Financing of the German Economy During the Financial Crisis[1]

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Introduction

After the break-out of the financial crisis the causes and the economic impact of credit constraints were widely discussed in the media and among academic researchers. In the narrowest sense, a firm is considered credit constrained when it is denied access to credit due to a supply-side shock from the bank-side, although the firm has profitable investment opportunities. Generally, the discussion centers on the question of whether firms, given that they had credit demand, had problems with access to credit during the financial crisis because of their own deteriorating creditworthiness (demand-side effects), or because of lending constraints at the bank-level (supply-side effects). Empirical research has shown that banks reduced the supply of credit to firms during the financial crisis (Ivashina and Scharfstein 2010; Jimenez et al. 2012; Popov and Udell 2012; deYoung et al. 2012). For Germany, the same has been found for retail lending by identifying banks that reduced lending because they themselves faced a liquidity shock (Puri, Rocholl and Steffen 2011).

As far as the effects of credit constraints are concerned, the question arose whether scarce bank credit is truly harmful or whether firms simply substitute bank credit with other financing instruments. Empirical research supports the hypothesis that restricted access to credit during banking crises has serious real economic effects (e.g. Reinhart and Rogoff 2009; Campello, Graham and Campbell 2010).

In this article we will provide a descriptive analysis of the credit financing impairments German firms faced due to the financial crisis, the importance of bank credit in the financing of firms and the role of their bank relationships. To assess these issues, the Ifo Institute conducted the "Financing of the German Economy" survey in September 2011. In the sample of 1,139 firms from the manufacturing sector that participated in the survey, small, medium-sized and large firms were evenly represented.

Credit financing impairments due to the financial crisis

To bring firms' perception of credit supply into the discussion about credit constraints during the financial crisis in Germany, firms in the Ifo "Financing of the German Economy" survey were asked whether they saw their credit financing impaired by the financial crisis. 22.1 percent of the firms surveyed confirmed that this was indeed the case. When it comes to assessing credit constraints, it is important to understand that the volume of bank credit granted in an economy can also decrease because firms have a lower demand for financing (for example due to business cycle fluctuations in the demand for its products or shocks from economic crises). Macroeconomic indicators like the volume of loans granted do not make it possible to disentangle supply and demand effects. Therefore, it helps to focus on firms that actually have demand for bank credit. In our sample many firms had not conducted loan negotiations since 2008. These firms were likely to report that they did not experience impairments caused by the financial crisis. Among the firms that negotiated a loan or a line of credit in 2008 or later, 31 percent reported credit financing impairments arising from the financial crisis.

If a firm reported that it experienced impaired credit financing, it was also asked what kinds of impairment it had faced. In the narrowest sense, credit constraints describe a situation whereby bank credit is not available to firms. As Figure 1 shows, over half of the firms with impaired credit financing in the Ifo "Financing of the German Economy" survey reported that the availability of new loans or lines of cred-

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it was an impairment caused by the financial crisis. In addition, 34.2 percent faced a reduction of existing credit lines, another indicator that the quantity of credit available was impaired by the crisis.

A second impairment due to the financial crisis was the increase in the interest rates charged for existing lines of credit or loans. This impairment was also reported by over 50 percent of the firms with impaired credit financing, which underlines that many firms still had access to bank credit, but they had to pay a higher price for it. This can firstly be explained by the fact that the business conducted by many firms became riskier during times of crisis. Banks used the higher interest rates to receive compensation for the risk incurred from lending to such firms. On the other hand, higher interest rates might also indicate that banks faced higher refinancing costs during the financial crisis and that these were passed on to their customers.

