Chapter 3 Sustainable Finance in House Bank Relations

Enabling the Effective Use of Sustainable Finance in a Bank-Based Financial System – With Special Consideration of SMEs –

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Abstract

This paper analyzes whether and how the currently implemented sustainable finance incentive mechanism needs to be adapted to and utilize the characteristics of house bank relations, particularly in regard to SMEs, to achieve the desired and necessary sustainability transition investments. The analysis is conducted based on a survey with 700 corporate customers of DZ BANK AG and uses a mixed method research approach to investigate how companies that rely solely on bank-based financing differ in their motivational, implementation and enabling factors to use sustainable finance instruments (SFIs). The results show that they can primarily be incentivized by a potential pricing advantage. Furthermore, they demonstrate a low sustainable finance knowledge and perceive data collection, reporting and insufficient consulting amongst the biggest barriers to SFI use. In regard to their bank relation, less than a third of companies have been recommended SFI use by their bank. To overcome these barriers, they would like to receive information on SFI use, concrete financing offers and are interested in promotional loan use. Based on the findings, the study formulates recommendations on how to ensure an effective use of sustainable finance in a bank-based financial system, as well as how to use the potential of promotional loan programs.

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3.1 Introduction

In December 2019, the European Commission presented the European Green Deal, an ambitious undertaking to make Europe the first climate-neutral continent by 2050 and thereby contribute to the global effort to limit global temperature rise to 2°C (European Commission, 2024a). In September 2020, the European Green Deal was extended to include a 2030 climate target plan with the plan to reduce the European Union's greenhouse gas emissions by 55 % until 2030 (European Commission, 2024b). Both targets are part of the European Climate Law, which entered into force on the 29th of July 2021 (European Commission, 2024c). In order to achieve these sustainability targets, the European Commission (2020) has introduced the sustainable finance action plan to foster investments into sustainable activities. The action plan includes several sustainability regulations meant to incentivize sustainability investments. The two main objectives are to establish a transparent and comparable sustainability reporting, as well as to integrate sustainability criteria into risk assessments (European Commission, 2020).

The currently implemented sustainable finance incentive mechanism, in terms of sustainability transparency and sustainability risk, differs in its effect on companies' motivation to invest into their sustainability transition. Regarding the integration of sustainability risk and potential financial consequences, the existence of a risk differential between green and non-green assets still needs to be proven (Network for Greening the Financial System (NGFS), 2020; NGFS, 2022; Neagu et al., 2024). Consequently, regulatory authorities are hesitant to introduce risk-weighted adjustment factors into pillar I of the Basel framework, such as a green supporting factor (Deutsche Bundesbank, 2023; European Banking Authority (EBA), 2023). In contrast, the increased transparency regarding companies' sustainability performance appears to already have the intended effect. Companies are motivated to invest into their sustainability transition and use sustainable finance instruments (SFIs) by their sustainability reputation and its effect on their financial performance (Bachelet et al., 2019; Tang & Zhang, 2020;

Friede et al., 2015), as well as a potential pricing advantage of SFIs compared to a conventional financing instrument (Berrada et al., 2022; Gianfrate & Peri, 2019; Hinsche, 2021; Kapraun et al., 2021).

Generally, academic and market research suggest that companies are currently primarily incentivized to use SFIs due to a potential pricing advantage, the anticipation of a potential risk differential and the reputational effect of their sustainability transparency (Bachelet et al., 2019; Gerstenberger, 2024; Gianfrate & Peri, 2019; Kapraun et al., 2021). However, companies which are not active in capital markets and thus rely solely on bank-based financing are not exposed to the same sustainability regulations and market environment, which could alter how they are affected by the current sustainable finance incentive mechanism. The same holds for small and medium-sized companies (SMEs). This is crucial, as in the European Union (EU), and particularly Germany, banks-based financing is still prevalent and banks are often the main external provider of financing to companies (Franke & Krahnen, 2017; Schmidt & Tyrell, 2004). Furthermore, SMEs make up 99 % of Germany's companies (Bundesverband mittelständische Wirtschaft (BVMW), 2023). Consequently, in order to achieve the EU's sustainability targets, companies not active in capital markets, including SMEs, need to invest in their sustainability transition.

In fact, the corporate sector has to invest €120 billion annually to achieve the goal of climate neutrality, of which around half, approximately €60 billion annually, have to be borne by SMEs (Gerstenberger et al., 2023). However, current investment efforts indicate a gap of €32 billion in sustainability investments for SMEs alone (Gerstenberger et al., 2023). Moreover, a study by Hinsche (2024) demonstrates that SFI use among companies which are not active in capital markets is statistically significantly lower (7 %) than for companies active in capital markets (26 %). These observations suggest that the currently implemented sustainable finance incentive structure might not work effectively for companies relying on bank-based financing instead of capital markets.

Consequently, the question arises *whether and how the currently implemented sustainable finance incentive mechanism might need to be adapted to companies not active in capital markets, and particularly SMEs.* This paper analyzes whether companies active and not active in capital markets differ significantly in their sustainable finance interests and characteristics, and how the sustainable finance incentive mechanism might need to be adapted accordingly to companies not active in capital markets, to ensure sufficient sustainability transition investments. Furthermore, close and long-term relations between companies and their banks, so-called house bank relations, are a common characteristic in Germany's bank-based financial system (Hackethal, 2004) and could influence the SFI behavior of companies not active in capital markets. Thus, this paper additionally evaluates how the characteristics of house bank relations might be utilized for an efficient SFI use as well. Finally, SMEs not active in capital markets might deviate in their interests and in regard to their established house bank relations, and are thus evaluated additionally.

In order to answer these research questions, this study uses a mixed method research approach and conducted a survey with 700 corporate customers of DZ BANK AG in June 2023. The online survey included questions regarding companies' sustainable finance interest, knowledge and use, as well as perceived barriers and expectations regarding their banks' sustainable finance support. Furthermore, using a mixed method approach, the survey contains both, quantitative and qualitative questions. The response rate was 17.6 % and yielded 93 fully completed surveys. Analyzing the survey data, the quantitative analysis is conducted using correlation and logistic regression analysis, whilst the qualitative analysis is done based on the seven steps thematic content analysis by Kuckartz (2014).

Firstly, the survey results show that companies active and not active in capital markets differ in regard to their motivation to use SFIs. Companies not active in capital markets perceive lower regulatory pressure and slightly lower transition risk. Furthermore, both, companies active and not active in capital markets, believe it to be likely that

credit conditions will be linked to sustainability criteria, whilst they are more hesitant to believe that they could lose financing access should they fail to achieve certain sustainability targets. Moreover, companies not active in capital markets are less likely to benefit from any reputational advantages from SFI use, compared to capital market active companies. Instead, the results indicate that companies not active in capital markets can be predominantly incentivized to use SFIs by a potential pricing advantage. In regard to SMEs not active in capital markets, there is no significant difference in observations, apart from a lower perceived regulatory and transition risk.

In regard to SFI implementation, the analysis demonstrates that companies not active in capital markets have a lower sustainability awareness and sustainable finance knowledge. In fact, only 16 % of companies not active in capital markets have an ESG rating and 17 % were unfamiliar with SFIs before the survey. This is further reflected in their reported perceived barriers to SFI use, which state that particularly data collection and reporting pose a challenge for companies not active in capital markets, as well as insufficient consulting and a lack of experience. Regarding the SME share of companies not active in capital markets, the low sustainability awareness is even more pronounced. None of the companies have an ESG rating and only 50 % have a carbon footprint. Nevertheless, the share of companies that perceive barriers is similar to all companies not active in capital markets.

Taking a closer look at the (house) bank relation of companies not active in capital markets, this paper shows that 47 % believe that their banks can support them in their sustainability transition, whilst 36 % are uncertain about their banks' role. Furthermore, the share of companies that have been recommended SFI use is statistically significantly lower for companies not active in capital markets (28 %) compared to capital market active companies (53 %). When asked to rate their banks' sustainable finance support, the highest share of companies not active in capital markets rates it only as average (48 %). These observations are also reflected in companies' expectations regarding their banks' support. Companies not active in capital markets would

like a clear commitment from their banks and for them to be their sparring partner to acquire financing for their sustainability transition. More precisely, they would like to receive guidance regarding KPI choice and reporting, as well as information on SFI use and concrete financing offers. In regard to SMEs not active in capital markets, the bank support evaluation indicates that none have been recommended SFI use and a lower share of only 33 % that believe in their banks' support.

Finally, the survey also assessed companies' interest, knowledge and use of promotional loans as an alternative sustainable finance instruments to green and sustainability-linked loans. The results show that whilst 57 % of companies not active in capital markets know promotional loans connected to sustainable finance, only 14 % have used one. Nevertheless, the share of promotional loan users is statistically significantly higher for companies not active in capital markets, suggesting that promotional loans could be an effective instrument to support particularly companies not active in capital markets in financing their sustainability transition. Regarding SMEs not active in capital markets, the analysis demonstrates a lower promotional loan knowledge and that none have used a promotional loan connected to sustainable transition investments so far.

Based on the research findings, this paper concludes that the currently implemented sustainable finance incentive structure needs to be adapted to the characteristics of companies not active in capital markets. Furthermore, SFIs need to offer a clear pricing advantage to foster sustainability investments among companies not active in capital markets. A potentially effective, at least temporary, option are promotional loans connected to sustainable finance, as they have a lower sustainability data barrier, compared to green or sustainability-linked loans, whilst offering a clear pricing or risk advantage compared to conventional financing instruments. However, from a social market economy perspective, the preferred option would be to improve the applicability and implementation of SFIs, as well as to establish a link between companies' sustainability and risk performance, thereby

returning to market-based structures, rather than relying on public funds. This would be in line with the overarching aim of sustainable finance to mobilize private sector sustainability investments in addition to public sector sustainability investments.

The paper contributes to the existing literature by using a mixed methods research approach to analyze the differences between companies active and not active in capital markets with respect to their sustainable finance interests and characteristics. It demonstrates that the current sustainable finance incentive mechanism needs to be adapted to companies not active in capital markets and particularly SMEs not active in capital markets, in order to ensure sufficient investments into their sustainability transition to successfully reach the set sustainability targets.

This paper is structured as follows: section 2 explains the desired and current sustainable finance incentive mechanism, incorporating sustainability regulations and research on the existence of a risk differential. Section 3 gives an overview of the German financial system, namely the characteristics of a bank-based financial system and house bank relations. Section 4 begins by developing the research question based on the theoretical background of Section 2 and 3, and subsequently outlines the existing literature on sustainable finance in house bank relations and details this study's methodology and data sample. Section 5 presents the results regarding any differences in motivational, implementation and enabling factors between companies active and not active in capital markets. Moreover, promotional loan use, interest and knowledge among companies active and not active in capital markets is analyzed, and all results are additionally evaluated with respect to SMEs not active in capital markets. Section 6 discusses the findings in terms of existing differences between companies active and not active in capital markets, an effective sustainable finance mechanism, and the role of banks, and particularly regional banks, in relation to SMEs' sustainability transition. Finally, section 7 summarizes the papers' results and formulates a recommendation regarding how companies not

active in capital markets, and particularly SMEs, can be effectively incentivized to invest into their sustainability transition.

3.2 The Sustainable Finance Mechanism

In order to analyze the sustainable finance mechanism in house bank relations, it is helpful to first understand and assess how the sustainable finance mechanism works in capital markets. The following section explains the existing sustainability regulations, their intended effect, as well as how the mechanism is currently incentivizing companies active in capital markets to invest into their sustainability transition.

3.2.1 Desired Sustainable Finance Mechanism

In order to finance the sustainability transition, the European Commission has introduced the sustainable finance action plan, which aims to foster sustainable finance growth (European Commission, 2020). The action plan encompasses several sustainability regulations to redirect capital flows towards sustainable economic activities. The two overarching goals of sustainable finance regulations can be summarized as establishing transparency and comparability in regard to companies' sustainability performance and integrating sustainability criteria into risk assessments of financial institutions. Thereby, they are the main drivers meant to incentivize sustainable investments and are further discussed in the following sections.

By making companies' sustainability performance transparent and comparable, whilst simultaneously requesting financial institutions to incorporate sustainability criteria into their risk assessments, sustainability becomes an influential factor in investment and credit decisions of investors. Consequently, companies are incentivized to invest in their sustainability transition and thereby improve their sustainability performance. This is supported by the use of sustainable finance instruments, such as green or sustainability-linked bonds, which offer companies the possibility to invest in their sustainability transformation

whilst obligating them to credibly and transparently communicate their progress to their investors.

3.2.1.1 Transparency & Comparability

In order to establish transparency and comparability in regard to companies' sustainability performance, the European Union has introduced several sustainability disclosure regulations, as well as a unified classification system for sustainable activities. First, in order to establish a common definition of sustainable economic activities for companies and financial institutions, the EU has developed the EU Taxonomy, which entered into force on July 12th 2020 (European Commission, 2024d). Moreover, since January 5th 2023, the EU requires all large and listed companies to report on their sustainability performance according to the Corporate Social Responsibility Directive (CSRD) (European Commission, 2024e). The first CSRD reports will be due 2025 for the financial year 2024 and over time will be rolled out to apply to smaller companies as well[20]. Finally, the EU also introduced the Sustainable Finance Disclosure Regulation (SFDR), which applies to financial market participants and advisers (European Commission, 2024f). The SFDR requires financial institutions to report on their sustainability performance on both, the entity and financial product level (European Commission, 2024f). This establishes a unified sustainable classification system of investment products and thereby advances the integration of sustainability criteria into investment decisions.

20 For the financial year 2024, the CSRD applies to all large public-interest companies that already had to adhere to the non-financial reporting directive, and for the financial year 2025 to all large companies that fulfil two of the following three criteria: they have a net turnover of more than €50 million, total assets of more than €25 million or more than 250 employees. Finally, for the financial year 2026, the CSRD applies to all listed SMEs (European Parliament, 2022).

3.2.1.2 Sustainability Criteria in Risk Assessments

As a second driver to incentivize sustainable investments, the European Banking Authority (EBA), the European Central Bank (ECB) and the Federal Financial Supervisory Authority (BaFin) have introduced several recommendations and regulatory adjustments requesting financial institutions to incorporate sustainability criteria into their risk assessments.

In 2019, the ECB published guidelines and recommendations on the definition and integration of climate-related and environmental risk. The guide states that the ECB expects banks to incorporate climate-related and environmental risk into their risk management, including credit, operational, market and liquidity risk, as well as scenario analysis and stress testing (ECB, 2020). Subsequently, the ECB conducted a climate-risk stress test in 2022, in order to assess banks' progress regarding the integration of climate-related risks according to the guide (ECB, 2022a). The stress test did not have any effect on banks' Basel framework pillar II guidance, which serves as an indicator for banks' level of capital that needs to be maintained as a stress buffer, additionally to their binding capital requirements (ECB, 2022a). However, following the stress test results, the ECB (2022b) announced that it requires banks to reach full alignment with all expectations set in the ECB's guide on climate-related and environmental risk by the end of 2024.

For banks that are supervised on a national level, so-called less significant institutions (LSIs), the BaFin published a guide on how to deal with sustainability risks for German banks (BaFin, 2020). The guide only entailed non-binding recommendations on, for example, the integration of sustainability risks into risk management practices. However, these recommendations became legally binding in the newest publication of the minimum requirements for risk management (MaRisk). The publication states that banks are to incorporate ESG risks with "due and explicit account" into their risk management practices, including for instance the loan granting process and annual credit risk classification (BaFin, 2023, p. 10).

