Preliminary

The Special Credit Guarantee Program in Japan

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Abstract

We examine the effect of the special credit guarantee program introduced by the Japanese government between 1998 and 2001. To alleviate the credit crunch faced by small businesses, the program provided 30 trillion yen of loan guarantees which was more than 10% of total small business loans outstanding. We contrast the moral hazard hypothesis with relaxing borrowing constraint hypothesis to examine the widely-held negative assessments of the program. We evidence an increase of long-term loans ratio and profitability among existing program users. It is consistent more with the relaxing borrowing constraint hypothesis than with moral hazard. To evaluate the special guarantee program, we need to compare this positive effect with the default cost of guarantee users.

1. Introduction

Informational asymmetry is frequently cited as one of the most conspicuous features of the relationship between small and medium enterprises (SMEs) and financial institutions. Due to this asymmetry, the flow of funds to SMEs is often constrained by credit rationing. These constraints are often alleviated by government policies such as loans by government affiliated institutions, investments in start-up businesses, and credit risk databases designed to quantify the default risk of SMEs. Among others, the credit guarantee program plays an important role in Japan's SME financing. The government-backed credit guarantee corporations ensure repayments to private financial institutions for their SME loans. According to the Federation of Credit Guarantee Corporations, the total public credit guarantees outstanding amounted to 30.3 trillion yen as of the end of March 2004. This is equal to 12% of the total value of all SME loans in Japan. Very few countries have such a large volume of publicly guaranteed SME loans. The importance of the credit guarantee programs increased in the 1990s when Japan experienced a series of recessions and needed powerful stimulus packages.

Above all, the special guarantee program for financial stability (hereafter the special guarantee) introduced in October 1998 provided guarantees for as much as 30 trillion yen in loans in order to mitigate the severe credit crunch triggered by the failures of financial institutions. The introduction of the special guarantee program has been said to cause a gigantic impact in the credit market, both positively and negatively. Some commentators point out that the special guarantees provided sufficient credit to companies that were suffering from the credit crunch and close to bankruptcy. This view emphasizes the importance of easing borrowing constraints. However, critical assessments are more common than the positive ones. This critical stance is shared by

most of the mass media and economists in Japan. According to the critics, several defects may distort the incentives of financial institutions and firms, including the 100% guarantee practice whereby private banks are guaranteed full repayment of their loans even when their borrowers become delinquent. Banks thus have no incentive to monitor their borrowers, which can lead to “empire building” by SMEs. Such firms may over-borrow and overinvest, especially when they are close to default. This behavior decreases their profitability and viability. These are what economists call moral hazard problems, for both financial institutions and firms.

In this paper, we investigate the effects of the Japan’s special guarantee program to determine which is dominant: easing borrowing constraints or enhancing moral hazard. Using a panel data set of SMEs for the previous nine years, we find that the constraint-easing effects dominate the moral hazard problems. In the late ’90s and early 2000s, the public credit guarantee scheme including the special guarantee program contributed significantly to the recovery of the SMEs’ profitability; and this effect was much more pronounced than the negative effects of agency problems. Also, even though the results may be profoundly influenced by the unprecedented borrowing constraints of the late 1990s, we may safely say that the moral hazard issue was relatively minor despite the widely-held negative assessments of the programs.

The structure of the paper is as follows. Section 2 gives an overall description of the Japan’s public credit guarantee scheme including the special guarantee program. Section 3 summarizes the previous literature on the effects of the program. Section 4 contrasts the two major hypotheses on its effects. Section 5 explains the data gathered for the current study. Section 6 shows summary statistics and estimation results for the effects of the program. Section 7 concludes.

2. Public Credit Guarantee System in Japan

2.1. Credit Guarantee Scheme

To facilitate the flow of funds to SMEs, a variety of commitments have been implemented by the Japanese government, including the direct loans by government-backed financial institutions. In terms of the amount outstanding, loan guarantees are larger than direct government loans to SMEs, and thus these guarantees play a major role in SME credit provision. Three parties are involved in credit guarantee transactions in Japan: a small business borrower, a financial institution, and the credit guarantee corporation, which is financially backed by the government. With respect to the process of application, approval and use of such guarantees, first, a small business applies for the credit guarantee at either a financial institution or with a guarantee corporation. Second, the corporation examines the application and grants approval of the guarantee. The approval rate is about 90%. Third, based on a letter of approval, the financial institution extends a loan to the small business. Fourth, in cases where the firm cannot repay its debt to the bank, the corporation covers the debt by repaying to the bank, whereupon it receives the loan claim. Fifth, the corporation collects the claim over the long term by assisting with the firm's business restructuring.

There are two additional points worth noting with regard to the guarantee scheme. In the fourth step (i.e., debt relief), the share assumed by the guarantee corporation as a percentage of the total loan claim outstanding is, in principle, 100%. This means the financial institution bears no default risk whatsoever. Also, collateral or guarantees are also sometimes required for sizable loan contracts. For example, collateral can be required for loans of more than 80 million yen; and a third-party guarantor can be required for loans of more than 50 million yen. These collateral and

guarantor requirements are designed to prevent moral hazard, though the credit guarantee programs are supposed to assist small businesses that are short of collateral or lack a guarantor.

