Public Bank Lending in Crisis Times

Alfredo Schclarek* and Michael Brei**

*National University of Córdoba
**University Paris Quest

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Agenda

1. Motivation

2. Related literature

3. Empirical results

4. Theoretical model

5. Conclusions

Motivation

- Is there any role for public banks?

- Is there any difference between public and private banks?

- Do they behave the same way during normal and crisis times?

- What are the reasons for the different behavior?

Public Banks in Latinamerica (* Development banks)

| Nr.	Total Assets (end-2009)	Country	Million USD
1	Banco do Brasil	Brazil	357.615
2	BNDES*	Brazil	217.752
3	Caixa Economica Federal	Brazil	196.252
4	Banco del Estado de Chile	Chile	33.271
5	Banco de la Nacion Argentina	Argentina	22.695
6	Nacional Financiera*	Mexico	21.598
7	Banobras*	Mexico	20.634
8	Banrisul (Rio Grande do Sul)	Brazil	16.855
9	Banco de Venezuela	Venezuela	15.432
10	Banco Bicentenario	Venezuela	13.345
11	Banco do Nordeste*	Brazil	10.997
12	Bancomext	Mexico	9.236
13	Banco de la Provincia de Buenos Aires	Argentina	7.856
14	Sociedad Hipotecaria Federal	Mexico	7.799
15	Banco de la Nación	Peru	6.930
16	Banco Banestes	Brazil	5.141
17	Banco del Tesoro	Venezuela	4.999
18	Banco da Amazonia*	Brazil	4.482
19	BRDE (Extremo Sul)*	Brazil	4.203
20	Banco de Brasilia	Brazil	3.639
21	Banco de la Ciudad de Buenos Aires	Argentina	3.588
22	Banco Industrial de Venezuela	Venezuela	3.392
23	Bancoldex*	Colombia	2.759

Ranking Public Banks Share

by Total Assets (end of 2009)
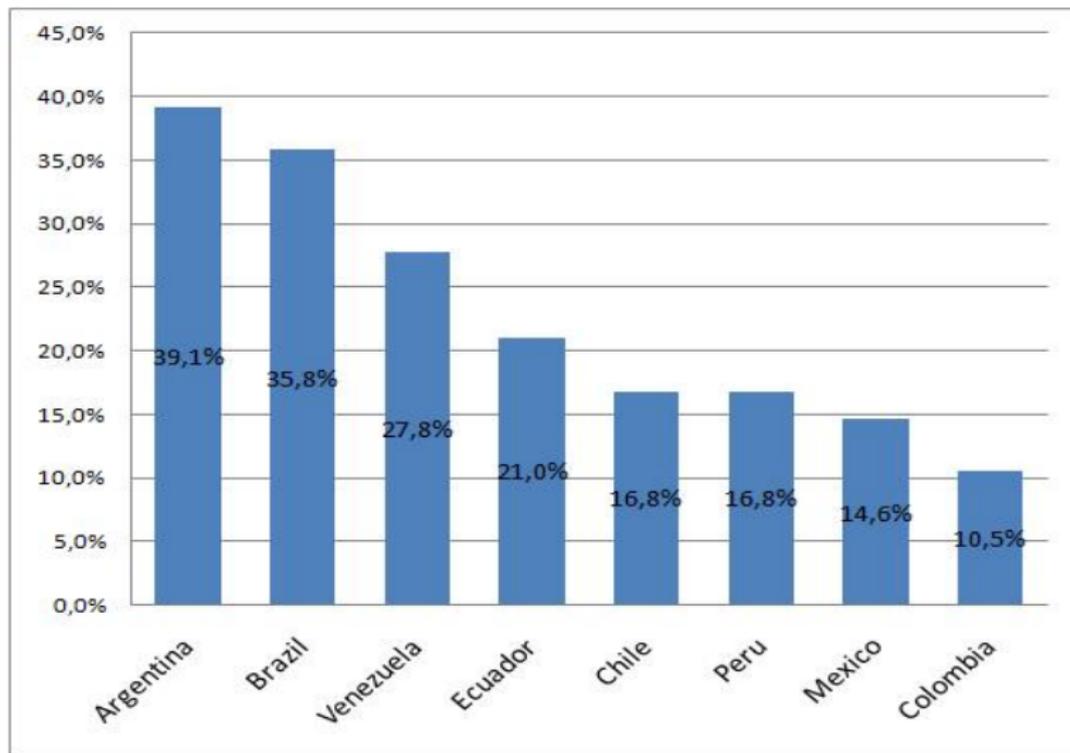
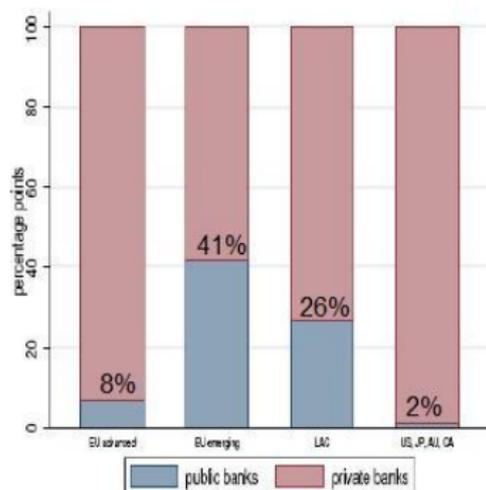# Share of public bank loans

