SME Financing in Japan during the Global Financial Crisis: Evidence from Firm Surveys

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Abstract

Employing data from a unique firm survey, this article examines small and medium-sized enterprise (SME) financing in Japan during the global financial crisis. The major findings of the article are two-fold. First, in terms of credit availability, loans extended by main banks were the "first line of defense" for most Japanese SMEs to deal with the crisis. In contrast, the role of trade credit provided by firms' main suppliers was relatively limited. The Emergency Credit Guarantees (ECG) program introduced by the government in response to the crisis also helped to increase credit availability. Second, in terms of firms' ex-post performance, loans extended by firms' main bank and loans backed by government policy measures did not have any measurable impact. While the average profitability of firms that received these loans deteriorated more than that of firms that did not in 2009, the difference between these two groups vanished after 2010.

1. Introduction

The global financial crisis that erupted after the failure of Lehman Brothers, a large U.S. investment bank, in September 2008 led the Japanese economy into severe recession. In contrast with U.S. and European banks, Japanese banks did not suffer from severe damage to their balance sheets due to massive holdings of collateralized debt obligations or credit derivatives linked to U.S. subprime mortgages. Nevertheless, the Japanese economy recorded negative GDP growth rates for four consecutive quarters, from the second quarter of 2008 to the first quarter of 2009, as Japan's exports fell drastically due to the Great Recession. Although many small and medium-sized enterprises (SMEs) were not exporting directly, they were nevertheless badly affected via shocks to their transaction partners, that is, customers, suppliers, and lenders.

The aim of this article is to provide an overview of SME financing in Japan during the global financial crisis. To this end, we use descriptive statistics from a firm survey dataset to examine SME financing during the crisis and provide in-depth discussions of empirical studies that employed this dataset. In particular, we focus on the following three issues. First, we identify the nature of shocks (demand, supply, and financial shocks) that affected SMEs and examine how firms responded to each of these shocks. Second, we investigate the role of relationship lenders (main banks), trade creditors (main suppliers), and the government in SME financing during the crisis period. Regarding the role of the government, we primarily

focus on the Emergency Credit Guarantee (ECG) program that was introduced in the fall of 2008 in response to the crisis. Third, we compare credit availability for and the ex-post performance of SMEs that relied on relationship lenders, trade creditors, and government schemes from 2008 to 2012.

The dataset we employ, which is based on two surveys by the Research Institute of Economy, Trade and Industry (RIETI), is particularly useful for examining the above issues. The questionnaire for the surveys was prepared by academics and researchers including ourselves in cooperation with RIETI and therefore was carefully constructed so as to match empirical strategies to answer relevant research and policy questions. The empirical studies we survey in this article were the products of this well thought out research design. In addition, by combining the RIETI survey dataset with data from respondent firms' financial statements after the crisis, the present study provides an ex-post evaluation of how loans and credit extended by relationship lenders, trade creditors, and the government were useful in increasing credit availability and improving firm performance during and after the crisis.

The major findings of this article, including the results of empirical studies that used the RIETI survey, are as follows. First, we find that in terms of the impact on SMEs the most important element of the global financial crisis was the demand shock through their customers rather than any supply or financial shocks. In order to cope with the demand shock, many SMEs relied on bank loans, especially loans provided by their main bank. The role of

trade credit provided by main suppliers was relatively limited.

Second, while we find that a loan from the main bank was the "first line of defense" for most SMEs to deal with the crisis, we also find that some firms experienced difficulties in obtaining a loan from their main bank. A likely reason for the latter is that these firms had obtained "transactional" loans from non-main banks before the crisis, which undermined the close relationship with their main bank. We also find that banks that abruptly tightened their lending attitude during the crisis were transactional lenders.

Third, while we find that the ECG program was useful in increasing loan availability for SMEs in the midst of the crisis, we also find evidence that increased credit availability as a result of the ECG program was partially offset by a decrease in non-ECG loans when it was a main bank that extended an ECG loan. The finding suggests that close firm-bank relationships may have perverse effects on the efficacy of public credit guarantees.

Finally, while loans extended by main banks and loans either provided by government affiliated financial institutions or guaranteed through government credit programs, including the ECG program, helped to increase credit availability for SMEs in general, they did not help to improve the ex-post performance of SMEs that obtained these loans. The average profitability of firms that received these loans deteriorated more than that of firms that did not in 2009, while the difference between these two groups vanished after 2010. In addition, the number of employees of firms that received these loans, especially

loans from their main bank, decreased more than that of firms that did not, even after 2010.

Taken together, these results suggest that main banks, government financial institutions, and

the credit guarantee corporations urged borrowing firms to increase their profitability through

cost-cutting restructuring, resulting in a reduction in the number of employees. However, the

profitability of these firms nevertheless did not show any significant improvement,

presumably because their gross sales also declined proportionately. Trade credit provided by

main suppliers also did not have a measurable impact on firms' ex-post performance.

The structure of the rest of the article is as follows. Section 2 provides an overview

of SME financing in Japan during the global financial crisis. Section 3 explains the RIETI

surveys and the TSR database that we use. Section 4 examines the nature of shocks from the

crisis and SMEs' responses to them. Sections 5, 6, and 7 then respectively examine the role of

loans extended by main banks, of trade credit supplied by main suppliers, and of loans

guaranteed by the ECG program. Next, Section 8 investigates whether these loans helped to

increase loan availability for and improve the ex-post performance of SMEs. Section 9

concludes.

2. Overview of SME financing in Japan during the global financial crisis

The global financial crisis threw the Japanese economy into severe recession and negatively

affected many SMEs. Figure 1 shows the ROA (return on assets = operating profit/total

assets) of Japanese firms of various sizes, where firm size is measured in terms of firms'

capital, from 1991 to 2012. The figure shows that since the burst of the "bubble" economy in

the early 1990s, the smallest firms with paid-in capital of less than 10 million yen exhibit the

worst ROA. In addition, their ROA further declined sharply after 2008 due to a rapid drop in

their sales. Against this background, many SMEs faced difficulties in their finances, as

indicated by the deterioration in the diffusion index for firms' financial position provided by

the Bank of Japan.

{Figure 1 near here}

{Figure 2 near here}

Although the economic impact of the global financial crisis on the Japanese

economy was substantial, the increase in the number of corporate bankruptcies was modest

when compared with the early 2000s, when Japan's economy was paralyzed by the bad loan

problem (Figure 3). It should also be noted that there was no abrupt decline in loans to SMEs

after 2008 (Figure 4). This suggests that the deterioration in SMEs' financial position after

2008 seen in Figure 2 was mostly due to a decline in firms' profit (i.e., a decline in internal

funds) and not due to a tightening of loan supply (i.e., a decline in external funds), indicating

that banks, by providing rescue finance, may have played a role in preventing shocks from

the global financial crisis from propagating to SMEs – an issue that we examine in detail

below.

{Figure 3 near here}

{Figure 4 near here}

One reason why bank loans to SMEs did not decline during the crisis period is that the damage to the financial health of Japanese bank through the crisis was relatively limited compared to U.S. and European banks. For example, the amount of losses associated with securitized products at the end of September 2008 for Japanese banks in aggregate was 3.3 trillion yen, which was far below their aggregate tier 1 capital (50.0 trillion yen) and their annual profits (6.1 trillion yen).[1] In contrast, losses linked to securitized products for Western banks were about ten times larger than those of Japanese banks, resulting in severe damage to their balance sheets (Chart 1-10, Bank of Japan, 2010a).

Another factor that helped to alleviate the effects of the financial crisis was the massive interventions by the Bank of Japan and the government in response to the financial crisis (see Yamori et al. (2013) for details). Specifically, in response to the malfunctioning of capital markets, the Bank of Japan temporarily introduced extraordinary monetary policy measures that involved repo transactions and outright purchases of commercial paper and corporate bonds.[2] In addition, at the end of October 2008, the Japanese government expanded the total amount of direct loans that government affiliated financial institutions

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[1] The figures are from the following Financial Services Agency web page: http://www.fsa.go.jp/en/news/2008/20081128-4.html (accessed February 6, 2014).
[2] For details, see: http://www.boj.or.jp/en/mopo/outline/cfc.htm/ (accessed February 6, 2014).

could extend and increased the amount of CP they were authorized to purchase outright. Further, regarding financing for SMEs, the government introduced the ECG program. This program was one of the largest credit guarantee problems ever implemented anywhere, with total guarantees amounting to 27.1 trillion yen (about 300 billion U.S. dollars) by the time the program ended in April 2011.

In addition to these policy measures taken right after the outbreak of the financial crisis, the Japanese government in December 2009 implemented the Act on Temporary Measures to Facilitate Financing for SME (referred to as the "SME Financing Act" hereafter). While most of the policy measures introduced after the crisis erupted aimed to facilitate the provision of *new* loans to SMEs, the SME Financing Act aimed to lighten the debt burden of *existing* loans to SMEs. Specifically, the SME Financing Act required financial institutions to make their best effort to respond positively to requests by client SME borrowers to amend loan contract terms, typically in the form of deferring loan repayments. In order to provide an incentive for financial institutions to accept such requests from borrowers, the law allowed the amended loans not to be classified as nonperforming loans as long as borrowers made credible business restructuring plans (or committed to making business restructuring plans within one year). The SME Financing Act was introduced as a temporary measure and was initially planned to end in March 2011. However, it was extended twice and finally ended in March 2013. The cumulative number of loans for which firms applied to have the loan

contract terms amended was more than 4.3 million,[3] and 93 percent of the requests were

accepted. The cumulative amount of loans for which such applications were accepted was

120 trillion yen. In this context, it is important to note that while the SME Financing Act

probably helped to keep the number of corporate bankruptcies lower than otherwise would

have been the case, it may also have allowed "zombie" firms to survive (Yamori et al., 2013).

Moreover, the Act may have undermined the transparency and trustworthiness of the financial

statements of Japanese banks, as it may have contributed to the under-reporting of the true

number of nonperforming loans.

