Deposit Insurance and Financial Development

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Motivation

• Do deposit insurance programs contribute to financial stability and development?
• Bank runs and risk of systemic bank failure
• Credible deposit insurance as a stabilizing force
  – Financial depth and economic growth
• Adverse consequences of deposit insurance
  – Moral hazard and incentive problems
  – Greater systemic instability in lax regulatory environments
What we do in this paper: outline

- Examine the effect of deposit insurance on financial stability and development
  - level of financial activity
  - stability of banking sector
  - quality of resource allocation and real sector performance

- Empirics guided by a theory of banking regulation based on agency paradigms
  - observed features of deposit insurance programs: 58 countries
  - generosity and entry hurdles: unique data set
  - Indexing deposit insurance features

- Effects of deposit insurance on size and volatility of the financial sector
Theory and predictions

Model:

- Agency paradigms: deposit (bank) institution as the nexus of contracts
  - Depositors
  - Bank management
  - Bank owners
  - Regulators and tax-payers

- Social planner’s objective function: based on two goals
  - Minimizing the loss of value resulting from distortionary investment policy (agency costs)
  - Maximizing the value of bank activity in the liquidity services that banks provide (bank liability side) and their role as informed agents in an environment of imperfect information - screening and monitoring of borrowers (bank asset side)
Bank incentives: investment distortion and excessive risk-taking

Figure 1: Partitioning of Income from Bank Asset Portfolio

Note: Along the horizontal axis, we measure cash flows from bank assets (e.g. loans), and these cash flows are partitioned among depositors and bank owners. The partitioned claims are measured along the vertical axis.
Formalizing bank incentives and deposit insurance effects

Figure 2: Bank Investment Opportunities

Value under bank asset risk-shifting
Multiple banks and risk incentives

Figure 3: Capital Requirements and Multiple Banks
Testable predictions: 1

• Financial instability and moral hazard (volatility effect)
  – Excessive risk-taking to excessive financial volatility beyond socially optimal level
  – With unresolved moral hazard, deposit insurance induces more financial instability

• Economic inefficiency (value effect)
  – Distortions in bank investment activities (loans) away from the socially optimal levels of investments
  – Decline in economic performance in the banking sector
  – Asset regulation: counterproductive measure
Testable predictions: 2

• Capital regulation effect (entry hurdle and effectiveness)
  – Limited effectiveness of capital regulation
  – Time-inconsistency of deposit insurance premium

• Optimal regulation and the rule of law
  – Consider an optimal, incentivized banking regulation
  – If regulators themselves have distorted incentives, no implementation of optimal regulation
### Principal components indices: deposit insurance features

<table>
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<tr>
<th>Generosity: moral hazard</th>
<th>Entry hurdles: requirements</th>
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<td>• coverage limits</td>
<td>• compulsory membership</td>
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<td>• foreign currency coverage</td>
<td>• ex ante funding</td>
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<td>• interbank coverage</td>
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<td>• funding source (bnk, gov)</td>
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<td>• management (official, private)</td>
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<td>• co-insurance</td>
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- Coverage limits: cover a certain amount of deposits, often set by law.
- Foreign currency coverage: covers deposits in foreign currencies.
- Interbank coverage: provides protection to interbank deposits.
- Funding source: can come from banks (bnk) or governments (gov).
- Management: can be handled by official or private entities.
- Co-insurance: involves multiple insurance providers sharing the risk.
\[ Y_i = \alpha_0 + \beta_{G_1}G_i + \beta_{G_2}G_iLaw_i + \beta_{H_1}H_i + \beta_{H_2}H_iLaw_i + \beta_XX_i + \beta_RR_i + \varepsilon_i \]