Public bank lending shares increased in all regions, especially in Latin America and Europe.
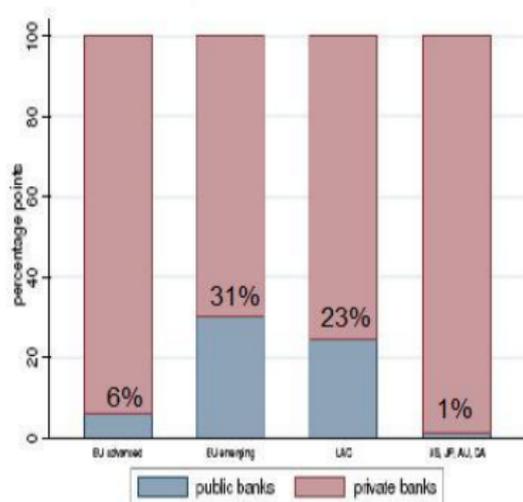
Nationalization of banks in Europe

- England: Royal Bank of Scotland, HBOS-Lloyds
- Iceland: Kauping, Landsbanki, Glitnir and Icebank
- Ireland: Anglo Irish Bank
- Netherlands: Fortis NL
- Portugal: Banco Portugues de Negocios

Two views

- "Development" view (heterodox)
  - Need of public banks for financial and economic development
  - Alexander Gerschenkron (1962)
- "Political economy" view (orthodox)
  - Public banks generate distortions and soften budget constraint of govt.
  - Thus, privatize public banks
  - Anne Krueger (1974), Shleifer and Vishny (1994)

Related literature

- La Porta, Lopez-De-Silanes and Shleifer (2002)
  'Government ownership of banks', JF
  - **Argue that public banks cause financial instability and underdevelopment and slow growth (92 countries)**

- Andrianova, Demetriades and Shortland (2009)
  'Is government ownership of banks really harmful to growth?'
  - **Refutes Laporta et al. (2002) by including institutional quality variable**