3. Dataset

The data used in this and the previous studies that we will survey below are taken from the

Kigyo Kinyukikan to no Torihiki Jittai Chosa (Survey on Inter-Firm and Firm-Bank

Transactions) conducted in February 2008 and *Kinyukikika ni okeru Kigyo Kinyukikan to no*

Torihiki Jittai Chosa (Survey on Inter-Firm and Firm-Bank Transactions during the Financial

Crisis) conducted in February 2009. Both surveys were carried out by the Research Institute

of Economy, Trade and Industry (RIETI), a government affiliated research institution, and

will be referred to as the "RIETI surveys" hereafter.

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[3] Note that the number of firms that applied to have their loan contract terms amended was
much smaller than 4.3 million, meaning that many firms applied for several loans to be
amended and/or applied several times for the same loan to be amended. The *Nikkei Shinbun*
(December 30, 2013), for example, reports that in practice about 400,000-500,000 SMEs,
roughly 10 percent of the total, were able to amend their loan contract terms.

The 2008 RIETI survey was sent to 17,018 firms chosen from firms that had responded to previous government surveys compiled by the Small and Medium Enterprise Agency. Firms surveyed were randomly drawn from the database of Tokyo Shoko Research (hereafter TSR database), a business data company. The TSR database covers more than 1.2 million Japanese firms and maintains information on firms' financial statements as well as their primary characteristics, including the firm age, ownership structure of the firm, and the identity of banks they transact with. The number of respondent firms to the 2008 survey is 6,079. The 2009 RIETI survey questionnaire was sent to firms that responded to the 2008 survey excluding defaulters. Of the 5,979 firms that the questionnaire was sent to for the 2009 survey, 4,103 firms responded. A detailed summary (in Japanese) of the characteristics of sample firms and the results of these surveys can be found in Uesugi et al. (2009). Suffice it here to say that the overwhelming majority of respondent firms – 93.5 percent in the 2008 survey and 94.7 percent in the 2009 survey – are SMEs with 300 or fewer employees. Thus, the RIETI surveys are extremely useful for examining how SMEs weathered the financial crisis. Note, however, that the size distribution of these respondent firms compared with that of the original sample containing 17,018 firms is slightly more bunched around the center. That is, the response rate of firms that fall into either of the tails, very large firms and very small firms, was lower than for firms that fall between them.

For the purpose of this study, a notable feature of the RIETI surveys is that they

asked firms about a variety of issues regarding their transaction partners, that is, customers, suppliers, and banks. In addition, the 2009 survey explicitly asked firms how their relationships with transaction partners were affected by the financial crisis following the failure of Lehman Brothers in the fall of 2008, and below we mostly use the dataset constructed from the 2009 survey to examine the role of transaction partners in SME financing. Further, the RIETI surveys asked firms to identify the two banks with which they had the largest and second-largest amount of loans outstanding. Throughout this article, we will refer to the bank with which a firm has the largest amount of loans outstanding as its "primary bank" and the bank with which a firm has the second-largest amount of loans outstanding as its "second-primary bank." We also assume that a primary bank is the firm's "main bank" and hence is a relationship lender.

Because more than 5 years have passed since the failure of Lehman Brothers in the fall of 2008, we can also trace changes in respondent firms' credit availability and performance after the crisis based on firms' financial statements. These data are obtained from the TSR database described above.

4. Impact of the crisis through transaction partners and SMEs' responses

4.1. Impact of the crisis through transaction partners

The global financial crisis negatively affected SMEs through their various links with

transaction partners in the form of demand shocks from customers, supply shocks from suppliers, and financial shocks from banks. In order to understand the nature of the difficulties that SMEs faced during this period, it is therefore important to quantify the relative importance of these different shocks.

To this end, the 2009 RIETI survey asked firms whether their relationships with customers and suppliers and the lending attitudes of the bank with which they had the largest amount of loans outstanding (i.e., their primary bank), of the bank with which they had the second largest amount of loans outstanding (second primary bank), and of other banks "improved," "did not change," or "deteriorated" after the start of the global financial crisis in September 2008.

Table 1 shows the results, where the diffusion index (D.I.) represents the difference between the percentage of firms that replied "improved" and those that replied "deteriorated." It turns out that the D.I. is lowest (worst) for the relationship with customers (-24.7 percentage points). Much fewer firms reported a deterioration in the relationship with suppliers, with the D.I. registering only -6.8 percentage points. Finally, the D.I. for banks' lending attitudes ranges from -3.0 percentage points (primary banks) to -8.9 percentage points (other banks). Overall, the results indicate that the most widespread shock was the demand shock from customers, while shocks emanating from suppliers and banks were much less prevalent.

{Table 1 near here}

To identify the source of shocks more precisely, the 2009 RIETI survey asked for details regarding any changes respondents experienced in their relationships with transaction partners after September 2008 (multiple answers allowed). Table 2 shows the result for firms' relationships with their customers. The table indicates that the large majority of firms (71.6 percent) experienced a decrease in gross sales and orders received. In addition, 35.0 percent of firms replied that they experienced a decrease in their sales price, and 28.1 percent said that one or more of their customers suffered distress and/or bankruptcy. On the other hand, less than 20 percent of firms indicated that they experienced no changes in their relationships with customers.

{Table 2 near here}

Next, Table 3 shows the result for main suppliers. In contrast to relationships with customers, relationships with suppliers remained unchanged for the large majority (64.4 percent) of firms. The table further indicates that roughly 30 percent of firms experienced an increase in purchasing costs, which likely partially reflects soaring prices in international commodity markets at the time.

{Table 3 near here}

Finally, Table 4 shows results for relationships with primary banks, second primary banks, and other banks. The results indicate that almost 80 percent of respondent firms

experienced no substantial changes. That being said, looking at firms' relationship with their primary bank shows that 8.4 percent of respondent firms experienced a decrease in loans outstanding, 6.7 percent experienced a decline in loan offers, and 6.5 percent experienced an increase in the lending rate. Similar results are obtained for firms' relationships with their second primary bank and other banks.

{Table 4 near here}

4.2. Firms' responses to the crisis: Descriptive statistics

Next, we identify the measures taken by firms to cope with shocks emanating from the crisis. The 2009 RIETI survey asked firms to specify what measures they took after September 2008 (multiple answers allowed). These measures are also classified into three categories, namely, measures taken in relations with customers, main suppliers, and banks.

Table 5 presents measures taken in relations with customers. The table shows that 47.0 percent of firms did not take any specific measures in their dealings with costumers, meaning that more than half of firms did take some sort of measures in their dealings with customers to cope with the crisis. Looking at the responses to the seven other possible answers, the most common measures were to enhance explanations to customers (22.1 percent), to expand sales volumes (21.5 percent), and to increase sales prices (15.7 percent). On the other hand, relatively few firms tightened the terms for providing trade credit

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(shortening the terms of accounts receivable, shortening the terms of bills receivable, and shifting to cash payment).

{Table 5 near here}

Next, Table 6 presents measures taken in relations with main suppliers. The table shows that more than 60 percent of firms did not take any specific measures in relations with main suppliers. Meanwhile, the responses to the six other possible answers indicate that 22.7 percent of respondent firms decreased the price of purchased goods and 16.1 percent decreased purchase volumes. On the other hand, only a very small number of firms relied on trade credit provided by their main suppliers (by extending the terms of accounts payable, extending the terms of bills payable, and increasing the percentage share of payments by accounts payable and bills).

{Table 6 near here}

Finally, Table 7 shows measures taken in relations with banks. Similar to the results for relations with customers, the percentage share of firms that did not take any specific measures in relations with banks is 46.0 percent, implying that more than half of firms took some sort of measures to weather the crisis. In particular, roughly 30 percent of respondent firms relied on borrowing from a primary bank, highlighting the importance of close firm-bank relationships. A substantial share of firms also relied on borrowing with public credit guarantees (19.2 percent) and on borrowings from a second primary bank (16.4

percent).

{Table 7 near here}

To summarize, Tables 5 to 7 show that the majority of SMEs asked their customers and main suppliers to improve the terms of real transactions such as increasing the sales volume and lowering the price of purchased goods. Regarding financial transactions, most firms relied on bank loans and did not try to change the terms of trade credit.

4.3. Firms' responses to the crisis: Empirical analysis

Using the survey responses just described above, Ogawa and Tanaka (2012) formally examined how SMEs responded to the different kinds of shocks by estimating what they call "response function models." The dependent variables in these models are dummy variables that take a value of one if a firm takes a measure to cope with the shocks. For example, the dummy variable representing measures vis-à-vis customers is equal to one if a firm chooses answers other than "no particular response" in Table 5. Dummy variables for measures vis-à-vis suppliers and banks are constructed in a similar manner. In these regressions, the explanatory variables of main interest are dummy variables representing the existence of demand shocks, supply shocks, and financial shocks. These shocks are identified by the survey responses shown in Tables 2, 3, and 4. For example, the dummy variable for demand shocks is equal to one if a firm chooses answers other than "no particular change" in Table 2.

Ogawa and Tanaka's (2012) main findings can be summarized as follows. While SMEs took a range of measures to cope with demand shocks, the manner in which they did so crucially depended on the duration of a firm's relationships with its main bank (i.e., primary bank) and second primary bank. Firms that had longer relationships with their primary and second primary banks were likely to mainly seek help from these banks. On the other hand, firms with shorter bank relationships tended to take a variety of measures, including obtaining loans from government-affiliated financial institutions and loans backed by public credit guarantees. Ogawa and Tanaka's findings (2012) suggest that close bank-firm relationships serve as a buffer against negative demand shocks.

5. Bank loans

5.1. Liquidity insurance by relationship lenders

The literature on relationship lending suggests that SMEs tend to suffer from credit rationing during financial crises, but that firms that have close relationships with particular banks (relationship lenders) are less susceptible to crises (see Section 4.3.2.7 of Degryse et al. (2009) and references therein). Empirical studies on the role of "main banks" in Japan in particular suggest that these tend to provide loans ("liquidity insurance") when their client firms fall into temporary distress (Hoshi et al., 1990; Sheard, 1989; Suzuki and Wright, 1985). This section discusses the role of liquidity insurance provided by main banks during the

global financial crisis. As noted above, we assume that firms' primary bank in terms of loans outstanding is their main bank.