The regulatory adjustments by the ECB and BaFin primarily target pillar II of the Basel framework, which focuses on qualitative banking supervision and banks' risk management (Deutsche Bundesbank, 2023). Pillar III, which encompasses supervisory disclosure requirements is targeted by EBA's binding technical standards on ESG risk disclosure. The standards include comparable key performance indicators such as the green asset ratio (GAR)[21] and the banking book taxonomy alignment ratio (BTAR), which aim to establish transparency regarding bank portfolios' sustainability (EBA, 2022).

However, the integration of sustainability risks into pillar I, which calculates banks' capital requirements based on banks' respective credit, operational and market risks, is still being discussed (Deutsche Bundesbank, 2023). A potential adjustment could be the introduction of a green or brown supporting factor, which would decrease capital requirements for green assets or increase capital requirements for environmentally harmful assets respectively[22]. In its newest publication, EBA (2023) states that they recommend to enhance the existing risk categories of pillar I by incorporating environmental and social risks. But, at this point in time, the EBA (2023) does not support the introduction of a green supporting or brown penalizing factor.

3.2.2 Current Sustainable Finance Mechanism

Transparency and reporting regulations are coming into action, as large and listed companies will need to report on their sustainability

21 The GAR measures lenders' asset share invested in sustainable activities. However, only CSRD-level sustainability reporting measures are used to calculate the GAR. Therefore, SMEs that do not report their sustainability performance according to CSRD guidelines yet, cannot be included in the ratio. Instead, the BTAR can be used, which includes SMEs sustainability data based on bilateral data exchange (Deutsche Bank, 2022).

22 In the case of a green supporting factor, prudential capital requirements could be decreased through lower risk weights or the application of an adjustment factor smaller than one to risk-weighted assets (EBA, 2023). For a brown supporting factor, higher risk weights would be used or an adjustment factor larger than one would be applied to risk-weighted assets.

performance in line with the CSRD for the first time in 2025 for the financial year 2024 (European Commission, 2024e) and since January 2023 large financial market participants already have to comply with the SFDR (European Commission, 2024f). Beyond increasing sustainability performance transparency, the integration of sustainability criteria into risk assessment methods is progressing as well. Nevertheless, the existence and mechanism of a link between sustainability and financial risks are still being investigated and discussed. The existence of a risk differential between green and non-green assets and activities, however, is a necessity to warrant further regulatory adjustments, such as a closer risk monitoring and subsequently higher regulatory capital requirements (NGFS, 2020). The following section presents the current research on a potential risk differential, as well as the respective regulatory perspective.

3.2.2.1 Existence of a Risk Differential

A risk differential between green and non-green assets could exist due to non-green assets' higher exposure to transition risk. However, in a survey conducted with 49 banks worldwide, the Network for Greening the Financial System (NGFS, 2020) finds that the majority of financial institutions do not have sufficient evidence to prove the existence of a risk differential between green, non-green and brown assets. Also, the research findings of credit rating agencies fail to establish a clear link between a company's final credit rating and the ESG credit factors that could affect a company's creditworthiness (NGFS, 2022). Moreover, banks' motivation to green their balance sheet appears to be currently guided by the desire to mitigate reputational, business model or legal risks, rather than based on a distinct relation between their portfolios' greenness and credit risk (NGFS, 2020).

Nevertheless, several academic studies analyzing a potential link between sustainability and financial risks find some supporting evidence. Analyzing the relation between firms' climate metrics, such as carbon emissions, and credit risk measures, Carbone et al. (2021) find that

higher emissions are associated with higher credit risk. Furthermore, disclosing emissions and setting emission targets can be observed in line with a lower credit risk. This is supported by Saffiulah et al. (2021), who also detect a negative impact of firms' carbon emissions on their respective credit ratings. Further studies also suggest a relation between a company's emissions and distance-to-default (Kabir et al., 2021; Capasso et al., 2020). However, a most recent study by Neagu et al. (2024) fails to detect the existence of a clear risk differential, as no significant credit risk reduction for green loans compared to conventional loans is found. Generally, research on the existence of a risk differential is still inconclusive and regulatory authorities so far take the lack of evidence regarding a risk differential between green and non-green assets and activities as a baseline for their decision-making (Rismanchi et al., 2022).

3.2.2.2 Sustainability Risk Regulations

In line with the uncertainty regarding the existence of a relation between sustainability and financial risks, authorities are so far cautious to introduce financial consequences, such as a green supporting factor, linked to financial institutions' sustainability risk performance indicators, such as the GAR for banks. Based on academic literature and a public consultation conducted in 2022, the European Banking Authority (EBA, 2023), decided that the current empirical evidence on the existence of risk differentials is not sufficient to warrant the introduction of specific risk-weighted adjustment factors into pillar I of the Basel framework, as explained in section 2.1.2. Instead, environmental and social risks should be integrated into the existing internal market and credit risk models of pillar I, in line with the sustainability risk integration into risk management and supervision method of pillar II and market transparency measures under pillar III (EBA, 2023).

Some of the biggest challenges in regard to analyzing and detecting a potential risk differential are the lack of harmonized data, both in terms of quantity and quality, a lack of internal resources, as well as

classification difficulties, such as the classification at activity or asset level rather than company level and the heterogenous methods of financial institutions (NGFS, 2020; NGFS, 2022; EBA, 2023; Walther, 2023; Deutsche Bundesbank, 2023). Consequently, the current priority for financial institutions is the identification of a potential link between sustainability and financial risks, understanding whether markets already price environmental risks, and further promoting the integration of sustainability measures into their own risk assessments (EBA, 2023). Nevertheless, the European Banking Authority leaves the door open for potential pillar I adjustments, should a clear link between sustainability and financial risk be established (EBA, 2023).

3.2.2.3 Reputation and Pricing as Additional Motivational Factors

As explained above, the existence of a risk differential between green and non-green assets is still to be proven and regulatory authorities are thus cautious to introduce measures that would introduce direct financial consequences linked to sustainability performance. However, even though the market is still uncertain regarding the link between sustainability and financial risk, companies and financial institutions are already using sustainable finance instruments. This might be due to the anticipation and thus preparation for a proven risk differential and subsequently regulatory adjustments.

Nevertheless, research is pointing towards additional motivational factors, namely public pressure for companies and financial institutions to become more sustainable, as well as the potential existence of a pricing advantage of sustainable instruments compared to conventional financing instruments. In recent years, climate change awareness has increased and companies, as well as financial institutions, have been moved into the limelight regarding their sustainability performance. A company's sustainability performance is becoming transparent due to increased sustainability disclosure regulations and can have an effect on its financial performance (Friede et al., 2015), for instance stock price

and stock liquidity (Tang and Zhang, 2020), as well as on employer attractiveness (Bachelet et al., 2019).

Furthermore, the effect of a company's sustainability reputation can be both, positive or negative. Greenwashing controversies are the most prominent example how a company's negative sustainability image can also impact its general public image. However, in regard to sustainable finance, companies have also discovered the potential effects of a positive sustainability reputation, using sustainable finance instruments to communicate their transition willingness and strategy (Bachelet et al., 2019). Moreover, research shows that sustainable finance instruments can, in some instances, have a greenium, a green premium, which means that the yield is slightly lower compared to a conventional finance instrument with the same characteristics (Gianfrate & Peri, 2019; Hinsche, 2021; Kapraun et al., 2021).

Overall, academic and market research suggest that companies active in capital markets are currently primarily incentivized to use sustainable finance instruments due to the anticipation of a potential risk differential, a potential pricing advantage and the reputational effect of their sustainability transparency. These drivers in turn are fueled by the implementation of sustainability disclosure and risk assessment regulations. But how does the incentivization scheme work for companies that are not active in capital markets, relying solely on (house) bank financing, and are thus for instance not (yet) exposed to sustainability disclosure regulations already mandatory for capital market participants?

3.3 German Financial System

Before analyzing the above explained sustainable finance mechanism in house bank relations, the following section gives an overview of the main characteristics regarding a bank-based financial system and a traditional house bank relation. Furthermore, this section describes how small and medium-sized companies' financing needs and relations might differ compared to large companies.

3.3.1 Germany's Bank-Based Financial System

Generally, financial systems can be classified as market or bank-based. Germany, as well as other European countries, are known for their bank-based financial systems, whilst the United States is known for its market-based financial system (Allen & Gale, 2000; Franke & Krahnen, 2017). In a bank-based financial system, banks tend to have a more important role in regard to financing and saving than the organized capital markets and other financial intermediaries (Allen & Gale, 2000; Behr & Schmidt, 2016). In fact, banks are often the main external providers of financing to companies (Schmidt & Tyrell, 2004).

The German financial system, which will be the focus of the analysis of this paper, is classified by a three pillar system including private commercial banks, savings banks and cooperative banks (Behr & Schmidt, 2016)[23]. The first pillar consists of three big banks, Deutsche Bank, Commerzbank and UniCredit, as well as 237 smaller or foreign private credit institutions (Deutsche Bundesbank, 2024). The second pillar consists of 354 legally independent, municipality sponsored small and medium-sized savings banks and 6 Landesbanken (Behr & Schmidt, 2016; Deutsche Bundesbank, 2024). Finally, the third pillar comprises 694 local small and medium-sized cooperative banks and the central financial institution DZ BANK AG (Behr & Schmidt, 2016; Deutsche Bundesbank, 2024).

Both, savings and cooperative banks are not strictly profit-maximizing entities (Allen & Gale, 2000; Schmidt & Tyrell, 2004). Savings banks are institutions under public law, which means that they have a strong tie to public bodies such as municipalities and districts, whilst still being legally and economically independent (Deutscher Sparkassen- und Giroverband (DSGV), 2017). Furthermore, they follow a public mandate with the main purpose to serve the common good by providing financial access to all private customers and supporting the development of local businesses (DSGV, 2017). Cooperative

23 Other banks, such as promotional banks are considered in a fourth pillar (Behr & Schmidt, 2016).

banks are member-owned and their main purpose is to support the business of their members (Schmidt & Tyrell, 2004).

Furthermore, savings and cooperative banks adhere to the regional principle[24], which means that banks can only operate in their designated region (Schmidt & Tyrell, 2004; Behr & Schmidt, 2016). This in turn leads to low competition within their respective pillars, but to a high competition between the cooperative and savings bank pillars (Schmidt & Tyrell, 2004; Fischer & Pfeil, 2004). Overall, savings (23 %) and cooperative (17 %) banks make up 40 % in terms of total assets of German banks[25], whilst 46 % are private and exclusively profit-oriented (Deutsche Bundesbank 2024; DZ BANK, 2023).

3.3.2 The House Bank Model

A close and long-term relation between companies and their banks is called relationship banking or house bank model (Hackethal, 2004; Behr & Schmidt, 2016). A house bank model can be characterized by a long-term relationship between the respective company and bank. In Germany, such a relation exists on average for 29 years for companies' most important bank and 23 years for the second most important bank (Hainz & Wiegand, 2013). The relation takes time to grow (Hackethal & Schmidt, 2000) and thereby leads to a strong trust between companies and their house banks (Fuest et al., 2020). Furthermore, the house bank relation is known for its high exclusivity (Elsas, 2005), as companies, depending on size, often only have one or two house banks. This bank is not necessarily the only bank, but the main bank, with the closest relation and which provides all core services in terms of payment services, lines of credit and financing (Hainz & Wiegand, 2013; Elsas & Krahnen, 2004). Additional characteristics of a house

24 In the following analysis, the term regional bank refers to banks that adhere to the regional principle, which are predominantly savings and cooperative banks, but can also be private banks (Deutsche Bundesbank, 2024).

25 The remaining 14 % consist of mortgage banks, building and loan associations and banks with special, development or other central support tasks (Deutsche Bundesbank, 2024).

bank relation include the repetitive use of financial services, such as credit financing, personal support and an often small distance between the house bank and the companies' headquarters (Hainz & Wiegand, 2013; Handke, 2011).

As a further advantage, a house bank relation can overcome information asymmetry between companies and their banks. In a bank-based financial system, information is predominantly private, but banks require a high level of information, including proprietary data, to assess companies' creditworthiness and provide financing (Schwartz & Gerstenberger, 2019; Schmidt & Tyrell, 2004). This is particularly crucial in bank-based financial systems, as an individual bank's view on a company's creditworthiness determines the lending decision (Hardie & Howarth, 2013). In fact, banks often have difficulty assessing companies' creditworthiness, due to missing credit history, or are faced with high costs to acquire the necessary information (Schwartz & Gerstenberger, 2019). This is termed information asymmetry and in turn can lead to interest rate risk premiums, higher security and documentation requirements, as well as generally more expensive or scarer credit offers (Schwartz & Gerstenberger, 2019).

The information asymmetry between companies and their lenders can be overcome through house bank relations, as the long-term duration and exclusivity of the relation incentivize the bank to obtain the required and costly information to assess the company's creditworthiness (Handke, 2011). This in turn can improve a firm's access to credit, as well as their financing conditions (Schwartz & Gerstenberger, 2019; Hainz & Wiegand, 2013). Nevertheless, the presence of information asymmetry and subsequently high cost intensity to acquire the necessary credit information can also lead to a house bank developing an information monopoly (Sharpe, 1990). Having several bank relations can strengthen companies' bargaining power against each individual bank, which increases competition (Hainz & Wiegand, 2013). Therefore, having only one house bank can negatively affect companies' credit conditions. This can be particularly relevant for smaller and medium-sized firms, which tend to have a smaller financing demand

and thus often have only one house bank, as discussed in the next section.

3.3.3 SMEs and the House Bank Model

Traditionally, big banks, as part of pillar one's private banks, used to be house banks of large firms, being their main provider of financial services, such as credit lending and investment banking, as well as playing an important role in the governance of the respective firm (Behr & Schmidt, 2016). However, this traditional house banking role was discontinued by big banks around 2000 and they focused on the international markets of investment banking instead (Behr & Schmidt, 2016; Schmidt, 2019).

In contrast, savings and cooperative banks have always been and still are focused on lending to SMEs (Behr & Schmidt, 2016). In fact, SMEs often have one or two house banks that implement all their financing (Behr & Schmidt, 2016). A study by Schwartz and Gerstenberger (2019) analyzing house bank relations in 2018 shows that 93 % of SMEs in Germany have a primary credit institution in the form of a house bank. These are primarily savings or cooperative banks, as they are market leaders in lending to SMEs (Behr & Schmidt, 2016). As universal banks, they offer a wide range of banking services (Schmidt & Tyrell, 2004), which allows companies to obtain all their banking services from one institution (Behr & Schmidt, 2016). The duration of the house bank relation is on average 20 years and 80 % of an SME's credit financing is done through their house bank (Schwartz & Gerstenberger, 2019). In fact, more than 50 % of all SMEs only obtain credits through their house bank (Schwartz & Gerstenberger, 2019). In terms of financial instruments, SMEs predominantly finance their investments through own funds (32 %), bank loans (51 %) and promotional loans (14 %) (Kreditanstalt für Wiederaufbau (KFW), 2023).

3.4 Sustainable Finance Mechanism in House Bank Relations

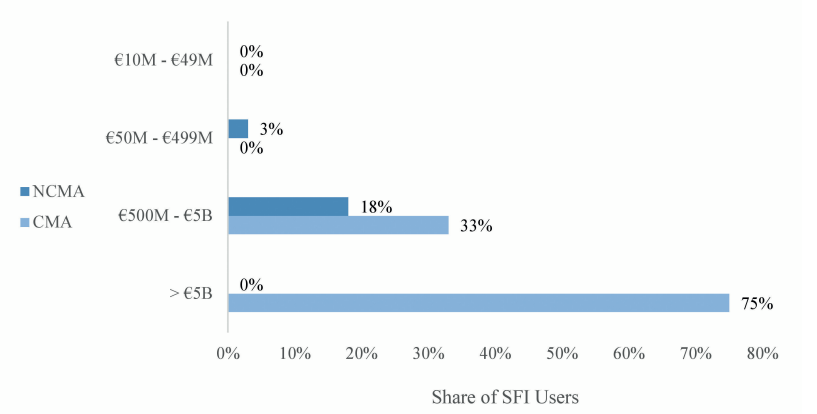
3.4.1 Research Questions

As explained in section 3, bank-based financing is still the prevalent form of financing in a bank-based financial system and therefore an important channel to foster sustainable investments through sustainable finance. A study by Hinsche (2024), analyzing companies' individual sustainable finance needs, finds that the majority (63 %) of companies are not active in capital markets, in line with Germany's bank-based financial system. Moreover, the high share of companies not active in capital markets holds true for all company size groups (medium-sized, large medium-sized and large companies), apart from multinational companies[26]. This emphasized the importance of considering the characteristics of bank-based financing and house bank relations for an effective SFI use.

