FI Analysis

Non-financial companies and financial stability: A description of vulnerabilities

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Summary

The liabilities of non-financial companies have increased rapidly over the past 15 years, and for the banks this lending represents a significant proportion of their balance sheets. Credit losses associated with corporate lending have also played a prominent role in previous financial crises on numerous occasions, both in Sweden and internationally. The analysis of the risks associated with corporate loans is therefore an important component of FI's work on financial stability. This FI Analysis describes how vulnerabilities from lending to non-financial companies occur and the reasons why FI needs to monitor them to fulfil its assignment to safeguard financial stability.

The fact that companies are able to take out loans is an effective way of distributing risks and resources in the economy. However, if the levels of indebtedness are too high, this can lead to vulnerabilities not only for the companies, but also for the financial sector. The transmission channels between the financial sector and the real economy can be used to show how these vulnerabilities occur. The main threats to financial stability are widespread company defaults and credit losses (or an elevated risk of them happening).

It is important to analyse vulnerabilities associated with substantial credit losses in order to understand how they occur. The starting point is FI's intermediate financial stability goals. These goals primarily aim to limit systemic risks and financial imbalances caused by high levels of debt and to limit systemic risks caused by high exposure concentrations that are relevant when analysing companies. FI uses indicators and stress tests to monitor and quantify vulnerabilities and resilience related to corporate lending.

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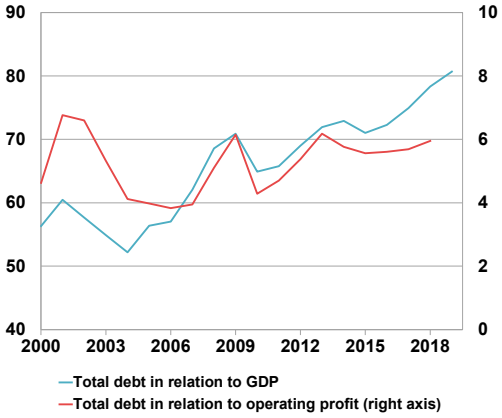
Diagram 1. Rapidly growing debt

Per cent and ratio



Source: Statistics Sweden.

Note: Total debt refers to corporate loans from Swedish credit institutions and issued bonds and commercial paper.

Non-financial companies are important for financial stability.

Finansinspektionen (FI) is tasked, inter alia, with promoting a stable financial system and counteracting financial imbalances on the credit market. 'Financial stability' is the ability of the financial system to maintain its basic functions in both normal and stressed conditions. If the financial system does not work, it can have major economic and social costs. Finansinspektionen (2019) describes the work that FI carries out to maintain this stability. This work includes identifying vulnerabilities and resilience in the financial system in order to assess the need for, and effects of, various measures.

The non-financial companies (hereinafter referred to as the 'companies') play a central role in financial stability due to the fact that a significant proportion of the banks' lending is to these companies. Swedish corporate debts have increased rapidly – both in relation to GDP and their operating profit (see Diagram 1). This development can also be observed in several others European countries (see ESRB, 2020). Large and increasing debt makes companies more sensitive to disruptions. Widespread problems in the corporate sector can then spread to the banks, which can in turn impact financial stability as well. This has contributed to an increased international discussion on targeted macroprudential measures that can counteract the risks of corporate debt. This is why one important part of FI's work is to continually monitor the corporate sector.

The purpose of this FI analysis is to describe how vulnerabilities from lending to companies occur and the reasons why they pose a threat to financial stability. This will help to clarify the stability work that FI carries out with regard to these companies from a macro perspective.

In the description of how vulnerabilities occur, we will focus mostly on the companies' bank loans, as they have the clearest link to financial stability. Traditionally, companies have primarily taken out loans through banks. However, in recent years, the corporate bond market has been steadily growing and now plays an important role in company financing.