2.2. History and the Special Guarantee Program

The credit guarantee system in Japan began in 1937 when the first credit guarantee corporation was established in Tokyo. After the Second World War, the system continued to develop. The Japanese government in 1948 established the Small and Medium Enterprise Agency (hereafter SMEA), which initiated a number of prefectural guarantee corporations. The agency considered the guarantee system one of the major pillars of its SME financing policy. In 1951, repayment by the guarantee corporation became partially insured by the government and the scheme has remained unchanged since. Currently, the insurer is the credit insurance division of the Japan Finance Corporation for Small and Medium Enterprise, which finances 70% to 80% of the repayments by the corporations. The amount of credit guarantees outstanding has grown in tandem with the Japanese economy. During the recessions of the 1970s and ’80s, the system was utilized more frequently than previously as a convenient tool to stimulate the SME sector. The guarantee program for firms harmed by exchange rate appreciations and the guarantee program for recession-hit areas are two examples.

In the ’90s, as the Japanese economy entered a period of prolonged stagnation, public guarantees have been more frequently included in government economic stimulus packages. This culminated in the introduction of the special guarantee program for financial stability (special guarantee program), which ran from October 1998 to March 2001. This measure aimed to ease the credit crunch caused by the slowdown in

lending by the financial sector and beneficiaries were subject to very few collateral or guarantor requirements. The planned guarantee amount is unprecedented as a single program. Initially, the upper limit of 20 trillion yen was provided for the special guarantee program, which was added by another 10 trillion yen in 1999. Furthermore, the examination process by the corporation was said to be looser than other guarantee programs. There was a negative list of conditions for a guarantee corporation to reject applications. But these conditions are difficult to be satisfied. They include significantly negative net worth, tax delinquency, default, and window dressing of balance sheets. Hence, an astonishing number of small businesses (1.7 million approvals totaling about 28.9 trillion yen in guaranteed loans) benefited from the program. Figure 2-1 shows the amount of SME loans backed by guarantees. The amount of outstanding has almost quadrupled in the past 20 years, with the peak of over 40 trillion yen in 1999. The peak is driven by the introduction of the special guarantee program.

However, there appeared a series of reports the program is possibly misused. Some borrowers make stock investments with the guaranteed loans for the daily company operations (Nikkei Financial Newspaper, February 16, 2000), file a bankruptcy less than one month after obtaining guaranteed loans (Nikkei Newspaper, January 11, 1999) and obtain the loans with no purpose simply because they are available (Nikkei Newspaper, January 11, 1999). Furthermore, secretaries of a local legislature were arrested because they receive illegal commissions from ineligible borrowers for acting as an intermediary in the special guarantee programs (Nikkei Newspaper, November 11, 2000). These misuses by borrowers can be attributed to the insufficient credit examination by financial institutions and credit guarantee corporations. Since so many applications were filed at the window of the credit

guarantee corporations, they cannot closely examine the credit risk of an applicant. In one newspaper report, a credit examiner of a credit guarantee corporation was deceived by a disguised office which was non-existent.

The financial cost of the guarantee program incurred by the borrowers' default is no means negligible. Over the past five years, the amount repaid by the corporations has ranged between 0.8 trillion and 1.2 trillion yen on an annual basis, and annual deficits hover between 0.2 trillion and 0.6 trillion yen. These deficits are financed by the national government budget. This has raised the concern about the sustainability of the system. At the end of the year 2004, SMEA has established a committee on the future of the credit guarantee system. The committee has discussed topics such as risk-sharing between guarantee corporations and financial institutions and the introduction of flexible guarantee premiums.

3. Previous Literature on Japan's Public Guarantee Programs

In the early '90s there had been few empirical analyses of the credit guarantee system despite the sizable amount of guarantees outstanding.[2] The general public became aware of the system's importance after the introduction of the special guarantee program in 1998. Media coverage of this scheme included not only its benefits but also the negative effects. Such critical reports included incidents of fraudulent guaranteed loans received by corporate racketeers. After the introduction of the special guarantee scheme, analyses by Japanese economists began to appear. The first study of this issue was carried out by SMEA (2000), which focuses on the short-term effects reducing bankruptcies and unemployment. It estimated the bankruptcy function and observed a

[2] One of the few exceptions is Matsuura (1995). It suggests that the credit guarantee substitutes public loans for private ones by increasing the credit worthiness of the guarantee users.

wide gap between the estimated and actual values of such bankruptcies and attributed this gap to the effects of the financial stimulus packages, including the special guarantee program. The study claimed that about 10,000 bankruptcies were prevented in 1998 and 1999 as a result of these support measures.