- Andrianova, Demetriades and Shortland (2008)
  'Government ownership of banks, institutions, and financial development' JDE
  - **Under weak institutional quality, depositors trust more public banks than private banks.**
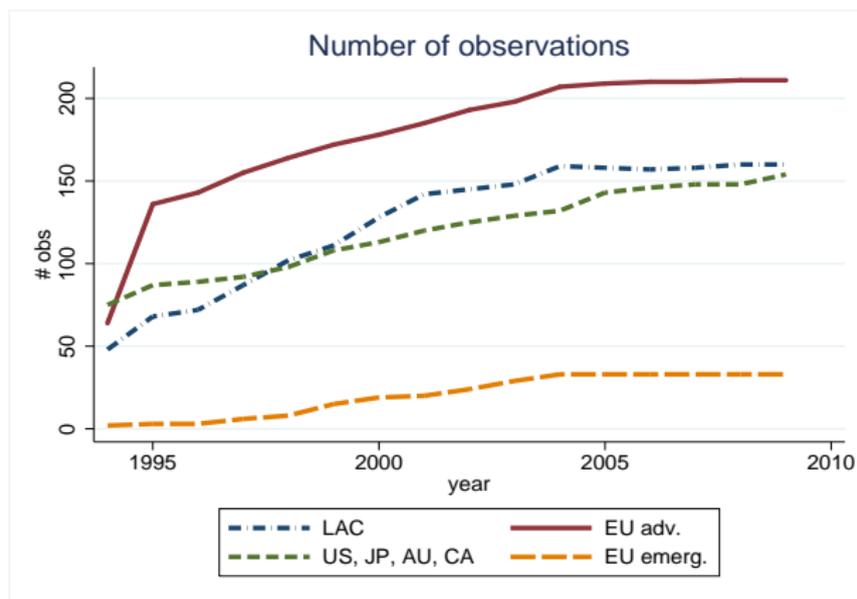
Hypothesis

- Public banks lend more than private banks during and after a financial crisis

- During normal times, they behave the same

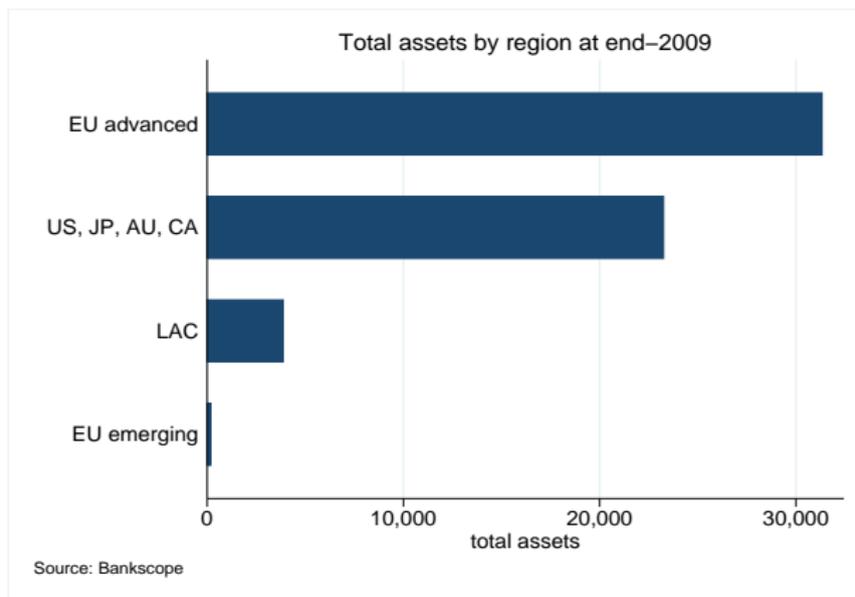- Thus, (new) role for public banks to mitigate effects of crisis on real sector

The data

Bankscope (filtered)

- 560 banks from 52 countries (1994-2009)
- 520 private and 40 public banks

Number of observations

The sample of 560 banks accounts for USD 60 trillion of total assets (2/3 of the global banking system)

Dynamic panel regression

$$
\begin{aligned}
\Delta L_{ijt} =\ & \alpha_1 \Delta L_{ijt-1} + \beta X_{jt} \\
& + \alpha_{PR} + \alpha_{PU} P_{it} + \gamma_{n,PR} Z_{ijt} + \gamma_{n,PU} Z_{ijt} P_{it} \\
& + \delta_{PR} C_{jt} + \delta_{PU} C_{jt} P_{it} + \gamma_{c,PR} Z_{ijt} C_t + \gamma_{c,PU} Z_{ijt} C_{jt} P_{it} + \varepsilon_{ijt},
\end{aligned}
$$