This report has been structured in the following way. The introductory section summarises the factors that affect a company's choice of financing. This is followed by a description of the various links between the financial sector and the real economy (what is referred to as 'transmission channels'). This shows how companies can affect, and be affected by, these links, and explains why this is a vulnerability for the financial system. One conclusion is that widespread company defaults and the accompanying credit losses can have a major impact on financial stability. The next section describes the important general factors that can affect the extent of the losses caused by corporate loans. Finally, we report on how to analyse vulnerabilities and resilience related to financial stability and companies, using analyses, indicators and stress tests.

Companies' choice of financing

Understanding the driving forces and incentives behind a company's choice of financing helps to understand the vulnerabilities associated

with corporate loans. As companies are mostly heterogeneous and operate in different industries, their choice of financing often differs.[1] However, the vast majority of companies aim to maximise value for their shareholders. This involves, inter alia, striving for an *optimal capital structure*, i.e. optimising the choice between financing activities from the surplus in the business, using a direct injection of equity or taking out a loan.[2]

There are various advantages and disadvantages when choosing between equity and loans. Given several basic assumptions (for example, that there are perfect markets and that there are no frictions from, for example, taxes, asymmetric information and bankruptcy costs), a company's value and cost of capital are not affected by their choice of financing (see Modigliani and Miller, 1958). This can be seen as a starting point for companies when choosing their financing.

Away from these assumptions, there are other theories that suggest that the cost of capital is affected by a number of factors, which is why the choice of financing plays a role in a company's valuation. According to the *trade-off theory* the choice of financing is guided by the various advantages and disadvantages of loans and equity, focusing on the tax benefits and bankruptcy costs associated with loans (see Kraus and Litzenberger, 1973). The *pecking order theory* argues that due to asymmetric information, companies firstly prefer internally generated financing, followed by loan financing, and as a last resort, increasing the share capital in their company (see, for example, Myers and Majluf, 1984). However, there is no strong empirical evidence to show that any of these academic theories can really explain the way that companies choose financing.[3] This is simply because advantages and disadvantages can differ between companies, industries and countries.

Corporate taxes are probably the clearest example of a factor that favours loan financing over equity (see, for example, Heider and Ljungqvist, 2015 and Feld et al., 2013). This is because interest expenses, unlike capital dividends, are deductible from a company's taxable income.[4] The tax benefit for borrowed capital enables a company's value to increase through higher indebtedness. Tax incentives are probably stronger for companies that have stable profits over a long period of time (which therefore gives them more opportunity to continually use these deductions) as well as companies that can offer collateral in real assets for their loans and therefore secure loans at lower interest rates.[5]

Another advantage of financing through loans is that this kind of financing requires the least amount of involvement from the investor (see Townsend, 1979). However, there are also disadvantages to loans

1 This description focuses on the companies that pose the greatest risk to the financial system.

2 The theoretical descriptions in this section refer primarily to large companies, as smaller companies generally have more limited options when choosing financing.

3 See, for example, Graham and Leary (2011) for an empirical overview of capital structures.

4 To improve the tax neutrality between loans and equity in Sweden, new rules governing deduction rights for companies were introduced on 1 January 2019, limiting the interest deduction to 30% of EBITDA (Earnings Before Interest and Tax, Depreciation and Amortisation).

5 Companies with a high proportion of real assets also tend to have higher indebtedness than other companies (see Frank and Goyal, 2009).

compared with equity. This includes the fact that highly leveraged companies may refrain from making profitable investments, as it is mostly existing lenders that report positive results from these investments. Highly leveraged companies may instead have an incentive to increase the risk-taking in their investments, as the existing lenders would bear a substantial share of any potential losses.[6] However, a high level of risk-taking can generate positive results not only for the lenders, but also the owners. Jensen and Meckling (1976) and Myers (1977) are examples in the literature where companies' investment incentives are affected in this way by their loan-to-value ratio. Lamont (1995) provides similar arguments and shows how the real economy can be negatively affected by highly leveraged companies.

However, a company's choice of financing is not only governed by different frictions or by the initial incentives of borrowing. Other factors can also influence the choice of financing, such as a company's size, age, industry, growth phase and development potential (see Mac and Bhaird, 2013 and Moritz et al., 2016). However, these circumstances vary over time, for example, due to changes in the law or economic conditions.[7] This means that a company's optimal capital structure may change over time.