In contrast, Matsuura and Takezawa (2001) are skeptical about the short-term effects of the special guarantee program. They estimated the banks' loan supply function and conclude that no significant coefficient for the credit guarantee outstanding was seen. A medium-term study was conducted by Takezawa, Matsuura, and Hori (2004). It utilized aggregated data on the prefecture level to simultaneously estimate the three variables: loan supply, credit guarantees, and default rate. They suggest that after 1998, the loans supply was constrained by the higher credit risk incurred by the increasing rate of default. The authors argue that the rise in the default rate was caused by more frequent use of the credit guarantee scheme. They conclude that financial stimulus packages, including the special guarantee program, do not necessarily assist firms with good business prospects. However, one should note that aggregated data presents difficulties in distinguishing users of guarantees from non-users, or prospective firms from those in default. Therefore, clear cut results on the effects of the guarantees are hard to obtain.

Matsuura and Hori (2003) try to solve this problem by employing firm-level data. They investigate the effects of the special guarantee program on non-defaulting and defaulting firms. For firms not in default, they examine whether a guarantee raises profitability. For those in default, they examine whether a guarantee provides additional forbearance lending opportunities, resulting in an extremely high debt level. Such high levels of debt at bankrupty hinder the future activities of formerly bankrupt business

owners. However, no significant coefficients are observed for special guarantee dummy variables and thus it is still not clear whether the guarantee system contributes to the firms' growth.

4. Hypotheses on the Impact of the Credit Guarantee

This section examines two contrasting hypotheses on the economic effects of the credit guarantee system. These hypotheses are: "relaxing borrowing constraints" (RBC) and "moral hazard" (MH).

4.1. The Relaxing Borrowing Constraints (RBC) Hypothesis

In the presence of information asymmetry, firms often face borrowing constraints that lead to a sub-optimal level of investment. These constraints are alleviated by the use of the credit guarantee program. Because financial institutions do not bear the credit risk of the borrowing firms, the information asymmetry problem is mitigated, which eases the borrowing constraints. Once the constraints have become nonbinding, firms are able to implement the additional investment projects. This increases the firms' profitability. The above process is defined as the RBC hypothesis. In the late 1990s and the early 2000s when the special guarantee program was introduced, the borrowing constraints for small businesses were severe. Therefore, RBC may have proven quite effective during the period.

4.2. Moral Hazard (MH) Hypothesis

The credit guarantee system has defects that negatively impact firms' behavior and performance. The 100% guarantee that relieves financial institutions of credit risks and

the lack of collateral or guarantor requirements are two such defects. These adversely affect the incentives of financial institutions and borrowing firms and thus exacerbate their performance problems. This process is defined as the MH hypothesis.

4.2.1. Moral Hazard Created by the Full Coverage Guarantee

Japan's credit guarantee system assures 100% repayment, in principle, which incurs a moral hazard problem on the part of the financial institutions. These institutions may contact borrowing firms and demand documents less frequently than those that lend without guarantees; they produce less credit information on their borrowers than they would without the credit guarantee.[3] Once the credit risk of individual firms becomes unavailable to financial institutions, the information asymmetry problem becomes acute. This, in turn, creates a moral hazard problem on the part of SMEs. Borrowing firms may harm their own profitability and viability by investing in risky projects. They are more likely to gamble their assets when their net worth is low.

4.2.2. Moral Hazard Created by the Lack of Collateral/Guarantor Requirements

In principle, the special credit guarantee program requires no third-party guarantor and very little collateral for the borrower. This lowers the cost of default for the borrower considerably compared to conventional borrowing. Even in default, debtors can retain their assets and maintain their relationships with business partners. This creates a serious moral hazard problem on the part of SMEs since they have less need to avoid bankruptcy under such conditions. As a result, they may choose risky projects or escape

[3] Note that not all the loans extended by a financial institution to a firm are guaranteed. Some portion of the loans may not be secured, in which case the financial institution continues to monitor firms to reduce the risk that defaults will cause losses to the lending institution.

from their businesses with the loans acquired to damage their own value, thereby impairing the financial health of credit guarantee corporations. In contrast to the special credit guarantee program, the general guarantee program requires collaterals or guarantors more often, which reduces the moral hazard problem.

4.3. Relationship between the Hypotheses and Firms Behavior and Performance

The relationship between these two hypotheses and firms' behavior is summarized in Table 4-1. Under the RBC hypothesis, a firm takes on more debt to realize the optimal amount of investment, which is impossible to do without the credit guarantee. This results in a significantly positive capital and inventory investment, which allows the firm to act more aggressively and increases profitability. When the profit reaches a certain level, net worth begins to rise as well.

Under MH, the frequency of monitoring by financial institutions declines. Since the financial institutions produce less credit information on firms, they cannot allocate loans according to firms' individual credit risk. A borrower firm is expected to exploit the situation and apply for additional loans. On the other hand, the effects on investments are tenuous. The moral hazard problem may encourage firms to undertake risky investment projects, in which we observe a significantly positive capital and inventory investments. It may also be the case that executives may reduce their firm's assets to increase their private properties, in which we observe a significantly negative capital and inventory investments. There is an obvious difference between RBC and MH hypotheses in terms of the firm's performance as measured by ROA. The MH hypothesis results in a decline in the firm's profitability. When the profitability continues to decline, net worth also begins to fall.