However, the study by Hinsche (2024) demonstrates that SFI use among companies who are not active in capital markets, and thus only obtain bank-based financing, is very low. In fact, SFI use is more than twice as high for companies that are active in capital markets (26 %), compared to companies that are not active in capital markets (7 %). Furthermore, not being active in capital markets decreases the odds of being a SFI user and the negative association is statistically significant at the 5 % level (Hinsche, 2024). The relation holds true, even when grouping the results based on company size as seen in Figure 1, supporting the observation that SFI use significantly differs for companies' capital market activity. The share of SFI users who are not active in capital markets is especially low for smaller companies, with medium-size companies having no SFI users and with large medium-sized companies having only 3 % that are SFI users and not active in capital markets.

26 Medium-sized companies have a revenue of €10 to €49 million, large medium-sized from €50 to €499 million, large companies from €500 million to €5 billion and multinational companies larger than €5 billion (Hinsche, 2024).

Figure 1. Companies' SFI Use by Capital Market Activity and Company Size



Source: This figure presents companies' SFI use by capital market activity and grouped by the four defined company size groups medium-size, large medium-size, large and multinationals as depicted in Hinsche (2024). Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active. "M" denotes million and "B" denotes billion.

The lack of SFI use amongst companies not active in capital markets could indicate that the currently implemented sustainable finance incentive structure, as explained in section 2, does not work effectively for companies financing themselves through their (house) banks instead of capital markets. This leads to the research question, whether the currently implemented sustainable finance incentive structure is tailored to capital market structures and thus cannot simply be applied to house bank relations. Instead, the incentive structure might need to be adapted to and utilize the characteristics of house bank relations. Moreover, this might be particularly true for small and medium-sized companies, as they rely more heavily on bank financing, have smaller financing demands and simultaneously face relatively higher administrative costs to implement a SFI.

3.4.2 Existing Literature

The literature on sustainable finance use in house bank relations is still developing as the topic gains more attention with discussions on sustainable finance regulations being extended to SMEs and the implementation of sustainability regulations through regional banks.

In a conceptual research paper discussing the integration of climate financing into SME lending in Germany, Flögel et al. (2023) emphasize the importance of house bank financing for a successful sustainability transformation, as regional banks are responsible for 54.2 % of total lending volume to non-financial firms and self-employed. Moreover, they also point out the challenges that regional banks face in adopting sustainable finance measures, such as the integration of climate impact assessments into lending processes. Firstly, regional banks have a lower capacity and resources than larger banks. Secondly, the borrowers, which are mainly SMEs, often have no knowledge or disclosure of their sustainability performance. Thirdly, most regional banks are savings or cooperative banks, which are obliged to fulfil additional social requirements apart from profit maximization, as explained in section 3.3. Therefore, a restriction to or exclusion of certain industries would violate their mandate to provide local credit and meet the financial needs of their members (Fölgel et al., 2023). Finally, long-term house bank relations have the potential to undermine the impact of a sustainability assessment in the lending process, as house banks might be too lenient with their clients.

In contrast, Greitens (2023) focuses on the applicability of the sustainable finance framework and stresses that regulations need to take bank-based financing characteristics into account, allowing for individual transition financing options. Furthermore, regional banks often have an information advantage, due to their close relation with their clients, which gives them access to private information. This can be used as an advantage in regard to sustainability information availability and assessment. Greitens's (2023) conceptual paper advocates for a more flexible sustainability and green loan concept for SMEs compared to the capital market-oriented framework. Moreover, banks

should clearly specify the information needed from their clients to be able to assess their sustainability risk.

In order to understand whether and how sustainability criteria are currently being integrated into banks' credit assessments and management, Strube et al. (2023a; 2023b) conduct a survey with 28 savings banks and 84 cooperative banks. They find that 35.5 % of banks are not performing any sustainability risk or ESG screening of their portfolios at the time of the survey. Reasons include insufficient data availability, no consistent methods, a lack of personal and technical capacities, as well as the extent of regulatory requirements (Strube et al., 2023a). Furthermore, only 18.8 % of banks require sustainability data from their lenders. The most common sustainability data provided are energy certificates, real estate related information and qualitative ESG criteria (Strube et al., 2023a). In regard to sustainability risk, the majority of surveyed savings and cooperative banks (74.3 %) stated that reputational risk is relevant or very relevant for them (Strube et al., 2023b). Moreover, 55 % think that the effect of sustainability risk on credit risk is also relevant or very relevant, but think that it has only a very limited effect on banks' financials and revenue. Additionally, the study by Strube et al. (2023b) finds that the majority of regional banks (81.7 %) currently do not offer any sustainability-linked loans.

Taking a closer look at the impact of sustainability regulations on SMEs' sustainability data collection and sustainable investments in Germany, Löher et al. (2022) conducted a quantitative survey with 199 companies that are members of the chamber of commerce and industry Siegen (IHK Siegen). Their research confirms that, even though SMEs might not be directly affected by sustainability disclosure regulations, they are affected indirectly through the supply chain. Customers and suppliers demand sustainability data most often and companies expect their requests to increase even more in the future.[27] However, only

27 The European Financial Reporting Advisory Group (EFRAG, 2024) is currently developing voluntary European Sustainability Reporting Standards for non-listed SMEs (VSME ESRS), which aim to establish a market standard that avoids individual sustainability data inquiries and satisfies demands from lenders and companies

2.8 % of companies state that they have received a sustainability data inquiry from their bank so far (Löher et al., 2022). In regard to sustainability investments, Löher et al. (2022) find that SMEs plan to finance their sustainability investments mainly through own funds, followed by bank and promotional loans.

Finally, Scharf (2022) analyzed SMEs' willingness to integrate sustainable finance measures into their established financing structures. Interviewing 100 German SMEs based on a survey with closed questions and running a linear regression analysis, Scharf (2022) finds a significant positive correlation between the willingness to integrate sustainable finance into their established financing structure and personnel resources, but no significant correlation for knowledge, profitability, administrative work or company size. The willingness to integrate sustainable finance into established financing structure was calculated using five different survey questions with a Likert scale, measuring companies' attitudes towards and interest in sustainable finance.

Overall, current studies have opened up the discussion regarding sustainable finance in house bank relations. However, apart from Strube et al. (2023a; 2023b); Löher et al. (2022) and Scharf (2022), the papers have not conducted any research to acquire or analyze existing data to gain a deeper insight into SFI use in bank-based financing. Furthermore, Strube et al. (2023a; 2023b) focus on the bank perspective, particularly on the integration of sustainability criteria into credit risk assessment methods. In contrast, Scharf (2022) concentrates on SMEs' perspectives regarding sustainable finance integration and use. However, the calculated measure of willingness to integrate sustainable finance in established financing structures does not reflect companies' actual sustainable finance behavior and the research did not examine the difference between capital-market and bank-based financing for SMEs and larger companies. Finally, Löher et al. (2022) focus on the impact of sustainability disclosure regulations primarily on SMEs' sustainability data collection and the planned form of sustainable invest-

along the supply chain, thereby simplifying and standardizing the sustainability data exchange for SMEs.

ments, but do not discuss the actual use and implementation of SFIs, as well as potential barriers.

Consequently, this research contributes to the existing literature by acquiring data on the current state of SFI use among companies that rely on bank-based financing, and by subsequently analyzing and interpreting the data using a mixed method approach. This will allow for a more precise understanding of how companies not active in capital markets can be motivated and supported to use SFIs, as well as how the sustainable finance incentive structure might need to be adapted accordingly. Furthermore, based on the results, the study will formulate recommendations on how to ensure an effective use of sustainable finance in a bank-based financial system and identify points for further research.

3.4.3 Methodology

This research aims to fill the aforementioned research gap using a mixed method approach, thus applying both, quantitative and qualitative methods. The study follows a convergent parallel design (Creswell & Creswell, 2018; Kuckartz, 2014), including quantitative and qualitative methods in the survey and subsequent analysis simultaneously. The research data is collected using a survey which is predominantly quantitative, but also includes some qualitative parts in the form of open questions. This qualifies as a concurrent embedded strategy (Creswell & Creswell, 2018) and allows for a more in-depth understanding of the quantitative analysis results through additional qualitative coverage and evaluation (Greene et al., 1989; Morgan, 2014).

The quantitative analysis entails a correlation analysis to test for an existing association between variables using Fisher's exact measure and for the strength of the association using Cramér's V. However, the correlation analysis does not indicate the direction of association. Consequently, a logistic regression with robust standard errors is run as well, to gain an insight based on the resulting odds ratios, whether an existing association is positive or negative. In regard to the qualitative

analysis, a thematic content analysis is performed using the seven steps of Kuckartz (2014). This entails first coding all the existing material, which in the case at hand is also translated from German into English and subsequently developing main thematic categories. Once all the existing material is coded according to the main thematic categories, subcategories are defined inductively and the data material is coded again with the more advanced categorical system (Kuckartz, 2014). Finally, the qualitative results are integrated into the quantitative results using quantification (Fakis et al., 2014; Kuckartz, 2014) and thus interpreted together.

3.4.4 Data and Data Summary

In order to investigate the two research questions, this study uses the company and survey data provided through a survey study conducted by Hinsche (2024) in cooperation with DZ BANK AG. The online survey[28] was conducted in June 2023 with 700 invited corporate customers to record their individual sustainable finance interests and needs. An overview of the survey can be found in Chapter 2, Appendix C. The response rate was 17.6 %, with 123 recorded responses, and yielded 93 fully completed surveys.

Looking at the data summary in Table 1, the highest share of companies is from the industrials sector (31.2 %), followed by the utilities (9.7 %), consumer staples (9.7 %) and materials sector (9.7 %). Furthermore, more than half of the sample has a company size of €50 million to €499 million (50.5 %), followed by €500 million to €5 billion (24.7 %)[29].

28 For a more detailed description of the survey structure see Hinsche (2024).

29 In the following analysis, companies with a revenue lower than or equal to €49 million are denoted as small and medium-sized companies, based on DZ BANK AG's internal allocation.

Table 1. Summary Statistics – Company Characteristics

	Survey Sample Characteristics	
	Observations	**Percent of Data**
Number of Companies	93	100 %
Company Sector		
Industrials	29	31.2 %
Consumer Discretionary	9	9.7 %
Utilities	9	9.7 %
Consumer Staples	9	9.7 %
Materials	7	7.5 %
Financials	4	4.3 %
Health Care	4	4.3 %
Information Technology	2	2.2 %
Communication Services	1	1.1 %
Real Estate	1	1.1 %
No Answer	18	19.4 %
Company Size		
Up to €9 million	1	1.1 %
€10 mm to €49 million	9	9.7 %
€50 mm to €499 million	47	50.5 %
€500 mm to €5 billion	23	24.7 %
Bigger than €5 billion	10	10.8 %
No Answer	3	3.2 %
Company Capital Market Activity		
Yes	34	36.6 %
No	58	62.4 %
I don't know	1	1.1 %

Source: This table presents the company summary statistics of the 93 survey respondents. Companies' sectors are classified based on the Global Industry Classification Standard by MSCI and companies' sizes in terms of revenue are rounded to millions and divided into five respective revenue groups.

Finally, the majority of companies are not active in capital markets (62.4 %), whilst 35.5 % are active and 1.1 % answer that they do not

know. Being active in capital markets is defined by the survey as acquiring any form of financing through the capital market. For the subsequent analysis, only respondents who answered company capital market activity with yes or no are included, thus reducing the data sample by one respondent to 92 companies. An overview of companies' sustainability characteristics and respondent information can be found in Appendix A, Table 2 and Table 3[30].

3.5 Results

In order to assess whether the currently implemented sustainable finance incentive structure works effectively for companies not active in capital markets, one first has to understand the potential differences in regard to SFI use between companies active and not active in capital markets. The following sections analyze any potential differences in the motivation to use SFIs, as well as whether companies can and will use SFIs. Moreover, the survey results are additionally evaluated with special regard to small and medium-sized companies not active in capital markets.

3.5.1 Motivation: Want to Use SFI

One potential difference in regard to SFI use between companies active and not active in capital markets could be their motivation to use SFIs. As discussed in section 2.2.1, regulatory authorities are still hesitant to introduce risk-weighted adjustment factors, such as a green supporting factor, as long as the existence of a risk differential between green and non-green assets is still debated. Nevertheless, companies might anticipate the existence of a risk differential and subsequent introduction of further regulatory adjustments, such as higher capital requirements, in the future. This in turn could incentivize them to already invest in

30 A more detailed data sample analysis, including company sustainability characteristics, as well as a representativeness analysis can be found in Hinsche (2024).

their sustainability transition through SFIs now. Moreover, companies could also be incentivized by regulatory pressure, pricing, and reputational advantages, as discussed in section 2.2.3. The following section analyzes the potential motivational influence of these factors, as well as the observed respective differences for companies active and not active in capital markets, based on the survey results.

3.5.1.1 Motivational Factors

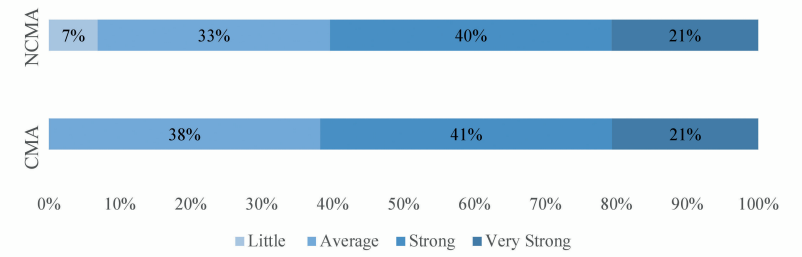
Regulatory requirements such as the CSRD are mandatory for companies active in capital markets, whilst companies not active in capital markets have more time to adhere to sustainability disclosure regulations, depending on their company size (see section 2.1.1). Therefore, companies active in capital markets might experience a higher regulatory pressure. Moreover, companies might experience a higher transition risk not only influenced by their industry, for instance carbon-intensive industries such as oil and gas, but also due to their capital market activity. Companies active in capital markets are often faced with higher public awareness, due to the transparency and publicity that come with acquiring financing through the capital market. Consequently, they are more likely to experience a strong societal pressure to transition and invest in their sustainability and do not have the possibility to fly under the radar. The survey asked respondents to report on their perceived regulatory pressure and transition risk to evaluate both potential effects.

Looking at Figure 2, the survey results indeed indicate a slightly lower perceived regulatory pressure and transition risk for companies not active in capital markets compared to companies active in capital markets. The most prominent difference is that whilst 7 % of companies not active in capital markets perceive little regulatory pressure, none of the companies active in capital markets perceive such a low regulatory pressure. However, no statistically significant association between capital market activity (CMA) and levels of perceived regula-

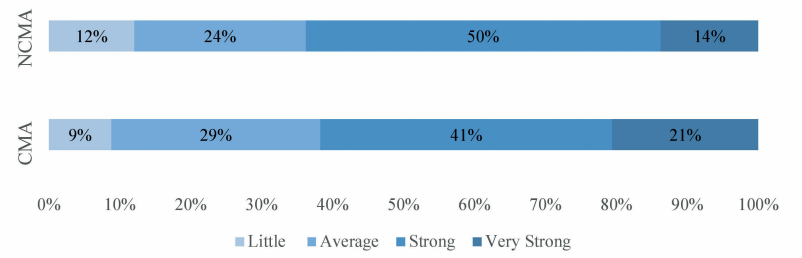
tory pressure or levels of perceived transition risk can be found (see Appendix A, Table 4 and Table 8).