As we saw above, a considerable share of firms relied on bank loans to cope with shocks emanating from the crisis. However, this reliance on bank loans to some extent depends on firms' size. In order to examine this in more detail, Table 8 breaks down the results shown in Table 7 by firm size (measured in terms of gross sales). The table shows that for firms of all sizes, the most common response was to increase borrowing from the primary bank. At the same time, however, substantial differences across firms of different sizes can be observed. First, the share of firms that delayed debt repayment to a primary bank is highest among the smallest firms with gross sales of less than 100 million yen. This likely reflects the severe financial position of small firms during the crisis, since under normal circumstances firms do not ask for delayed debt repayment because it would hurt their reputation and may even precipitate the redemption of loans as the benefit of time might be forfeited.[4] At the same time, it also suggests that the role of the primary bank during the crisis was especially important for small firms. Second, the shares of firms that borrowed from a second primary bank and that borrowed from other banks are higher for larger firms. This suggests that larger firms have access to a more diversified set of lenders than smaller firms.

{Table 8 near here}

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[4] Note that the SME Financing Act was implemented in December 2009, after the 2009 RIETI survey was conducted.

The results in Tables 7 and 8 suggest that borrowing from the primary bank (main bank) still is the "first line of defense" for most Japanese firms in dealing with a financial crisis. However, some firms also relied on borrowing from other, non-main banks. To investigate the latter point further, Table 9 presents the transition matrix for the number of banks with which firms transacted in 2008 (before the crisis) and the number of banks with which they transacted in 2009 (after the crisis). The matrix indicates that for the majority of firms the number of banks with which they transacted did not change from 2008 to 2009 (diagonal elements in Table 9). However, among firms that transacted with only one or two banks in 2008, more firms had increased than decreased the number of banks with which they transacted by 2009. On the other hand, among firms that transacted with three, four, or five banks in 2008, the opposite pattern can be observed. Overall, the survey results indicate that to weather the financial crisis, some firms tended to rely on their main bank while the others tended to establish transaction relationships with a new bank or banks. In this context, it should be noted that main banks may have extended rescue loans because they were backed by public credit guarantees.[5] If this was indeed the case, it was not main banks but public guarantees that mattered for SME finance during the crisis. We will examine this issue in Section 7.

{Table 9 near here}

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[5] Because multiple answers were allowed in Tables 7 and 8, it is possible that firms that relied on borrowing from a primary bank also relied on borrowing with public credit guarantees.

5.2. Transactional loans

Advances in information technology over the past decades have allowed a number of transaction-based lending technologies such as credit scoring that rely on quantifiable and verifiable "hard" information to flourish (Berger and Udell, 2002; 2006). This means that SMEs which had obtained transactional loans utilizing such lending technologies before the crisis may have been adversely affected if their credit worthiness deteriorated as a result of the crisis and the provider of such loans reduced their credit supply.

As we noted in the previous section, most firms in the RIETI survey did not experience any adverse changes in the lending attitudes of, and their relationships with, banks (Tables 1 and 4). However, some firms did report that at least one of the banks that they transacted with tightened its lending attitude during the crisis.

The 2009 RIETI survey asked firms whether they transacted with a bank that lent aggressively before September 2008 but that abruptly tightened its lending attitude afterwards.[6] Of the 3,555 firms that responded to the survey, 461 (13.0 percent) firms indicated that they had had such an experience. In terms of the industries that these 461 firms belonged to, about 20 percent were in the real estate sector. In terms of bank types, 42.7

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[6] To be more precise, the 2009 RIETI survey first of all asked firms whether they had had such an experience. If respondent firms answered yes, the survey then asked about the type of, and the duration of the relationship with, such banks. However, for reasons of confidentiality, the RIETI survey did not ask firms whether such banks were their primary bank, second primary bank, or other banks. The results reported here are based on these questions.

percent of firms said that it was a large bank with which they had had such an experience, while 39.6 percent of said that it was a regional bank (Table 10). This is in sharp contrast with the distribution of main banks (primary banks) in the RIETI survey: only 18.2 percent of firms answered that their main bank was a large bank. Finally, 44 percent of firms with a relationship with a bank that abruptly tightened its lending attitude after September 2008 indicate that this relationship was less than 10 years old. In contrast, the share of firms whose relationship with their main bank is less than 10 years old is only about 20 percent. To summarize, these results indicate that banks that tightened their lending attitude during the crisis were mostly large banks that had less intimate relationships with client firms and, moreover, suggest that such banks were transactional lenders whose lending decisions are not based on "soft" information.

{Table 10 near here}

Of considerable interest in this context is the study by Hasumi et al. (2013), which reports that transactional loans have an adverse effect on firms' relationship with their main bank. Focusing on a specific type of transactional loans – small business credit scoring (SBCS) loans – and utilizing the RIETI surveys, they identify whether firms obtained SBCS loans before the onset of the crisis, and if so, whether the SBCS loans were provided by a relationship lender (primary bank) or a transactional lender (non-primary bank). Their main findings are two-fold. First, examining whether relationship lenders' willingness to provide

liquidity insurance during the crisis was adversely affected by the provision of SBCS loans, they find that the lending attitude of relationship lenders during the crisis was more severe if a firm had received an SBCS loan from a transactional lender. Interestingly, such adverse effects were not found when the SBCS loans were extended by the relationship lenders themselves. Second, the probability of default increased significantly after the crisis for SMEs that obtained an SBCS loan from transactional lenders. Again, this adverse effect was not found for SBCS loans by relationship lenders. Overall, the empirical findings by Hasumi et al. (2013) suggest that SBCS loans by transactional lenders are more prone to type II errors (approving a loan that will default) and detrimental to relationship lenders' incentive to provide liquidity insurance.

6. Trade credit

One of the main sources of business financing, especially for SMEs, is trade credit. In the United States, the ratio of accounts payable (i.e., trade credit) to total assets for SMEs is 20 percent, while in Japan it is 15 percent (Uchida et al., 2010). Given the relative importance of trade credit, a number of studies have examined why trade credit is used and whether it substitutes for or is complementary to bank loans.[7] Against this background, this section focuses on the role of trade credit during the crisis.

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[7] See Uchida et al. (2010), Section 4 and references therein, for a detailed survey of these studies.

6.1. Use of trade credit during the crisis: Descriptive statistics

The RIETI surveys provide a unique opportunity to investigate whether trade credit served as a form of rescue finance during the recent crisis. However, the survey results suggest that this was generally not the case. Table 6 above, as mentioned, showed that only a very small number of firms asked their main suppliers after September 2008 to extend the terms of accounts and bills payable or to increase the share of payments based on these trade credit instruments.

In addition, the 2008 survey, which was conducted before the crisis, asked firms to indicate their most preferred measure to cope with a temporary deterioration in cash flow. The results are presented in Table 11 and show that more than 70 percent of firms replied they would ask their main bank to provide a loans. In addition, 3.5 percent of firms said they would ask their main banks to extend the repayment period of existing loans. The share of firms that would rely on trade credit is only a little more than 10 percent (the sum of firms that would ask their main supplier to extend the payment period, firms that would ask their main supplier to accept a cut in payments, and firms that would ask their main customer to shorten the payment period). Tables 7 and 11 together suggest that the role of trade creditors as sources of rescue finance for SMEs during the crisis was limited.

{Table 11 near here}

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6.2. Use of trade credit during the crisis: Empirical analysis

Using the 2009 RIETI survey, Tsuruta and Uchida (2013) formally examined whether

variations in the amount of trade credit owed to suppliers were explained mainly by "real" or

"financial" measures taken by firms. Specifically, they ran regressions in which the

dependent variables represent changes in firms' outstanding trade debt from 2008 to 2009

calculated from firms' financial statements. The key variables of interest are real and

financial steps taken by firms represented by dummy variables constructed from the survey

answers shown in Table 6. Among the seven possible answers in Table 6, "decrease in

purchase volume" and "decrease in purchase prices" are considered to be real measures,

while "extended terms of accounts payable," "extended terms of bills payable," and "increase

in percentage share of payments by accounts payable and bills" are considered to be financial

measures. The dummies for the real measures are expected to have negative coefficients,

since these measures result in a reduction of the amount of purchases (and hence the amount

of trade debt), while the financial measures are expected to have positive coefficients.

Consistent with this expectation, Tsuruta and Uchida (2013) find that the coefficient on the

dummy variable representing a decrease in the purchase volume is significantly negative,

while the dummy for an extension of the terms of accounts payable is significantly positive.

Because the number of firms that took the former measure was much larger than that of firms

that took the latter, variations in the aggregate amount of trade debt during the crisis period were mostly explained by changes in the amount of underlying real transactions. Tsuruta and Uchida's finding (2013) means that caution is needed in interpreting the results of studies examining the substitutability and/or complementarity of trade credit and bank loans, since the effect of real transactions on the amount of trade credit needs to be properly controlled for.

Finally, two things are worth noting for future research. First, the importance of real transactions as a determinant of trade credit may be due to the nature of the shock Japanese firms experienced. As discussed above, in contrast with banks in the United States and Europe, Japanese banks did not experience a substantial deterioration of their balance sheets during the global financial crisis. They therefore had sufficient capacity to provide funding to their client firms and firms consequently did not need to resort to trade credit in order to ease financial difficulties. It may well be the case that trade credit could be an important source of financing when firms' main banks suffer huge losses in a crisis. Second, the importance of trade credit as an alternative source of financing may depend on firm characteristics. For instance, in Table 11 for firms overall we saw that the share of firms that relied on trade credit was little more than 10 percent. However, for small firms with five or fewer employees, the share was about 30 percent. This suggests that trade credit may be more important for smaller firms.