5. Data

We create a firm-level panel data set based on the Survey of Financial Environments carried out by SMEA. For this survery, SMEA sends questionnaires to 15,000 firms annually and typically receives 7,000 to 8,000 replies. The questionnaire covers a variety of issues, including the maximum short-term interest rate for the past year and their main bank's responses to requests for credit. For the 2001 survey, there are three questions related to the credit guarantee system: whether the firm made use of the special credit guarantee program between October 1998 and March 2001, whether it use the general credit guarantee program during the same period, and the share of guaranteed loans as a portion of all loans extended by the firm's main bank. Based on these questions, we divide the entire sample into three groups: (1) special guarantee program users, (2) Users of the general guarantee program only, and (3) those who did not use any guarantee program. For each sample in the 2001 survey, we add annual balance sheet data from 1996 to 2004.[4] For this time horizon, we divide the samples into three periods: the pre-crisis period between January 1996 and December 1998 (period t-1), the crisis period between January 1999 and December 2001 (period t), and the post-crisis period between January 2002 and December 2004 (period t+1). The crisis period roughly coincides with the period of the special guarantee program.

Table 5-1 posits the number of samples both of non-defaulters and defaulters. Table 5-2 shows basic statistics for each user category. Table 5-1 shows that 5,000 to 7,000 firms report financial status on an annual basis, except for 2004. Table 5-2

[4] The balance sheet information is provided by the Tokyo Shoko Research Inc., one of the Japan's largest private credit research firms. Note that observation numbers vary across years since not all the sample firms submit the balance sheet data regularly.

indicates that non-users had the highest performance indicators, followed by those that used general guarantees only, with special guarantee users having the lowest performance indicators as a group. Figure 5-1 illustrates the time series development of firms' performance for guarantee users and non-users. With a brief look, we observe a contrast in the development of the profitability between special guarantee users and non-users. The special users become skewed to the right in the post-crisis period, while non-users become skewed to the left. In the next section, we statistically examine these findings in detail.

6. Sample Statistics and Hypothesis Tests

This section tests the hypotheses outlined in the previous section. We summarize here the variables on firms' credit procurement, investment activities, and performance for different periods and for different categories of credit guarantee use. Note that several variables taken from the SMEA's survey lack values for periods t-1 and t.

(1) Lending variables

- Propensity to lend by the main bank[5] (1: loan application denied or credit reduced, 2: approved, 3: offered larger loans)
- Firm willingness to borrow (1: reduced, 2: no change, 3: increased)
- Short-term loans to total asset ratio (%)
- Long-term loans to total asset ratio (%)
- Frequency of document submission (1: once a year, 2: twice a year, 3: quarterly, 4: monthly)

(2) Investment activity variables

- Fixed tangible asset to total asset ratio (%)

[5] A "main bank" is defined as the most important bank to a firm. It does not necessarily mean that the bank has the largest share of loans to the firm, but indicates that the firm thinks that bank is most relevant.

- Inventory asset to total asset ratio (%)

(3) Firm performance variables
- Return on Assets (Profit to total asset ratio) (%)
- Net worth (Total capital to total asset ratio) (%)

We use several approaches to measure the effects of the guarantees. First, we observe the time-series change for guarantee users. Second, we use the time-series changes for non-users as a benchmark to determine the difference between the time-series change for users versus non-users. These two approaches are possible where time series data is available for periods between t-1 and t+1. Third, in cases where time-series data is unavailable, we make a cross sectional comparison. To do this we have to control for cross sectional differences in firm characteristics and time-series differences due to macroeconomic shocks. Here we obtain residuals of each variable after regression for the year and for industry dummies.[6] Note that the statistics figures employed hereafter are these residuals.

6.1. Tests Based on Summary Statistics

We summarize the relationship between loan-related variables and guarantee use. Changes in the variables along the time horizon are observed where we have data for the periods between t-1 and t+1. Where such data is not available, cross sectional differences are observed. In Table 6-1 (a), we make a cross-sectional comparison to show that financial institutions' attitudes are most accommodative toward the non-users and most severe toward special guarantee users. Moreover, attitudes differ significantly according to the use of guarantee. Hence, we speculate that use of guarantees does not

[6] We follow Hoshi, Kashyap, and Scharfstein (1991) on the use of industry dummies.

necessarily ease the lending attitude of financial institutions. In Table 6-1 (b), we make another cross-sectional comparison to indicate insignificant but stronger demand for funds among special guarantee users than non-users.