Transmission channels between the real economy and the financial sector

'Transmission channels' play an important role in understanding how companies' loan financing can affect financial stability.[8] We have decided to focus on the channels that are the most relevant for shocks from companies to the financial system. These channels explain how a disruption that starts in the real economy affects the financial system, as well as how the financial system can magnify this kind of shock. The magnitude of the effect of a shock varies depending on, inter alia, where the economy is in its credit and economic cycle.

COMPANY BALANCE SHEET CHANNEL

The first channel is based on the companies' balance sheets.[9] It operates through the mark-up (known as the 'external finance premium') that is included in the cost that companies pay for loans. The main reason for this finance premium is asymmetric information between borrowers and lenders. Lenders cannot fully assess a borrower's financial situation and the risks it faces.[10] The fact that

6 Financial covenants in loan agreements are one way of managing these kinds of conflicts, as they limit a borrower's room for manoeuvre and strengthen the lender's control (see Smith and Warner, 1978).

7 For example, government interventions (in the form of financial support) in crises can change incentives and influence companies' choice of financing.

8 See Basel Committee on Banking Supervision (2011) for a more comprehensive review of the literature on the various channels between the financial sector and the real economy.

9 See, for example, Bernanke and Gertler (1989), Kiyotaki and Moore (1997) and Mishkin (1997) for a detailed description of the mechanisms behind the borrower balance sheet channel.

10 A borrower may have incentives to take on greater risk than is in the lender's interest, while the lender may find it difficult to fully restrict the level of risk a borrower takes (see Hubbard, 1990).

banks often take collateral for loans reduces this uncertainty, but does not remove it completely. This is because the value of an asset can be easier to assess than the company's financial situation. The finance premium represents compensation for the remaining risk. The amount of the premium normally depends on the company's ability to provide collateral that will reduce uncertainty about its long-term creditworthiness. The more creditworthy a company is, the lower the finance premium will be.

In the event of an economic disruption, the profitability and value of the companies' assets may fall, while their liabilities remain the same. This weakens the companies' financial position, which risks an increase in the lenders' credit losses. If these credit losses increase, it will have a negative impact on the lenders' capital and profitability. Lower asset values make companies less able to offer collateral to lenders to compensate for the risk of losses (see Bernanke and Gertler, 1995). As a result, lenders may tighten their collateral requirements for loans or demand higher lending rates to cover the increased credit risk.

This scenario can have major consequences for companies, including reduced access to loans or higher borrowing costs (see Ehrmann and Fratzscher, 2004). A credit crunch and more expensive loans can lead to a lower investment rate and less demand for labour. If companies also have problems refinancing their existing loans, this can lead to even more defaults and credit losses for the lenders.

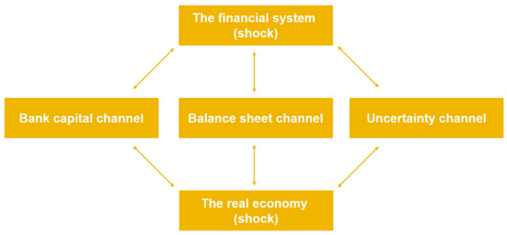
BANK CAPITAL CHANNEL

Another important transmission channel is the channel via the banks' balance sheets (the bank capital channel). Banks are exposed to various kinds of risk, such as liquidity, operational, interest rate and credit risks. If the banks' balance sheets weaken as a result of any of these risks materialising, this can affect lending to the private sector. This channel is closely related to the company balance sheet channel as declining profitability and weaker company balance sheets have a direct impact on the banks through higher credit losses and stricter capital requirements due to higher credit risks (see Basel Committee on Banking Supervision, 2011 and Stein, 1998). While the company balance sheet channel mostly affects the companies' financing costs, the bank capital channel operates primarily through the credit supply. The link between these channels has resulted in them jointly being referred to as *the financial accelerator* (see, for example, Bernanke and Gertler, 1995).

