

On the Real Effects of Bank Bailouts: Micro-evidence from Japan

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Background

- ◎ **Government bailouts during banking crises are intensely disputed**
 - Necessary to avoid recessions
 - Ineffective if lack of confidence (inefficient credit freezes)
 - Unnecessary and damaging if firms lack growth opportunities
- ◎ **Lots of opinions but no empirical evidence**
 - Inconclusive because it relies mostly on macro-data
 - Government methods and intensity of intervention depends on severity of banking problems
 - Case studies (Calomiris, Klingebiel, and Laeven, 2005)
 - Impossible to define counterfactuals and to evaluate benefits

This paper

- ◎ Quantifying the real (direct) effects of bank bailouts
 - Do firms benefit?
 - Which firms benefit?
- ◎ Exploits the Japanese experience for a micro-econometric analysis of bank bailouts

Institutional background

◎ Japan ideal environment for the following reasons

- Real estate driven crisis similar to the current U.S. crisis
- Various interventions affecting different subsets of banks
- Data available to link banks benefitting from bailouts and their borrowers
 - → Crucial to evaluate the real effects

Related literature

- ◎ Slovin, Sushka and Polonchek (1993), Bae, Kang and Lim (2002) and Karceski, Ongena and Smith (2005) use event studies to evaluate the real effect of bank lending
- ◎ Existing literature focuses on the announcement of bank failures not on the real effects of bank bailouts

The Japanese banking crisis and the main government interventions

- ◎ It originates from a large drop in stock and real estate prices in the first half of the nineties
 - Large effect on bank balance sheets heavily exposed to the real estate sector
- ◎ Evidence that this led to a credit crunch (Gan, RFS 2007) and affected negatively firm investment (Gan, JFE 2007; Kang and Stulz, JB 2000; Gibson, JB 1995)
- ◎ Government adopted a variety of policies similar to ones currently adopted in the U.S.

Government interventions for bank rehabilitation

Events	Date	Description	Related firms	Unrelated firms
First recapitalization	February 16, 1998	20 major banks were recapitalized	2039	148
Second recapitalization	March 1, 1999	15 major banks were recapitalized	2029	202
Third recapitalization	May 19, 2003	Resona Bank was recapitalized	696	1497
Fourth recapitalization	June 2, 2003	Government allowed to provide capital to any bank that is considered systemically important	2193	
Fifth recapitalization	June 2, 2004	Government allowed to provide capital to any bank	2148	
Merger	Different dates	71 bank mergers affecting 58 banks between 1998 and 2005	2490	670
Bank equity issue	Different dates	98 capital injections affecting by private investors 64 banks between 1998 and 2005	2437	723
Asset management companies	April 1, 1999 May 1, 2003	Two different asset management companies were created with the goal to purchase bad loans from banks	2577	-
Takenaka's market based program for financial revival	October 30, 2002	Banks were requested to rigorously evaluate assets and to improve transparency	2237	-

Empirical approach

- ◎ **Effects of the event announcements on abnormal returns of banks and most importantly of their clients**
 - Using the cross-section of firms to account for firm characteristics
 - Normal returns computed rolling Scholes-Williams betas
 - Using portfolios of firms to account for cross-sectional correlation

Empirical approach-we are able to do more

- ◎ Do banks extend larger loans to their borrowers after the interventions?
 - Firms have multiple relationships
 - Can include firm, bank and year fixed effects
 - In practice we ask, **do firms obtain larger loans from banks that benefit from interventions?**
- ◎ Do firms that are related to banks that benefit from government interventions shed fewer jobs, invest and grow more after the interventions?

◎ Nikkei NEEDS Financial dataset

- NEEDS Bank Loan data to listed companies
- Bank balance sheets
- Firm balance sheets
- Price data
- Info on mergers, recapitalizations, capital reductions

◎ News searches and various report for establishing the sequence of events

- Main sources: BIS report by Nakaso (2001) and Hoshi and Kashyap (2008)

Summary of results

- ◎ Capital injections by the government
 - Related firms experience positive abnormal returns and receive larger loans
 - No effects on firm employment; some effects on investment for firms heavily dependent on bank debt
 - The abnormal returns of low quality clients are larger
 - **→ Evidence of capital misallocation?**
- ◎ Capital injections by private investors had similar effects
 - Market discipline may have been impaired by low transparency

Summary of results II

- ◎ Bank mergers to enhance the financial stability of the merging banks
 - Banks experienced positive abnormal returns
 - On average, no gains for bank borrowers but:
 - The clients of the strongest of the merging banks experience negative abnormal returns and obtain smaller loans
 - The clients of the weakest of the merging banks experience positive abnormal returns and obtain larger loans
 - → **Bank mergers to enhance financial stability involve costs**

Summary of results III

- ◎ Bank and firms react positively to the creation of asset management companies
- ◎ Firm reaction to plans to increase bank transparency and to evaluate more rigorously bank assets negative