7. Public credit guarantees

7.1. Institutional background

The global financial crisis prompted governments around the world to introduce policy measures aimed at improving the credit availability for SMEs. The Japanese government was no exception and, along with a variety of other measures, introduced a special credit guarantee program, the ECG program, at the end of October 2008. Even before the crisis, the Japanese government had loan guarantee programs for SMEs, which remain in place, and nearly 40 percent of all Japanese SMEs were receiving guarantees. In the regular credit guarantee program, which is the most widely used such program, three parties are involved: a small business borrower, a financial institution, and a credit guarantee corporation (CGC), which is financially backed by the government. In order to obtain guaranteed loans, small businesses have to first apply to a CGC, often via a financial institution that acts on behalf of the small business. The CGC then examines the application and makes a credit decision. Once approved, the financial institution extends a loan to the small business and the borrowing firm pays a guarantee premium to the CGC. In the case that the firm is unable to repay its loan to the bank, the loan is covered by the CGC. In most cases, credit guarantees extend to 80 percent of the loan amount.

In comparison with the regular credit guarantee program, the ECG program had the

following institutional features. First, the ratio of credit covered by CGCs was 100 percent and banks that extended EGC loans bore no credit risks. Second, the maximum duration of an ECG loan was ten years, whereas that of a regular credit guaranteed loan is seven years. Third, in most cases, guarantee premiums were fixed at about 0.75-0.80 percent of the loan amount. In contrast, the premium for regular credit guarantee loans varies between 0.45 and 1.9 percent depending on the borrowing firm's credit risk. Finally, while the risk weight of regular credit guarantee loans under the Basel II Capital Accord is 10 percent, the risk weight of ECG loans was set to 0 percent. In sum, the ECG program was set up to make it easier for risky SMEs to obtain loans.

7.2. Use of the Emergency Credit Guarantee program: Descriptive statistics

The 2009 RIETI survey asked firms about the use of the ECG program. The responses are summarized in Table 12, which shows that, by February 2009, four months after the introduction of the ECG program, when the RIETI survey was conducted, a quarter of firms had obtained an ECG loan. In addition, 15 percent of firms intended to apply for an ECG loan. The RIETI survey also asked SME borrowers that had obtained or intended to obtain an ECG loan about the reasons for applying for an ECG loan. The results are shown in Table 13 (multiple answers allowed) and indicate that the majority of ECG-loan-user firms, including potential users, planned to use ECG loans to increase their liquidity buffers, including cash

and deposits. About 15 percent of firms replied that they applied for ECG loans because they had reached the limit of loans they could obtain under the regular guarantee program. In addition, 13 percent of firms applied for ECG loans because their loan applications for ordinary (non-credit-guaranteed) loans had been declined. The percentage shares of these credit-rationed borrowers were higher for smaller firms. These results from the 2009 RIETI survey suggest that the ECG program improved the financial position of Japanese SMEs.

{Table 12 near here}

{Table 13 near here}

7.3. Use of the Emergency Credit Guarantee program: Empirical analysis

Using a firm-bank matched dataset constructed from the RIETI surveys, Ono et al. (2013) empirically examined the effectiveness of the ECG program in increasing credit availability. They find that the ECG program significantly improved credit availability for user-firms. However, they also find that the increased availability was partially, if not completely, offset by a decrease in non-ECG loans when it was a relationship lender (main bank) that extended an ECG loan. Interestingly, such loan "substitution" effects were not found when non-main banks extended an ECG loan. Ono et al. (2013) argue that these results reflect that relationship lenders exploit their informational advantage to identify low quality firms. That is, similar to the situation where an informed bank underwrites corporate bonds of a low

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quality firm and distributes them to outside investors in order to replace its existing loans, a relationship lender may switch from non-guaranteed loans to guaranteed loans. In such cases, the credit risks associated with risky firms are transferred from the relationship lender to the public credit guarantee program.

If this conflict-of-interest hypothesis is correct, we would observe a deterioration in the ex-post performance of borrowers that obtained an ECG loan from their relationship lenders. Employing propensity score matching estimation, Ono et al. (2013) find that indeed the ex-post performance of firms that received ECG loans from their main bank deteriorated more than that of firms that received non-ECG loans. Again, they do not find such performance deterioration effects when non-main banks extended an ECG loan.

In sum, Ono et al. (2013) find that the ECG program helped to improve access to credit for struggling SMEs during the global financial crisis, but the program was partially "abused" by informed lenders. Although close firm-bank relationships are thought to be beneficial in improving access to credit, when combined with a credit guarantee program, they may have perverse effects, as the credit guarantees may distort banks' incentives. The findings by Ono et al. (2013) imply that researchers and policy-makers need to consider program designs that create the right incentives and institutional structures.

8. Ex-post performance of SMEs

In the previous sections, we examined the steps that SMEs took in order to cope with the financial crisis. These include obtaining a loan from the main bank, obtaining additional trade credit from their main suppliers, and obtaining a loan backed by public guarantees. However, because the 2009 RIETI survey was conducted shortly after the eruption of the global financial crisis, we cannot infer whether the loans or trade credit improved credit availability for SMEs in the long run. Nor is it possible to infer whether they helped to improve the performance of firms that obtained loans/credit. In this section, we examine these issues by utilizing firms' financial statements data from 2007 to 2012.

8.1. Methodology

In order to measure the treatment effect of loans/credit that SMEs obtained during the crisis, we take the following three steps. First, we identify firms that obtained a main bank loan, a government-backed loan, or trade credit and firms that did not. As we noted in Section 3, the 2009 RIETI survey asked firms about how they responded to the crisis in their relations with main suppliers (Table 6) and banks (Table 7) to cope with the crisis. We use the answers to these questions.

In particular, we construct three dummy variables that represent the provider of loans/credit to each firm. First, we identify firms that relied on their main bank as those that chose "borrowing from a primary bank" or "delayed debt repayment to a primary bank" in

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Table 7 and construct a dummy variable, MAINBANK. Firms that relied on trade creditors (main suppliers) were identified as those that chose one or more of the following responses in Table 6, "extended terms of accounts payable," "extended terms of bills payable," and/or "increase in the percentage share of payments by accounts payable and bills" and are represented by the dummy variable TRADECREDIT. Finally, we identify firms that relied on government assistance as those that chose "borrowing with public credit guarantees" or "borrowing from government financial institutions" in Table 7 (GOVLOAN).

Second, for each group of firms that relied either on their main bank, trade creditors, or the government (treatment group) and those that did not (control group), we calculate the development in variables that represent firms' credit availability and their performance between 2007, the year before the crisis, and 2012. Variables that measure credit availability for and the ex-post performance of firms from 2007 to 2012 are obtained from the TSR database.

Third, to examine the relationship between MAINBANK, TRADECREDIT, and GOVLOAN on the one hand and firms' credit availability and ex-post performance on the other, we employ the difference in differences (DID) approach. That is, we take differences between the development in variables for treated firms and the development for non-treated firms.

The procedure is as follows. We first calculate the difference in each credit

availability or performance variable (say, variable X) between year t+i and year t,

dX(i)=X(t+i)-X(t), where t is 2007, the pre-crisis year, i ranges from 1 to 5 (2008 to 2012),

and the prefix "d" represents the i-year differences. By focusing on the variation over time

within each firm, we eliminate time-invariant firm fixed effects. We then compare the

differences in the variables between firms that relied on, for example, their main bank

(MAINBANK=1, treatment group) and firms that did not (MAINBANK=0, control group).

That is, we compare the means of dX(i) for the treatment and the control group and conduct

simple t-tests.

The credit availability variables we employ are the loan ratio, LOANRATIO, and the

interest payment ratio, RATE. LOANRATIO is defined as firms' loans outstanding divided by

the amount of total assets, and a larger LOANRATIO implies better access to credit.

LOANRATIO can be divided into short-term loans with a maturity of less than one year

(S_LOANRATIO) and long-term loans with a maturity of one year or more

(L_LOANRATIO). The interest expense ratio, RATE, is defined as interest expenses divided

by the total amount of loans. Ex-post performance variables are the number of employees

(EMP), which represents firm size, the operating profit-to-assets ratio (ROA) to represent

profitability, and the capital-to-assets ratio (CAPRATIO) to represent firms' riskiness. We

also calculate the interest coverage ratio (ICOVER), which measures firms' debt repayment

capacity.

Table 14 shows the summary statistics of the different variables as of 2007. To exclude outliers, for each variable, we drop observations that fall into either the upper or lower 1 percent of the total distribution of the variable in each year.

{Table 14 near here}

8.2. Results

Table 15 shows the results for the DID analysis.

{Table 15 near here}

We begin with the results for firms that relied on their main bank (MAINBANK). The relative improvement in credit availability for these firms is positive and significant for every year, as indicated by the DID estimates for dLOANRATIO. We also find that the increase in loan availability is mostly due to the increased availability of long-term loans, as shown by the results for dL_LOANRATIO.

Turning to the ex-post performance variables, dCAPRATIO significantly worsened, presumably because firms that relied on their main bank borrowed more than firms that did not. Further, we find that the DID estimate for dROA(t+2) (i.e., for 2009) is negative. This deterioration in profitability, however, was short-lived and there are no significant differences between the treatment group and the control group in subsequent years. In contrast, we find persistently negative treatment effects for dEMP from t+2 to t+5 (2009 to 2012), suggesting

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that main banks urged firms that obtained loans from them to cut costs by reducing employment. This likely is the reason why the negative effect on firms' profitability (indicated by the negative dROA(t+2) above) diminished after 2009. At the same time, the profitability of treated firms did not improve despite cost-cutting, suggesting a decrease in gross sales.

Despite the deterioration in profitability in year t+2, the interest coverage ratio, dICOVER(t+2), improved. This result might obtain because main banks may have provided temporary moratoriums on debt repayment. Consistent with this conjecture, dRATE(t+1) and dRATE(t+2) are significantly negative.