Banks need to meet certain regulatory requirements for equity. If there is an economic disruption that leads to losses, the equity of one or more banks may decrease. If banks are finding it difficult to meet their capital requirements, they may be forced to reduce their lending or try to increase lending margins.[11] If many companies suffer widespread problems, leading to large credit losses, this poses a threat to financial stability. A higher lending rate and a credit crunch also lead to lower aggregate demand, which can trigger or worsen a negative real

11 Banks, just like companies, finance their activities using externally borrowed capital (for example, mortgage bonds) and have to pay an external finance premium as well. As the banks' finance premiums are reflected in the cost and availability of bank loans for households and companies, a reduction in the banks' capital or profitability or an increase in uncertainty results in higher financing costs. This in turn affects the cost of loans for companies and therefore economic activity.

Diagram 2. Transmission channels between the real economy and the financial sector



Source: FI.

Note: This diagram describes the ways in which the financial system and the real economy interact, via transmission channels, in the event of shocks.

economic development. Financial and real imbalances can therefore strengthen each other.

UNCERTAINTY AFFECTS THE COMPANIES AND THE FINANCIAL MARKETS

Antony and Broer (2010) and the Swedish Ministry of Finance (2014) also highlight the 'uncertainty channel', which explains how companies react to an increased risk. An increased risk is reflected in greater volatility on the financial markets, for example through large fluctuations in asset prices, exchange rates and interest rates.[12] When there is uncertainty in the market, companies are more likely to cancel or postpone their investments. An increase in uncertainty makes it worthwhile to wait before locking funds into an investment.

This uncertainty channel has been developed in Minsky's Financial Instability Hypothesis (see Minsky, 1992). It can be summarised as a long period of financial stability that results in a higher level of risk-taking in the economy, which includes lending. This makes the financial system more sensitive to shocks, increasing the risk of large credit losses. Empirical studies, such as Schularik and Taylor (2012) and Baron and Xiong (2017), have also shown that greater optimism increases the probability of a financial crisis. Danielsson et al. (2018) finds, inter alia, that long periods of low volatility lead to an excessive, and more risky build-up of credit in the financial system. This indicates that low volatility leads to an increase in aggregate risk-taking in the economy, which in turn increases the probability of a financial crisis. Geanakoplos (2010) describes how the ability to mortgage assets increases during long periods of economic upturn, contributing to the build-up of 'asset bubbles'.

COMPANY DEFAULTS AND CREDIT LOSSES CAN HAVE A MAJOR IMPACT ON FINANCIAL STABILITY

The transmission channels described show the ways in which the financial system and the real economy interact, and also the ways that companies are affected by, or can affect, this process (see Diagram 2). One important conclusion is that widespread company defaults and credit losses, or a clearly elevated risk of them taking place, can have a major impact on financial stability. If many companies have lower creditworthiness as a result of a drop in their profitability, this can lead to a sharp increase in the statutory capital requirements for corporate exposures. This is particularly the case if the banks have high exposure to the companies that are the worst affected. At the same time, there is a risk that the banks' provisions for credit losses increase sharply, which eats at the capital the banks have to meet their capital requirements. Liquidity problems can also be caused by disruptions in the banks' own financing. As described above, this can result in companies, and also households, being faced with a credit crunch and more expensive loans. This may exacerbate an ongoing economic downturn.

Substantial credit losses can lead to financing difficulties for the banks and, by extension, trigger a crisis for the banks. As the Swedish banks are strongly interconnected, problems in one bank can quickly spread

12 An increase in the volatility of financial markets may indicate expectations of lower asset values, earnings (and therefore a lower repayment capacity) or lower future profits for both financial and non-financial companies.

to other banks and therefore pose a threat to the entire financial system.

Companies in previous financial crises

Companies have often played a central role in previous financial crises.[13] In some cases, they have contributed significantly to the emergence of a crisis. In other cases, they have been negatively affected by a crisis, which has resulted in them intensifying the turmoil on the financial markets and an ongoing economic downturn.