We also investigate whether or not moral hazard exists on the financial institutions' side and present the results in Table 6-1 (c). A cross-sectional comparison indicates that special guarantee users are significantly more frequently monitored by banks than both non-users and general guarantee users. Though credit risk is not explicitly controlled, financial institutions nevertheless supervise special guarantee users more closely than others.

Several interesting contrasts are obtained when we observe the short- and long-term loans ratios in Tables 6-1 (d) and (e). In the special guarantee samples, the short-term loan ratio decreases and the long-term loan ratio increases. Special guarantee users increase their share of long-term loans by 1.4 percentage points between the pre- and post-crisis periods, while they reduce their share of short-term loans by almost the same margin. By contrast, in the non-user samples, the short-term loan ratio increases and the long-term ratio decreases. Since the special guarantee program allows firms to borrow for a maximum of five years, they take advantage of this to borrow for longer periods.

We also summarize the relationship between the investment behavior of firms and guarantee use. We focus on special guarantee users with a larger share of long-term loans to determine whether they invest more in fixed tangible assets. Table 6-2 (a) (b) summarizes the ratio of fixed tangible assets to total assets and inventory assets to total assets, respectively. Table 6-2 (a) suggests that special guarantee users gradually accumulate fixed tangible assets, while non-users dispose of them.

Finally, we summarize the relationship between firms' performance and guarantee use. The relationship is intended to indicate how a firm's investment contributes to its profitability and stability. ROA represents profitability and net worth shows how the flow of profits has accumulated. ROA appears in Table 6-3 (a) and net worth in Table 6-3 (b). Non-users' ROA declines significantly, whereas special credit guarantee users observes an increase in ROA at the 1% significance, and the general guarantee users at the 5% significance. Thus, although the special guarantee users are predicted to be least likely to improve in their ROA according to the MH hypothesis, in fact we see that their ROA increase is the most conspicuous of all groups surveyed. However, the outstanding performance in the flow level does not necessarily indicate superior performance in the stock level. Table 6-3 (b) shows this point. Time-series comparisons indicate that the net worth rises over time for non-users while it falls for special guarantee users. Even though profitability improves for special guarantee users the level itself is still low, which hinders the recovery of net worth.

Table 6-4 summarizes the time-series developments explained in this subsection. For the monitoring efforts by the financial institutions, we only make cross-sectional comparisons to observe that guarantee users are monitored more frequently than non-users. Another contrast between guarantee users and non-users lies in their loan procurement and investment activities. The share of long-term loans rises for the special guarantee samples, which is reflected in the increase of tangible fixed assets, while the share of such loans falls among the non- guarantee users (i.e, they reduce their cumulative outstanding capital investment). Above all, special guarantee users show far better performance trends over the period of the survey than do non-users. Note here that net worth is exacerbated for the special guarantee users, while it is

improved for non-users. Our interpretation is that the net worth of the guarantee users will improve more markedly than that of non-users as their profitability continues to recover.

6.2. Estimations

Testing by summary statistics is not sufficient since the number of variables accounted for is limited; other variables must be incorporated such as a firm's credit risk, size, and age. Employing these new variables, we estimate the determinants of the performance change between periods t-1 and t+1. Dependent variables are the changes in ROA and the net worth. Explanatory variables are given below:

- Use of special guarantee dummy (1: yes, 0: no)
- Use of general guarantee only dummy (1: yes, 0: no)
- Credit risk score (0 = highest credit risk; 100 = lowest credit risk)
- Number of employees
- Number of years elapsed since the establishment of the firm
- Change in fixed tangible asset to total asset ratio (%)
- Change in inventory asset to total asset ratio (%)

Table 6-5 shows the OLS estimation results. Our main concern is the coefficients for credit guarantee use, and the results are qualitatively identical to what we see in the summary statistics. For the special guarantee users the increase in ROA is 1.34 percentage points higher and for the general users, the increase is 0.92 percentage points higher than for non-users. This indicates the credit guarantees significantly contribute to the profitability of a firm. However, the improvement of ROA among the credit guarantee users does not coincide with an improvement in the net worth of a firm.

Even after controlling firm age and size, for the special guarantee users the increase in net worth is 1.54 percentage points less than for non users; for the increase was 1.26 percentage points less among general users.

7. Conclusion

We have investigated the effects of the public credit guarantee system and above all the special guarantee program introduced in 1998 to alleviate the credit crunch for SMEs in Japan. We have posited two contrasting hypotheses. One emphasizes the effect of relaxing the borrowing constraint (the RBC hypothesis, and the other emphasizes the effect of the moral hazard problem (MH hypothesis). With the SMEs panel data set before and after the credit crunch period in Japan, we strongly show that the RBC hypothesis is more consistent with the summary statistics and the estimation results than is the MH hypothesis. There is no significant evidence that the credit guarantee hinders monitoring by financial institutions. Also, credit guarantee users increase both their long-term loan ratio and their tangible fixed asset ratio, which improves profitability. These statistical observations are more significant among the special program users than among those who use only the general guarantee program.