Next, regarding firms that obtained loans from government affiliated financial institutions and loans backed by public credit guarantees (GOVLOAN), credit availability for these firms improved substantially. In terms of ex-post performance, we find that dROA(t+2) is significantly negative, while dROA(t+5) is significantly positive. The treatment effects in the case of dEMP are negative for years t+2 and t+3, but become insignificant thereafter. These results suggest that direct lending by government affiliated financial institutions and/or public credit guarantees during the crisis period may have played a role in improving the ex-post performance of firms. That is, firms that received government-supported loans may have cut their costs in the short run as indicated by the negative estimates for dEMP(t+2) and dEMP(t+3), but may have increased their gross sales in the long run and improved their

profitability, as indicated by the positive estimate for dROA(t+5). However, this improvement in profitability should be treated with caution, since it is observed only in the most recent year.

Finally, firms that relied on trade creditors increased their leverage, as indicated by the negative DID estimates for dCAPRATIO. We also find that the DID estimates for dLOANRATIO are positive and significant in most years. The latter finding implies that many firms increased their borrowing from banks and trade credit from main suppliers simultaneously, suggesting that bank loans and trade credit from main suppliers are complementary. Regarding the ex-post performance variables, we find negative DID estimates for dROA(t+1), but this deterioration in firm performance is again short-lived and there is no significant differences afterwards.

In sum, we find that the credit availability of firms that relied on main banks, the government, or trade creditors improved during 2008-2012. In terms of firms' ex-post performance, we find that the number of employees of firms that obtained loans from their main bank or loans backed by government policy measures decreased, suggesting that firms that obtained rescue loans made restructuring efforts to cut costs. In terms of firms' profitability, we find negative effects in 2009, but such negative effects subsequently diminished and even turned positive in 2012 for firms that obtained government-backed loans. In most years, however, the effects on profitability are insignificant. Overall, it is safe to say

that the performance of firms that received loans did not improve significantly.

9. Conclusion

Using unique firm survey data, this article investigated SME financing in Japan during and

after the global financial crisis. The major findings can be summarized as follows.

We find that the most important element of the crisis was the demand shock through

firms' customers, and many SMEs relied on loans extended by their main bank to cope with

the demand shock. There were some firms that experienced difficulties in obtaining rescue

loans from a main bank. We inferred that this is because these firms obtained "transactional

loans" from non-main banks before the crisis, which undermined the close relationship with

their main bank. We also find that banks that abruptly tightened their lending attitude during

the crisis were transactional lenders.

Many SMEs also relied on the loans that were either provided or guaranteed by

government-affiliated institutions, including the ECG program set up in October 2008.

Although these loans generally helped to increase credit availability for firms that received

the loans, the ECG program may also have resulted in "abuse" by main banks in that they

appear to have provided guaranteed loans in order to replace, at least partially, existing

non-guaranteed loans. In contrast to loans either extended by main banks or backed by the

government, trade credit extended by main suppliers played a limited role in improving the

availability of credit.

Finally, using data from firms' financial statements, we examined the ex-post performance of survey respondent firms during 2008-2012. We find that firms that obtained rescue loans from their main bank or government-backed loans made restructuring efforts to cut costs. In terms of firms' profitability, we find negative effects in 2009, but such negative effects subsequently diminished. In most years, however, the effects on profitability are insignificant. Thus, it is safe to say that the performance of firms that received loans did not improve significantly.

While it is beyond the scope of this article to investigate why the various ways in which firms sought to improve their financial position did not have a significant effect on their ex-post performance, it may be the case that one of the policy measures we did not examine in this study, namely the SME Financing Act mentioned in Section 2, affected firms' incentives and performance. Although the Act seems to have helped to improve the financial positions of SMEs, it may also have led firms to put off restructuring efforts. In addition, because the SME Financing Act allowed lenders to classify rescheduled loans as performing loans, this may have weakened the incentive for lenders to make efforts to help distressed firms to restructure.[8] Unfortunately, our dataset does not allow us to identify firms that relied

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[8] In this regard, it should also be noted that the Japanese government revised several rules for the definition of non-performing loans in November 2008, before the Act was implemented (see Yomori et al. (2013) for details). Bank of Japan (2010b) estimates that the ratio of non-performing loans to total loans decreased by 0.6 percentage points for large banks and 1.6 percentage points for regional banks as a result. Thus, the revision may also contributed

on the Act to reschedule their loan repayments, which would make it possible to examine whether the performance of firms that obtained loans from their main bank and/or loans backed by the government did not improve because of disincentives brought about by the Act. Nevertheless, this possibility means that a key challenge for researchers and policy-makers is to create a policy program that provides a safety-net to struggling SMEs while preserving incentives for them to restructure and grow. What such a program should look like is an issue left for future research.

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to weakening the incentive for lenders to make efforts to help distressed firms to restructure.

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Figure 1: ROA of Japanese firms by firm size

Note: Return on assets, defined as the ratio of operating profits to total assets. Firm size is measured in terms of the amount of capital.

Source: *Financial Statements Statistics of Corporations by Industry*, Ministry of Finance.
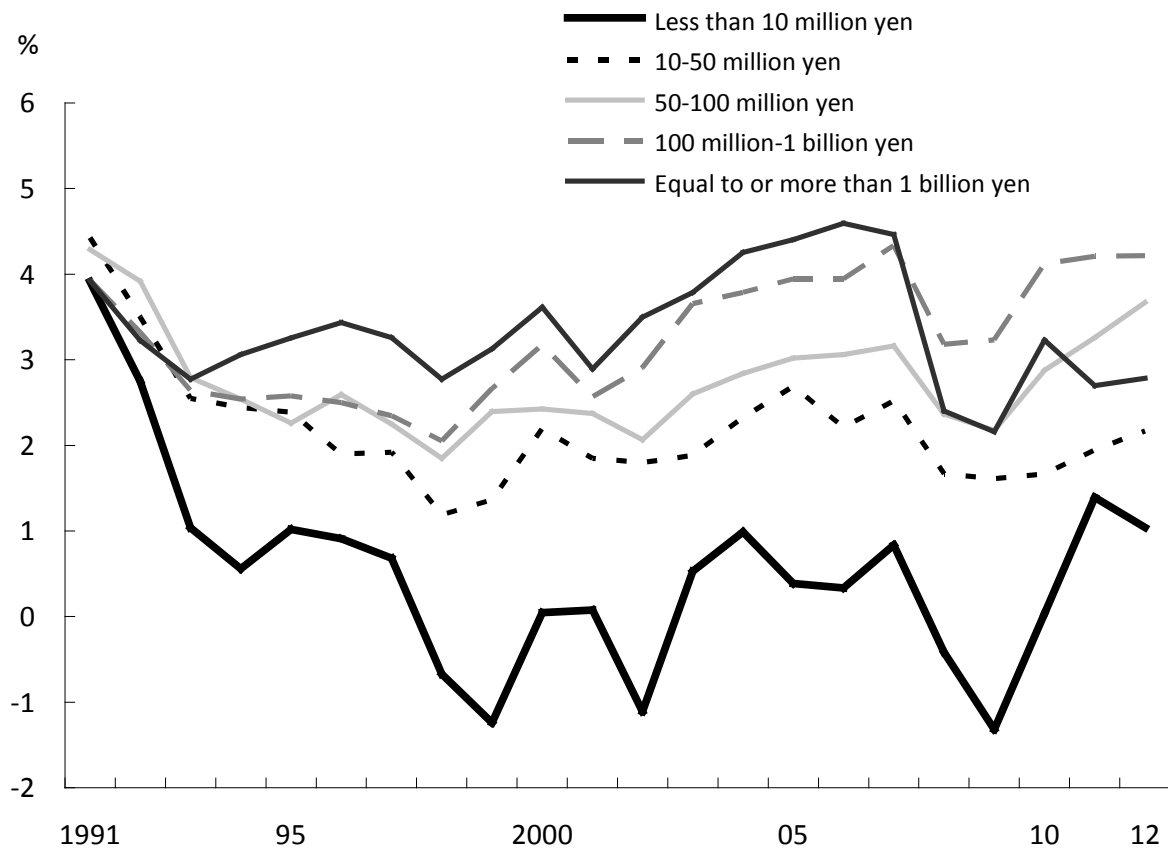
Figure 2: Diffusion index of firms' financial position by firm size

Note: The diffusion index of firms' financial position is calculated as the difference in percentage points between firms that answered their financial position was "comfortable" and those that answered it was "tight". A larger positive number indicates that, on aggregate, firms' financial position is more comfortable. Firm size is measured in terms of the amount of capital. Large firms: More than 1 billion yen, Medium-sized firms: 100 million-1 billion yen, Small firms: Less than 100 million yen.

Source: *TANKAN*, Bank of Japan.