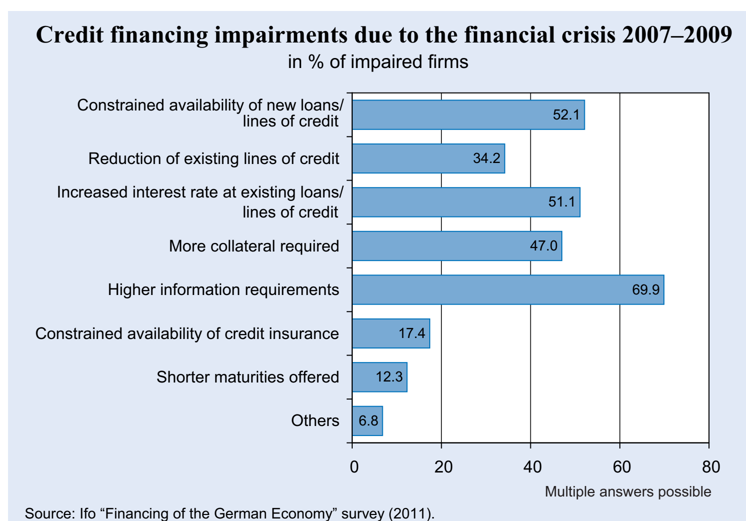
Besides the pecuniary transfer of interest rates, banks can require collateral if they lend to firms. The incentives to do so are twofold. Firstly, banks take over property rights of the collateral if a firm defaults on its debt and thereby limit their loss given default. Secondly, the prospect that a firm loses collateral if it does not service its debt provides an incentive for the firm to increase its effort to pay interest and repay credit. Therefore, collateral is a natural instrument for banks to control the risks of lending to firms during crisis times, and it is not surprising that 47 percent of the firms with impaired credit financing reported higher collateral requirements from banks.

To gain a deeper insight into collateral, firms in the Ifo "Financing of the German Economy" survey were also asked about the terms and conditions of the most recent loan or line of credit that they received.

Figure 2 summarises what kinds of collateral firms had to pledge: 32.1 percent of all lines of credit and only 15.7 percent of all loans were granted without collateral. If collateral was pledged, the most prominent types of collateral were land and buildings. 41.9 percent of the lines of credit and 55.8 percent of the loans were collateralised with this kind of asset. In addition, other fixed assets are often used as collateral for loans, while lines of credit are more likely to be collateralised with current assets. While private property is rarely used, the results underline that guarantees are almost as important in credit financing among German firms as collateralising with current assets is.

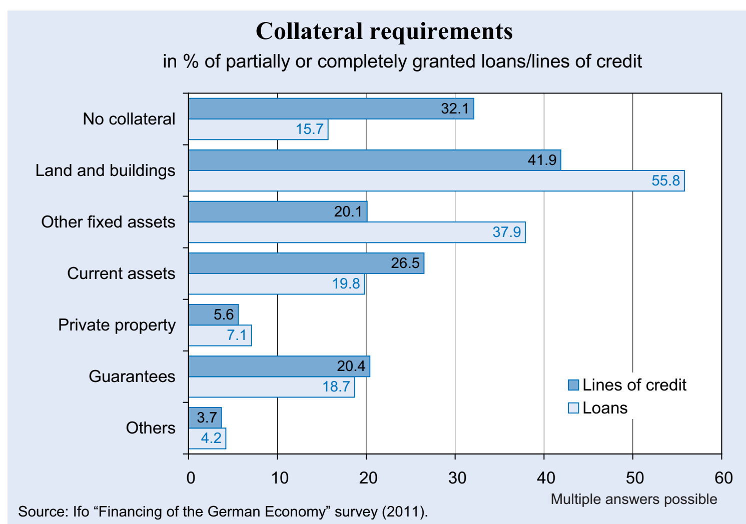
Although constrained credit availability, higher interest rates and higher collateral requirements

Figure 1



Source: Ifo "Financing of the German Economy" survey (2011).

Figure 2



Source: Ifo "Financing of the German Economy" survey (2011).

were an important impairment for the firms in the survey, Figure 1 shows that higher information requirements were reported by 69.9 percent of the firms with impaired credit financing. It is therefore the most frequent of all kinds of impairment. To resolve uncertainty about a firm's creditworthiness, banks require firms to provide information, for example through financial statements and business plans. During the financial crisis firms operated under high uncertainty, which made it even harder for banks to assess their creditworthiness. In response, many firms had to provide more information to banks, which created costs for the firms, as well as the banks, which had to process the information.

In addition to these frequent impairments, some firms also reported that they faced restricted availability of credit insurance (17.4 percent). Credit insurance is an important instrument for improving the availability of credit or improving the conditions whereby credit is granted. The impairment that banks only offered credit at shorter maturities was reported by only 12.3 percent of the firms with impaired credit financing.

