize buying time to find product-market fit.
  - Strategy shift: Allocate resources based on fit, rather than scaling up organizational structures immediately.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - Institutional investors must question why they invest in a long-term, high-risk asset class that is illiquid compared to other attractive investment options.
  - This reflects a need for justification regarding the allocation of resources to such assets.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Assumptions on forecast of ventures are unpredictable.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - It's always assumed that the company can repay the funds.
  - Selling is currently generally challenging.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - Venture communications reflect a shift towards investor-centric power dynamics.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - High-quality teams often don't need to settle; everything is relative to market standards in the early-stage sector.
  - Their focus is on maximizing upside potential rather than minimizing downside risks, reflecting the entrepreneurial mindset.
- 18. Have you noticed changes in alternative financing options?**
  - Don't know specifically.

## **Interview Questions for Venture Capitalists (VC9)**

- 1. Have you observed any changes in investment sentiment?**
  - Pre-seed and seed stages have seen minimal changes; investors haven't been significantly restrained.
  - However, valuations have become more realistic and investor friendly.
  - Growth investments witness less funding, indicating a shift in investment behavior.
- 2. Have you become more selective in your investment decisions?**
  - Automatic selection has occurred as fewer startups secure funding, especially in the early stages.
  - There's a more cautious approach to starting businesses now, with fewer ventures being initiated compared to the hype-filled past.

- Previously, almost anyone could secure funding for their idea, leading to financing of less sustainable ventures.
- 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
  - There's a decreased demand for VC funding.
  - However, the quality of startups has significantly improved, even though the deal flow remains the same.
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
  - (Option C) No change
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - Same, with fewer than 30 investments, the likelihood of catching an outlier is relatively low in early-stage ventures.
  - Late-stage investments allow for financial analysis, there a handful of investments is sufficient.
- 6. Do you apply stricter criteria in the selection process?**
  - Generally, yes.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Finding teams remain crucial, especially in early stages.
  - However, there's a growing emphasis on scrutinizing the specific business model.
- 8. Has the significance changed towards startups with an MVP?**
  - Always good.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - Scalability is still very important in early stage, but capital efficiency increasingly also.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - There's a preference for AI and B2B software due to their faster scalability with less capital.
  - Traditional e-commerce models, which often require significant initial investment and time to generate revenue, are less favored.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Competition has decreased somewhat, but AI remains a dominant force as before.
- 12. Has the importance of financial or growth figures changed for you?**
  - Previously disregarded, now there's a strong focus on when the company plans to become profitable.
  - While this might not be a concern in the pre-seed stage, it becomes crucial during larger financing rounds.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - All stayed the same and, the hurdle rate remains unchanged, as does the carry-on rate.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - Not useful in early stage.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - Stayed the same.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - More a buyer market now.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - No significant changes.
- 18. Have you noticed changes in alternative financing options?**

- Use of Convertible loan agreements allow for conversion into equity shares during larger financing rounds.

## **Interview Questions for Venture Capitalists (VC10)**

- 1. Have you observed any changes in investment sentiment?**
  - Previously, VC funding was abundant with no shortage of capital and a lower-risk environment.
  - However, with the increase in the risk-free rate and changing market conditions, the attractiveness of investments has shifted.
  - Uncertain market conditions have limited scalability, leading to reduced valuations, shallower due diligence, and an expectation of 18-month runway calculations.
  - There's been a decrease in growth opportunities, leading to more bridge financing demands.
  - LPs are now less willing to invest, resulting in more intense negotiations and reduced investment willingness.
- 2. Have you become more selective in your investment decisions?**
  - Yes, more selective.
- 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
  - Rather less, portfolio has a higher importance
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
  - No change.
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - Stayed the same.
- 6. Do you apply stricter criteria in the selection process?**
  - Closer look on the product, cost structure, realistic growth prospects are essential.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Always the team was important, it needs to be heterogeneous.
- 8. Has the significance changed towards startups with an MVP?**
  - Traction remains crucial.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
  - VCs are now prioritizing profitability and sustainable growth over rapid spending.
- 10. Has your assessment of the target market, industry, or sector changed?**
  - There's more emphasis on optimizing operational efficiency and driving sales growth, rather than focusing on convenience
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Competition has decreased.
- 12. Has the importance of financial or growth figures changed for you?**
  - Need a plan to be profitable, runway must be 18 - 24 months vs. 12
  - Flexibility in cost structure allows for an additional six months of runway, although scalability may suffer.
  - There's a shift from solely focusing on top-line growth to also considering cost structure more closely.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - It is risky to aim for high valuations without creating a solid foundation.
  - This strategy could lead to significant setbacks if things do not go as planned.