Percentage points
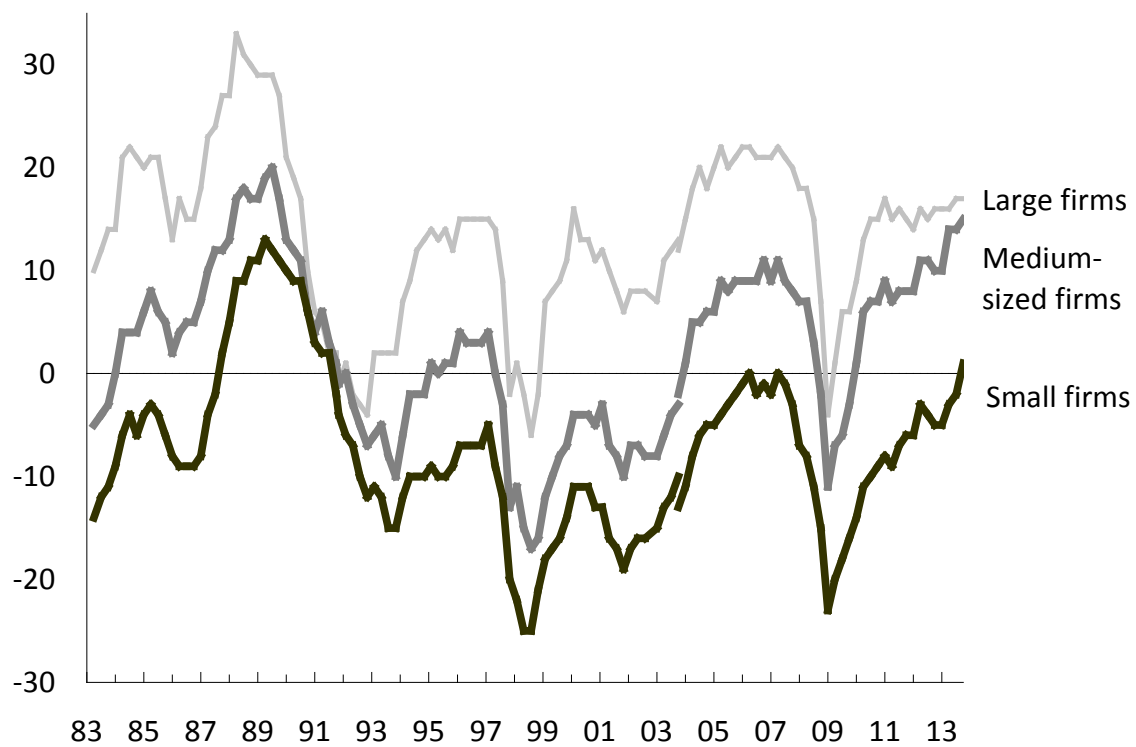
Figure 3: Number of corporate bankruptcies and amount of liabilities left

Source: Tokyo Shoko Research.
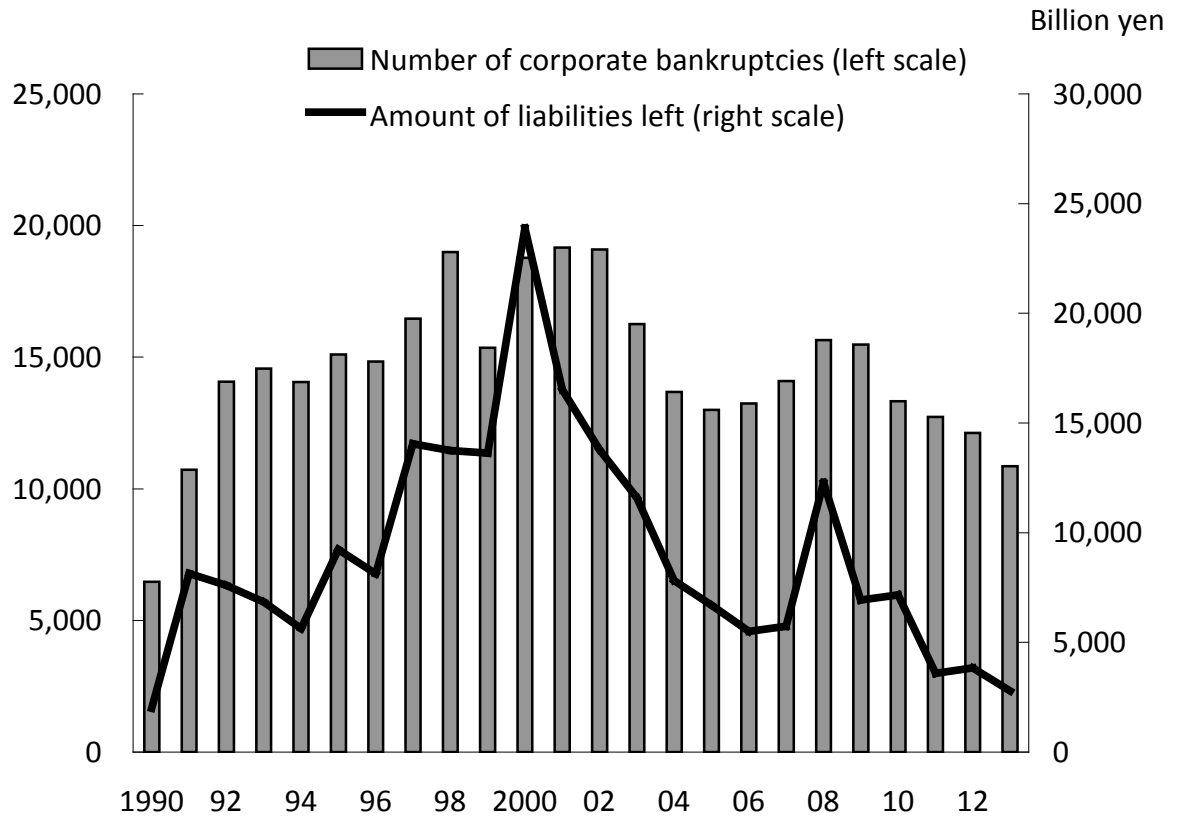
Figure 4: Year-on-year growth of aggregate loans outstanding

Note: Firm size is measured in terms of the amount of capital. Large firms: More than 1 billion yen, Medium-sized firms: 100 million-1 billion yen, Small firms: Less than 100 million yen.

Source: Bank of Japan, "Loans and Bills Discounted by Sector," available online: http://www.boj.or.jp/en/statistics/dl/loan/ldo/index.htm/..
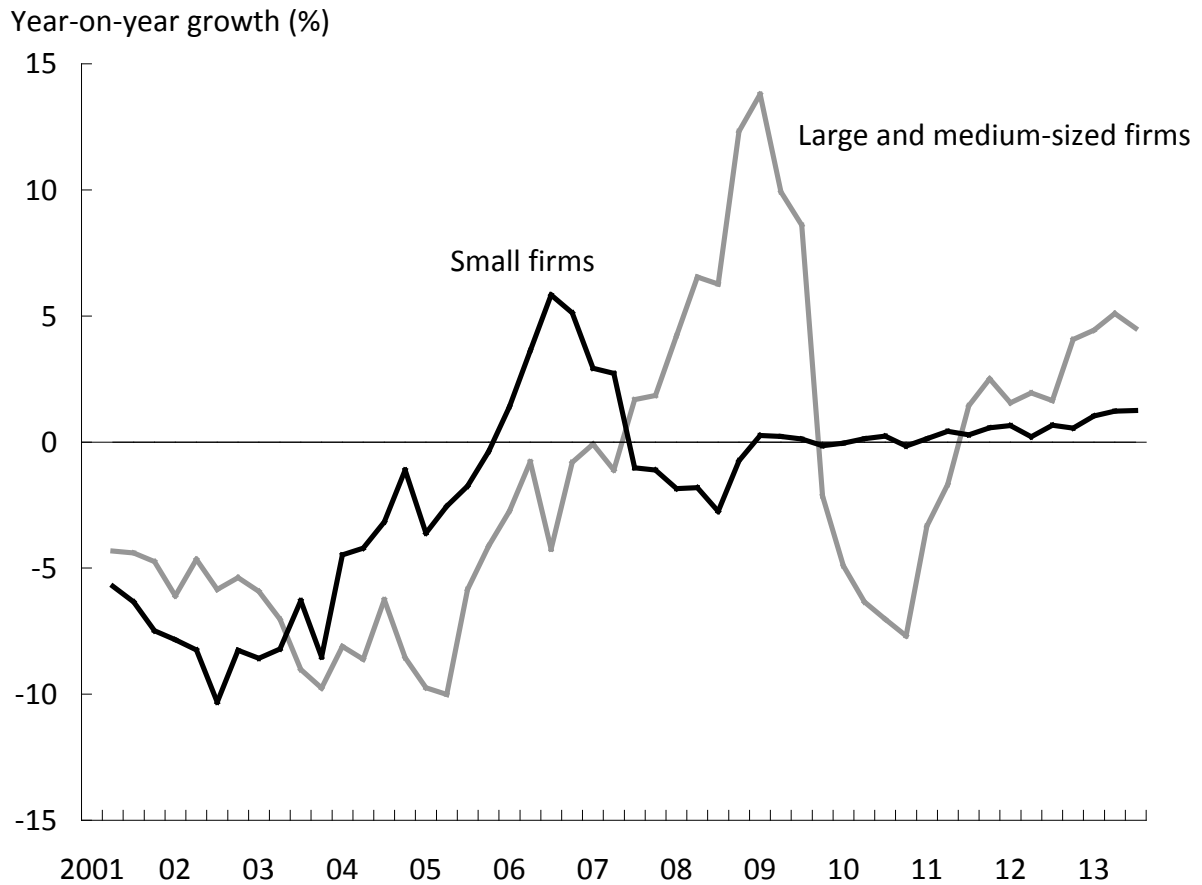
Table 1: Changes in relationships between transaction partners after September 2008

Note: "Primary bank" refers to the bank with which a firm has the largest amount of loans outstanding, while "second primary bank" refers to the bank with which a firm has the second largest amount of loans outstanding. In each set of rows, the upper row shows the number of respondent firms and the lower row shows the percentage share.

	Improved (1)	Unchanged (2)	Deteriorated (3)	Diffusion index (1)-(3)
Relationship with customers	97	2,820	1,086	
	2.4	70.4	27.1	−24.7
Relationship with suppliers	119	3,478	392	
	3.0	87.2	9.8	−6.8
Lending attitude of primary bank	248	3,067	357	
	6.8	83.5	9.7	−3.0
Lending attitude of second primary bank	187	2,795	348	
	5.6	83.9	10.5	−4.8
Lending attitude of other banks	152	2,570	434	
	4.8	81.4	13.8	−8.9

Table 2: Changes in relationships with customers after September 2008

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Bankruptcy or distress of customers	Increase in unrecoverable claims	Decrease in gross sales and orders	Decrease in sales price	Extended terms of accounts receivable	Extended terms of bills receivable	Decrease in percentage share of cash payments	No particular change
4,030	1,131	462	2,887	1,411	384	122	205	695
	28.1	11.5	71.6	35.0	9.5	3.0	5.1	17.2

Table 3: Changes in relationships with main suppliers after September 2008

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Bankruptcy or distress of main suppliers	Increase in purchase costs	Shortened terms of accounts payable	Shortened terms of bills payable	Increase in percentage share of cash payments	No particular change
3,971	187	1,131	132	79	216	2,559
	4.7	28.5	3.3	2.0	5.4	64.4

Table 4: Changes in relationships with banks after September 2008

Note: Multiple answers allowed. In each set of rows, the upper row shows the number of respondent firms and the lower row shows the percentage share.