Figure 2. Regulatory Pressure and Transition Risk by Capital Market Activity

a. Regulatory Pressure



b. Transition Risk



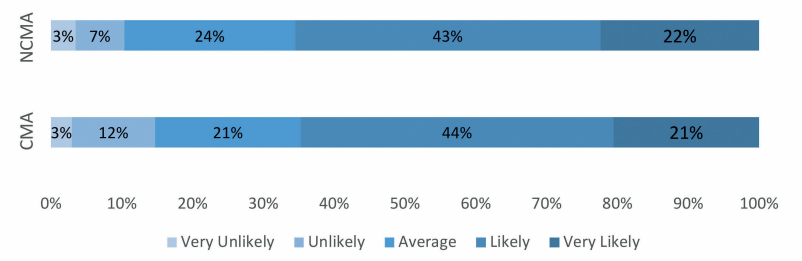
Source: This figure presents companies' perceived regulatory pressure and transition risk by capital market activity, based on the survey results reported in Appendix A, Table 7. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Another potential difference in motivation between companies active and not active in capital markets could be due to varying levels of anticipation regarding the introduction of risk adjustment factors such as a brown penalizing factor and subsequent impacts on credit conditions and financing access. This was measured by inquiring companies to report on their credit link and financing access beliefs. The survey asked companies to assess the likelihood that sustainability criteria and credit conditions will be linked, as well as the risk to lose financing access in case they should fail to achieve certain sustainability targets. Looking at

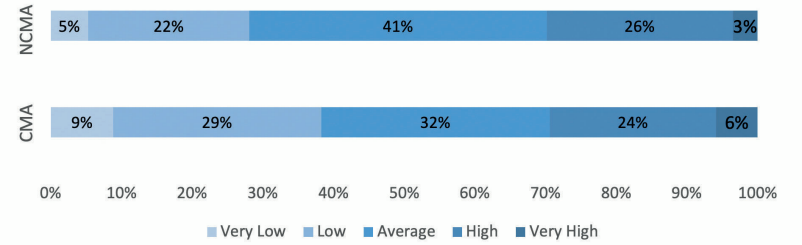
Figure 3, no significant differences between companies active and not active in capital markets can be observed.

Figure 3. Credit Link and Financing Access Belief by Capital Market Activity

a. Credit Link



b. Financing Access



Source: This figure presents companies' credit link and financing access beliefs by capital market activity, based on the survey results reported in Appendix A, Table 7. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

This is supported by the correlation and linear regression analysis results which do not show any statistically significant association as seen in Appendix A, Table 4 and Table 8. Interestingly, both company groups demonstrate a strong belief that sustainability criteria and credit conditions will be linked, with more than 60 % stating likely or very likely. In contrast, when asked about their belief that they could lose their financing access in case of failure to achieve certain sustainability targets, more than 60 % stated average or unlikely.

Generally, companies perceive on average a strong regulatory pressure and transition risk. Moreover, they strongly believe that credit conditions will be linked to sustainability criteria, but are still hesitant to believe that they could lose their financing access in case of failure to achieve certain sustainability targets. However, an analysis of the respective four criteria regulatory pressure, transition risk, linkage and financing access, and their relation with SFI use, indicates no statistically significant association (Hinsche, 2024). These observations suggest that instead of regulatory pressure, transition risk or the anticipation of a risk differential, companies are currently primarily incentivized to use SFIs by a potential pricing or reputational advantage. This is confirmed by the findings that companies rate a potential pricing advantage and the communication of their sustainability strategy as the most influential factors to use SFIs (Hinsche, 2024).

However, companies not active in capital markets are less likely to benefit from any reputational advantages in regard to SFI use, compared to companies active in capital markets. Most of the reputational advantages are due to the publicity and transparency of the capital market. This is supported by the fact that smaller companies rank a potential pricing advantage as the most influential reason, compared to larger companies that rate the communication of their sustainability strategy as the most influential factor to use SFIs (Hinsche, 2024).

Consequently, the survey results suggest that companies not active in capital markets are or can be predominantly incentivized to use SFI by a potential pricing advantage compared to using a conventional financing instrument. This is an important observation and needs to be taken into consideration when evaluating how the current sustainable finance incentivization scheme can be applied to companies not active in capital markets.

3.5.1.2 Motivational Factors of SMEs Not Active in Capital Markets

Only looking at the SME share of companies not active in capital markets, it can be observed that the majority perceive transition risk (66 %)

and regulatory pressure (67 %) as little or average (see Appendix A, Table 7). Moreover, whilst 50 % of SME companies not active in capital markets state that the risk of credit linkage is average or unlikely, 50 % state that it is likely or very likely. In contrast, the majority (83 %) believe that the risk of losing their financing access due to not achieving certain sustainability targets is low or average. Nevertheless, 17 % believe that the risk is very high (see Appendix A, Table 7). These results show that regulatory pressure and transition risk are perceived as lower by smaller companies not active in capital markets.

Moreover, high uncertainty regarding the risk of credit linkage and financing access can be observed among smaller companies not active in capital markets. It should be noted that the share of companies which believe the risk of losing their financing access to be average or low is higher for SMEs not active in capital markets (83 %) compared to all companies not active in capital markets (63 %) (see Appendix A, Table 7). This could indicate companies' trust in their house bank relations, as particularly SMEs are relying on house bank financing through their local savings or cooperative banks (see section 3.3).

3.5.2 Implementation: Can Use SFI

Apart from motivation, companies need to have sufficient knowledge regarding sustainable finance instruments, as well as to fulfil necessary requirements such as sustainability performance data collection and monitoring, in order to use SFIs. As explained in section 2.1.1, sustainability disclosure regulations, such as the CSRD, aim to establish a transparent and comparable sustainability reporting, which in turn makes it easier for companies to use SFIs. However, capital market active companies might be more advanced in their implementation of sustainability regulations, as they already have to adhere to these regulations for a longer time than companies not active in capital markets (see section 2.1.1). Consequently, companies active and not active in capital markets might differ in regard to their SFI knowledge, data assessment and perceived barriers. The following section analyzes

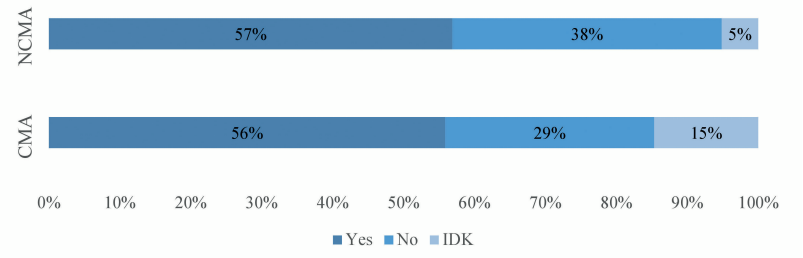
these potential differences and also examines any potential differences particular to SMEs.

3.5.2.1 Implementation Factors

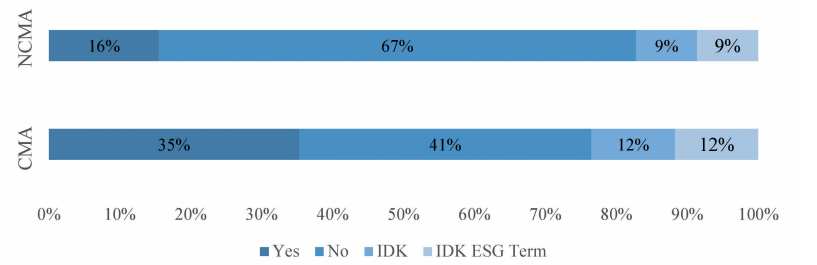
Firstly, looking at Figure 4, the study results demonstrate that the share of companies which have a carbon footprint does not differ significantly with a company's capital market activity. This is supported by the correlation and logistic regression results which do not show any statistically significant association (see Appendix A, Table 4 and Table 10). However, the logistic regression results show a positive, at the 5 % level statistically significant, association between having an ESG rating and being active in capital markets (see Appendix A, Table 4 and Table 10). This can also be seen in Figure 4, as the share of companies that have an ESG rating is more than twice as high for companies active in capital markets (35 %) compared to companies not active in capital markets (16 %). Furthermore, the share of companies that are not familiar with the term ESG, which is denoted by "IDK ESG Term" is similar for both company groups.

Figure 4. Carbon Footprint and ESG Rating by Capital Market Activity

a. Carbon Footprint



b. ESG Rating

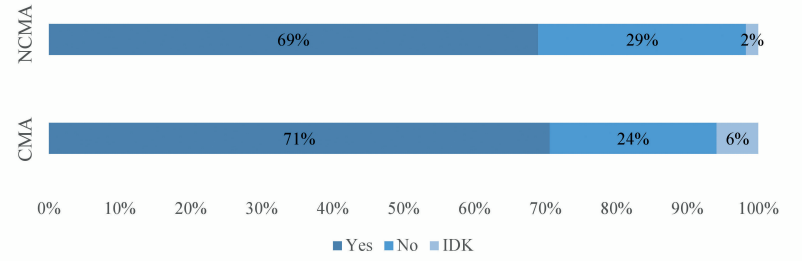


Source: This figure presents whether companies have a carbon footprint or ESG rating by capital market activity, based on the survey results reported in Appendix A, Table 9. Note: "IDK" = I don't know. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

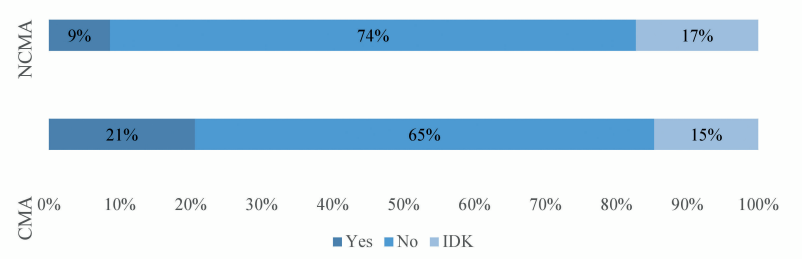
In regard to having company-level sustainability targets, Figure 5 shows no significant difference between companies active and not active in capital markets. This is supported by the correlation and logistic regression results (see Appendix A, Table 4 and Table 10). Nevertheless, Figure 5 demonstrates that the share of companies with a sustainability target commitment scheme is more than twice as high for companies active in capital markets (21 %) compared to companies not active in capital markets (9 %). A potential explanation could be that companies active in capital markets are subject to higher transparency requirements. Consequently, they might use sustainability target commitment schemes, for instance in the form of management compensation linked to sustainability targets, as a public sustainability commitment and thereby improve the company's sustainability reputation. In fact, in case that companies report their type of sustainability target commitment scheme, they state that it is in the form of management compensation in 100 % of the answers (see Appendix A, Table 9).

Figure 5. CLST and STCS by Capital Market Activity

a. Company Level Sustainability Target (CLST)



b. Sustainability Target Commitment Scheme (STCS)



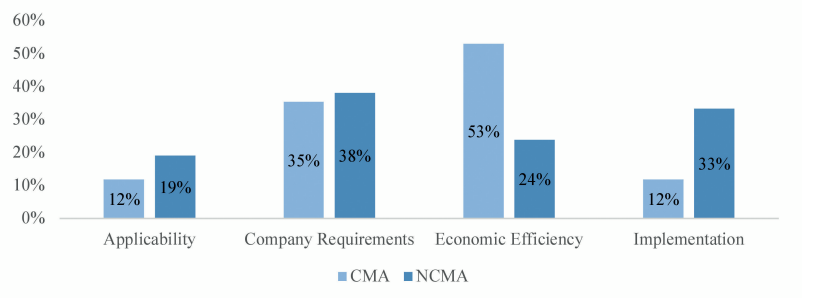
Source: This figure presents whether companies have company-level sustainability targets (CLST) and a sustainability target commitment scheme (STCS) by capital market activity, based on the survey results reported in Appendix A, Table 9. Note: "IDK" denotes I don't know. "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Regarding companies' sustainable finance instrument knowledge, the survey results show that whilst only 3 % of companies active in capital markets are unfamiliar with SFIs, 17 % of companies not active in capital markets are unfamiliar with SFIs (see Appendix A, Table 9). This relation is confirmed by a statistically significant negative association between being unfamiliar with SFIs and being active in capital markets (see Appendix A, Table 4 and Table 10). Finally, the analysis results show that the share of companies which perceive SFI barriers is slightly higher for companies active in capital markets (50 %) than for companies not active (36 %) (see Appendix A, Table 9).

3.5.2.2 Qualitative Assessment of Companies' Implementation Barriers

In order to gain a deeper understanding of companies' perceived barriers, this study uses a mixed method research approach and integrated open questions into the survey. The answers are coded using thematic content analysis, as explained in section 4.3. Firstly, all answers were coded and simultaneously translated from German to English, as the survey language was German. Subsequently, main thematic categories were developed. As seen in Figure 6, the main thematic categories are applicability, company requirements, economic efficiency and implementation. Finally, further subcategories were developed inductively and attributed to the thematic main categories in line with the overarching categorical system. The resulting overview of perceived barriers can be seen in Appendix A, Table 12.

Figure 6. Reported Perceived Main Barriers



Source: This figure presents companies' reported perceived main barriers by capital market activity, coded and assigned using thematic content analysis. The full overview of coded reported barriers can be seen in Appendix A, Table 12. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

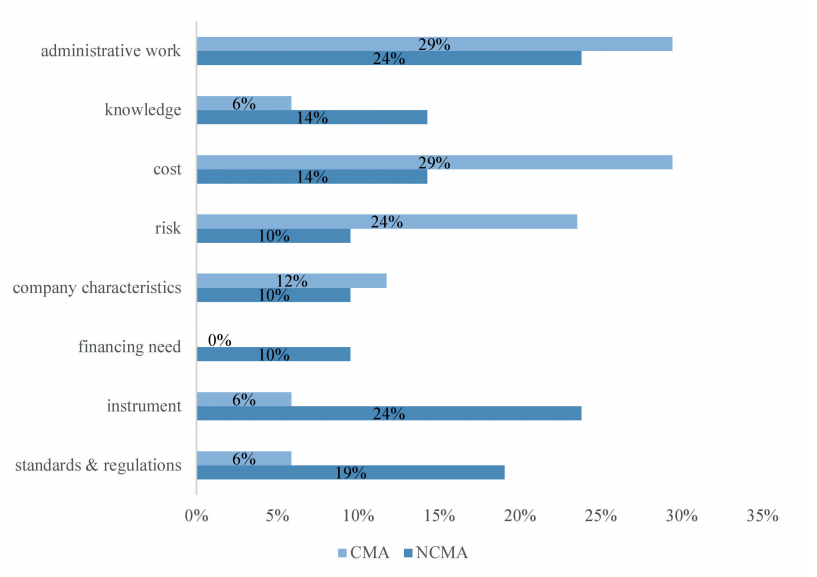
Capital market active companies are generally more concerned with the economic efficiency of SFIs, whilst companies not active in capital markets reported more often that they perceive the applicability and implementation of SFIs as a barrier, as seen in Figure 6. Furthermore, the number of times that company requirements were stated as a bar-

rier is similar for both, companies active and not active in capital markets.