- ΔL_{ijt}: loan growth in year t of bank i in country j
- P_{it}: public bank dummy
- C_{jt}: crisis dummy
- Z_{ijt}: size, liquidity, capitalization, ST funding
- X_{jt}: country- and time-fixed effects

If $\delta_{PU} > 0$: **public banks lend more than private banks in crises**

Regression results: core coefficients

| | Fixed effects | | IV - 2GMM | | System GMM | |
	coeff.	p-val	coeff.	p-val	coeff.	p-val
dummy C	-7.12***	0.00	-7.82***	0.00	-5.48***	0.00
dummy P	dropped		-4.73***	0.00	-4.98***	0.01
dummy $C*P$	10.96***	0.00	9.85***	0.00	9.40***	0.00
Obs.	4926		4298		4926	
Banks	523				523	
R^2	0.08		0.13			
AR(2)					0.86	
Hansen					0.00	

Summary of estimation results

Normal times

- Public banks have lower loan growth than private banks (-4.98%)

Crisis times

- Crisis periods have a strong adverse effect on private bank lending (-5.48%)
- Public banks counteract the credit crunch (+9.4%)

Hypothesis

Reasons different behavior public and private banks:

- Public banks' objective is not only to maximize profits but also to avoid transmission to the real sector

- Public banks are more likely recapitalized; govt. has more resources than a private banker

- Public banks suffer less deposit withdrawals

Basic model

- **Firm liquidity demand model:** Holmström and Tirole (1998) 'Private and public supply of liquidity' JPE

- **Consumer liquidity demand model:** Allen and Gale (1998) 'Optimal financial crises' JF

- **Four agents:** depositors/consumers, firms/entrepreneurs, private bank and public bank.

Setup

- **Entrepreneurs:** stochastic investment project but no liquid funds; outcome in period 2

- **Depositors/Consumers:** deposit initial liquidity in banks; risk neutral but bank leverage averse; consume in period 2

- **Banks:** initial own capital; risk averse; lend to entrepreneurs (investment project) and/or hold liquid funds (no return)

- **Three periods:** period 0 (initial investment); period 1 (observe signal: real variance and real leverage; partial liquidation); period 2 (outcome)

Uncertainty

Information about stochastic shocks

- Initial investment: I (period 0)

- Stochastic return: R (period 2)

- $E(R)$ known with certainty in period 0

- $V(R)$ NOT known with certainty in period 0

- Signal in period 1: real $V(R)$

- Limit leverage: $LE \equiv \frac{D+A}{A} \leq 1 + \beta 0 - \beta 1 \frac{V(R)}{A}$

Result

- **Partial liquidation (period 1):** Investment project continued smaller scale; conversion into liquid funds; due to optimal bank decision and/or withdrawal of deposits

- Normal times (no partial liq.): $V_1(R) \leq V_0(R)$

- Financial crisis (partial liq. by optimal bank decision): $V_0(R) < V_1(R) < V(\overline{R})$

- Severe financial crisis (partial liq. by withdrawal of deposits): $V_1(R) > V(\underline{R})$

Period 1

Consumers' objective function

$$\max_{C_2} E(C_2) \tag{1}$$

s.t.

$$C_2 \leq D1_{PR} + D1_{PU} + LF1$$

$$D1_{PR} + D1_{PU} + LF1 = D0_{PR} + D0_{PU} + LF0$$

$$D1_{PR} \leq \beta 0_{PR} A0 - \beta 1 V_1(R) \tag{2}$$

$$D1_{PU} \leq \beta 0_{PU}(A0 + \Delta A1_{PU}) - \beta 1 V_1(R) \tag{3}$$

Period 1

Private banks' objective function

$$\max_{\delta_{PR}} \delta_{PR}E(R)I_{PR} + (1 - \delta_{PR})I_{PR} - \frac{\gamma}{2}\delta_{PR}^2 I_{PR}^2 V_1(R)$$

s.t.