Still, there are a few caveats in interpreting the empirical results. First, lagging improvement of the net worth may support the MH hypothesis rather than the RBC hypothesis. Our interpretation is that the net worth of the guarantee users will improve more markedly than that of non-users as their profitability continues to recover. Secondly, we must compare the benefit we have observed in this study with the fiscal cost the guarantee program has incurred. The credit guarantee corporations have run a deficit of more than 100 billion yen for the past five years, which mainly reflects the

default cost of the special credit guarantee users. In contrast, the special guarantee users which are still viable earn higher profit than non-users. We may be able to approximate the rate of return of the special guarantee program by quantitatively comparing the above cost and benefit.

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Table 4-1 Predictions on Firm's Performance

	Relaxing Borrowing Constraint (RBC)	Moral Hazard Hypothesis (MH)
Monitoring	Unchanged	-
Loans	+ (especially long-term)	+
Fixed tangible asset	+	+/-
Inventory asset	+	+/-
ROA	+	-
Net worth	Gradually +	Gradually -

Table 5-1 Number of Observations

	All Firms	Default Firms	Default Ratio (%)
1996	5355		
1997	5867		
1998	6899		
1999	7248		
2000	7254		
2001	6308		
2002	5974	76	1.272
2003	5554	62	1.116
2004	3361	54	1.607
Total	53820	192	

Table 5-2. Summary Statistics

	Special Guarantee	General Guarantee	No Guarantee	All
	Mean Std. Dev.	Mean Std. Dev.	Mean Std. Dev.	Mean Std. Dev.
Asset (1 Thousand Yen)	1637347 (2399868)	1827695 (2848522)	3673660 (4991301)	2593945 (3977163)
Sales (1 Thousand Yen)	1867440 (2340876)	2036551 (2819842)	3787098 (4480364)	2767270 (3654656)
Number of Employee	45.929 (47.852)	52.262 (59.982)	78.921 (78.427)	61.839 (66.905)
Capital Stock (1 Thousand Yen)	45359.98 (91762)	59664.98 (143523)	146205.9 (304382)	93384.96 (225682)
ROA (%)	1.927 (4.474)	2.023 (4.792)	2.944 (4.948)	2.408 (4.765)
Profit Rate (%)	1.571 (4.255)	1.630 (4.429)	2.643 (5.006)	2.069 (4.665)
Capital Ratio (%)	16.740 (16.375)	25.030 (18.925)	34.495 (23.264)	25.994 (21.767)
Capital Expenditure (%)	9.216 (30.212)	9.241 (28.630)	10.065 (29.595)	9.614 (29.723)
Change in Business Inventories (%)	11.778 (75.063)	11.896 (76.875)	9.849 (72.156)	10.913 (74.003)
Number of Observations	19499	6330	21880	47528

Table 6-1 (a). Bank Response

	Pre-Crisis Mean Std. Dev.	Crisis Mean Std. Dev.	Post-Crisis Mean Std. Dev.	Test of Means Post-Crisis vs. Pre-Crisis Diff Std. Err.
Special Guarantee		-0.151	-0.176	
		(0.547)	(0.614)	
General Guarantee		0.032	0.027	
		(0.531)	(0.598)	
No Guarantee		0.157	0.162	
		(0.524)	(0.552)	

	Test of Means		
	Pre-Crisis Diff Std. Err.	Crisis Diff Std. Err.	Post-Crisis Diff Std. Err.
No Guarantee vs. Special Guarantee		0.308 a	0.338 a
		(0.009)	(0.020)
No Guarantee vs. General Guarantee		0.125 a	0.135 a
		(0.013)	(0.027)
General Guarantee vs. Special Guarantee		0.182 a	0.203 a
		(0.013)	(0.029)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-1(b). Borrowing Demand

	Pre-Crisis Mean Std. Dev.	Crisis Mean Std. Dev.	Post-Crisis Mean Std. Dev.	Test of Means Post-Crisis vs. Pre-Crisis Diff Std. Err.
Special Guarantee			0.022	
			(0.613)	
General Guarantee			-0.027	
			(0.607)	
No Guarantee			-0.016	
			(0.606)	

	Test of Means		
	Pre-Crisis Diff Std. Err.	Crisis Diff Std. Err.	Post-Crisis Diff Std. Err.
No Guarantee vs. Special Guarantee			-0.037
			(0.030)
No Guarantee vs. General Guarantee			0.011
			(0.043)
General Guarantee vs. Special Guarantee			-0.048
			(0.044)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-1 (c). Bank Monitoring

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee		0.279	0.371	
		(1.219)	(1.145)	
General Guarantee		0.069	0.133	
		(1.136)	(1.155)	
No Guarantee		-0.232	-0.320	
		(0.898)	(0.990)	