However, taking a closer look at company requirements subcategories in Figure 7 shows significant differences in the barriers perceived. In fact, capital market active companies state administrative work as a barrier relatively more often than companies not active in capital markets. The reported barriers that are part of the administrative work barrier subgroup are general additional effort, additional work capacities needed and reporting. Interestingly, reporting is predominantly stated as a barrier by companies not active in capital markets (see Appendix A, Table 12). Furthermore, the subgroup knowledge, containing regulatory uncertainty, no experience and insufficient consulting as barriers, is more often perceived as a barrier by companies not active in capital markets.

In regard to economic efficiency barriers, the survey results show that both, cost and risk barriers are stated more often by companies active in capital markets, as seen in Figure 7. The perceived barriers attributed to the cost subgroup are higher costs, insufficient promotional loans and costs higher than benefits. Furthermore, the risk subgroup contains the reported barriers regulatory and greenwashing risk, as well as the risk of failure to achieve sustainability targets. Interestingly, regulatory risk is only stated by a company not active in capital markets, whilst greenwashing risk is only stated by a company active in capital markets. This supports the claim in section 4.5.1 that capital market active companies can be incentivized to use SFIs by potential sustainability reputation effects, whilst companies not active in capital markets are rather incentivized by regulations or pricing.

Figure 7. Barrier Subcategories by Capital Market Activity



Source: This figure presents the subcategories of companies' reported perceived barriers by capital market activity, coded and assigned using thematic content analysis. The full overview of coded reported barriers can be seen in Appendix A, Table 12. The percentage indicates the share of companies that stated the respective barrier in relation to all companies that stated they perceive a barrier, which are 17 capital market active companies and 21 companies that are not active in capital markets. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Moreover, it is striking that 18 % of capital market active companies, that perceive barriers, stated risk of failure to achieve sustainability targets as a barrier, as seen in Figure 7. Sustainable finance instruments such as the sustainability-linked bond only work efficiently, if companies are penalized for not achieving their targets. However, the stated barrier suggests that companies might be choosing not to use SFIs for fear of precisely this penalty, in the form of financial payments or reputational damage. This would be an unintentional and conflicting effect of SFIs characteristics and should be considered during further developments of SFIs.

Looking at applicability barriers, the survey results show that the applicability of SFIs to company characteristics, namely financing structure, industry and company purpose, is perceived equally as a barrier by companies active and not active in capital markets (see Figure 7 and Appendix A, Table 12). However, the applicability of SFIs to a company's financing needs is only stated as a barrier by companies not active in capital markets, more precisely they name the lack of use cases and insufficient flexibility as barriers to SFI use.

Finally, implementation barriers are predominantly stated by companies not active in capital markets. In regard to the subgroup instrument implementation, the most stated barrier is KPI choice and tracking, followed by data collection and size. Furthermore, taking a closer look at the reported barriers of the subgroup standard and regulations, it is striking that only companies not active in capital markets state data comparability and availability. In contrast, capital market active companies state investor requirements as a barrier to SFI use (see Appendix A, Table 12).

Overall, the qualitative survey results and analysis allow for a deeper understanding of the differences in barriers between companies active and not active in capital markets. The barriers stated by companies not active in capital markets demonstrate that they experience a high uncertainty regarding sustainability regulations and that particularly data collection and reporting pose a challenge. This supports the quantitative results which show that companies not active in capital markets have a significantly lower share that has an ESG rating. This could be due to data availability, as well as costs associated with data collection and obtaining an ESG rating. Furthermore, the recorded barriers of insufficient consulting and no experience underline the quantitative results that companies not active in capital markets have a lower share that already was familiar with SFIs prior to the survey. This emphasizes the lack of sustainable finance knowledge of companies not active in capital markets. Both aspects are discussed in more detail in section 6.

3.5.2.3 Implementation Factors of SMEs Not Active in Capital Markets

Regarding the SME share of companies not active in capital markets and their sustainable finance instrument knowledge and implementation, it is striking that none of the companies have an ESG rating (see Appendix A, Table 9). Moreover, only 50 % have a carbon footprint, compared to 57 % when looking at the whole sample of companies not active in capital markets. The same holds true for having company-level sustainability targets, with also a lower share of 50 % compared to 69 % of all companies not active in capital markets. This underlines the issue of data availability and monitoring for SMEs when considering the use of SFIs. Furthermore, the share of companies unfamiliar with SFIs is the same for SMEs and all companies not active in capital markets (17 %). Finally, also the share of companies that perceive barriers to SFI use is similar (33 % vs. 36 %), as seen in Appendix A, Table 9.

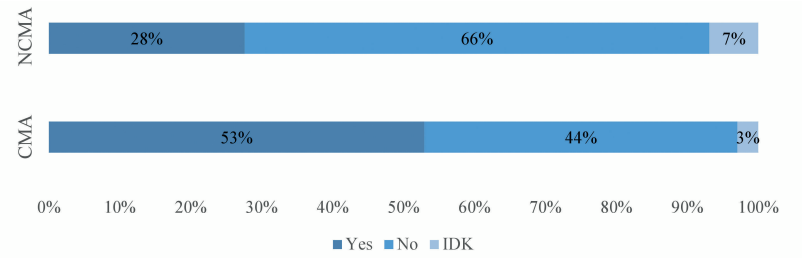
3.5.3 Enabler: Will Use SFI

As explained in Section 3, companies that are not active in capital markets rely on their (house) banks for financing. Therefore, banks play an important role in enabling them to use SFIs. This section reports the survey results in regard to banks' sustainable finance support, as well as companies' expectations regarding their financing partners. On the one hand, companies that are not active in capital markets might benefit from their very close (house) bank relation when considering SFI use. On the other hand, they also rely heavily on their banks to support them in their sustainable finance use and particularly SMEs, who often only have one or two close house bank relations, might be at a disadvantage as long as their bank is not suggesting and supporting SFI use.

3.5.3.1 Enabling Factors

Looking at the survey results, the difference between companies active and not active in capital markets is very apparent. As seen in Figure 8, more than half of capital market active companies (53 %) have been recommended by their bank to use SFIs, whilst only 28 % of companies not active in capital markets have had SFIs recommended to them by their bank. This relation is supported by the correlation and logistic regression results, which demonstrate a positive, at the 5 % level statistically significant, association between having been recommended a SFI and being active in capital markets (see Appendix A, Table 15).

Figure 8. Bank Recommendation by Capital Market Activity



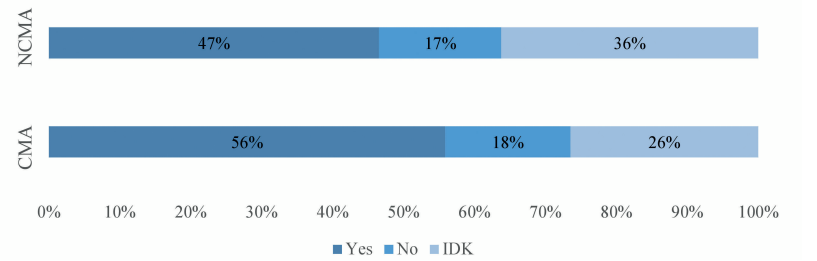
Source: This figure presents the share of companies that have been recommended SFIs by their banks by capital market activity, based on the survey results reported in Appendix A, Table 13. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Nevertheless, companies believe in their banks' capability to support them in their sustainability transition is quite similar, as seen in Figure 9. Capital market active companies have a slightly higher share that believes in their banks' support (56 %) compared to companies not active in capital markets (47 %). In contrast, the latter have a higher share that is uncertain about their banks' role (36 %) in comparison to capital market active companies (26 %).

This is an interesting observation, as one could expect companies that rely solely on bank financing to have a stronger belief in their banks' support. Instead, the results suggest that companies not active

in capital markets still experience a high uncertainty regarding how their banks can support them in their sustainability transition. This uncertainty could hinder positive characteristics of house bank relations, such as long-time trust and experience, to reach their full potential to support SFI use.

Figure 9. Bank Believe by Capital Market Activity

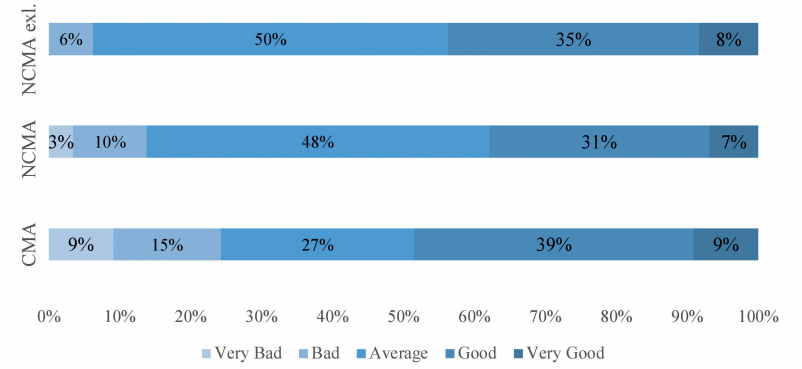


Source: This figure presents the share of companies that believe their bank(s) can support them with their sustainability transition by capital market activity, based on the survey results reported in Appendix A, Table 13. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

The survey also asked companies to rate their banks' sustainable finance support. As seen in Figure 10, the highest share of capital market active companies rates their banks' support as good (41 %), whilst the highest share of companies not active in capital markets rates their banks' support only as average (48 %).

However, banks' ratings might be influenced by companies' sustainable finance experience, as 17 % of companies not active in capital markets were unfamiliar with SFIs before the survey. Excluding these observations changes the distribution only very slightly for capital market active companies (see Appendix A, Table 14), but the distribution becomes on average more positive for companies not active in capital markets, as seen in Figure 10. The highest share still rated their banks' support as average (50 %), however, the ratings very bad and bad decreased to 0 % and 6 % respectively.

Figure 10. Bank Support Rating by Capital Market Activity

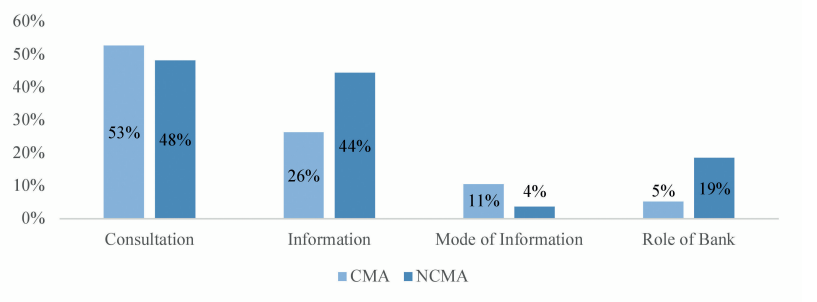


Source: This figure presents the share of companies that believe their bank(s) can support them with their sustainability transition, based on the survey results reported in Appendix A, Table 13 and Table 14. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

3.5.3.2 Qualitative Assessment of Companies' Bank Support Expectations

In order to gain a deeper understanding of companies' expectations regarding their banks' support and potential differences between companies active and not active in capital markets, the survey included a second open question section. The qualitative data are coded, grouped and analyzed in the same manner as described in Section 4.3 and 5.2.2, using thematic content analysis. As seen in Figure 11, the main thematic categories are consultation, information, mode of information and role of bank. More than half (53 %) of companies active in capital markets that would like to receive their banks' support stated that they would like to receive consultation and almost a third (26 %) that they would like to receive information. For companies not active in capital markets, the share of companies that would like to receive consultation is similar (48 %), but the share that would like to receive information is significantly higher (44 %). Moreover, 19 % had very clear expectations regarding the role of their banks.

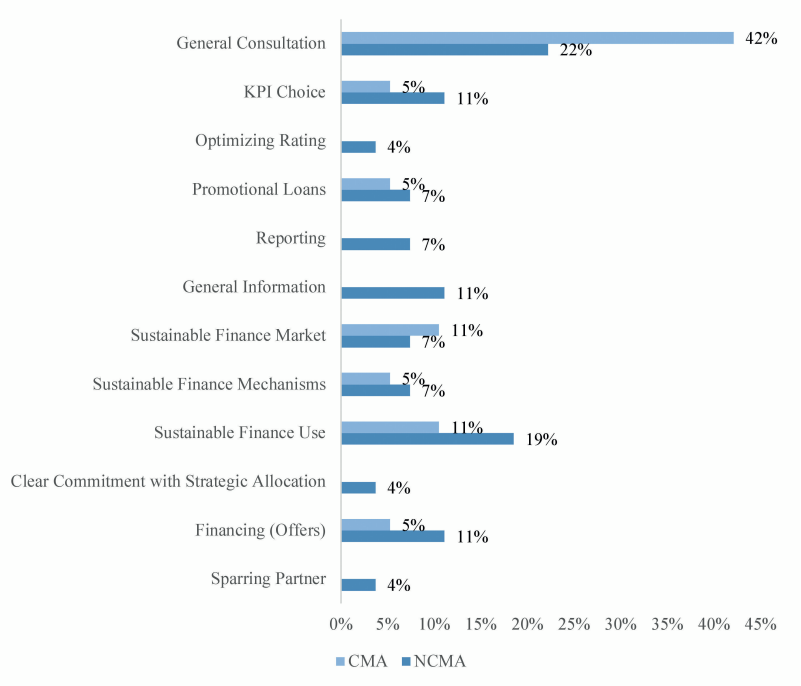
Figure 11. Bank Expectations by Capital Market Activity



Source: This figure presents the main thematic categories of companies' reported bank expectations by capital market activity, coded and assigned using thematic content analysis. The full overview of coded reported expectations can be seen in Appendix A, Table 16. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Taking a closer look at the subcategories reported in Figure 12, one can see that capital market active companies primarily would like to receive general consultation. In contrast, companies not active in capital markets are more specific in regard to the type of consultation. They would like to receive consultation on KPI choice, followed by promotional loans, reporting and rating optimization. Moreover, as mentioned above, the demand for information is significantly higher for companies not active in capital markets. They would like to receive information primarily on SFI use, encompassing experiences and use cases with other customers to learn from, as well as general information. However, if capital market active companies would like to receive information on SF use, they would like it to be best practice examples, as seen in Appendix A, Table 16.

Figure 12. Bank Expectation Subcategories by Capital Market Activity



Source: This figure presents the subcategories of companies' reported bank expectations by capital market activity, coded and assigned using thematic content analysis. The full overview of coded reported expectations can be seen in Appendix A, Table 16. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

Furthermore, companies active and not active in capital markets would like to receive information on the sustainable finance market, including a market overview and their financing partners' expectations. In regard to the sustainable finance mechanism, companies active in capital markets would like to receive information on framework conditions, as seen Appendix A, Table 16. In contrast, companies not active in capital markets would like to receive information on the differences between green and conventional instruments, as well as the impact of a sustainability rating on financing conditions.

As seen in Figure 12, almost one-fifth of companies not active in capital markets that believe in their banks' support also stated very precise expectations for their banks. Primarily, they would like to receive concrete financing offers. Moreover, they would like their bank to have a clear commitment and to function as their sparring partner for a successful sustainability transition. Finally, a few companies also reported their preferred mode of information. These include a wide range of suggestions from personal talks, questionnaires, workshops and presentations to events (see Appendix A, Table 16).

Overall, the qualitative analysis allowed for a deeper understanding of companies' expectations regarding the form of their banks' support and complements the quantitative results. Companies not active in capital markets would like to receive both, consultation and information. In regard to consultation, they would like to receive guidance on KPI choice and reporting, which is in line with their reported barriers in Section 5.2.2. Moreover, they would like to receive information on SFI use and receive concrete financing offers, which supports the findings from section 5.2.2 and 5.3.1 that companies not active in capital markets perceive the lack of experience and knowledge as a barrier and have been recommended SFI use less than companies active in capital markets. Furthermore, their demand for a clear commitment from their bank and for them to be their sparring partner mirrors their currently high uncertainty regarding their banks' ability to support them in their sustainability transition, as seen in section 5.3.1, Figure 9. Finally, their interest in promotional loan consultation is discussed further in section 5.4 on promotional loan use.

