



The Special Guarantee Program in Japan

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Questions to be answered

- How effective is Japan's credit guarantee program during a financial crisis?
- Which effect dominates: relaxing borrowing constraints or moral hazard?



Outline and preview of results

1. Institutional explanation on credit guarantee system
2. Hypotheses on the effect of guarantee
3. Data and summary statistics
4. Hypothesis tests
5. Conclusions

Long-term loans ratio increased for guarantee users

Their performance significantly improved

For policy evaluation, need to compare the positive effect with the default cost of guarantee users



Public financial assistance to SMEs

Loan guarantees (trillions of yen)

Credit Guarantee Corporations: 30.3

Direct Loans (trillions of yen)

(1) Governmental Financial Institutions: 26.6

JASME (Japan Finance Corporation for Small and Medium Enterprise): 7.6

NLFC (National Life Finance Corporation): 8.9

Shoko Chukin Bank: 9.8

ODFC (Okinawa Development Finance Corporation): 0.3

(2) Other Related Agencies

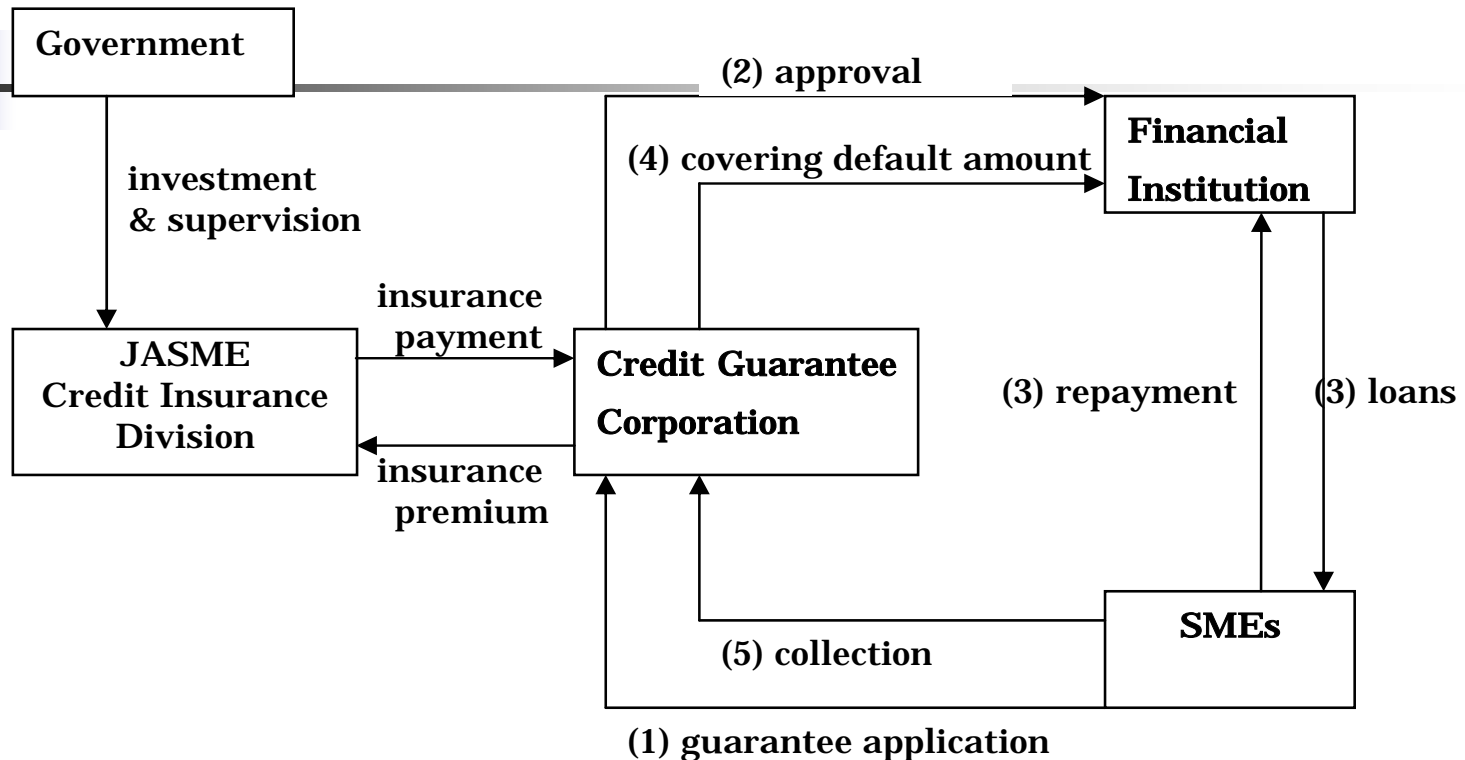
SMRJ (Organization for Small and Medium Enterprises and Regional Innovation, Japan) (amount as of end of June 2004): 1.3