The importance of credit financing

The negative impact of credit constraints on the German economy was widely discussed because bank credit is a major source of financing, particularly for small and medium-sized firms (SMEs). Since official statistics about the financing instruments used by German firms are scarce, the Ifo Institute asked firms which financing instruments they currently use. We find that 73 percent of all firms in the sample use bank credit. Almost half of the firms use leasing finance, about a quarter received loans from related firms and 10 percent use receivables financing (for example factoring). It is important to note that only 3.6 percent of the firms have access to capital markets (e.g. through the issuing of corporate bonds). Credit constraints may therefore have a serious effect on firms' investment and their business activity because their access to the capital market as an alternative source of funding in addition to bank credit is limited.

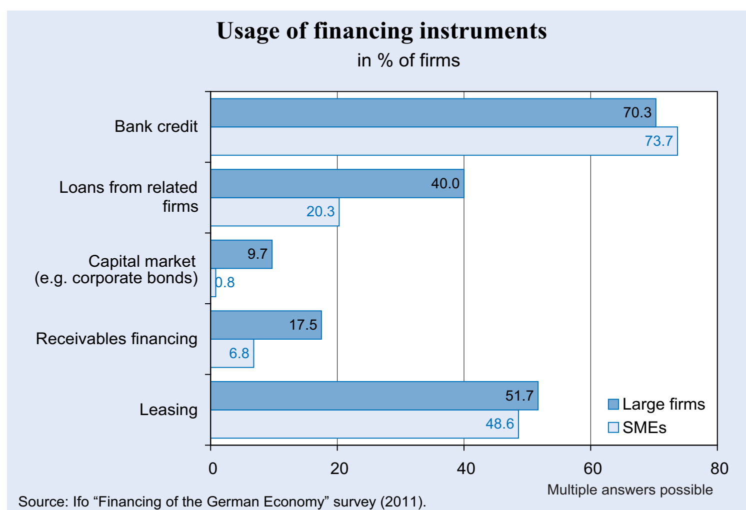
According to Figure 3, this is even more true of SMEs. For firms with less than 250 employees, bank credit is slightly more important than for large firms, but only 20.3 percent of SMEs use loans from related companies, 6.8 percent use receivables financing and only 0.8 percent have access to capital markets. These values are higher for large firms. Therefore, the financing structure underlines the importance of bank credit, in particular for SMEs, due to their limited access to alternative financing instruments.

When comparing this data to the financing structure of firms in other countries, one can see that the dependence on bank financing is a phenomenon that is not necessarily as present in other countries as it is in Germany, where a bank-based financial system is prevalent. For the US, as an example of a market-based financial system, a 2012 survey of the National Small Business Association has shown that only 43 percent of the firms used a line of credit to meet capital needs over the previous 12 months. Bank loans were even less common, with 29 percent of the firms using this instrument. Furthermore, it is interesting to note that credit cards are an important financing instrument for firms in the US (37 percent, see NSBA 2012).

The structure of the firms' bank relationships

As bank credit is the most important source of financing for German firms, their decision about the

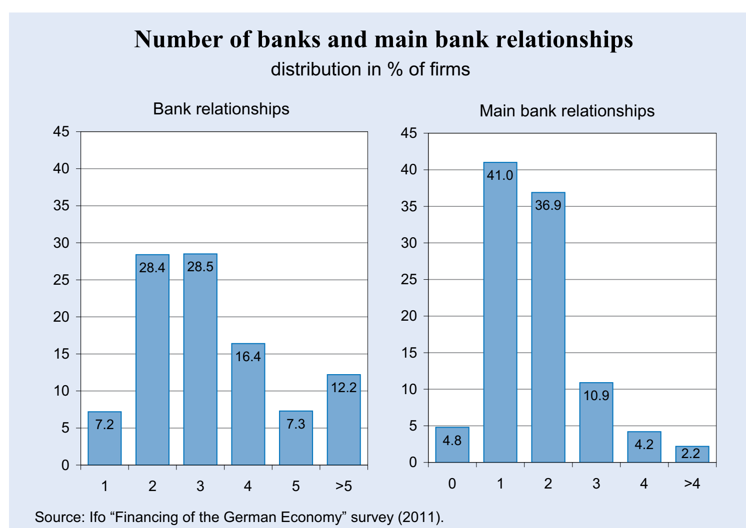
Figure 3



Source: Ifo "Financing of the German Economy" survey (2011).

structure of bank relationships should also play an important role. Several empirical studies have analysed whether access to bank credit is affected by the number and the characteristics of bank relationships.[2] In the Ifo "Financing of the German Economy" survey a number of questions are devoted to the portfolio of bank relationships that a firm maintains.