Some industries have historically contributed to financial crises more often than others. One example is commercial real estate companies, which were at the epicentre of the financial crisis in Sweden in the early 1990s.[14] This crisis was caused by an overheated economy which, combined with deregulation in, inter alia, the credit, fixed income and foreign exchange markets in the 1980s, contributed to rapidly rising debt and property prices. When real interest rates then increased as a result of a global economic downturn, it triggered a substantial fall in the price of commercial properties.[15] As many real estate companies found it difficult to refinance their loans, they had to sell their assets quickly. This exacerbated the ongoing negative spiral of falling asset prices and eroded the balance sheets of many companies, resulting in bankruptcies. Several banks experienced capital and liquidity problems as a result of extensive credit losses.

The global financial crisis (2008–2009) was also preceded by a long period of greater risk-taking and excessive debt accumulation around the world.[16] The high indebtedness of borrowers meant that there was a build-up of vulnerabilities in the financial system. An increase in competition in the credit market in the period before the crisis hit meant that banks were less strict about granting credit and increased the level of risk in their lending. When the crisis struck, triggered by *sub prime* lending in the US mortgage market, it caused extensive financing problems for banks around the world. For companies, this crisis led not only to financing difficulties and significantly higher risk premiums, but also lower revenues, while companies in some industries found it difficult to repay their loans.

Compared with the crisis of the 1990s, credit losses were relatively limited for Swedish banks. However, for a number of other European countries, including Ireland, Spain and Iceland, it caused significant problems in their banking systems. At an aggregate level, the non-performing loans of European banks mostly comprised corporate loans (see ESRB, 2019).[17]

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13 Reinhart and Rogoff (2009) describe a large number of financial crises around the world over a very long time scale. See also SoU 2013: 6 for an overview of financial crises in Sweden and a number of other countries.

14 Commercial real estate was also in the spotlight in the rest of the Nordic region and the United States in the early 1990s, in some Asian countries in the late 1990s, and in the United States and a number of EU countries during the financial crisis of 2007–2009 (see, for example, Englund , 1999; Herring and Wachter, 1999; Kim, 2004; and Kragh-Sørensen and Solheim, 2014).

15 For more information about the Swedish crisis in the 1990s, see, for example, Wallander (1994).

16 This was driven not only by companies, but also financial companies and households.

17 When borrowers breach their loan terms, it results in non-performing loans, which has a negative impact on the banks' profitability and can lead to credit losses. The literature

Diagram 3. Approach to assess vulnerabilities and resilience

Source: FI.
Note: The diagram describes how to analyse vulnerabilities and resilience linked to credit losses from lending to companies.

Vulnerabilities and resilience linked to financial stability and companies

One conclusion in the previous section was that a potential threat to financial stability, which could arise from corporate indebtedness, can firstly be caused by substantial credit losses (or from a clearly elevated risk of such losses). One important part of FI's supervisory duties is therefore to continually monitor the financial strength of the companies and how they can affect the banks.

Financial regulation and supervision are often divided into a micro and a macro dimension.[18] In the micro dimension, the focus is on monitoring and, if necessary, taking action against individual actors and markets that FI supervises (micro supervision). Macro supervision is primarily aimed at preventing vulnerabilities in the financial system as a whole, i.e. focusing on systemic risks.

The focus of this FI analysis is on systemic risks, which normally have a macro perspective. However, both micro and macro supervision overlap and interact. One example is concentration risks, which can be analysed effectively from both a macro and micro perspective. This is because Swedish banks tend to have similar loan portfolios, so problems in one bank can easily spread to other banks in an interconnected system.

An analysis of vulnerabilities and resilience linked to credit losses from lending to companies can be carried out in three steps (see Diagram 3).[19] In the first step, we identify the vulnerabilities in companies that can lead to widespread defaults and subsequent credit losses. Based on this, we develop appropriate indicators and stress tests to monitor vulnerabilities over time (Step 2). Using these indicators and stress tests, along with qualitative expert assessments, we analyse how the banks' exposures to the corporate sector affect the resilience of the financial sector (Step 3).

DISRUPTIONS CAN CAUSE WIDESPREAD COMPANY DEFAULTS

The collapse of some companies is a natural part of the economy. These defaults, which can potentially cause credit losses for banks, do not normally pose a threat to financial stability. However, large accumulations of company defaults, which are often caused by some form of severe disruption, can result in large credit losses that can create financial instability.