$$D0_{PR} - D1_{PR} \leq S0_{PR} + (1 - \delta_{PR})I_{PR}$$

$$0 \leq \delta_{PR} \leq 1$$

Public banks' objective function

$$\max_{\delta_{PU}} \delta_{PU}E(R)I_{PU} + (1 - \delta_{PU})I_{PU} - \theta(1 - \delta_{PU})I_{PU}$$
$$- \frac{\gamma}{2}\delta_{PU}^2 I_{PU}^2 V_1(R)$$

s.t.

$$D0_{PU} - D1_{PU} \leq S0_{PU} + (1 - \delta_{PU})I_{PU}$$
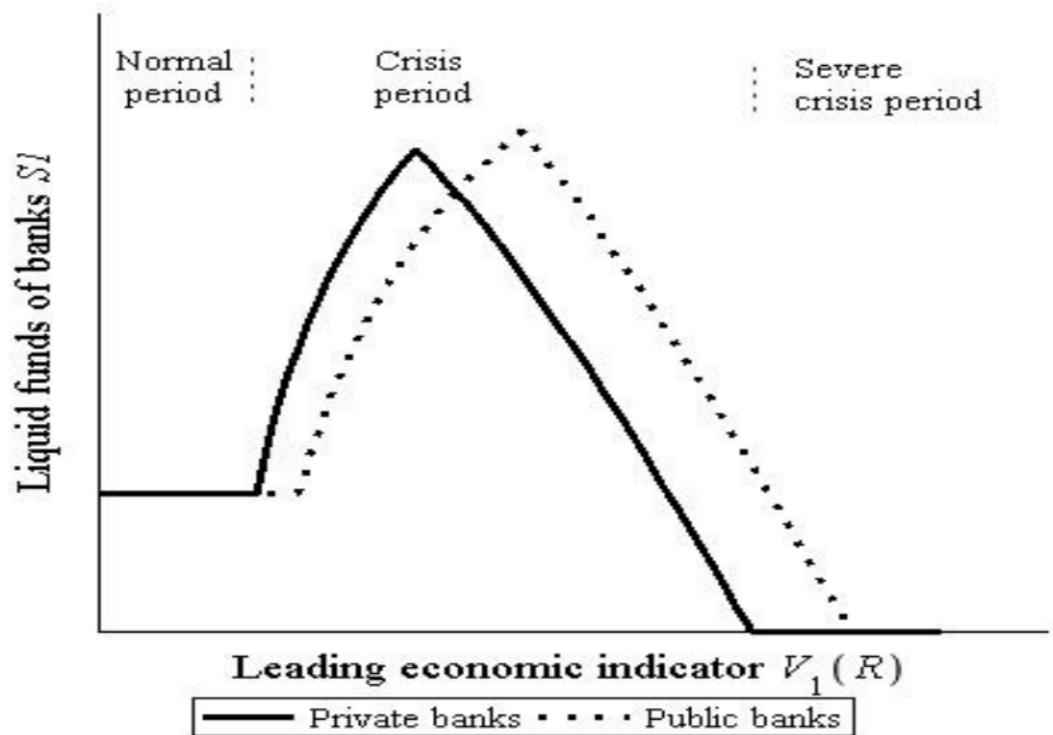
$$0 \leq \delta_{PU} \leq 1$$

Differences between Public and Private Banks

- $-\theta(1 - \delta_{PU})I_{PU}$: public banks' disutility of partially liquidating investment projects

- $\Delta A1_{PU}$: higher recapitalization of public banks than private banks (obtain liquidity by taxation)