**14. Have you prioritized financial forecasts or used them more frequently?**

- No.

**15. Do you place more emphasis on the exit potential when evaluating potential investments?**

- The time horizon for exits hasn't changed significantly; instead, it's shifted towards longer exits.
- There's more emphasis on conducting thorough scenario analyses, focusing on profitability and solid exit strategies.

**16. Has the bargaining power between investors and entrepreneurs changed?**

- It's a buyer's market, negotiations and deal durations are longer due to increasing due diligence requirements.

**17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**

- More focus on liquidity preferences, investor control, and tranche-based investments. However not in early stage.

**18. Have you noticed changes in alternative financing options?**

- Convertible loans are utilized for bridge financing, offering better returns for investors.

## **Interview Questions for Venture Capitalists (VC11)**

**1. Have you observed any changes in investment sentiment?**

- Low-interest-rate environment led to higher valuations and deal volumes.
- Current shift sees less VC investment due to LPs favoring alternative assets.
- PI and TVPI metrics are important for assessing fund performance.
- Fewer exits limit capital for new investments.
- Valuation downturn, especially in Series A rounds, poses challenges for startups.
- Flat rounds and down rounds are common, diluting founder shares.
- Investors protect portfolios, reducing market activity.
- State initiatives inject funds into the market to ease the situation.
- VC investors face challenges as later-stage valuations align with public markets, causing significant declines.
- Early-stage valuations remain high due to several factors:
  - Numerous new funds with uninvested capital pressure to deploy funds.
  - High liquidity in seed funds leads to pressure on fund managers to invest.
  - Uncertainty over future exits leads to speculation that future markets might offer better valuations.
- Despite lower valuations in later stages, early-stage valuations stay elevated.
- Pressure to deploy capital increases as LP dissatisfaction grows.
- Some funds haven't made any Series A investments in 2023 despite having substantial capital.
- Management fees continue despite the lack of investments, causing investor discontent.

**2. Have you become more selective in your investment decisions?**

- There's a trend towards more selective deal selection.

**3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**

- In 2023, many good companies raised internal capital due to unfavorable market conditions.
- Now, however, good companies are going in the market for fundraising out of necessity.

**4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**

- Somewhat more risk-averse
  - In 2023, there was a lot of uncertainty, leading to increased risk aversion among people.
  - However, there seems to be a shift now, with numbers showing a higher willingness to take risks, especially in the early-stage sector, with increasing deal volumes.
  - AI seems unaffected by these shifts. Some sectors are decoupled, especially the top 2 - 5%.
  - Despite this, there were bankruptcies following the peak in 2022, and we can expect to continue seeing them in the market, likely even in the years 2024 and 2025.
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
- No changes. But other investors have down nearly no investments since the interest rate shift.
- 6. Do you apply stricter criteria in the selection process?**
- Honestly, I don't believe we've changed drastically, but we also haven't been involved in extremely risky projects.
  - Others may have developed a better understanding of transactions and financial metrics.
  - Classic KPIs like Burn-Out multiples, which lost importance during the hype cycle, are now being reconsidered.
  - Healthy unit economics such as gross margin and positive contribution margin, which may have been neglected in recent years, are now in higher demand.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
- If there's been a significant shift, the truth is probably that there's been a partial shift.
  - Perhaps we've become stricter, but the focus remains on investing in great founders in great markets. In later stages, from Series A onwards, the numbers must also be good.
- 8. Has the significance changed towards startups with an MVP?**
- There's definitely a renewed focus on traction, but still, there are rough ideas of what MVP state, or Stage Traction for sectors like SaaS, which are quite well-defined, particularly in Series A and Seed stages.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
- Scalability always the main focus.
- 10. Has your assessment of the target market, industry, or sector changed?**
- I'm very unsure if interest rates are causing significant changes in the industries that are currently hyped.
  - Increased interest rates should theoretically be positive for some sectors, like certain Fintechs, but that doesn't seem to be the case.
  - Conversely, they should be negative for particularly capital-intensive companies, especially on the Capex side in the tech sector, like in Quantum Computing, but we're not seeing that.
  - There's a lot of funding in hardware and ClimateTech, which is somewhat inexplicable.
  - AI infrastructure, which is also incredibly Capex-heavy in terms of computing power and chips, is seeing significant funding rounds.
  - It's crazy: you see rounds where 30 to 50% of the funding goes directly into Nvidia chips. It should actually be the other way around.
  - Therefore, I don't believe that interest rates are really influencing the current trends. Current trends are simply always fluctuating.
  - We had the Consumer Waves, Pre-Commerce, Micromobility, and Fintech, which are now less significant. There are new trends emerging, and in two years, it will be something else again, maybe crypto or something similar.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
- There's a reasonable level of competition, not at a hype level, but at a normal level, more like pre-hype.