	Total	Rejection of new loan applications	Withdrawal of existing loans	Decline in loan offer	Decrease in outstanding loans
Primary bank	3,680	195	36	245	308
		5.3	1.0	6.7	8.4
Second primary bank	3,281	171	37	229	249
		5.2	1.1	7.0	7.6
Other banks	3,057	207	40	225	183
		6.8	1.3	7.4	6.0

(continued)

	Increase in lending rates	Shortened lending terms	Request for additional collateral	Request for additional guarantors	No particular change
Primary bank	238	83	86	28	2,861
	6.5	2.3	2.3	0.8	77.7
Second primary bank	191	60	58	18	2,618
	5.8	1.8	1.8	0.5	79.8
Other banks	174	55	44	15	2,435
	5.7	1.8	1.4	0.5	79.7

Table 5: Responses to the crisis in relations with customers after September 2008

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Expansion of sales volume	Increase in sales prices	Shortened terms of accounts receivable	Shortened terms of bills receivable	Shift to cash payment	Use of commercial credit insurance	Enhanced explanations to customers	No particular response
4,008	861	628	310	129	324	146	886	1,884
	21.5	15.7	7.7	3.2	8.1	3.6	22.1	47.0

Table 6: Responses to the crisis in relations with main suppliers after September 2008

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Decrease in purchase volume	Decrease in purchase prices	Extended terms of accounts payable	Extended terms of bills payable	Increase in percentage share of payments by accounts payable and bills	Enhanced explanations to main suppliers	No particular response
3,961	636	901	58	22	57	399	2,448
	16.1	22.7	1.5	0.6	1.4	10.1	61.8

Table 7: Responses to the crisis in relations with banks after September 2008

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Borrowing from a primary bank	Delayed debt repayment to a primary bank	Borrowing from a second primary bank	Delayed debt repayment to second primary bank	Borrowing from other banks	Delayed debt repayment to other banks
3,889	1,163	130	638	69	368	37
	29.9	3.3	16.4	1.8	9.5	1.0

(continued)

Borrowing with public credit guarantees	Borrowing from government financial institutions	Borrowing from non-bank lenders	Creation/expansion of overdraft arrangements	Creation/expansion of commitment lines	Enhanced explanations to financial institutions	No particular response
745	323	13	363	84	401	1,787
19.2	8.3	0.3	9.3	2.2	10.3	46.0

Table 8: Responses to the crisis in relations with banks after September 2008: By firm size

Note: Multiple answers allowed. In each set of rows, the upper row shows the number of respondent firms and the lower row shows the percentage share.

	Total	Borrowing from a primary bank	Delayed debt repayment to a primary bank	Borrowing from a second primary bank	Delayed debt repayment to second primary bank	Borrowing from other banks	Delayed debt repayment to other banks
Less than 100 million yen	246	59	22	18	8	11	5
		24.0	8.9	7.3	3.3	4.5	2.0
100 - 300 million yen	610	181	31	68	14	22	5
		29.7	5.1	11.1	2.3	3.6	0.8
300 million - 1 billion yen	1,070	315	36	141	24	61	12
		29.4	3.4	13.2	2.2	5.7	1.1
1 - 5 billion yen	1,171	371	25	236	13	141	9
		31.7	2.1	20.2	1.1	12.0	0.8
5-10 billion yen	305	99	2	70	1	48	1
		32.5	0.7	23.0	0.3	15.7	0.3
More than 10 billion yen	408	114	9	94	5	80	4
		27.9	2.2	23.0	1.2	19.6	1.0

(continued)

	Borrowing with public credit guarantees	Borrowing from government financial institutions	Borrowing from non-bank lenders	Creation/expansion of overdraft arrangements	Creation/expansion of commitment lines	Enhanced explanations to financial institutions	No particular response
Less than 100 million yen	42	17	1	4	0	12	129
	17.1	6.9	0.4	1.6	0.0	4.9	52.4
100 - 300 million yen	165	53	5	35	8	42	272
	27.0	8.7	0.8	5.7	1.3	6.9	44.6
300 million - 1 billion yen	232	77	3	86	20	78	500
	21.7	7.2	0.3	8.0	1.9	7.3	46.7
1 - 5 billion yen	221	108	1	133	15	138	524
	18.9	9.2	0.1	11.4	1.3	11.8	44.7
5-10 billion yen	43	28	1	38	8	42	151
	14.1	9.2	0.3	12.5	2.6	13.8	49.5
More than 10 billion yen	25	32	1	61	30	84	180
	6.1	7.8	0.2	15.0	7.4	20.6	44.1

Table 9: Transition matrix between 2008 and 2009 of the number of banks with which firms transacted

Note: Rows represent the number of banks with which firms transacted in 2008, while columns represent the number of banks with which firms transacted in 2009. In each set of rows, the upper row shows the number of respondent firms and the lower row shows the percentage share.

	0 (2009)	1 (2009)	2 (2009)	3 (2009)	4-5 (2009)	6 or more (2009)	Total
0 (2008)	196	43	8	10	3	6	266
	73.7	16.2	3.0	3.8	1.1	2.3	100.0
1 (2008)	23	445	101	16	7	1	593
	3.9	75.0	17.0	2.7	1.2	0.2	100.0
2 (2008)	9	77	469	105	24	1	685
	1.3	11.2	68.5	15.3	3.5	0.1	100.0
3 (2008)	4	16	101	399	93	0	613
	0.7	2.6	16.5	65.1	15.2	0	100.0
4-5 (2008)	0	6	25	114	550	97	792
	0	0.8	3.2	14.4	69.4	12.2	100.0
6 or more (2008)	2	1	1	5	70	493	572
	0.3	0.2	0.2	0.9	12.2	86.2	100.0

Table 10: Number of firms reporting that banks' lending attitude changed abruptly in or after September 2008, by type of bank

Note: In each set of rows, the upper row shows the number of respondent firms and the lower row shows the percentage share.

	Total	Large banks	Regional banks	Shinkin bank	Credit Cooperatives	Government financial institutions	Others
Firms that reported change in banks' lending attitude	457	195	181	40	2	23	16
	100.0	42.7	39.6	8.8	0.4	5.0	3.5
Cf. Firms by type of primary bank	3,272	595	1,703	437	37	403	97
	100.0	18.2	52.0	13.4	1.1	12.3	3.0

Table 11: The most preferred measure to cope with a temporary deterioration in cash flow

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Ask the main supplier to extend payment period	Ask the main supplier to accept cuts in payments	Ask the main customer to shorten payment period	Ask the main bank to provide loans	Ask the main bank to extend repayment period	Ask other non-main banks to provide loans	Ask other non-main banks to extend repayment period	Others
5,404	352	182	212	3,892	189	208	47	401
	6.5	3.4	3.9	72.0	3.5	3.8	0.9	7.4

Table 12: Use of the Emergency Credit Guarantee program

Note: The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Using	Not using but intend to use in the future	No plan to use	Do not know the ECG program
3,963	963	601	1,966	433
100.0	24.3	15.2	49.6	10.9

Table 13: Reasons for the use of the Emergency Credit Guarantee program

Note: Multiple answers allowed. The upper row shows the number of respondent firms and the lower row shows the percentage share.

Total	Private financial institutions refused to provide loans without public credit guarantees	Reached the limit for conventional guaranteed loans	Switching from non-guaranteed loans to ECG loans	Switching from conventional guaranteed loans to ECG loans	Expanding cash and deposits on hand	Other
1,290	168	192	96	126	807	171
	13.0	14.9	7.4	9.8	62.6	13.3

Table 14: Summary statistics

Note: Definitions of variables are provided in the text. Summary statistics are for 2007.

(a) Entire sample

	No. of obs.	Mean	Std. Dev.	Median
LOANRATIO	3,013	0.306	0.244	0.276
S_LOANRATIO	3,001	0.105	0.130	0.056
L_LOANRATIO	3,009	0.194	0.197	0.138
RATE	2,561	0.027	0.020	0.024
EMP	2,995	84.196	144.199	32
ROA	2,944	0.027	0.050	0.023
CAPRATIO	2,972	0.311	0.236	0.272
ICOVER	2,624	17.608	78.787	2.674

(b) By MAINBANK

	MAINBANK=1				MAINBANK=0			
	No. of obs.	Mean	Std. Dev.	Median	No. of obs.	Mean	Std. Dev.	Median
LOANRATIO	938	0.382	0.230	0.372	2,075	0.272	0.243	0.229
S_LOANRATIO	934	0.124	0.130	0.086	2,067	0.096	0.130	0.040
L_LOANRATIO	936	0.252	0.197	0.214	2,073	0.168	0.192	0.096
RATE	900	0.031	0.021	0.027	1,661	0.026	0.019	0.023
EMP	935	83.218	134.134	35	2,060	84.639	148.571	31
ROA	920	0.022	0.046	0.022	2,024	0.030	0.051	0.024
CAPRATIO	937	0.240	0.206	0.211	2,035	0.343	0.242	0.314
ICOVER	896	6.024	25.478	1.921	1,728	23.614	94.794	3.248

(c) By GOVLOAN

	GOVLOAN=1				GOVLOAN=0			
	No. of obs.	Mean	Std. Dev.	Median	No. of obs.	Mean	Std. Dev.	Median
LOANRATIO	646	0.448	0.214	0.452	2,367	0.268	0.237	0.223
S_LOANRATIO	644	0.136	0.136	0.098	2,357	0.096	0.128	0.042
L_LOANRATIO	649	0.306	0.197	0.268	2,360	0.163	0.186	0.094
RATE	644	0.031	0.020	0.028	1,917	0.026	0.019	0.023
EMP	649	57.455	102.466	27	2,346	91.593	152.951	34
ROA	634	0.016	0.047	0.017	2,310	0.030	0.050	0.025
CAPRATIO	647	0.192	0.193	0.169	2,325	0.344	0.236	0.312
ICOVER	623	1.766	11.416	1.122	2,001	22.540	89.432	3.602

(d) By TRADECREDIT

	TRADECREDIT=1				TRADECREDIT=0			
	No. of obs.	Mean	Std. Dev.	Median	No. of obs.	Mean	Std. Dev.	Median
LOANRATIO	82	0.425	0.267	0.414	2,931	0.303	0.243	0.273
S_LOANRATIO	82	0.150	0.155	0.118	2,919	0.104	0.129	0.055
L_LOANRATIO	83	0.261	0.221	0.223	2,926	0.192	0.196	0.136
RATE	77	0.031	0.018	0.028	2,484	0.027	0.020	0.024
EMP	84	37.143	58.020	18.5	2,911	85.553	145.711	33
ROA	77	0.014	0.049	0.016	2,867	0.028	0.050	0.023
CAPRATIO	80	0.207	0.244	0.184	2,892	0.314	0.235	0.276
ICOVER	77	10.403	84.501	1.051	2,547	17.826	78.616	2.732

Table 15: DID analysis

Note: Definitions of variables are provided in the text.