Figure 4



Source: Ifo "Financing of the German Economy" survey (2011).

In general, firms have to decide between focussing their business on a small number of banks to which close relationships are maintained and receiving financial products from a large number of banks without establishing close ties. On the one hand, a close relationship has the advantage that a relationship bank learns about the firm's creditworthiness over time, which may facilitate a firm's access to credit (Boot and Thakor 1994). On the other hand, if there is only one bank that knows the firm's creditworthiness, the firm depends on this bank because borrowing from uninformed non-relationship banks might be difficult (Sharpe 1990). The relationship bank can therefore develop an information monopoly. If a firm does not tie itself to a small number of banks, it forgoes the advantages of information provision within a close relationship, but can establish a better bargaining position against each bank because competition between banks is increased.

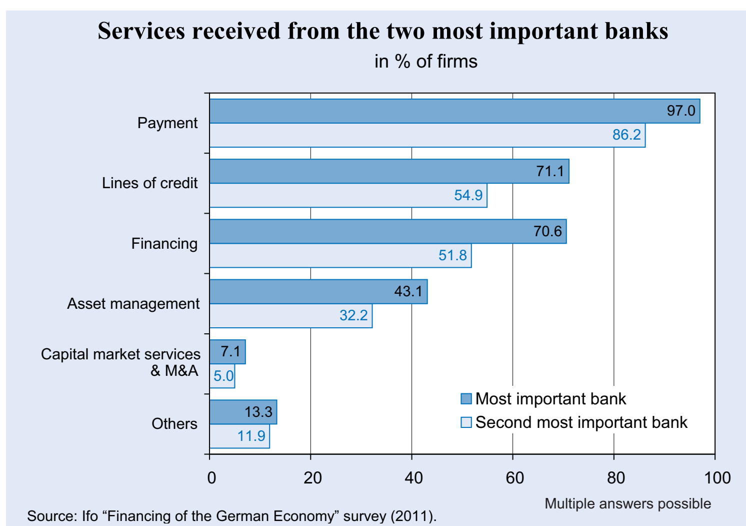
In Figure 4, the number of banks to which firms maintain business is summarised. The results show that only 7.2 percent focus all their business on one bank. The majority of the firms maintain two or three business relationships to banks. Almost half of the firms even have more than two banks.

To learn more about the character of these business relationships to banks, firms were asked how many banks they refer to as main banks (in German "*Hausbank*"). Close main bank relationships were raditionally perceived as an important characteristic of the German banking system. According to the survey, they are characterised by a long duration, personal support and a small distance between the bank and the headquarters of the firm. Only 4.8 percent of the firms do not have a main bank, which indicates that they do not follow the idea of focussing business on a relationship bank. The fact that over three quarters of all firms maintain one or two main bank relationships underlines the importance of focussing on a small number of very important banks among German firms. Referring to a larger number of banks as main banks, which would indicate a spread of business among many banks, is far less common. These numbers underline that firms in the sample tend to diversify their business relationships to banks, but at the same time maintain a small core of close long-term main bank relationships.

When asking firms about the characteristics of the two most important bank relationships (independent of whether the bank is a main bank or not), it becomes clear that the relationship between a firm and the key banks is stable over time. On average, the most important bank relationship has been established 29 years ago. The average length of the second most important bank relationship is 23 years. The survey also collected information on the products that a firm receives from the two most important banks (see Figure 5). The most important bank enjoys a leading position in the provision of all products. When looking at the differences, however, it seems that in particular core services like payment services, lines of credit and financing are more likely to be received from the most important bank than

[2] See Petersen and Rajan 1994; Berger and Udell 1995; Harhoff and Körting 1998; Cole 1998; Degryse and van Cayseele 2000; Lehmann and Neugerber 2001; Cole, Goldberg and White 2004; Santikian 2011; Bharath et al. 2011.

Figure 5



from the second most important institution. For capital market services, Mergers & Acquisition and other services the differences between the two banks are smaller.