(3) Local Governments: Sizable, but difficult to measure

Investments

Subsidies

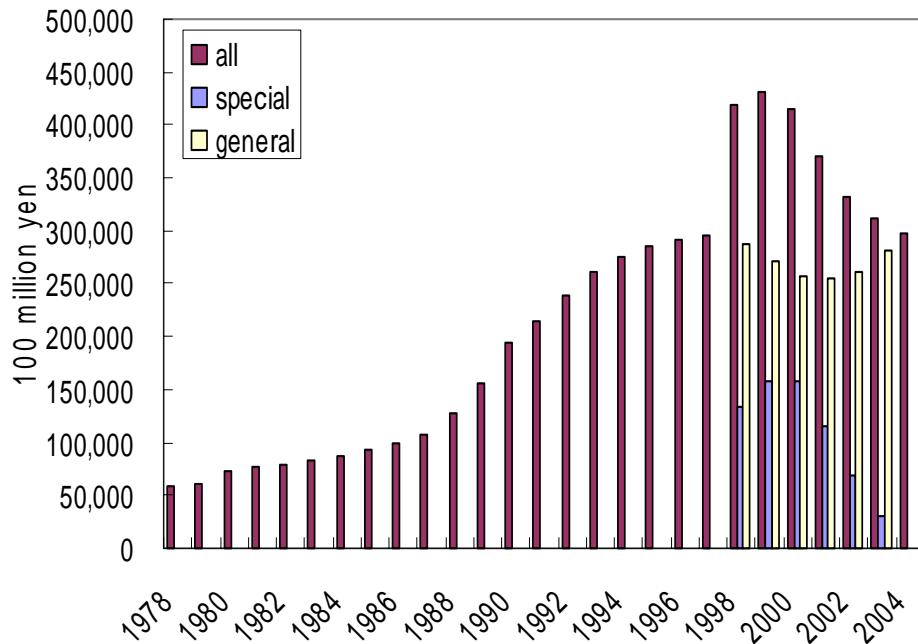
Public credit guarantee system



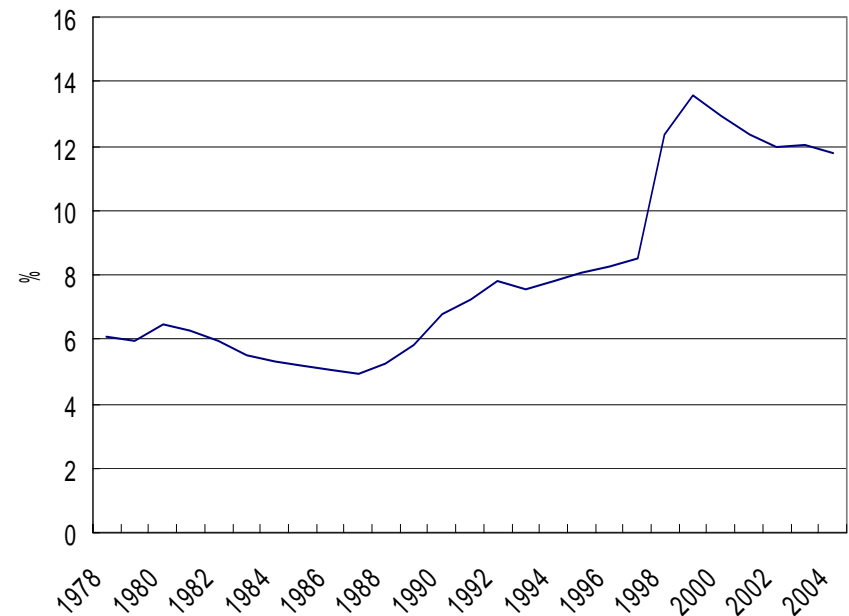
- Coverage is almost always 100% for loans contract. No credit risk on the lenders' side.
- Collateral and guarantors are sometimes required by the Credit Guarantee Corporation.