Firm Abnormal Returns

The effect of government recapitalizations on firm CAR is between 1 and 9%

The effect is larger for bank-dependent firms

	(1) Bank AR	(2) Firm AR	(3) Firm AR	(4) Firm AR	(5) Firm AR High dependence= High leverage	(6) Firm AR High dependence= Bank provides more than 50% of loans
First recapitalization	-1.356*** (0.25)	0.0775*** (0.017)	0.0812*** (0.0173)	0.0804*** (0.0173)	0.0180 (0.026)	0.0805*** (0.0173)
First recapitalization * High dependence					0.0892*** (0.032)	0.0166 (0.0214)
Second recapitalization	-0.626*** (0.19)	0.433*** (0.016)	0.436*** (0.0161)	0.434*** (0.0161)	0.312*** (0.022)	0.434*** (0.0161)
Second recapitalization * High dependence					0.181*** (0.030)	0.0938* (0.0489)
Third recapitalization		0.0978*** (0.031)	0.0920*** (0.0310)	0.104*** (0.0309)	0.136*** (0.052)	0.109*** (0.0312)
Third recapitalization * High dependence					-0.0596 (0.063)	0.0115 (0.0577)
Fourth recapitalization	0.0579 (0.052)	0.326*** (0.018)	0.329*** (0.0181)	0.329*** (0.0180)	0.188*** (0.026)	0.297*** (0.0209)
Fourth recapitalization * High dependence					0.198*** (0.034)	0.101** (0.0395)
Fifth recapitalization	-0.479*** (0.076)	0.308*** (0.014)	0.306*** (0.0138)	0.307*** (0.0138)	0.216*** (0.020)	0.311*** (0.0157)
Fifth recapitalization * High dependence					0.128*** (0.026)	-0.0179 (0.0307)
Merger	0.355* (0.20)	0.00590 (0.0080)	0.00352 (0.00805)		0.0175 (0.013)	0.00212 (0.00810)
Merger*Strong bank				-0.0337*** (0.0120)		
Merger*Weak bank				0.0678*** (0.0155)		
Merger* High dependence					-0.0169 (0.016)	0.0794* (0.0407)
Asset management companies	0.0852*** (0.029)	0.455*** (0.011)	0.361*** (0.0223)	0.452*** (0.0113)	0.455*** (0.011)	0.452*** (0.0113)
Asset management companies*Bank with			0.111***			

Furthermore

- ◎ Results are robust to the use of portfolios of firms for each event
- ◎ Main results use $[-10, +10]$ event window, but robust to $[-5, +5]$ and $[-3, +3]$

Firm loans

Increase in loans at most 1%
of total liabilities after capital
injections

	(1) All loans	(2) All loans	(3) All loans	(4) Long-term loans	(5) Short-term loans
First recapitalization	0.0000830 (0.00013)	0.000367*** (0.000139)	0.000474*** (0.000144)	0.000201* (0.00011)	-0.000118 (0.00011)
Second recapitalization	0.000898*** (0.00016)	0.00111*** (0.000174)	0.00111*** (0.000174)	0.000552*** (0.00012)	0.000346** (0.00014)
Third recapitalization	0.00607*** (0.00073)	0.00629*** (0.000737)	0.00565*** (0.000743)	0.00275*** (0.00053)	0.00332*** (0.00053)
Merger	-0.0000158 (0.00013)	0.000218 (0.000141)		-0.000190* (0.00011)	0.000174* (0.000097)
Merger*Strong bank			-0.000469*** (0.000113)		
Merger*Weak bank			0.000705*** (0.000131)		
Asset management companies*Bank with High real estate exposure		0.000235* (0.000126)			
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	188669	188669	188669	188669	188669
R-squared	0.10	0.10	0.10	0.07	0.07

Real effects

- ◉ Firm investment, employment and sales growth
- ◉ **Only highly bank-dependent firms increase investment after government recapitalizations and bank mergers**
- ◉ No effect on employment and sales growth
- ◉ **→ Was capital really allocated to financing constrained firms with growth opportunities?**

Who benefit most?