Disruptions that arise from cyclical fluctuations are relatively common and affect the vast majority of companies, regardless of the industry.

explains that economic downturns and negative asset price shocks often have the greatest impact on the volume of non-performing loans (see, for example, Salas and Saurina, 2002; Espinoza and Parasad, 2010; and Kjosevski and Petkovski, 2017). During an economic upturn, borrowers are normally in a better position to take out loans. When growth slows, and company revenues and assets decline, there is a risk that borrowers will find it difficult to repay loans. This leads to an increase in the proportion of non-performing loans in the banking system.

18 Finansinspektionen (2019) and Braconier and Palmqvist (2017) describe these dimensions in more detail.

19 These steps reflect the first two steps in FI's policy circle (see Finansinspektionen, 2019).

A negative demand shock usually reduces the companies' earning capacity and weakens their financial position. Other disruptions can include, for example, changes to legislation (such as taxes and regulations), natural disasters, interest rate shocks or increased uncertainty (in general or within a specific sector). It is difficult for lenders to diversify in order to mitigate these risks, which is also the case with risks from cyclical fluctuations.

Technical innovations, where some companies cause other companies with older technology or business models to go under, represent another kind of disruption. Innovations create structural transformations and change market conditions, which is also a natural part of a growing economy. Another similar disruption is globalisation, as many companies face greater competition from companies that come from, or have relocated their production to, low-cost countries. The financial system is normally able to handle these kinds of changes.

Structural changes or changes to market conditions have sometimes taken place quickly, causing major problems for many companies or an entire sector. It is primarily these changes that create financial instability. One example is the crisis in the Swedish commercial real estate market in the early 1990s, which resulted in large credit losses and problems for the banks.[20] Against this background, it is important to consider which factors can lead to substantial credit losses in the event of a market disruption.

FACTORS THAT MAY AFFECT THE LEVEL OF CREDIT LOSSES

It is difficult to know in advance how significant disruptions have to be in order to threaten financial stability. This can vary depending on the size and resilience of both individual actors and the financial system as a whole. The probability of having credit losses that can threaten financial stability is higher if one or more banks have a less diversified credit portfolio, as this increases the banks' vulnerability.

Low diversification is caused by different kinds of concentrations in the banks' lending portfolios (see BCBS, 2006 and Riksgälden, 2020 for similar descriptions). This refers both to the portfolios of individual banks and situations where several banks have similar exposures, which is an example of where a combined micro and macro perspective is needed. In addition to concentration risks, companies' sensitivity to cyclical fluctuations affects the level of credit losses in the event of an economic downturn. High sensitivity can result in credit losses co-varying between different sector exposures.[21] Substantial credit losses are often caused by a sharply declining economy, combined with one or more portfolio concentrations being hit particularly hard by the downturn. In the following section, we describe three types of concentrations in the banks' lending portfolios that are important to take into consideration

20 Although the crisis in the 1990s was caused by a number of factors over time, they resulted in sudden changes to the market conditions for the commercial real estate market.

21 In this context, the general creditworthiness of the lending portfolios also has an impact. The lower the creditworthiness of a concentration risk is, the more credit losses will co-vary with a negative economic shock. It is therefore important for part of the analysis to have a micro perspective in order to indicate how strong or weak the elasticity can be between GDP and credit losses, given the general creditworthiness of the lending.

when identifying vulnerabilities that can lead to substantial credit losses.

Name concentrations

Name concentrations in banks occur if one or a limited number of individual commitments are large in relation to total lending and equity. It would then only take a few corporate commitments to fail for a bank to incur credit losses that are large enough to create problems. These large name concentrations are less common in larger banks and in large financial systems (see BCBS, 2006). This is partly due to the fact that name concentrations are limited by regulation in most countries. It is also normally in the interest of banks to avoid this, precisely because it poses such a risk.

