

# Comments: “Japan’s Banking Crisis: Who Has the Most to Lose?”

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# Summary

- Event study – Abnormal stock returns of borrowing firms around the date of an event
- Events related to the banking crisis – (1) Government actions, (2) Downgrading of banks' credit ratings, (3) Bank mergers
- Not all companies were equally sensitive to the events
- The most affected were small companies with low profits in low-tech sectors with high leverage and limited access to bond markets
- Firms in R&D-intensive sectors were less affected
- Misallocation of funds due to rollover of bad loans by banks to nonviable clients (“zombies”) is not supported by the data

## Comments (focusing on misallocation of funds)

The authors show: A negative shock to banks induces a negative response in the stock returns of the worst borrowers.

This result rejects the following “strong” hypothesis of zombie lending.

### (Strong) Hypothesis

As banks’ financial health deteriorates, they shift more and more of their loans to their worst clients (to hide the truth from bank regulators and depositors).

⇒ The authors’ prediction: A negative shock to banks induces a positive response in stock returns of zombie firms.

⇒ The prediction is rejected by this empirical study.

But this result may not imply non-significance (or nonexistence) of economy wide misallocation of funds.

- (1) The strong hypothesis may not validate the above prediction
- (2) Theoretically, the rollover of bad loans to the worst clients may have been widespread and the amount of the loans rolled over may respond negatively to a negative shock to banks. (A “weak” hypothesis)
- (3) Existing empirical studies point to widespread misallocation of funds

# (1) The strong hypothesis may not validate the above prediction

- The motive for banks to extend loans to their worst clients is to conceal the true financial health of the banks from regulators and depositors.
  - (Prediction 2) Banks shift more funds to the (nonviable) borrowers in response to a negative shock to the borrowers.
  - In the case of negative shocks to banks (e.g., downgrading of banks), the banks cannot conceal the fact by increasing loans to zombies.
- ⇒ There may be no incentive for banks to increase zombie lending in response to a negative shock to banks themselves.

(2) A weak hypothesis: zombie lending is widespread and it negatively responds to a negative shock to banks.

### **A simple model of a bank**

- Two periods: Today and tomorrow. No discount.
- The bank capital is  $C$  today.
- Today, an exogenous macro shock makes  $X$  units of loans bad. ( $0 < X < 1$ . Total amount of loans is one)
- The bank can choose  $z$ , where  $X - z$  is disposed of today, and  $z$  is rolled over until tomorrow.
- Tomorrow,  $z$  loans remain bad with probability  $p$  and they turn good with probability  $(1-p)$ . All remaining bad loans must be disposed of tomorrow.
- The bank manager suffers from private cost  $\Psi(d)$  if  $d$  units of bad loans are disposed of. ( $\Psi'(d) > 0$ ,  $\Psi''(d) > 0$ )

## Bank manager's problem

$$\begin{aligned} & \max_z W(z) \\ & = -(X - z) - \Psi(X - z) - \Phi(z, C) + p\{-z - \Psi(z)\}, \end{aligned}$$

$\Phi(z, C)$ : Social cost from rolling over bad loans  $z$ ,  
 $\Phi_z > 0, \Phi_{zz} > 0, \Phi_{zC} < 0$ .

- The solution:  $z = z^{(+)}(X, C)$
- $z(X, C) > z_o$ , where  $z_o$  is the socially optimal amount of  $z$ ,  
if  $z_o < \frac{1}{2}X$ .

⇒ Zombie lending may respond negatively to an adverse shock to bank health.

⇒ Zombie lending may have been widespread and it may have been socially costly.

### (3) Existing evidence of fund misallocation

- Hoshi (1999)

Public data shows that bank loans to the “bubble”-related sectors (real estate, construction, retail, wholesale, nonbank finance) increased throughout the 1990s. Bank loans to manufacturing decreased during the 1990s.

- Saita and Sekine (2001)

*Tankan* survey of BoJ shows the (subjective) mismatch of fund allocation widened during the 1990s.

- Sekine, Kobayashi, and Saita (2002)

Estimation of loan supply function implies that heavily indebted firms were likely to have easier access to bank loans than less indebted firms.

- Nishimura, Nakajima, and Kiyota (2003)

Firms with high productivity exited and those with low productivity continued operating in the late 1990s.