- There's already a relatively strong competition, especially at the Seed level.
- At Series A, competition tends to decrease as you move into later stages, but not by much.
- There's definitely strong competition that decreases relatively as the phase progresses.
- 12. Has the importance of financial or growth figures changed for you?**
- Yes, looking partly more closely on the cost structure.
- Venture currently secure bridge financing and reduce their burn rate, buying them additional time.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
- No, changes. Interest rates are not a decisive factor compared to overall returns.
- Long-term capital balances out over vintages, with LPs diversifying investments.
- 14. Have you prioritized financial forecasts or used them more frequently?**
- No.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
- Always important.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
- Since interest rate shift a buyer market.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
- More emphasis on reporting and governance in the boardroom.
- Liquidation Preferences preferences is being used especially for downrunds
- Liquidation Preferences can lead to tensions, especially if they are higher than old valuations.
- Increasing investor activity in the board, heightened focus on reporting and financial metrics.
- Investors react faster to deviations from goals and cash burn rates.
- Stage Financing is rare, but in some cases, milestone-based financing is applied more.
- Milestone-based financing can be stressful for start-ups and founders and may not always provide the expected benefits.
- Recommendation: Use milestone-based financing more for difficult cases like bridges, otherwise 6- to 12-month bridges are more effective.
- 18. Have you noticed changes in alternative financing options?**
- Convertible loans have become more popular as they defer difficult valuation questions into the future.
- Venture debt interest rates are high, ranging from 13% to 17%, making it less attractive, especially when repayment starts from day one.

## **Interview Questions for Venture Capitalists (VC12)**

- 1. Have you observed any changes in investment sentiment?**
  - There has been significant restraint in investing, driven by increased interest rates and a downturn in public markets, especially in the technology sector.
  - Family offices experienced a denominator effect, where their public portfolios decreased in proportion to their private portfolios, leading to fewer investments in private markets.
  - LP investments in funds decreased, making it harder for new funds to raise capital.
  - Investors have become more cautious in deploying new investments, affecting both quantity and quality.
- 2. Have you become more selective in your investment decisions?**
  - Yes, more selective.

- 3. Have you noticed a change in demand for VC financing and are you coming across more promising projects?**
  - There were fewer founders seeking funding, with some opting to manage with their own funds due to the challenging fundraising environment.
  - It's unclear whether there was a shift in the quality of startups seeking investment.
- 4. On a scale of 1 to 5, please indicate the extent to which your investment decision framework/approach has changed:**
  - Significantly more risk-averse
- 5. Have your preferences changed in terms of syndication, diversification, transaction size and volume?**
  - No changes.
- 6. Do you apply stricter criteria in the selection process?**
  - Yes, looking closer on financial metrics.
- 7. Has the importance between the entrepreneur (jockey) and the company (horse) shifted?**
  - Entrepreneur and his team are most important as it is still very early, but business is getting also more important again.
- 8. Has the significance changed towards startups with an MVP?**
  - Yes, looking more for traction.
- 9. Have your investment priorities changed towards capital efficiency over scalability?**
- 10. Has your assessment of the target market, industry, or sector changed?**
  - Not that I know, but in general less capital-intensive industries.
- 11. Have you noticed a change in competition when pursuing investment opportunities?**
  - Top deals may be slightly more competitive, but it's uncertain if they are significantly more competitive compared to before the economic shift.
- 12. Has the importance of financial or growth figures changed for you?**
  - Yes, less focus on pure growth, more capital efficiency.
- 13. Have the expected returns, IRRs and MOICs for investments been adjusted?**
  - No, changes.
- 14. Have you prioritized financial forecasts or used them more frequently?**
  - No.
- 15. Do you place more emphasis on the exit potential when evaluating potential investments?**
  - No changes.
- 16. Has the bargaining power between investors and entrepreneurs changed?**
  - Yes, generally more investor friendly but early-stage minimal effect.
- 17. Has the level of control and the use of control mechanisms and the overall involvement in the company you invested in changed?**
  - Some have participating liquidation preferences, which are significantly lower.
  - Valuations and terms are notably more aggressive. More control mechanisms.
- 18. Have you noticed changes in alternative financing options?**
  - Reduced reliance on debt financing. Shifted to alternative financing options to cut costs.
  - Increased equity financing as a result.