- $\beta 0_{PU} > \beta 0_{PR}$: depositors trust more public banks and accept a higher leverage (less leverage averse)
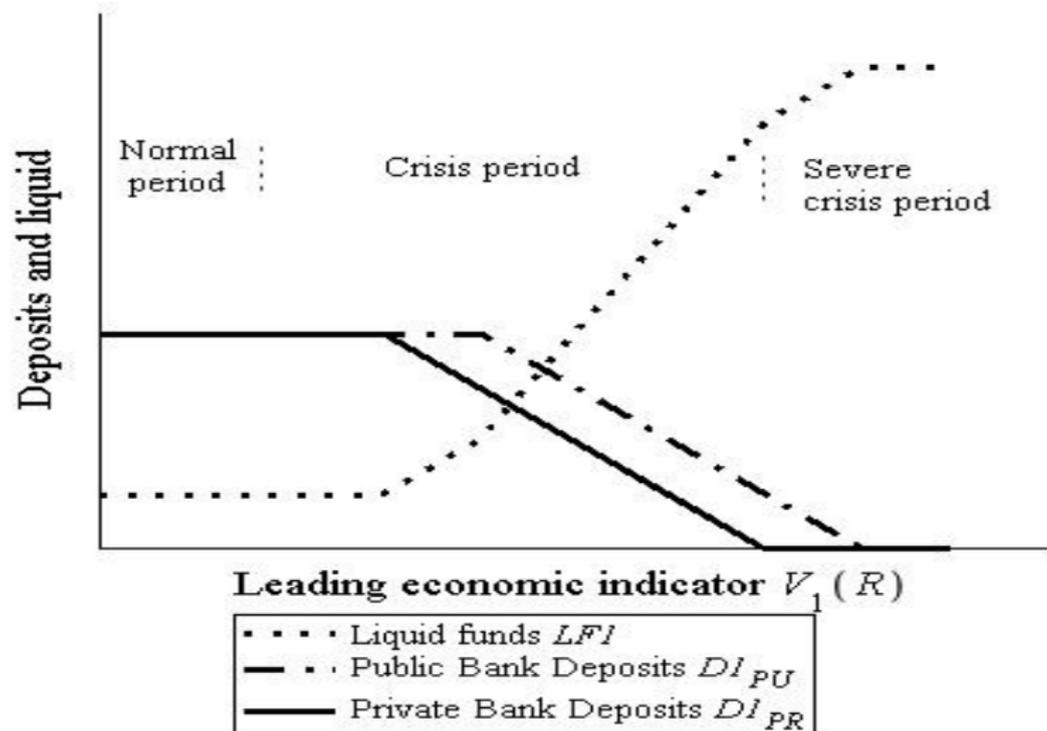
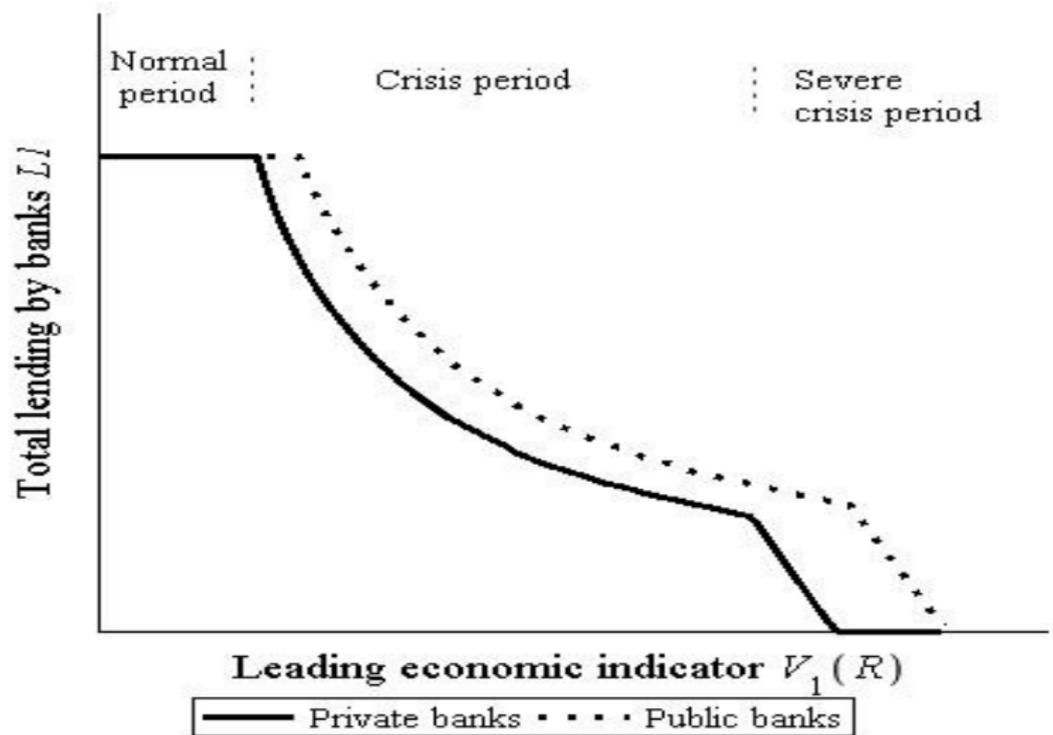## Continuation of the investment project
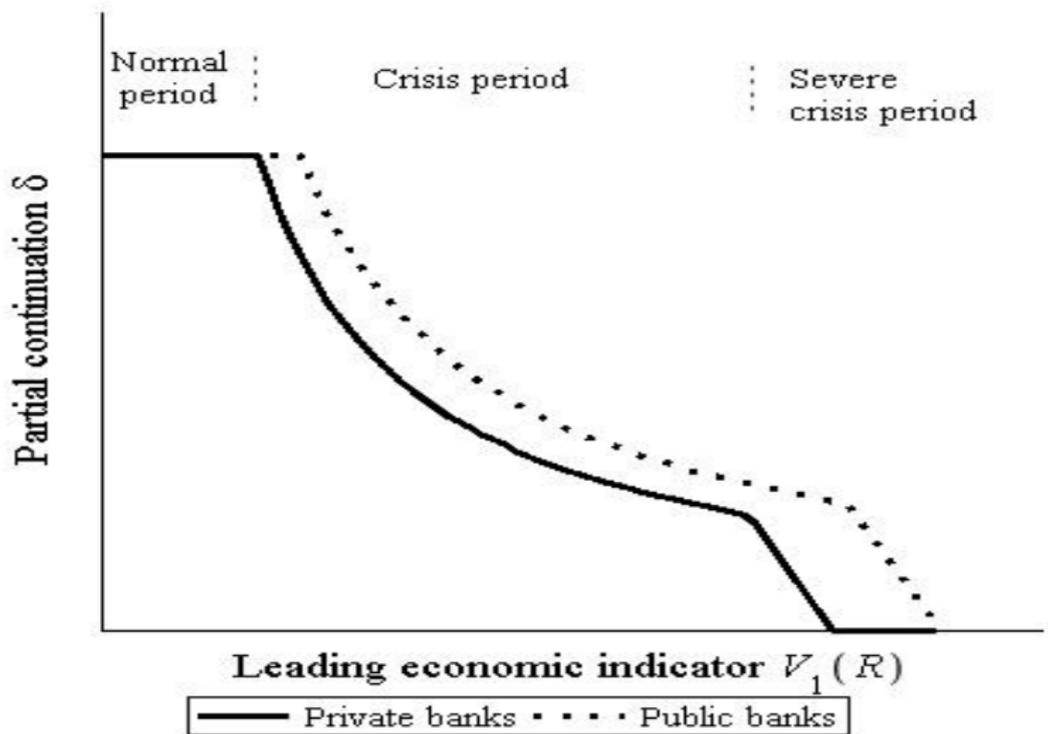
Liquid funds holding by banks

Deposits and liquid funds holding by consumers

Leading economic indicator $V_1(R)$

- $\cdots\cdots$ Liquid funds $LF1$
- $\textbf{--}\cdot\textbf{--}$ Public Bank Deposits DI_{PU}
- $\textbf{———}$ Private Bank Deposits DI_{PR}

Lending decisions by banks

Conclusions

- Public banks lend more than private banks during crisis periods

- Role for public banks to avoid financial crises spreading to real sector

- Role for public banks in recovery of real sector after a crisis

- Public bank credit integral part for successful monetary policy