3.5.3.3 Enabling Factors of SMEs Not Active in Capital Markets

Regarding the SME share of companies not active in capital markets, it is striking that none of the companies have been recommended to use SFIs by their bank, in contrast to 28 % of all companies not active in capital markets (see Appendix A, Table 13). This suggests that from their banks' perspective it is either not feasible to offer SFIs or that they

do not think that it would be an attractive or viable option for their clients. Furthermore, SMEs have a lower share (33 %) that believe their bank can support them in their sustainability transition, compared to the full sample of companies not active in capital markets (47 %). This contradicts the assumption that SMEs not active in capital markets might benefit from their close house bank relations in terms of a strong trust and thus easier implementation of SFIs. The observed behavior could be due to a lack of knowledge and uncertainty regarding how their house banks can support them in their sustainability transition. This is discussed in further detail in section 6. Finally, SME's bank rating is on average similar to all of the companies not active in capital markets, with 33 % rating their banks' support as very good and 67 % as average.

3.5.4 Promotional Loans

Promotional loans are a financing instrument that is usually linked to a certain topic and offers companies more favorable loan conditions compared to a conventional loan. They are often provided through public financial institutions, such as the European Investment Bank ((EIB), 2023) and KFW (2024a). For instance, KFW (2024a) offers promotional loans for investments in companies' sustainability transition in line with the EU taxonomy, in energy and resource efficiency, as well as renewable energies and the reduction of greenhouse gas emissions. Promotional loans have favorable financing conditions in the form of attractive interest rates, easier access to credit when KFW assumes part of the credit risk, or even an investment grant.

The aim is to foster sustainability investments by lowering companies' financial barriers to implement their transition strategy. Promotional loans could be particularly attractive for companies not active in capital markets, as they have lower sustainability data requirements

than a sustainability-linked or green loan.[31] Furthermore, the loan application is processed through a company's bank, which means that they can benefit from their long-term trust relation. However, companies consequently also depend on their banks to support them in the application process. In the following section, the difference in promotional loan interest, knowledge and use between companies active and not active in capital markets, as well SMEs not active in capital markets, are analyzed.

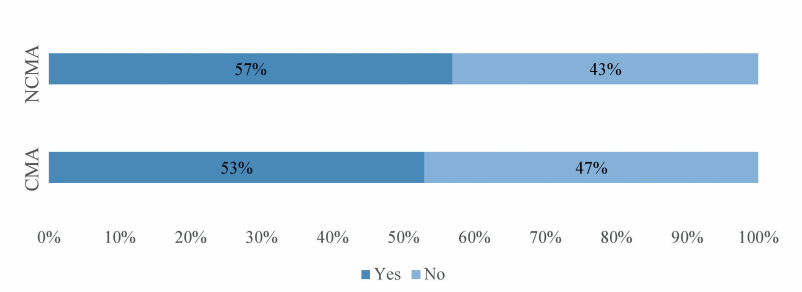
3.5.4.1 Promotional Loan Interest, Knowledge and Use

The survey asked respondents whether they are familiar with or have already used a promotional loan in connection with sustainable finance. As seen in Figure 13, promotional loan knowledge is very similar for companies active (53 %) and not active (57 %) in capital markets. However, for both groups only slightly more than half of the companies are familiar with promotional loans connected with SFIs. Furthermore, it is striking that only companies not active in capital markets have used promotional loans so far. This suggests that promotional loans indeed offer an attractive financing opportunity for companies not active in capital markets. Capital market active companies might prefer to use capital market SFIs, such as a green or sustainability-linked bond, as they offer a potential reputational benefit, as explained in section 2.2.3.

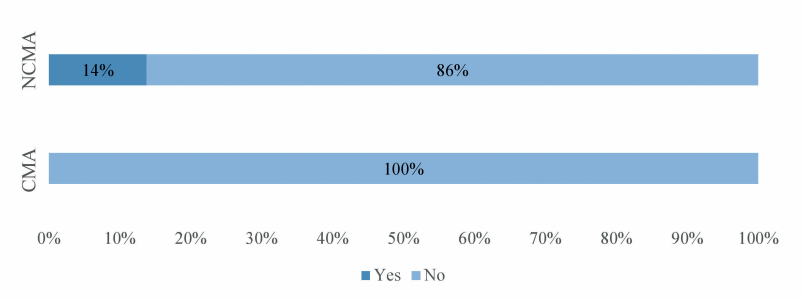
31 For instance, the climate action promotional loan for medium-sized businesses by KFW (2024b) finances investments into the reduction, prevention and elimination of greenhouse gas emissions. Regarding the promotional loan's sustainability criteria requirements, companies have to adhere to a list of eligible investment categories and have to prove the appropriate use of the funds. However, they do not have to provide any company-level or project-level sustainability data, as would be the case for a green or sustainability-linked loan.

Figure 13. Promotional Loan Knowledge and Use by Capital Market Activity

a. Promotional Loan Knowledge



b. Promotional Loan Use

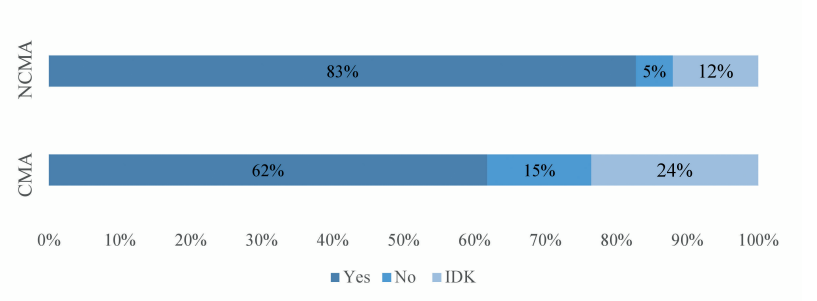


Source: This figure presents the share of companies that know and / or use promotional loans by capital market activity, based on the survey results reported in Appendix A, Table 17. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

In regard to promotional loan interest, one can see in Figure 14 that promotional loan interest is higher for companies not active in capital markets (83 %) compared to companies active in capital markets (62 %). This relation is supported by the logistic regression results which indicate a statistically significant negative association between being interested in promotional loans and being active in capital markets (see Appendix A, Table 18). This result further supports the finding that promotional loans are a particularly attractive financing instrument to foster sustainability transition investments for companies

not active in capital markets. Finally, it is striking that almost one-fifth of companies active in capital markets (24 %) are unsure whether they are interested in promotional loans, as seen in Figure 14. This suggests that companies are uncertain whether they can use and how they can benefit from promotional loans connected to sustainable finance.

Figure 14. Promotional Loan Interest



Source: This figure presents the share of companies that are interested in promotional loans by capital market activity, based on the survey results reported in Appendix A, Table 17. Note: "NCMA" denotes not capital market active and "CMA" denotes capital market active.

3.5.4.2 Promotional Loans and SMEs Not Active in Capital Markets

Regarding the SME share that is not active in capital markets, one can see that promotional loan knowledge is significantly lower (33 %) compared to all of the companies not active in capital markets (53 %) (see Appendix A, Table 17). Moreover, none of SMEs not active in capital markets have used a promotional loan connected to sustainability transition investments so far. This is an important observation, as promotional loans could be particularly helpful for SMEs, providing a more cost-sensitive option to foster sustainability transition investments compared to a sustainable finance loan. Compared to a sustainability-linked or green loan, the data requirements in terms of sustainability data collection and monitoring are lower and the process already more standardized. The promotional loan interest among SMEs not

active in capital markets is comparatively a bit lower (67 %) than for all companies not active in capital markets (83 %), as seen in Appendix A, Table 17. Nevertheless, more than half are interested in promotional loans in contrast to only one-third knowing about promotional loans connected to sustainable finance in advance of the survey. This observation suggests that SMEs do not have sufficient knowledge regarding promotional loan use and is further discussed in the following section.

3.6 Discussion

The survey results show that companies not active in capital markets experience lower regulatory pressure and transition risk. Moreover, they experience uncertainty in regard to further sustainability regulations, but expect a linkage between credit conditions and sustainability criteria to be likely, whilst the loss of financing access is seen as more unlikely. An important difference to companies active in capital markets is that they cannot benefit from reputational advantages of SFIs in the same manner, as explained in section 5.1. Consequently, companies not active in capital markets could be best incentivized to use SFIs by a pricing advantage.

SFIs such as green or sustainability-linked loans have the potential to offer such a pricing advantage, but also have precise and binding sustainability data and reporting requirements that are challenging for companies not active in capital markets to comply with. Regarding the implementation of SFIs, companies not active in capital markets demonstrate to have insufficient data availability and monitoring, as well as a lack of sustainable finance knowledge and experience. This is particularly the case for SMEs not active in capital markets. A potential explanation based on the preceding analysis is that they perceive lower regulatory pressure and transition risk, whilst the costs to obtain sustainability data and implement a SFIs are relatively higher. This is reflected in the low share of companies that have an ESG rating and the low share of SFI users. Consequently, SFIs for companies not active in capital markets, and especially for SMEs, should be adapted

in terms of their data requirements accordingly. Companies not active in capital markets in particular asked for more flexibility of SFIs to be able to adapt them to their financing needs and investment projects, as explained in section 5.2.

A form of SFI that could be particularly attractive for companies not active in capital markets, and who are currently unable to meet sustainability data requirements of green or sustainability-linked loans, are promotional loans. The data requirements for promotional loans are lower, in terms of sustainability data collection and monitoring, compared to a green or sustainability-linked loan. Moreover, they offer a clear pricing or risk advantage compared to a conventional loan, whilst fostering investments into companies' sustainability transition. A study by Brüggemann et al. (2023) shows that especially SMEs often use promotional loans to finance their transition projects, compared to large companies. The survey results reflect this, with the majority of companies not active in capital markets being interested in promotional loans connected to sustainability. However, more than half of the companies not active in capital markets are currently not familiar with said promotional loans, as seen in Section 6.1 and 6.2. As promotional loans are usually processed through a company's bank, they play an important role in supporting companies to use promotional loans to foster sustainability investments.

The diversity and different financing conditions of promotional loans connected to sustainability investments can be overwhelming for companies. For instance, KFW (2024a) currently has ten different promotional loans and grants connected to sustainable finance, with varying conditions, including promotional loans tailored to SMEs, as well as to sustainability technologies. Therefore, banks play a crucial role in aiding companies to find the best option for their sustainability investment plans and in supporting them in the subsequent application process. Nevertheless, this approach relies on banks' willingness to support companies in their promotional loan use, even though interest margins earned with promotional loans are considered as low by banks (Handke, 2011). However, the promotional loan process can also offer

banks the opportunity to develop a closer relationship with their corporate clients and to reduce information asymmetry by developing a credit history (Handke, 2011). Furthermore, supporting companies to finance their sustainability transition with the help of a promotional loan falls into the mandate of the majority of particularly regional banks. Apart from profit-making, cooperative and savings banks have the mandate to support the business of their members (Schmidt & Tyrell, 2004) and to serve the common good in line with their public mandate (DSGV, 2017) respectively, as explained in Section 3.1.

In general, the survey results demonstrate the importance of banks' support to use SFIs and promotional loans. In contrast to the assumption that companies not active in capital markets might benefit from their close relation with their house banks (see section 3.3), the opposite appears to be true. Companies not active in capital markets have a lower SFI recommendation and higher uncertainty regarding their banks' support for their sustainability transition. This observation is even stronger for SMEs not active in capital markets, of which none have been recommended SFI use and only 33 % believe that their bank can support them in their sustainability transition (see section 5.2.3).

This reflects how particularly regional banks appear to be lagging behind in the integration of sustainability in their lending processes and the support of SFIs. This is supported by the fact that only 19 % of regional banks currently require sustainability data from their borrowers (Strube et al., 2023a) and 82 % do not offer any sustainability-linked loan (Strube et al., 2023b). Consequently, regional banks need to improve their sustainable finance support. However, the problem is not limited to regional banks, as even among all bank groups, only 13 % of SMEs state that their sustainability performance was a topic in their credit negotiations (Gerstenberger, 2024). This emphasizes that, in general, SMEs require a more tailored sustainable finance support than larger companies (Hinsche, 2024), taking their current level of sustainability data collection and relatively higher financial costs into consideration.

Based on the survey results, banks and in particular regional banks should advance and improve their sustainable finance support for companies not active in capital markets. The survey results show that companies are asking for a clear commitment, concrete financing offers and for their banks to be a sparring partner in acquiring the funds to finance their sustainability transition. It is striking that companies not active in capital markets and their banks are currently not making sufficient use of their, often long-term, (house) bank relationship. The advantage of an in-depth knowledge of the company's business, which is otherwise very costly to obtain given the prevalent information asymmetry, as well as trust built on years of experience together, should be used to foster sustainability investments. Banks should encourage their clients to make use of SFIs to invest in their sustainability transition, provide necessary information and consultation, and support them in the implementation.

In regard to the type of SFIs, the study demonstrates that sustainability-linked or green loans' data and reporting requirements might be difficult to align with the current level of data availability and relatively high costs of implementation for companies not active in financial markets, and particularly SMEs. This is supported by the fact that regional banks think that sustainability-linked loans are only conditionally suitable (Strube et al., 2023b) and that only 31 % of SMEs think that SFIs offer an understandable, transparent and accessible financing option (Scharf, 2022).

In the long run, companies not active in capital markets, including SMEs, will have to report on their sustainability performance due to the CSRD, SFDR and the accompanying trickle-down effect, as explained in section 2.2. Even if SMEs should be exempted from certain sustainability disclosure regulations, the trickle-down effect will eventually lead to all companies having to report certain sustainability data points and thus create the desired transparency. Currently, however, the availability of sustainability data is still insufficient and hinders sustainability investments, as this study showed. Yet, the overarching goal of sustainable finance is to foster investments into sustainability

to advance the economy's sustainability transition and to meet our climate targets. In order to successfully achieve the European Green Deal and global climate targets, sustainability investments need to be realized now and should not wait until sufficient data collection and monitoring are provided. Therefore, sustainable finance instruments need to be adapted to the current data availability and monitoring capabilities of companies not active in capital markets, particularly SMEs.

An alternative option for companies not active in capital markets is to use, at least temporarily, promotional loans, which have lower data requirements than green or sustainability-linked loans, as explained above. A potential adaptation could be to require companies to collect certain sustainability performance indicators in a defined time frame, in order to receive a promotional loan, as proposed and explained by Hinsche (2024). This could incentivize and progress data collection and monitoring, as long as the financial advantage of the promotional loan is higher than the costs of acquiring sustainability data. But ultimately, promotional loans should continue to support investments into companies' sustainability transition and not investments into sustainability data collection, to advance the real economy's progress to achieve the European Union's Green Deal climate target until 2030. Furthermore, in the course of promotional loan applications, particularly SMEs could receive information from their house banks regarding sustainability data requirements that they can expect in the upcoming years, how this can affect their financing and how to prepare accordingly, to decrease insufficient sustainability awareness and sustainable finance knowledge.

Apart from sustainability data requirements, the findings show that companies not active in capital markets can be primarily incentivized to use SFIs by a pricing advantage. Promotional loans can offer a clear pricing or risk advantage, however, the funds for the required promotional loans are provided by the state. In contrast, green and sustainability-linked loans mobilize private sector investments into sustainability, independently from public funds. This is crucial, as one

of the main aims of sustainable finance is to mobilize the required private sector sustainability investments in addition to public sector sustainability investments. However, a fundamental prerequisite, in order for green and sustainability-linked loans to be able to systemically offer a pricing advantage compared to a conventional instrument, is a clear established link between a company's or asset's sustainability and financial risk.