Test of Means

	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.		-0.511 a	-0.691 a
Special Guarantee		(0.033)	(0.033)
No Guarantee vs.		-0.301 a	-0.453 a
General Guarantee		(0.044)	(0.046)
General Guarantee vs.		-0.210 a	-0.238 a
Special Guarantee		(0.055)	(0.051)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-1(d). Short-Term Borrowing Ratio (%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	3.800	2.817	2.358	-1.442 a
	(17.814)	(17.136)	(16.740)	(0.337)
General Guarantee	0.313	-0.077	0.291	-0.022
	(16.729)	(16.512)	(15.734)	(0.573)
No Guarantee	-3.747	-2.951	-2.478	1.268 a
	(16.716)	(16.895)	(16.776)	(0.339)

	Test of Means		
	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	-7.547 a	-5.768 a	-4.836 a
Special Guarantee	(0.323)	(0.301)	(0.352)
No Guarantee vs.	-4.060 a	-2.875 a	-2.770 a
General Guarantee	(0.455)	(0.427)	(0.498)
General Guarantee vs.	-3.487 a	-2.893 a	-2.067 a
Special Guarantee	(0.472)	(0.424)	(0.494)

a: Significant at the 1 percent level.
b: Significant at the 5 percent level.
c: Significant at the 10 percent level.

Table 6-1(e). Long-Term Borrowing Ratio (%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	4.572	5.964	5.940	1.368 a
	(17.998)	(18.257)	(18.228)	(0.345)
General Guarantee	1.170	0.337	0.117	-1.053 c
	(17.344)	(17.317)	(16.899)	(0.586)
No Guarantee	-5.371	-7.262	-6.698	-1.327 a
	(16.745)	(16.987)	(17.020)	(0.348)

	Test of Means		
	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	-9.943 a	-13.226 a	-12.637 a
Special Guarantee	(0.327)	(0.314)	(0.370)
No Guarantee vs.	-6.541 a	-7.599 a	-6.814 a
General Guarantee	(0.454)	(0.426)	(0.502)
General Guarantee vs.	-3.402 a	-5.627 a	-5.823 a
Special Guarantee	(0.470)	(0.436)	(0.519)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-2 (a). Tangible Fixed Asset Ratio (%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	0.038	0.387	0.652	0.614 c
	(18.486)	(19.218)	(19.503)	(0.353)
General Guarantee	1.444	1.305	1.467	0.023
	(17.717)	(18.389)	(18.139)	(0.593)
No Guarantee	-0.602	-0.835	-1.044	-0.442
	(18.364)	(19.034)	(19.310)	(0.334)

Test of Means

	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	-0.640 b	-1.222 a	-1.697 a
Special Guarantee	(0.319)	(0.310)	(0.370)
No Guarantee vs.	-2.047 a	-2.140 a	-2.511 a
General Guarantee	(0.463)	(0.442)	(0.528)
General Guarantee vs.	1.406 a	0.918 b	0.815
Special Guarantee	(0.467)	(0.447)	(0.541)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-2 (b). Inventry Ratio (%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	1.143	1.224	1.489	0.346
	(11.322)	(11.247)	(11.520)	(0.219)
General Guarantee	-0.283	-0.180	0.117	0.400
	(10.383)	(10.189)	(10.092)	(0.349)
No Guarantee	-0.806	-0.837	-1.068	-0.262
	(10.164)	(9.947)	(9.474)	(0.180)

Test of Means

	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	-1.949 a	-2.061 a	-2.557 a
Special Guarantee	(0.192)	(0.177)	(0.206)
No Guarantee vs.	-0.523 c	-0.657 a	-1.185 a
General Guarantee	(0.267)	(0.242)	(0.273)
General Guarantee vs.	-1.427 a	-1.404 a	-1.372 a
Special Guarantee	(0.292)	(0.266)	(0.323)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-3(a). ROA (%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	-0.711	-0.508	-0.123	0.588 a
	(4.471)	(4.435)	(4.347)	(0.083)
General Guarantee	-0.439	-0.447	-0.129	0.310 b
	(4.556)	(4.869)	(4.897)	(0.156)
No Guarantee	0.720	0.625	0.186	-0.534 a
	(4.916)	(5.010)	(4.846)	(0.087)

	Test of Means		
	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	1.431 a	1.133 a	0.308 a
Special Guarantee	(0.081)	(0.077)	(0.088)
No Guarantee vs.	1.159 a	1.073 a	0.315 b
General Guarantee	(0.123)	(0.117)	(0.135)
General Guarantee vs.	0.272 b	0.061	-0.007
Special Guarantee	(0.115)	(0.107)	(0.127)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-3(b). Capital Ratio(%)

	Pre-Crisis	Crisis	Post-Crisis	Test of Means
	Mean	Mean	Mean	Post-Crisis vs.
	Std. Dev.	Std. Dev.	Std. Dev.	Pre-Crisis
				Diff
				Std. Err.
Special Guarantee	-8.347	-9.685	-10.697	-2.350 a
	(14.969)	(16.383)	(17.716)	(0.303)
General Guarantee	-1.954	-1.549	-1.970	-0.016
	(16.494)	(18.775)	(20.054)	(0.603)
No Guarantee	7.305	8.538	8.610	1.305 a
	(21.307)	(22.948)	(23.520)	(0.397)

	Test of Means		
	Pre-Crisis	Crisis	Post-Crisis
	Diff	Diff	Diff
	Std. Err.	Std. Err.	Std. Err.
No Guarantee vs.	15.652 a	18.223 a	19.308 a
Special Guarantee	(0.319)	(0.324)	(0.402)
No Guarantee vs.	9.260 a	10.088 a	10.581 a
General Guarantee	(0.515)	(0.518)	(0.633)
General Guarantee vs.	6.392 a	8.135 a	8.727 a
Special Guarantee	(0.391)	(0.401)	(0.518)

a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent level.

