Herd Behavior by Japanese Banks in Local Financial Markets

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Question

Q. Did Japanese banks follow **Herd Behavior** in local financial markets?
Background

- Herding by JP banks was observed from the WW II to the late 1970s,
  - because there were bank regulations to make banks do businesses uniformly.
  - criticized as inefficiency of the Japanese financial market.

- Herding by banks is still observed,
  - Even after financial deregulation
  - Casual evidence of bank herding:
    1. Shifts in bank portfolios
    2. Inflow of loans into real estate & finance (Asset-price bubble)
    3. Withdrawal of loans (Credit crunch)

- Problem: The literature gives only casual evidence ... (not empirical)
Contents

1. Background

2. Literature
   a. Theory on Herd
   b. Empirical study
   c. Conditions for herding
   d. Our empirical focus

3. Conclusions

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   b. Model
   c. Sequential estimation

5. Results
   a. All areas
   b. Urban vs. Regional areas
   c. Tokyo area

6. Robustness check
Theory on Herd

What’s herding?
- An agent behaves similarly to other agents, by observing the behavior of others.

Reasons:
- For getting information of unobservable fundamentals.
  - Bikhchandani, Hirshleifer, Welch (92, JPE)
- For reputational concerns.
  - Sharfstein, Stein (90, AER)
- For pay-off externality.
  - Diamond, Dybvig (83, JPE)

- The markets equilibrium can be socially inefficient.
Conditions for Herding

1. An investment opportunity is not well known by agents.
   - e.g. new assets, regional firms, etc.
     • Jain, Gupta (87, JMCB), Calvo, Mendoza (96, JIE)

2. An agent has little wealth to get information of investment opportunities.
   - e.g. households, small banks, etc.
     • Barron, Valev (01, JMCB), Nelson (02, RFS):

3. The economy is stable.
   - e.g. stable growth, no crush, etc.
     • Barron, Valev (01, JMCB), Nelson (02, RFS)
Empirical study

- Jain, Gupta (87, JMCB), Barron, Valev (01, JMCB):
  - In the US, Small banks herd on Large banks in loans to Latin American countries in the 1980s.

- Chang, Chaudhuri, Jayaratne (97, FRB), De Juan (03, IJIO):
  - Banks herd when opening branches in Local areas.

- Buch, Lipponer (06, IJCB):
  - German banks herd in Foreign Direct Investments.

- Uchida, Nakagawa (07, JFI):
  - JP banks herd in the asset-price bubble (late 1980s),
    (but, no focus on local financial markets.)
Our empirical focus

Q. Did Japanese banks follow **Herd Behavior** in local financial markets?

**Difference of herding?**

1. **Urban areas vs. Regional areas?**

2. **Major banks vs. Local banks?**

3. **Stable period vs. Fluctuating period?**
   - Japan: 80s (stable) vs. 90s (financial crises)
Conclusions

- Japanese banks frequently herd on each other in local financial markets.

1. Herding by banks is observed in regional areas (more than in urban areas).

2. Local banks herd on
   1. major banks in urban areas,
   2. other local banks in regional areas.

3. Herding is observed in the 1980s (more than in the 1990s).
Overview: Bank type

- **Major type:**
  - City bank

- **Local type:**
  - Regional bank
  - Second-tier regional bank (hereafter, Reg-2 bank)
  - Shinkin bank

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<th>Av. Loans</th>
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Overview: Loan distribution

- **47 areas (prefectures)**
  - Tokyo: largest
  - Tottori: smallest

- **Loan distribution:**
  - City: urban-based
  - Regional, Reg-2, Shinkin: local-based

Lorenz curve of loans by area

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Loan share: 1-15th

(A) Urban prefectures (1st to 15th)
Loan share: 16-30th
Loan share: 31-47th

(C) Regional prefectures (31st to 47th)

- Shinkin
- Reg-2
- Regional
- City

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Methodology

- Loan equation:
  - \( L_{i,t}^s \): loans of bank type \( s \), area \( i \)

\[
L_{i,t}^s = \alpha_i^s + \delta^s L_{i,t-1}^s + \beta^s Z_{i,t-1} + \gamma^s L_{i,t-1}^{-s} + \varepsilon_{i,t}^s.
\]

  - \( Z_{i,t}^s \): Economic variables that affect bank loan supply and borrowers' profitability
    - GDP by industry, land price, total debt of bankrupt firms, new housing construction
  - \( L_{i,t}^{-s} \): Loans of other types

- \( \gamma^s \): HERDING parameter

- If bank \( s \) herds on other types, \( L_{i,t}^s \) is explained not only by \( L_{i,t-1}^s \) and \( Z_{i,t}^s \), but also by \( L_{i,t}^{-s} \).
Sequential estimation

• To clarify time-variations in herding parameter $\gamma^s$, (= consistency of herding)
  – we take all possible 5-year sample periods.
  • 23 periods.
All areas
All areas

(Loan variable: Ratio of loans by area to the nationwide loans)

Herd parameter $\gamma$

1%

5%

Dependent Variable

Little Herd between Major and Local types

Explanatory variable

Herd between Local types

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Urban areas
Urban areas
(Loan variable: Ratio of loans by area to the nationwide loans)

Herd by Major type only in the late 1980s

Little Herd between Local types

Much Herd by Local on Major types

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Regional areas
Regional areas
(Loan variable: Ratio of loans by area to the nationwide loans)

Much Herd between Local types

Little Herd between Major and Local types

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Brief conclusions

- Herding is frequently observed:
  1. in regional areas as well as in urban areas,
  2. by local banks
     1. on major banks (urban),
     2. on other local banks (regional),
  3. in the bubble period (late 1980s).
     1. by major banks.
Urban areas
(Loan variable: Growth rate of loans by area)

Herd by Major type in the late 1980s

Little Herd between Local types

Herd by Local on Major types (but, **smaller, more temporal**)
Regional areas
(Loan variable: Growth rate of loans by area)

<= City(-1)  <= Regional(-1)  <= Reg-2(-1)  <= Shinkin(-1)

Much Herd between Local types

Little Herd between Major and Local types

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Adjacent areas
(Tokyo region)
Adjacent areas
(Tokyo region)
(Loan variable: Ratio of loans by area to the nationwide loans)

1. Background
2. Literature
3. Conclusion
4. Methodology
5. Result
6. Robustness check

Less Herd by Major type on Local types

Herd by Major in the bubble

Herd by Local types on Major & Local types

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Final conclusions

- Herding is frequently observed:

1. in regional areas **more than** in urban areas.

2. by local banks
   1. on major banks in urban areas,
   2. on other local banks in regional areas,
   3. on major and local banks in adjacent areas.

3. in the bubble period (late 1980s).
   1. by major banks in urban areas.