(a) Firms that relied on their main bank

		MAINBANK					
		Treatment		Control		Difference	
		No. of obs.	Mean	No. of obs..	Mean		
dLOANRATIO	t+1	938	0.012	2,075	-0.001	0.013	***
	t+2	893	0.055	1,981	0.014	0.041	***
	t+3	863	0.050	1,945	0.012	0.038	***
	t+4	824	0.042	1,885	0.010	0.032	***
	t+5	683	0.030	1,568	-0.002	0.033	***
dS_LOANRATIO	t+1	934	0.004	2,067	0.000	0.003	
	t+2	890	0.008	1,971	0.003	0.006	*
	t+3	863	0.004	1,943	-0.003	0.006	*
	t+4	826	-0.003	1,882	-0.004	0.001	
	t+5	688	-0.009	1,562	-0.009	0.000	
dL_LOANRATIO	t+1	936	0.006	2,073	-0.002	0.008	***
	t+2	890	0.042	1,981	0.011	0.031	***
	t+3	864	0.042	1,944	0.014	0.028	***
	t+4	825	0.042	1,881	0.012	0.030	***
	t+5	684	0.038	1,566	0.006	0.033	***
dRATE	t+1	900	0.001	1,661	0.003	-0.002	**
	t+2	859	-0.003	1,549	0.000	-0.003	***
	t+3	828	-0.003	1,505	-0.002	-0.001	
	t+4	786	-0.004	1,431	-0.003	-0.001	
	t+5	643	-0.005	1,198	-0.005	0.000	
dEMP	t+1	935	0.125	2,060	0.565	-0.439	
	t+2	891	-1.861	1,960	0.263	-2.124	**
	t+3	863	-2.918	1,922	-0.083	-2.834	**
	t+4	822	-3.558	1,862	0.568	-4.127	**
	t+5	681	-4.592	1,547	1.164	-5.756	**
dROA	t+1	920	-0.006	2,024	-0.003	-0.003	
	t+2	876	-0.022	1,922	-0.016	-0.006	**
	t+3	849	-0.014	1,905	-0.015	0.001	
	t+4	811	-0.010	1,844	-0.012	0.003	
	t+5	669	-0.003	1,531	-0.004	0.001	
dCAPRATIO	t+1	937	0.001	2,035	0.011	-0.010	***
	t+2	892	-0.004	1,943	0.024	-0.027	***
	t+3	864	-0.005	1,912	0.028	-0.033	***
	t+4	827	-0.003	1,843	0.031	-0.034	***
	t+5	686	0.006	1,537	0.036	-0.030	***
dICOVER	t+1	896	-1.203	1,728	-2.852	1.649	
	t+2	852	-4.149	1,613	-10.072	5.923	**
	t+3	835	-0.884	1,582	-3.999	3.115	
	t+4	791	-1.327	1,503	4.978	-6.305	
	t+5	652	3.418	1,255	25.033	-21.615	**

(b) Firms that relied on government-backed loans

		GOVLOAN					
		Treatment		Control		Difference	
		No. of obs.	Mean	No. of obs.	Mean		
dLOANRATIO	t+1	646	0.017	2,367	0.000	0.017	***
	t+2	624	0.063	2,250	0.017	0.046	***
	t+3	605	0.065	2,203	0.012	0.053	***
	t+4	575	0.064	2,134	0.007	0.057	***
	t+5	481	0.037	1,770	-0.001	0.038	***
dS_LOANRATIO	t+1	644	0.007	2,357	0.000	0.007	**
	t+2	621	0.002	2,240	0.005	-0.003	
	t+3	605	-0.003	2,201	0.000	-0.002	
	t+4	574	-0.003	2,134	-0.004	0.001	
	t+5	481	-0.020	1,769	-0.006	-0.014	***
dL_LOANRATIO	t+1	649	0.009	2,360	-0.001	0.010	***
	t+2	625	0.058	2,246	0.010	0.048	***
	t+3	610	0.066	2,198	0.011	0.055	***
	t+4	577	0.065	2,129	0.010	0.055	***
	t+5	483	0.058	1,767	0.004	0.055	***
dRATE	t+1	644	0.001	1,917	0.002	-0.001	
	t+2	620	-0.002	1,788	0.000	-0.002	*
	t+3	606	-0.002	1,727	-0.002	0.000	
	t+4	573	-0.004	1,644	-0.004	-0.001	
	t+5	482	-0.003	1,359	-0.005	0.002	*
dEMP	t+1	649	0.165	2,346	0.500	-0.335	
	t+2	626	-2.275	2,225	0.127	-2.402	**
	t+3	610	-3.120	2,175	-0.356	-2.763	*
	t+4	577	-3.104	2,107	-0.036	-3.068	
	t+5	482	-3.444	1,746	0.191	-3.635	
dROA	t+1	634	-0.004	2,310	-0.004	0.000	
	t+2	615	-0.022	2,183	-0.016	-0.006	**
	t+3	598	-0.011	2,156	-0.016	0.004	
	t+4	568	-0.008	2,087	-0.012	0.004	
	t+5	471	0.003	1,729	-0.005	0.008	***
dCAPRATIO	t+1	647	-0.002	2,325	0.011	-0.013	***
	t+2	624	-0.010	2,211	0.022	-0.032	***
	t+3	605	-0.018	2,171	0.028	-0.046	***
	t+4	577	-0.025	2,093	0.033	-0.058	***
	t+5	481	-0.008	1,742	0.036	-0.045	***
dICOVER	t+1	623	-0.785	2,001	-2.757	1.971	
	t+2	600	-2.475	1,865	-9.810	7.335	**
	t+3	586	-1.071	1,831	-3.516	2.444	
	t+4	554	-0.503	1,740	3.857	-4.360	
	t+5	461	1.204	1,446	22.883	-21.680	**

(c) Firms that relied on trade credit from main suppliers

		TRADECREDIT					
		Treatment		Control		Difference	
		No. of obs.	Mean	No. of obs.	Mean		
dLOANRATIO	t+1	82	0.024	2,931	0.003	0.021	**
	t+2	73	0.044	2,801	0.026	0.018	
	t+3	71	0.051	2,737	0.023	0.028	*
	t+4	65	0.054	2,644	0.019	0.035	*
	t+5	59	0.057	2,192	0.006	0.051	***
dS_LOANRATIO	t+1	82	0.008	2,919	0.001	0.006	
	t+2	71	0.000	2,790	0.004	-0.004	
	t+3	72	-0.019	2,734	0.000	-0.019	*
	t+4	65	-0.005	2,643	-0.004	-0.001	
	t+5	59	-0.011	2,191	-0.009	-0.002	
dL_LOANRATIO	t+1	83	0.013	2,926	0.001	0.012	
	t+2	75	0.039	2,796	0.020	0.019	
	t+3	73	0.069	2,735	0.022	0.047	***
	t+4	64	0.043	2,642	0.021	0.022	
	t+5	58	0.056	2,192	0.014	0.041	**
dRATE	t+1	77	-0.002	2,484	0.002	-0.004	**
	t+2	67	-0.002	2,341	-0.001	-0.001	
	t+3	67	-0.003	2,266	-0.002	-0.001	
	t+4	60	-0.003	2,157	-0.004	0.000	
	t+5	53	-0.004	1,788	-0.005	0.001	
dEMP	t+1	84	-0.310	2,911	0.449	-0.758	
	t+2	75	-4.573	2,776	-0.288	-4.286	
	t+3	74	-5.378	2,711	-0.841	-4.537	
	t+4	66	-6.561	2,618	-0.548	-6.013	
	t+5	58	-8.293	2,170	-0.389	-7.904	
dROA	t+1	77	-0.014	2,867	-0.004	-0.011	**
	t+2	68	-0.026	2,730	-0.017	-0.008	
	t+3	71	-0.027	2,683	-0.014	-0.012	
	t+4	62	-0.016	2,593	-0.011	-0.005	
	t+5	55	0.004	2,145	-0.004	0.007	
dCAPRATIO	t+1	80	-0.013	2,892	0.008	-0.021	***
	t+2	72	-0.026	2,763	0.016	-0.042	***
	t+3	69	-0.028	2,707	0.019	-0.047	***
	t+4	63	-0.031	2,607	0.022	-0.053	***
	t+5	58	-0.047	2,165	0.029	-0.076	***
dICOVER	t+1	77	-8.357	2,547	-2.105	-6.252	
	t+2	66	-11.712	2,399	-7.923	-3.789	
	t+3	67	0.659	2,350	-3.025	3.684	
	t+4	61	1.441	2,233	2.841	-1.400	
	t+5	55	5.436	1,852	18.005	-12.570	