As the current market mechanism and structures do not price environmental pollution yet, they fail to direct investments into environmentally sustainable activities and companies' sustainability transition. Furthermore, research so far fails to establish a clear link between sustainability and financial risk (NGFS, 2020; NGFS, 2022). Consequently, the state must intervene to ensure that the necessary sustainability investments are realized in a timely manner, in order to avoid higher damages and costs caused by the climate crisis in the future. Promotional loans can constitute a temporary option for the state to intervene, in the form of directly providing the necessary funds. However, from a social market economy perspective, the preferred solution would be for the state to only intervene in the form of regulations and to return to market-based structures. This would be possible, for instance, by determining a price for environmental pollution or in regard to sustainable finance by introducing risk-weighted adjustment factors, based on a company's sustainability, to capital requirements as part of pillar I of the Basel framework (Deutsche Bundesbank, 2023).

Otherwise, sustainable finance is currently relying on public pressure to transition and the voluntary nature of companies. The results emphasize that companies not active in capital markets cannot benefit from reputational effects in capital markets and can therefore be primarily incentivized to use SFIs by a clear pricing advantage. Consequently, in order to foster sustainability investments by companies relying on bank-based financing and to avoid a dependency on promotional loans, two important adjustments are necessary: Firstly, SFIs need to be improved in terms of their accessibility and feasibility for companies relying on bank-based financing. Secondly, a clear link be-

tween a company's sustainability performance and financial risk needs to be established, in order to ensure a pricing incentive for companies to invest into their sustainability transition.

3.7 Conclusion

This study analyzed how companies active and not active in capital markets differ in their SFI use and motivation, and whether the sustainable finance incentivization scheme might need to be adapted accordingly. Furthermore, the study evaluates how the characteristics of a house bank relation could be utilized for an efficient SFI use, with a special consideration of SMEs not active in capital markets. The research data was collected through a survey conducted in June 2023 with 700 invited corporate customers from DZ BANK AG. Subsequently, the analysis was performed using a mixed method approach, with correlation and logistic regression analysis for the quantitative analysis and a thematic content analysis for the qualitative research parts.

The survey results show that companies active and not active in capital markets differ in their motivation to use SFIs. Companies not active in capital markets perceive on average a lower regulatory pressure and transition risk. Moreover, they believe that a link between credit conditions and sustainability criteria is likely, but perceive the risk to lose financing access due to failure to achieve certain sustainability targets mostly as average. Also, in contrast to capital market active companies, companies not active in capital markets do not benefit from reputational advantages that arise due to the transparency of the capital market. Therefore, companies not active in capital markets can primarily be incentivized by a potential pricing advantage of SFIs compared to a conventional financing instrument.

Companies active and not active in capital markets also differ in regard to the implementation of SFIs. Companies not active in capital markets have a significantly lower SFI knowledge and a lower share that has an ESG rating. This is supported by companies' perceived barriers to SFI use, which demonstrate that companies not active in capital

markets perceive particularly company requirements and implementation as barriers. The respective barriers include data collection, comparability, KPI choice and reporting, as well as knowledge barriers such as insufficient experience and consulting. Generally, the implementation results suggest that particularly data availability and SFI knowledge pose a challenge for companies not active in capital markets to use SFIs.

Finally, companies not active in capital markets also differ in terms of their bank support and SFI enabling factors. They experience high uncertainty regarding their banks' ability to support them in their sustainability transition and rate their banks' current support predominantly as average. Furthermore, only a small share of companies not active in capital markets have been recommended SFI use by their bank, compared to capital market active companies. However, their desired bank support in the form of more information on sustainable finance use, mechanism and market, as well as consultation regarding KPI choice, promotional loans and reporting, shows that companies not active in capital markets are interested in their banks taking a more proactive role. This is supported by their demand for concrete SFI financing offers and for their banks to demonstrate a clear commitment to sustainability and to support them as a sparring partner in their sustainability transition.

Additionally, this study analyzed differences in motivation, implementation and enabling factors inherent to SMEs not active in capital markets. The survey results show that SMEs not active in capital markets perceive lower regulatory pressure, transition risk and risk to lose financing access in case of failure to achieve sustainability targets. The latter could be attributed to SMEs' trust in their established banking relations with their house banks. Furthermore, data availability is an even more pressing issue for SMEs not active in capital markets, as none reported to have an ESG rating and only 50 % have a carbon footprint. In regard to bank support, SMEs not active in capital markets demonstrate high uncertainty about how their bank could support them in their sustainability transition and none have been recommended SFI

use by their bank. This emphasizes the important role of (regional) banks to improve their sustainable finance support particularly for SMEs not active in capital markets.

To conclude, this paper contributes to the existing literature by demonstrating how companies active and not active in capital markets differ in their motivational, implementation and enabling factors to use SFIs based on a mixed methods research approach. Furthermore, this study suggests how the currently implemented sustainable finance incentive structure could be adapted to the characteristics of companies not active in capital markets and particularly SMEs. In regard to limitations, it should be noted that the share of SMEs in the sample is comparably small, as the survey was distributed to corporate customers of DZ BANK AG and not through regional cooperative bank branches. Thus, further research focusing on regional bank clients, including cooperative and savings bank clients, could provide even more insights into house bank relation characteristics in relation to sustainable finance instrument use.

In terms of policy recommendations, the research results suggest that the currently implemented sustainable finance incentive structure indeed needs to be adapted to the differing characteristics of companies not active in capital markets, and even more in the case of SMEs not active in capital markets. Furthermore, the paper discusses potential pathways to increase sustainability investments for companies not active in capital markets. The results indicate that companies, which rely on bank-based financing, can be primarily incentivized by a pricing advantage. In order to ensure a systemic pricing advantage, a clear link between companies' sustainability and financial risk has to be established. However, as research has failed to identify a clear link between sustainability and financial risk so far, the state might have to intervene in order to ensure the necessary sustainability investments in a timely manner.

From a social market economy perspective, the preferred option would be to introduce a price for environmental pollution or, for instance, risk-weighted adjustment factors, based on a company's sus-

tainability, with respect to capital requirements (e.g. Basel framework). Thereby, the state would only intervene in the form of a regulatory adjustment and could subsequently return to market-based structures. In contrast, promotional loans rely on the state intervening by providing liquidity in the form of public funds and should therefore only be used temporarily, until a link between sustainability and financial risk is established, or the state introduces regulatory adjustments accordingly. Finally, the paper results emphasize the need for banks to step up their sustainable finance support and become a sparring partner to their corporate customers, providing information and consultation regarding the financing of their sustainability transition.

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Appendix A: Tables

Table 2. Summary Statistics – Companies' Sustainability Characteristics

	Observations	Percent of Data
Number of Companies	93	100 %
Carbon Footprint		
Yes	52	55.9 %
No	33	35.5 %
I don't know	8	8.6 %
ESG Rating		
Yes	21	22.6 %
No	53	57.0 %
I don't know	10	10.8 %
I don't know, unfamiliar with the term ESG	9	9.7 %
Company-Level Sustainability Targets		
Yes	65	69.9 %
No	25	26.9 %
I don't know	3	3.2 %
Sustainability Target Commitment Scheme		
Yes	12	12.9 %
No	65	69.9 %
I don't know	16	17.2 %

Source: This table presents the company sustainability characteristics of the 93 survey respondents.

Table 3. Summary Statistics – Respondents' Additional Information

	Observations	Percent of Data
Numer of Companies	93	100 %
Company Department		
Finance	86	94,5 %
Other Deparment	5	5,5 %
Gender		
Male	80	87,9 %
Female	9	9,9 %
Diverse	1	1,1 %
No Answer	1	1,1 %
Age Group		
20 to 29 years	2	2,2 %
30 to 39 years	21	23,1 %
40 to 49 years	28	30,8 %
50 to 59 years	28	30,8 %
60 years or older	12	13,2 %
Study / Work Experience in Sustainability		
Yes, study and work experience in sustainability	8	8,8 %
Yes, work experience in sustainability	27	29,7 %
No, neiter study nor work experience in sustainability	48	52,7 %
No Answer	8	8,8 %

Source: This table presents additional information regarding the 93 survey respondents, based on survey questions 26, 27, 28 and 29. Differences in the number of observations are due to the fact that the response was voluntary and not all survey participants answered these questions.

Table 4. Correlation Analysis Results

	CMA	
	Fisher's Exact	Cramér's V
Regulatory Pressure	0.555	0.1662
Transformation Risk	0.710	0.1234
Financing Access	0.832	0.1199
Financing Link	0.941	0.0907
Carbon Footprint	0.237	0.1710
ESG Rating	0.079*	0.2685
Company-Level Sustainability Targets	0.511	0.1237
Sustainability Target Commitment Scheme	0.275	0.1716
Unfamiliar with ESG	0.721	-0.0511
Unfamiliar with SFI	0.049**	0.2127
Barriers	0.273	0.1352
Bank SF Support Rating	0.278	0.2273
Bank SFI Recommendation	0.044**	0.2564
Banks Potential Role	0.624	0.1042
Promotional Loan Knowledge	0.829	0.0384
Promotional Loan Use	0.024**	0.2363
Promotional Loan Interest	0.087*	0.2384

Source: Fisher's exact test and Cramér's V calculation run in Stata using the data from Table 7, Table 9, Table 13 and Table 17. The number of observations is 92, as one recorded "no answer" option for capital market activity is excluded. Significance levels are denoted as follows: *** p<.01, ** p<.05, * p<.1.

Table 5. SFI Use and Company Size by Capital Market Activity

	Sample	
	CMA	**Not CMA**
Count	34	58
Company Size		
Up to €9 million	0	1
€10 to €49 million	4	5
€50 to €499 million	14	32
€500 million to €5 billion	6	17
Bigger than €5 billion	8	2
No Answer	2	1
Sustainable Finance Use		
Yes	9	4
No	22	38
Yes in Progress	1	5
IDK SFI	1	10
IDK	1	1

Source: This table presents the recorded data based on survey questions 1, 19 and 20 by capital market activity. Note. "CMA" means capital market active, "Not CMA" means not capital market active and "IDK" means I don't know.

Table 6. Logistic Regression Results – SFI Use and Company Size

Logistic Regression: CMA – SFIUse

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Yes	1	.	.	.	.	.	Baseline
No	.257	.17	-2.05	.04	.07	.941	**
Yes in Progress	.089	.112	-1.93	.054	.008	1.043	*
IDK SFI	.044	.054	-2.56	.01	.004	.481	**
IDK	.444	.687	-0.52	.6	.022	9.182	
Constant	2.25	1.359	1.34	.18	.688	7.353	
Number of obs	=	*92*			*Log pseudol.*	=	*-54.894267*
Wald chi2(4)	=	*8.77*			*Pseudo R2*	=	*.0942*
Prob > chi2	=	*.0670*					

Logistic Regression: CMA – Company

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
< 49 M	1	.	.	.	.	.	Baseline
50 – 499 M	.656	.476	-0.58	.561	.159	2.716	
500 – 5 B	.529	.427	-0.79	.43	.109	2.568	
>5 B	6	6.157	1.75	.081	.803	44.84	*
NA	3	4.176	0.79	.43	.196	45.921	
Constant	.667	.433	-0.62	.532	.187	2.379	
Number of obs	=	*92*			*Log pseudol.*	=	*-55.112019*
Wald chi2(4)	=	*8.78*			*Pseudo R2*	=	*.0906*
Prob > chi2	=	*.0668*					

Source: Logistic regression analysis with robust standard errors run in Stata using data from Table 5. The dependent variable is a binary variable for which 1 denotes capital market activity and 0 no capital market activity. The independent variables are in this case SFI Use and Company Size respectively. Significance levels are denoted as follows: *** p<.01, ** p<.05, * p<.1.

Table 7. Motivational Factors by Capital Market Activity and SME Share

	Sample		Percentage		SME Share	
	CMA	Not CMA	CMA	Not CMA	Not CMA	Not CMA
Count	34	58	100 %	100 %	6	100 %
Transition Risk						
Little	3	7	9 %	12 %	2	33 %
Average	10	14	29 %	24 %	2	33 %
Strong	14	29	41 %	50 %	1	17 %
Very Strong	7	8	21 %	14 %	1	17 %
Regulatory Pressure						
Little	0	4	0 %	7 %	1	17 %
Average	13	19	38 %	33 %	3	50 %
Strong	14	23	41 %	40 %	1	17 %
Very Strong	7	12	21 %	21 %	1	17 %
Credit Link						
Very Unlikely	1	2	3 %	3 %	0	0 %
Unlikely	4	4	12 %	7 %	2	33 %
Average	7	14	21 %	24 %	1	17 %
Likely	15	25	44 %	43 %	2	33 %
Very Likely	7	13	21 %	22 %	1	17 %
Financing Access						
Very Low	3	3	9 %	5 %	0	0 %
Low	10	13	29 %	22 %	2	33 %
Average	11	24	32 %	41 %	3	50 %
High	8	15	24 %	26 %	0	0 %
Very High	2	2	6 %	3 %	1	17 %

Source: This table presents the recorded data based on survey questions 14, 15, 16, 17 and 20 by capital market activity in the first column. "CMA" means capital market active and "Not CMA" means not capital market active. The second column shows the respective percentage with the two groups CMA and Not CMA as the respective baseline. The third column presents only the SME share of companies Not CMA.

Table 8. Logistic Regression Results – Motivational Factors

Logistic Regression: CMA – Regulatory Pressure

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Signifi-cance / Comment
Low	1	.	.	.	.	.	PFP
Average	1	.	.	.	.	.	Baseline
Strong	.89	.442	-0.24	.814	.336	2.358	
Very Strong	.853	.511	-0.27	.79	.263	2.763	
Constant	.684	.248	-1.05	.294	.337	1.391	
Number of obs	=	*88*			*Log pseudol.*	=	*-58.65975*
Wald chi2(2)	=	*.09*			*Pseudo R2*	=	*.0008*
Prob > chi2	=	*.9569*					

Logistic Regression: CMA – Transformation Risk

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Signifi-cance / Comment
Low	1	.	.	.	.	.	Baseline
Average	1.667	1.349	0.63	.528	.341	8.14	
Strong	1.126	.864	0.16	.877	.25	5.066	
Very Strong	2.042	1.771	0.82	.411	.373	11.175	
Constant	.429	.297	-1.22	.222	.11	1.67	
Number of obs	=	*92*			*Log pseudol.*	=	*-59.906354*
Wald chi2(3)	=	*1.37*			*Pseudo R2*	=	*.0115*
Prob > chi2	=	*.7120*					

Logistic Regression: CMA – Financing Access

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Signifi-cance / Comment
Very Low	1	.	.	.	.	.	Baseline
Low	1.026	.899	0.03	.977	.184	5.718	
Average	.611	.52	-0.58	.563	.115	3.238	
High	.711	.629	-0.39	.7	.125	4.031	
Very High	1.333	1.687	0.23	.82	.112	15.918	
Constant	.75	.576	-0.37	.708	.166	3.379	
Number of obs	=	*92*			*Log pseudol.*	=	*-59.946244*
Wald chi2(4)	=	*1.29*			*Pseudo R2*	=	*.0108*
Prob > chi2	=	*.8623*					

Logistic Regression: CMA – Financing Link

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Signifi-cance / Comment
Very Unlikely	1	.	.	.	.	.	Baseline
Unlikely	2	2.844	0.49	.626	.123	32.464	
Average	1	1.316	0.00	1	.076	13.201	
Likely	1.2	1.529	0.14	.886	.099	14.589	
Very Likely	1.077	1.42	0.06	.955	.081	14.275	
Constant	.5	.616	-0.56	.574	.045	5.587	
Number of obs	=	*92*			*Log pseudol.*	=	*-60.23298*
Wald chi2(4)	=	*.74*			*Pseudo R2*	=	*.0061*
Prob > chi2	=	*.9469*					

Source: Logistic regression analysis with robust standard errors run using data from Table 7. Further details see Table 6. Significance levels: *** p<.01, ** p<.05, * p<.1."PFP" = predicts failure perfectly.