In addition to these features of the two most important bank relationships, the data set contains information on the class of banks to which the two most important banks of every firm belong. This provides valuable information on how firms establish bank relationships within the institutional framework of the German banking system. Commercial banks, public banks and cooperative banks constitute the three different pillars of banks in Germany. Commercial banks are privately-owned universal banks that are to a large extent equity-financed. They operate without any regional restrictions and are often internationally active. The second pillar of the German banking system is the public banking sector. It consists of over 400 savings banks, each operating only within a certain region. They are owned by the respective municipalities and instead of profit-maximisation, their major goal is to take in deposits from local savers and lend to local borrowers. *Landesbanken* are also publicly owned and serve as central banks for the savings banks. They provide large-scale funding to private firms. The third pillar of the German banking system is the cooperative banking sector. A large number of small cooperative banks are only regionally active and their major goal is to serve their own members. Like savings banks, these cooperative banks focus on traditional banking activities. The DZ Bank and the WGZ Bank serve as central banks in the cooperative banking sector and offer financial services to firms that cannot be offered by small cooperative banks (for a more detailed description of the German banking system, see Hackethal 2004).

Table 1 shows how the choice of the most important bank depends on the size of the firm. For small firms savings banks are the most important class of banks followed by commercial banks and cooperative banks, which are equally important. *Landesbanken* and "Others" play a minor role. There are two potential explanations for the importance of savings banks and cooperative banks for small firms. Firstly, these firms might not need large scale funding so that savings banks and cooperative banks can provide credit to them without *Landesbanken* or commercial banks, which have the capacities to grant large-scale loans, needing to get involved. Secondly, if a firm is only active in a small local area, which is more likely for small firms than for larger ones, savings banks and cooperative banks with their dense branch network have a comparative advantage against large commercial banks when it comes to the assessment of the creditworthiness of firms within their region. Working with these local banks might therefore be advantageous to small firms.

Table 1

Classes of the most important bank of a firm (in % of firms)

	Employees			
	<50	50-249	>249	Total
Commercial bank	26.2	35.4	61.9	41.0
Savings bank	42.4	36.9	18.5	32.7
Cooperative bank	25.3	18.4	5.7	16.5
Landesbank	2.6	4.4	7.4	4.8
Others	3.5	4.9	6.5	5.0

Source: Ifo "Financing of the German Economy" survey (2011).

For medium-sized firms private banks become more important, mainly at the expense of savings banks and cooperative banks. This trend continues when looking at large firms for which the most important bank is a commercial bank in 61.9 percent of the cases, while savings banks are only half as important as for medium-sized firms and the importance of cooperative banks is negligible. Comparing all size groups, *Landesbanken* and "Others" are also most important for large firms. It is reasonable to assume that large firms need financing for larger projects, which might exceed the lending capacities of small savings banks and cooperative banks. Large firms also usually need a much broader range of financial services (for example capital market or foreign exchange products) that are not offered by savings banks and cooperative banks. In particular, when firms do business abroad they tend to establish relationships with banks that are internationally active as well. We can therefore conclude that the choice of the most important banks is clearly affected by a firm's size and the corresponding need for financial services.

Summary and conclusion

This descriptive analysis of the data from the Ifo "Financing of the German Economy" survey has shown that over 20 percent of the firms surveyed saw their credit financing impaired by the financial crisis, but impairments were experienced by 31 percent of firms with demand for new bank credit. Higher information requirements were the most frequent impairment, followed by constrained availability of new bank credit, higher interest rate payments and higher collateral requirements. It cannot be expected that these impairments were compensated by firms switching to other financing instruments because firms, in particular SMEs, reported that other financing instruments play a minor role in their portfolio. The survey also shows that although firms diversify their portfolio of business relationships to banks, they still tend to maintain a small number of main bank relationships to which close long-term relationships are established.

Further empirical analysis by Hainz and Wiegand (2013) shows that the focus on one main bank relationship helps to prevent some of the impairments listed above, namely higher information requirements, more collateral and shorter maturities, but not the others. In particular, the constrained availability of new bank credit and the reduction of existing lines of credit, which can be taken as symptoms of credit constraints in the narrowest definition, are not affected by a firm's focus on one main bank. These results stand in contrast to earlier work by Petersen and Rajan (1994), Harhoff and Koerting (1998), Cole (1998) and Cole et al. (2004), who find that a small number of bank relationships improves credit availability. These papers use data from the 1980s and 1990s. Hainz and Wiegand (2013) argue that the changes in lending technology and bank regulation that happened during the last 20 years limit the influence of soft information provided through a close bank relationship on the lending decision. If credit is granted, however, a close relationship can still be advantageous in the negotiation of the terms and conditions of the credit contract.

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