Development of the guarantee system

Credit Guarantee Amount Outstanding



Ratio of Guaranteed to Total SME Loans



Significant increase both in the amount outstanding and the ratio by the special guarantee program in 1998



Special guarantee program for financial stability

- Expected Positive Effects:
 - Alleviate the effects of the credit crunch and stabilize Japan's financial system
- Application Period:
 - October 1998 – March 2001
- Guarantee Amount (overall):
 - 30 trillion yen (planned), 28.9 trillion yen (exercised)
- Maximum Guarantee Period for a Loan Contract:
 - 5 or 7 years with 1 year of no principal payment
- Requirement of Collateral and Third-Party Guarantor:
 - Almost none
- Other (major) conditions for rejecting the guarantee:
 - (1) Significantly negative net worth, (2) Tax delinquency, (3) Default, and (4) Window-dressing
- Amount Recovered by Credit Guarantee Corporations:
 - 2.1 trillion yen



Negative effects of the special guarantee program – Moral hazard

- Borrowers:
 - Misuse of guaranteed loans
 - Equity investments unrelated to their business
 - Political pressure to extend guarantees to doomed-to-fail firms
- Lenders:
 - Infrequent monitoring since banks bear no default cost
 - Added incentives to use guarantees if banks are injected with public money
 - Banks are obliged to increase SME loans by the government



Positive effects of the special guarantee program – Relaxing borrowing constraint

- Credit crunch after mid 1997
 - Recession began 1997:2
 - A series of failures by sizable financial institutions triggered by non-performing loans
 - Banks' attitude towards SMEs plummeted beginning in the latter half of 1997
- Special guarantees and the credit crunch
 - Banks' lending attitude rebounded
 - Some individual evidence in SMEA (2000)
 - A SME which was temporarily in the red and rejected loans by regional banks faced financial difficulty.
 - The firm recovered by procuring funds with the special guarantee.



Relaxing borrowing constraints (RBC) vs. Moral Hazard (MH)

- Focus on the firms' performance to evaluate the guarantee system
- Test between the RBC hypothesis and MH hypothesis
- Previous literature
SMEA (2000), Matsuura and Takezawa (2001), Matsuura and Hori (2003), Takezawa, Matsuura, and Hori (2004)



RBC versus MH hypotheses

- **Predictions on firm's performance**

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



Data

- **Survey of Financial Environment by SMEA**

Periods:

Annually from 1996 to 2004 divided into pre-crisis ($t-1$; 1996-1998), crisis (t ; 1999-2001), and post-crisis ($t+1$; 2002-2004) periods

Number of observations:

53820 (7254 distinct firms)

Items:

B/S and qualitative items including short-term interest rates and main bank's response to requests for credit

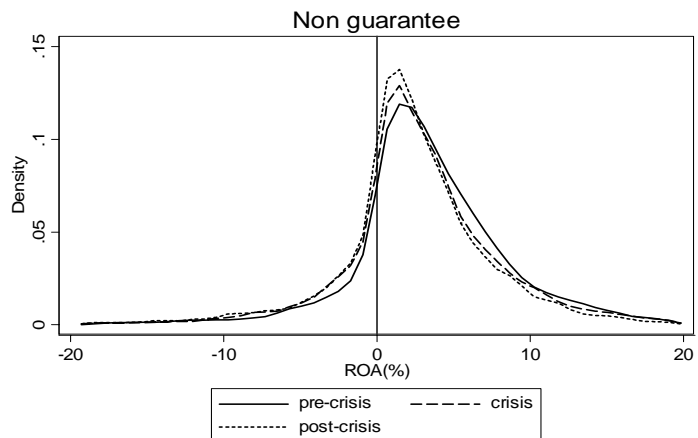
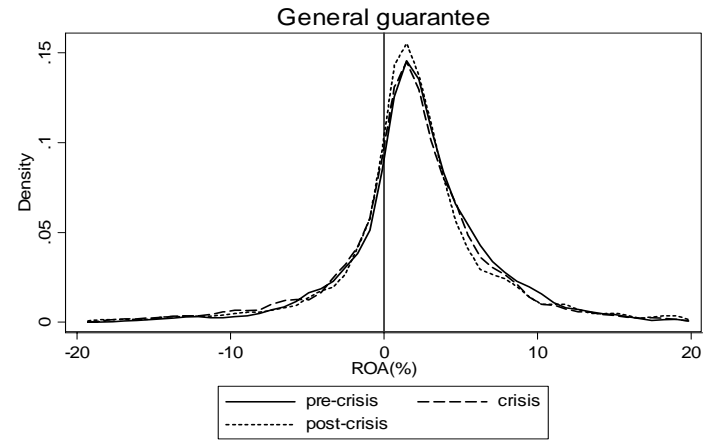
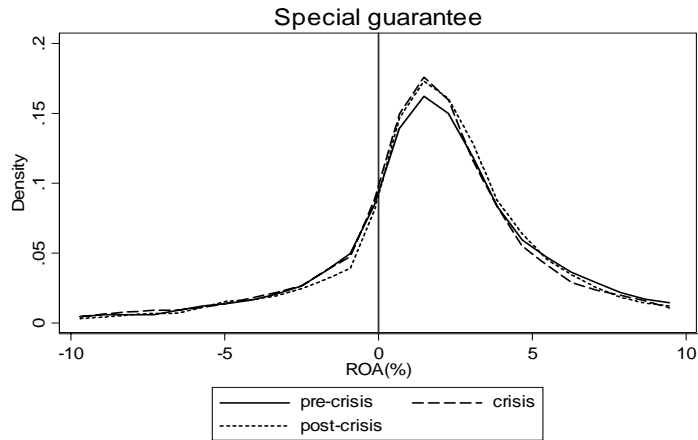
Effect of the credit guarantee program:

Compare among special credit guarantee, general credit guarantee only, and non-guarantee users

Summary statistics (by guarantees)

	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

Summary statistics (ROA by guarantees and periods)





Hypothesis tests by summary statistics

Many variables should be tested for equality

Lending variables	{	Propensity to lend by the main bank Firm willingness to borrow Frequency of document submission Short-term loans to total asset ratio Long-term loans ratio
Investment variables	{	Fixed tangible asset ratio Inventory asset ratio
Performance variables	{	Return on assets (ROA) Net worth



Hypothesis tests by summary statistics

Three approaches to measure the effects

- (1) Time-series change for guarantee users
- (2) Difference between the time-series change for users and non-users
- (3) Cross sectional comparison (if time-series data unavailable)

Industry and year effects are controlled for

Hypothesis tests by summary statistics

(Lending variables (1))

	Propensity to lend	Firm willingness to borrow	Frequency of document submission
(Non-Guarantee) - (Special Guarantee)	0.338 a (0.020)	-0.037 (0.030)	-0.691 a (0.033)
(Non-Guarantee)- (General Guarantee)	0.135 a (0.027)	0.011 (0.043)	-0.453 a (0.046)
(General Guarantee)- (Special Guarantee)	0.203 a (0.029)	-0.048 (0.044)	-0.238 a (0.051)

- a: significant at the 1 percent level, b: significant at the 5 percent level, c: significant at the 10 percent level.
- Time-series data unavailable for these variables.
- Propensity to lend (1: loan application denied or credit reduced, 2: approved, 3: offered larger loans)
- Firm willingness to borrow (1: reduced, 2: no change, 3: increased)
- Frequency of document submission (1: once a year, 2: twice a year, 3: quarterly, 4: monthly)

Hypothesis tests by summary statistics

(Lending variables (2))

	Short-term loans ratio	Long-term loans ratio
Special Guarantee: (post-crisis)-(pre-crisis)	-1.442 a (0.337)	1.368 a (0.345)
General Guarantee: (post-crisis)-(pre-crisis)	-0.022 (0.573)	-1.053 c (0.586)
Non-Guarantee: (post- crisis)-(pre-crisis)	1.268 a (0.339)	-1.327 a (0.348)

- a: significant at the 1 percent level, b: significant at the 5 percent level, c: significant at the 10 percent level.
- Unit is percentage point.

Hypothesis tests by summary statistics

(Investment and Performance variables)

	Fixed tangible asset ratio	Inventory asset ratio	ROA	Net worth
Special Guarantee: (post-crisis)-(pre-crisis)	0.614 c (0.353)	0.346 (0.219)	0.588 a (0.083)	-2.350 a (0.303)
General Guarantee: (post-crisis)-(pre-crisis)	0.023 (0.593)	0.400 (0.349)	0.310 b (0.156)	-0.016 (0.603)
Non-Guarantee: (post- crisis)-(pre-crisis)	-0.442 (0.334)	-0.262 (0.180)	-0.534 a (0.087)	1.305 a (0.397)

- a: significant at the 1 percent level, b: significant at the 5 percent level, c: significant at the 10 percent level.
- Unit is percentage point.



Hypothesis tests: Summary

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

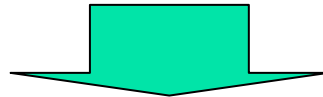
Monitoring variable is compared across cross-section. (++) indicates guarantee users are significantly more frequently monitored than non-users. Other variables are compared across time-series.

++: Sign of change is positive and significant, +: Sign of change is positive and non-significant, --: Sign of change is negative and significant, and -: Sign of change is negative and non-significant.



Hypothesis tests: Interpretations

- Guarantee users more frequently monitored than non-users
- Rising share of long-term loans for special users, reflecting maximum guarantee period of 5 to 7 years
- Rising share of tangible fixed assets for special users
- Significantly better performance of special users than non-users in terms of ROA
- Note, however, that net worth for special users recovered less than non-users since the profit level is still low



More consistent with RBC hypothesis than with MH hypothesis



Conclusions

- The special guarantee program contributed to the availability of long-term funds and recovery of profitability in Japan
- This is in contrast with the widely held view on the negative effect of the program
- For policy evaluation, we must compare the benefit with fiscal cost the program has incurred

Repayment amount: 2.1 trillion yen (as of October, 2004)