Table 9. Implementation Factors by Capital Market Activity and SME Share

	Sample		Percentage		SME Share	
	CMA	Not CMA	CMA	Not CMA	Not CMA	Not CMA
Count	34	58	100 %	100 %	6	100 %
Carbon Footprint						
Yes	19	33	56 %	57 %	3	50 %
No	10	22	29 %	38 %	3	50 %
IDK	5	3	15 %	5 %	0	0 %
ESG Rating						
Yes	12	9	35 %	16 %	0	0 %
No	14	39	41 %	67 %	2	33 %
IDK	4	5	12 %	9 %	1	17 %
IDK ESG Term	4	5	12 %	9 %	3	50 %
Sustainability Targets						
Yes	24	40	71 %	69 %	3	50 %
No	8	17	24 %	29 %	2	33 %
IDK	2	1	6 %	2 %	1	17 %
Incentive Scheme						
Yes	7	5	21 %	9 %	1	17 %
Management compensation	3	2	-	-	-	-
Management reporting	0	1	-	-	-	-
No	22	43	65 %	74 %	4	67 %
IDK	5	10	15 %	17 %	1	17 %
Unfamiliar with SFI						
Yes	1	10	3 %	17 %	1	17 %
No	33	48	97 %	83 %	5	83 %
Barriers						
Yes	17	21	50 %	36 %	2	33 %
No	17	37	50 %	64 %	4	67 %

Source: This table presents the recorded data based on survey questions 1, 2, 20, 21, 22, 23 and 24 by capital market activity in the first column. "CMA" means capital market active and "Not CMA" means not capital market active. The second column shows the respective percentage with the two groups CMA and Not CMA as the respective baseline. The third column presents only the SME share of companies Not CMA. Note. "IDK" = I don't know.

Table 10. Logistic Regression Results – Implementation Factors I

Logistic Regression: CMA – Carbon Footprint

CMA	Odds Ratio	Robust Std. Err.	z	P >| z|	95 % Confidence Interval		Significance / Comment
Yes	1.267	.609	0.49	.623	.494	3.248	
No	1	.	.	.	.	.	Baseline
I don't know	3.667	3.037	1.57	.117	.723	18.595	
Constant	.455	.174	-2.06	.04	.214	.964	**
Number of obs	*=*	*92*			*Log pseudol.*	*=*	*-59.302853*
Wald chi2(2)	*=*	*2.47*			*Pseudo R2*	*=*	*.0214*
Prob > chi2	*=*	*.2910*					

Logistic Regression: CMA – ESG Rating

CMA	Odds Ratio	Robust Std. Err.	z	P >| z|	95 % Confidence Interval		Significance / Comment
Yes	3.714	2.016	2.42	.016	1.282	10.764	**
No	1	.	.	.	.	.	Baseline
I don't know	2.229	1.657	1.08	.281	.519	9.573	
I don't know, unfamiliar	2.229	1.657	1.08	.281	.519	9.573	
Constant	.359	.112	-3.27	.001	.194	.663	***
Number of obs	*=*	*92*			*Log pseudol.*	*=*	*-57.306143*
Wald chi2(3)	*=*	*6.30*			*Pseudo R2*	*=*	*.0544*
Prob > chi2	*=*	*.0981*					

Logistic Regression: CMA – CLST

CMA	Odds Ratio	Robust Std. Err.	z	P >| z|	95 % Confidence Interval		Significance / Comment
Yes	1.275	.642	0.48	.629	.476	3.419	
No	1	.	.	.	.	.	Baseline
I don't know	4.25	5.545	1.11	.267	.329	54.825	
Constant	.471	.203	-1.75	.08	.202	1.095	*
Number of obs	=	*92*			*Log pseudol.*	=	*-59.921326*
Wald chi2(2)	=	*1.26*			*Pseudo R2*	=	*.0112*
Prob > chi2	=	*.5324*					

Logistic Regression: CMA – STCS

CMA	Odds Ratio	Robust Std. Err.	z	P >| z|	95 % Confidence Interval		Significance / Comment
Yes	2.736	1.765	1.56	.119	.773	9.688	
No	1	.	.	.	.	.	Baseline
I don't know	.977	.597	-0.04	.97	.295	3.234	
Constant	.512	.135	-2.54	.011	.305	.858	**
Number of obs	=	*92*			*Log pseudol.*	=	*-59.298665*
Wald chi2(2)	=	*2.54*			*Pseudo R2*	=	*.0215*
Prob > chi2	=	*.2813*					

Source: Logistic regression analysis with robust standard errors run in Stata using data from Table 9. Further details see Table 6. Significance levels: *** p<.01, ** p<.05, * p<.1. "CLST" means company-level sustainability targets and "STCS" means sustainability target commitment scheme.

Table 11. Logistic Regression Results – Implementation Factors II

Logistic Regression: CMA – Unfamiliar with ESG

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
No	1	.	.	.	.	.	Baseline
Yes	1.413	1.007	0.49	.627	.35	5.712	
Constant	.566	.13	-2.48	.013	.361	.888	**
Number of obs	=	*92*			*Log pseudol.*	=	*-60.485032*
Wald chi2(1)	=	*.24*			*Pseudo R2*	=	*.0019*
Prob > chi2	=	*.6273*					

Logistic Regression: CMA – Unfamiliar with SFI

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
No	1	.	.	.	.	.	Baseline
Yes	.145	.157	-1.79	.074	.018	1.205	*
Constant	.688	.156	-1.65	.099	.44	1.074	*
Number of obs	=	*92*			*Log pseudol.*	=	*-58.098981*
Wald chi2(1)	=	*3.19*			*Pseudo R2*	=	*.0413*
Prob > chi2	=	*.0739*					

Logistic Regression: CMA – Barriers

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Yes	1.762	.777	1.28	.199	.742	4.181	
No	1	.	.	.	.	.	Baseline
Constant	.459	.135	-2.64	.008	.258	.818	***
Number of obs	=	*92*			*Log pseudol.*	=	*-59.765225*
Wald chi2(1)	=	*1.65*			*Pseudo R2*	=	*.0138*
Prob > chi2	=	*.1989*					

Source: Logistic regression analysis with robust standard errors run in Stata using data from Table 9. Further details see Table 6. Significance levels: *** p<.01, ** p<.05, * p<.1.

Table 12. Perceived Barriers by Capital Market Activity

Main Categories	Subcategories Level 1	Subcategories Level 2	Number of Observations	
			CMA	NCMA
Applicability	Company Characteristics	*Company purpose*	1	0
		Financing structure	1	1
		Industry	0	1
	Financing Need	*Insufficient flexibility*	0	1
		Use Case	0	1
Company Requirements	Administrative Work	*Add. work capacities needed*	1	0
		General add. effort	4	3
		Reporting	1	3
	Knowledge	*Insufficient consulting*	1	0
		No experience	0	1
		Regulatory uncertainty	0	2
Economic Efficiency	Cost	*Costs higher than benefits*	1	2
		Higher costs	3	0
		Insufficient promotional loans	1	1
	Risk	*Greenwashing risk*	1	0
		Regulatory risk	0	1
		Risk of failure to achieve targets	3	1
Implementation	Instrument	*Data collection*	0	2
		KPI choice & tracking	1	3
		Size	0	1
	Standards & Regulations	*Data availability*	0	3
		Data comparability	0	1
		Investor requirements	1	0

Source: This table presents the recorded perceived barriers based on survey questions 2 and 20 by capital market activity. "CMA" means capital market active and "Not CMA" means not capital market active. 17 companies CMA and 21 companies NCMA reported barriers. The number of perceived barriers exceeds the number of companies, as some companies reported more than one barrier. The qualitative answers were categorized using thematic content analysis based on Kuckartz (2014).

Table 13. Enabling Factors by Capital Market Activity and SME Share

	Sample		Percentage		SME Share	
	CMA	Not CMA	CMA	Not CMA	Not CMA	Not CMA
Count	34	58	100 %	100 %	6	100 %
Bank Recommendation						
Yes	18	16	53 %	28 %	0	0 %
No	15	38	44 %	66 %	4	67 %
IDK	1	4	3 %	7 %	2	33 %
Bank Believe						
Yes	19	27	56 %	47 %	2	33 %
No	6	10	18 %	17 %	2	33 %
IDK	9	21	26 %	36 %	2	33 %
Bank Support						
Very Bad	3	2	9 %	3 %	0	0 %
Bad	5	6	15 %	10 %	0	0 %
Average	9	28	26 %	48 %	4	67 %
Good	14	18	41 %	31 %	0	0 %
Very Good	3	4	9 %	7 %	1	33 %

Source: This table presents the recorded data based on survey questions 11, 12, 13 and 20 by capital market activity in the first column. “CMA” means capital market active and “Not CMA” means not capital market active. The second column shows the respective percentage with the two groups CMA and Not CMA as the respective baseline. The third column presents only the SME share of companies Not CMA.

Table 14. Enabling Factors by Capital Market Activity excl. SFIDK

	Sample		Percentage	
	CMA	Not CMA	CMA	Not CMA
Count	33	48	100 %	100 %
Bank Recommendation				
Yes	18	16	55 %	33 %
No	14	28	42 %	58 %
IDK	1	4	3 %	8 %
Bank Believe				
Yes	18	23	55 %	48 %
No	6	10	18 %	21 %
IDK	9	15	27 %	31 %
Bank Support				
Very Bad	3	0	9 %	0 %
Bad	5	3	15 %	6 %
Average	9	24	27 %	50 %
Good	13	17	39 %	35 %
Very Good	3	4	9 %	8 %

Source: This table presents the recorded data from Table 13, excluding companies that were unfamiliar with SFI before the survey (SFIDK).

Table 15. Logistic Regression Results – Enabling Factors

Logistic Regression: CMA – Bank Support

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Very Bad	1	.	.	.	.	.	Baseline
Bad	.556	.612	-0.53	.594	.064	4.812	
Average	.214	.213	-1.55	.122	.03	1.508	
Good	.519	.511	-0.67	.505	.075	3.577	
Very Good	.5	.598	-0.58	.562	.048	5.22	
Constant	1.5	1.377	0.44	.659	.248	9.065	
Number of obs	=	*92*			*Log pseudol.*	=	*-58.181787*
Wald chi2(4)	=	*4.52*			*Pseudo R2*	=	*.0399*
Prob > chi2	=	*.3402*					

Logistic Regression: CMA – Bank Recommendation

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Yes	2.85	1.316	2.27	.023	1.153	7.047	**
No	1	.	.	.	.	.	Baseline
I don't know	.633	.738	-0.39	.695	.065	6.215	
Constant	.395	.121	-3.03	.002	.216	.72	***
Number of obs	=	*92*			*Log pseudol.*	=	*-57.586603*
Wald chi2(2)	=	*5.78*			*Pseudo R2*	=	*.0498*
Prob > chi2	=	*.0555*					

Logistic Regression: CMA – Bank Role

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Yes	1.173	.704	0.27	.791	.362	3.803	
No	1	.	.	.	.	.	Baseline
I don't know	.714	.468	-0.51	.608	.198	2.583	
Constant	.6	.312	-0.98	.325	.217	1.66	
Number of obs	=	*92*			*Log pseudol.*	=	*-60.096509*
Wald chi2(2)	=	*.98*			*Pseudo R2*	=	*.0084*
Prob > chi2	=	*.6125*					

Source: Logistic regression analysis with robust standard errors run in Stata using data from Table 13. Further details see Table 6. Significance levels: *** p<.01, ** p<.05, * p<.1.

Table 16. Companies' Bank Expectations by Capital Market Activity

Main Categories	Subcategories Level 1	Subcategories Level 2	Number of Observations	
			CMA	NCMA
Consultation	General Consultation		8	6
	KPI Choice		1	3
	Optimizing Rating		0	1
	Promotional Loans		1	2
	Reporting		0	2
Information	General Information		0	3
	Sustainable Finance Market	*Expectation of bank / capital market participants*	1	1
		Market Overview	1	1
	Sustainable Finance Mechanisms	*Comparison to conv. financing*	0	1
		Impact of sustainability on rating / financing	0	1
		Information on conditions	1	0
	Sustainable Finance Use	*Best Practice*	2	0
		Experience with other customers	0	4
		Use Cases	0	1
Mode of Information	Event		1	0
	Personal Talks		1	0
	Presentation		1	0
	Questionnaire		0	1
	Workshop		1	0
Role of Bank	Clear Commitment with Strategic Allocation		0	1
	Financing (Offers)		1	3
	Sparring Partner		0	1

Source: This table presents the recorded expectations based on survey questions 12 and 20 by capital market activity. "CMA" means capital market active and "Not CMA" means not capital market active. 19 companies CMA and 27 companies NCMA reported expectations. The number of expectations exceeds the number of companies, as some companies reported more than one expectation. The qualitative answers were categorized using thematic content analysis based on Kuckartz (2014).

Table 17. Promotional Loan Factors by Capital Market Activity and SME Share

	Sample		Percentage		SME Share	
	CMA	Not CMA	CMA	Not CMA	Not CMA	Not CMA
Count	34	58	100 %	100 %	6	100 %
PL Knowledge						
Yes	18	33	53 %	57 %	2	33 %
No	16	25	47 %	43 %	4	67 %
PL Use						
Yes	0	8	0 %	14 %	0	0 %
No	34	50	100 %	86 %	6	100 %
PL Interest						
Yes	21	48	62 %	83 %	4	67 %
No	5	3	15 %	5 %	1	17 %
I don't know	8	7	24 %	12 %	1	17 %

Source: This table presents the recorded data based on survey questions 9, 10 and 20 by capital market activity in the first column. "CMA" means capital market active and "Not CMA" means not capital market active. The second column shows the respective percentage with the two groups CMA and Not CMA as the respective baseline. The third column presents only the SME share of companies Not CMA.

Table 18. Logistic Regression Results – Promotional Loan Factors

Logistic Regression: CMA – Promotional Loan Interest

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
Yes	.263	.205	-1.71	.086	.057	1.211	*
No	1	.	.	.	.	.	Baseline
I don't know	.686	.617	-0.42	.675	.118	4.001	
Constant	1.667	1.224	0.70	.487	.395	7.029	
Number of obs	=	*92*			*Log pseudol.*	=	*-58.057085*
Wald chi2(2)	=	*4.91*			*Pseudo R2*	=	*.0420*
Prob > chi2	=	*.0860*					

Logistic Regression: CMA – Promotional Loan Knowledge

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
No	1	.	.	.	.	.	Baseline
Yes	.852	.372	-0.37	.714	.362	2.005	
Constant	.64	.206	-1.39	.166	.341	1.203	
Number of obs	=	*92*			*Log pseudol.*	=	*-60.534806*
Wald chi2(1)	=	*.13*			*Pseudo R2*	=	*.0011*
Prob > chi2	=	*.7141*					

Logistic Regression: CMA – Promotional Loan Use

CMA	Odds Ratio	Robust Std. Err.	z	P >|z|	95 % Confidence Interval		Significance / Comment
No	1	.	.	.	.	.	Baseline
Yes	1	.	.	.	.	.	PFP
Constant	.68	.152	-1.72	.085	.439	1.054	*
Number of obs	=	*84*			*Log pseudol.*	=	*-56.691203*
Wald chi2(0)	=	.			*Pseudo R2*	=	*.0000*
Prob > chi2	=	.					

Source: Logistic regression analysis with robust standard errors run in Stata using data from Table 17. Further details see Table 6. Significance levels: *** p<.01, ** p<.05, * p<.1. "PFP" = predict failure perfectly.