Commercially close connections

Substantial credit losses can also occur through spillover effects between companies due to commercially close connections. These occur if several companies in the same industry, or in different but closely related industries, are negatively affected by the same factors due to economic or legal connections. This could happen, for example, if several companies are part of the same supply chain. If there is a default in a company that is part of a large supply chain, the impact can spill over to the other companies.

Sector concentrations

Sector concentrations occur when a lot of exposures in the same industry or geographical area have a significant impact on a bank's total lending and equity. Companies in the same industry are often affected in a similar way in the event of any disruptions. If one industry is hit hard for any reason, this can result in large credit losses. Most banks, and banking systems, naturally have a geographical concentration in their home market as well. Geographical concentrations may also occur outside the home country.[22] One example is the operations of some major Swedish banks in other European countries (such as the Baltic countries). This means that a sharp economic downturn in a specific region or country can cause significant credit losses if a bank's exposures are geographically concentrated.

CHANGES TO THE COMPANIES' FINANCING STRUCTURE

Companies are able to finance their activities in different ways. They can use share capital and internal resources, or different types of loan financing. Historically, loans from banks have accounted for most of companies' loan financing. However, as financial markets have developed, more financing alternatives have emerged and the distribution between different loans has changed. In 1998, approximately 83% of corporate loans comprised bank loans. This proportion decreased to approximately 60% by 2020. Nowadays, companies are increasingly financing themselves with bonds instead. This is partly due to the fact that more companies have access to the

22 At the same time, geographical concentrations outside the home country can also create diversification at portfolio level.

Table 1. Companies with bank loans

Number and per cent

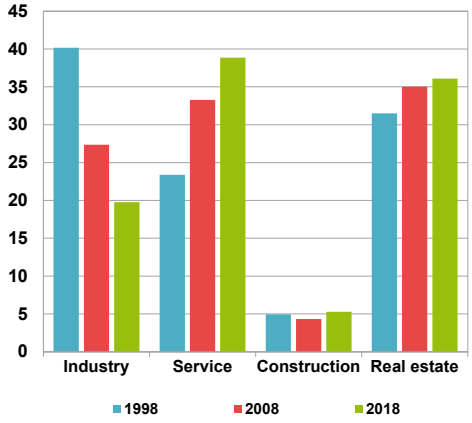
Category	Number of companies	Share with bank loan
Large	1 695	65
Mid-sized	5 301	62
Small	28 397	55
Micro	570 539	13
Total	605 932	16

Source: Bisnode (Serranode Database)

Note: Only refers to limited companies, 2018. The companies are classified based on the EU's definition of sizes.

Diagram 4. Distribution of corporate bank loans

Per cent



Source: Bisnode (Serranode Database)

Note: Refers to the distribution of corporate loans from credit institutions, which therefore reflects the banks' exposures. However, this is just a selection of all companies in Sweden. It only includes limited companies, while the SNI (Swedish Standard Industrial Classification) sectors K, O, T and U are excluded. This does not include, for example, tenant-owner associations, which are otherwise included in the Real Estate Activities group.

bond market and the cost of bond loans has fallen more than bank loans in recent years as a result of low interest rates.[23]

In terms of numbers, relatively few companies have bank loans; 16% (see Table 1). This is because 'micro-enterprises', which accounted for 94% of all companies in Sweden in 2018, normally do not have bank loans, but mostly finance their activities in other ways, primarily through equity. Large companies accounted for approximately two-thirds of the total bank loans, which amounted to approximately SEK 2,400 billion in 2018.

The credit expansion and the shift in the structure of lending have led to a change in the banks' exposures, credit risk and vulnerabilities linked to corporate loans. In 1998, the industrial sector accounted for just over 40% of the banks' corporate exposures (see Diagram 4). This can be compared with approximately 20% in 2018. Instead, there has been an increase in the service sector and the real estate sector. This trend has been driven by the structural transformation from an industrial society into a service society. As a result, banks are currently exposed to partly different risks than before. In addition, an increasing amount of market-based lending has created more diversified forms of financing for Swedish companies. An increasing number of lenders can result in a greater spread of risk in the financial system, which is positive for stability. But having an increasing amount of market-based lending can also have consequences for financial stability. This depends on whether market financing makes the credit supply more or less stable in the event of a crisis.[24] The Swedish bond market is relatively small and has limited liquidity. This would suggest that it currently makes the credit supply more unstable (see Becker et al., 2020). Major problems in the corporate bond market can spill over to the real economy and affect the financial system (see Wollert, 2020).