- ◎ **High quality firms**

- Export oriented firms

or

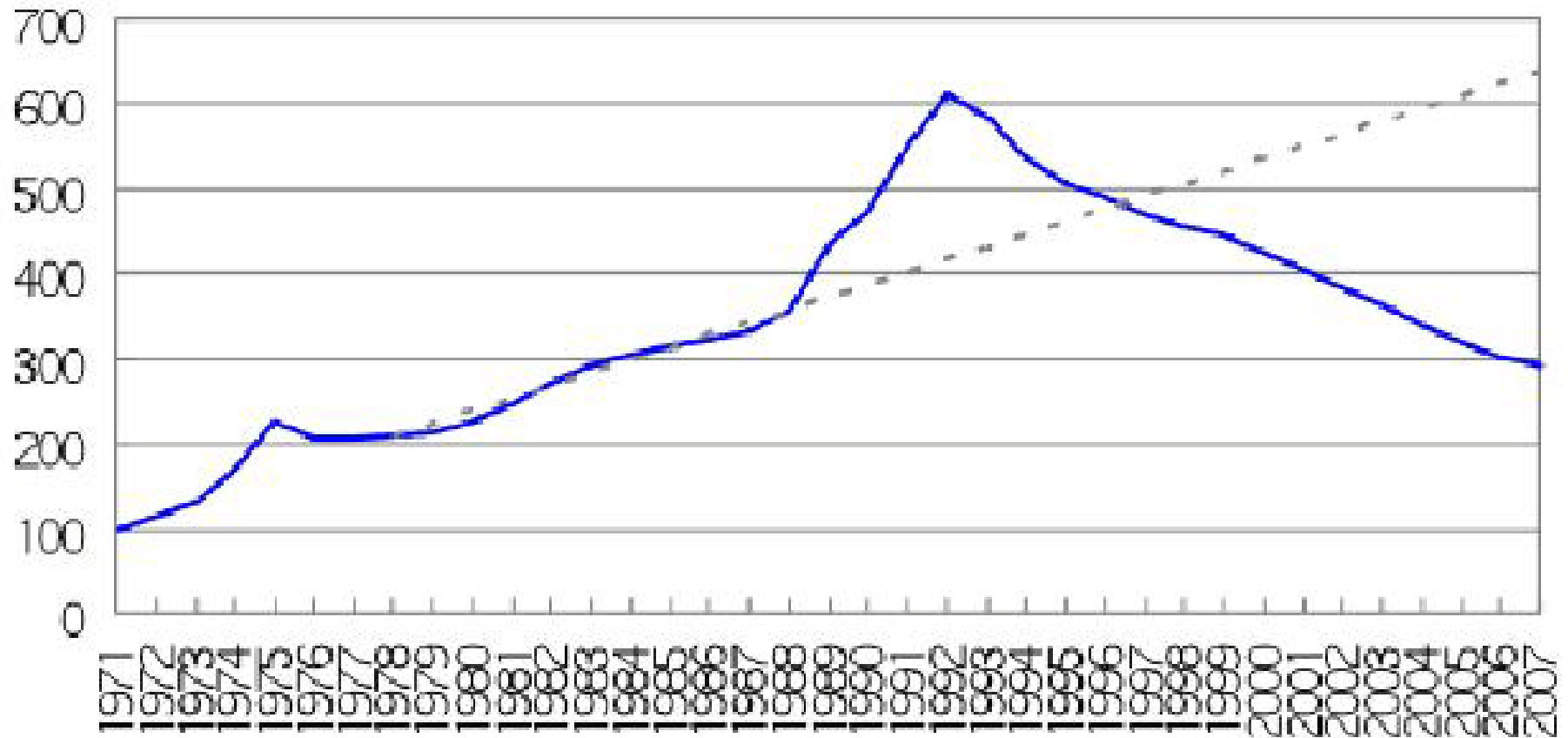
- ◎ **Low quality firms**

- Real estate firms; low profitability firms

- ◎ **How do bank bailouts affect lending policies?**

- Evidence that banks were lending to “zombie” firms (Caballero, Hoshi and Kashyap, 2008; Peek and Rosengren, 2001)

Japanese Real Estate



Source: Ministry of Land, Infrastructure, Transport and Tourism.

Capital (Mis)allocation

- First recapitalization (small amount of capital injected)
 - CAR of non-real-estate firms: 1%
 - CAR of real-estate firms: 6%
 - Similar evidence that also low-profitability firms benefit most, but they seem to restructure (cut employment and increase sales)
- Second and third recapitalizations (larger amount of capital injected)
 - Real-estate and low profitability firms do not benefit more than other firms
- **Bank capital requirements have to be re-established to give banks incentives to pursue sound lending policies?**

Capital injections by private investors

- ◎ Results are similar both qualitatively and quantitatively
- ◎ We do find similar effects on capital misallocation

Robustness

◎ Can our results be generalized beyond Japan?

- Japanese firms have peculiar organization and ownership structure: Keiretsu
 - But not all firms are part of keiretsu
- We check whether our results are driven by **keiretsu firms** and their main banks or by **bank shareholdings**
- They are not

◎ Concurrent events

- Bank capital reductions
 - No effects on firm abnormal returns and bank loans
 - All other results unaffected
- Placebo events generated at random dates (never significant)

Other real effects

- ◎ What if loans to unlisted small borrowers increased more than loans to listed borrowers?
- ◎ The number of borrowers, the number of (and the amount of loans to) small business borrowers did not increase after recapitalizations

Conclusions

- ◎ Bank lending policies cannot be assumed to spontaneously improve after capital injections, bank mergers or other measures to improve bank stability
- ◎ The design of bank bailouts is important:
 - Size of the recapitalizations
 - Measures to improve bank lending policies?