Table 6-4 Summary Statistics Results

	Special Guarantee	General Guarantee	Non-Guarantee
Monitoring	NA(++)	NA(++)	NA
Short-term Loans	--	-	++
Long-term Loans	++	--	--
Fixed tangible asset	++	+	-
Inventory asset	+	+	-
ROA	++	++	--
Net worth	--	-	++

++: Sign of change is positive and significant.
+: Sign of change is positive and non-significant.
-- : Sign of change is negative and significant.
- : Sign of change is negative and non-significant.
Monitoring variables are compared across cross-section samples. (++) indicates guarantee users are significantly more frequently monitored than non-users.

Table 6-5. OLS Estimation Results

Independent Variable	Change in ROA	Change in Capital Ratio
Special Guarantee Dummy	1.343 a	-1.540 a
	(0.223)	(0.519)
General Guarantee Dummy	0.915 a	-1.258 c
	(0.296)	(0.687)
Score	-0.035 b	0.660 a
	(0.016)	(0.037)
Number of Employee	0.003 b	-0.017 a
	(0.001)	(0.003)
Age	0.023 a	-0.036 b
	(0.007)	(0.017)
Change in Tangible Fixed Asset	-0.036 a	-0.121 a
	(0.010)	(0.023)
Change in Business Inventry	-0.001	-0.246 a
	(0.014)	(0.031)
Constant	1.596	-32.056 a
	(1.649)	(2.579)
Adjusted R-Square	0.044	0.212
Number of Observations	2546	2535

1) Year and industry dummies are included.
2) Standard errors are in parenthes
3) a: Significant at the 1 percent level. b: Significant at the 5 percent level. c: Significant at the 10 percent leve

Figure 2-1 Credit Guarantee Outstanding

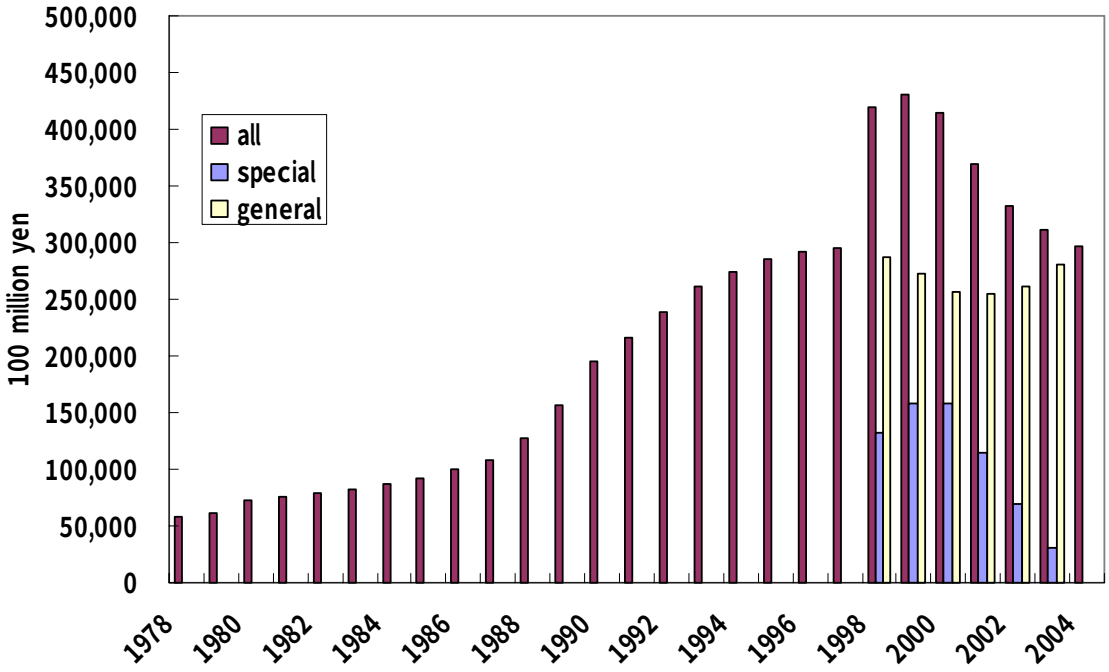

Figure 5-1 Development of Profitability Distribution: Before and After the Crisis