ASSESSMENT OF VULNERABILITIES AND RESILIENCE

The previous sections have described how companies can be a vulnerability for the financial system. The next step is to analyse the vulnerabilities that can be identified in lending to the corporate sector. The vulnerability then has to be assessed against the resilience of the system.

FI uses vulnerability indicators in different areas to analyse and monitor risks associated with corporate lending.[25] FI monitors them over time and uses this information when assessing how effective FI has been in achieving its intermediate stability goals.[26] In terms of

23 As interest rates decreased as a result of central banks purchasing government bonds, investors have turned to other financial assets where the return is higher. The higher demand from investors has resulted in companies paying a lower risk premium, as well as risk-free interest rates from bonds. This has further contributed to the terms being more favourable on the bond market than bank loans.

24 There is research that indicates that the supply of corporate credit from the capital markets in the US and the euro area has helped stabilise the supply of credit during crises (see Becker and Ivashina, 2014 and Becker and Ivashina, 2018).

25 See Finansinspektionen (2019) for a more detailed description of FI's work on vulnerability indicators.

26 To concretise its work on stability, FI has identified four intermediate stability goals: (i) to limit systemic risks from, or the consequences of, incentives that lead to excessive risk-taking; (ii)

corporate lending, there are two main stability goals that are relevant: (i) to limit systemic risks and financial imbalances caused by large liabilities; and (ii) to limit systemic risks caused by high exposure concentrations.

One difficulty when developing indicators is that there are many different kinds of companies, so aggregate measurements can be misleading. This means that some indicators need to be specific for different sectors. However, the analysis and the indicators can also be of a more general nature, with thematic elements. As a whole they need to capture the development of companies (the balance sheet channel), lenders (the bank capital channel) and the financial markets (the uncertainty channel).

Indicators for capturing the development of companies should cover asset values, liabilities and solvency. For lenders, the indicators that are most important are those that measure concentration risks from corporate lending and the consequences they can have on lenders' balance sheets and income statements in the event of a disruption. Stress tests are one method that can be used for this kind of evaluation. Indicators for the financial markets also need to capture uncertainty through, for example, volatility in financial assets and the pricing of risk.

Stress tests can be used as a complement to vulnerability indicators.[27] They are a tool for analysing how vulnerable companies are in the event of serious economic disruptions and how these companies can affect the banks' balance sheets as a result of higher credit losses. This refers to both direct credit losses from company bankruptcies and higher loss provisions when the aggregate credit risk increases in the lending portfolios.

Indicators and stress tests are used to monitor and measure the vulnerabilities of companies and the financial system.[28] The extent of the vulnerabilities that have been identified are then set against the assessed resilience of companies and the financial system, respectively. One example is stress tests for banks that indicate whether the banking system has sufficiently large capital buffers. Action needs to be taken if the vulnerabilities are judged to be too high, or the resilience too low. Based on this situation, the right action needs to be identified to deal with the individual vulnerability or to increase the resilience of the financial system.[29]

to limit systemic risks and financial imbalances caused by large debts; (iii) to limit systemic risks caused by maturity imbalances and lack of market liquidity; (iv) to limit systemic risks caused by high (direct and indirect) concentrations of exposures.

27 Stress tests can be designed and used in different ways. For real estate companies, FI has so far focused on micro-based stress tests. This is a static stress test that is based on a macroeconomic scenario, where changes to, inter alia, interest rates and GDP affect input values in the companies' balance sheets and income statements (see Aranki et al., 2020).

28 Thresholds based on expert assessments and/or estimates based on data shows when a vulnerability has increased. At the same time, vulnerabilities also depend on how likely they are to cause a disruption.

29 See Finansinspektionen (2019) for a more detailed description of FI's risk-based work, which can be divided into six different steps.

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