- Basic estimating equation, where:
  - \( Y_i \) is growth rate or volatility of an indicator of financial development in country \( i \)
  - \( G \) is generosity of deposit insurance
  - \( H \) is weakness of entry hurdles
  - \( Law \) is quality of the rule of law (proxy for quality of regulation, supervision)
  - \( X \) is macroeconomic controls (inflation, real growth,...)
  - \( R \) is other banking sector controls (age of program, concentration,...)
\[ Y_i = \alpha_0 + \beta_{G1} G_i + \beta_{G2} G_i \text{Law}_i + \beta_{H1} H_i + \beta_{H2} H_i \text{Law}_i + \beta_X X_i + \beta_r R_i + \varepsilon_i \]

• Hypotheses:

\( Y_i \) = volatility (\( \sigma \)); coefficient of variation in LL/GDP or Priv Credit/GDP

- generosity 1 more volatility (\( \beta_{G1} > 0 \))
- sound regulation can negate volatility due to generosity (\( \beta_{G2} < 0 \))
- lower entry hurdles 1 more volatility (\( \beta_{H1} > 0 \))
- sound regulation can negate volatility due to low entry hurdles (\( \beta_{H2} < 0 \))
\[ Y_i = \alpha_0 + \beta_{G1} G_i + \beta_{G2} G_i \text{Law}_i + \beta_{H1} H_i + \beta_{H2} H_i \text{Law}_i + \beta_X X_i + \beta_R R_i + \epsilon_i \]

- Hypotheses:

\( Y_i \) = financial development (growth in V); growth rate of LL/GDP or Priv Credit/GDP

- generosity \( \uparrow \) instability \( \downarrow \) slower long run financial development (LRFD), (\( \beta_{G1} < 0 \))

- sound regulation can negate that instability \( \uparrow \) faster LRFD (\( \beta_{G2} > 0 \))

- lower entry hurdles \( \uparrow \) instability \( \downarrow \) slower LRFD (\( \beta_{H1} < 0 \))

- sound regulation can negate that instability \( \uparrow \) faster LRFD (\( \beta_{H2} > 0 \))
Estimation

- Dependent variables: coefficient of variation and growth rate of Priv Credit and LL
- Principal component indices of deposit insurance features (one for generosity “moral hazard,” another for entry hurdles “adverse selection”)
- Two-stage estimation to correct for sample selection bias associated with adoption of explicit deposit insurance
- One observation per country, variables calculated as an average over all years for which data are available from 1960-97 for the country in question
- Selection stage: all variables measured prior to adoption of DI; Volatility/growth stage: variables measured after DI adoption.
\[ Y_i = \alpha_0 + \beta_{G1}G_i + \beta_{G2}G_iLaw_i + \beta_{H1}H_i + \beta_{H2}H_iLaw_i + \beta_X X_i + \beta_r R_i + \varepsilon_i \]

- **Results:** \( Y_i = \text{Volatility (}\sigma\text{)} 
  - generosity \( \beta_{G1}^* > 0 \) more volatility 
  - sound regulation can negate volatility due to generosity \( \beta_{G2}^* < 0 \) 
  - lower entry hurdles \( \beta_{H1}^* > 0 \), insignificant more volatility 
  - sound regulation doesn’t reduce volatility due to low entry hurdles \( \beta_{H2}^* \leq 0 \), insignificant
\[ Y_i = \alpha_0 + \beta_{G1}G_i + \beta_{G2}G_iLaw_i + \beta_{H1}H_i + \beta_{H2}H_iLaw_i + \beta_XX_i + \beta_rR_i + \epsilon_i \]

- Results: \( Y_i = \) financial development (growth in \( V \));
  - generosity \( \uparrow \) instability \( \uparrow \) slower long run financial development (LRFD), \( (\beta_{G1} \neq 0) \)
  - sound regulation can negate that instability; in a sound regulatory environment, generosity \( \uparrow \) faster LRFD \( (\beta_{G2} \neq 0) \)
  - lower entry hurdles \( \downarrow \) instability \( \downarrow \) slower LRFD \( (\beta_{H1} \neq 0, \text{insignificant}) \)
  - sound regulation can negate that instability \( \downarrow \) faster LRFD \( (\beta_{H2} \neq 0, \text{insignificant}) \)
$Y_i = \alpha_0 + \beta_{G1}G_i + \beta_{G2}G_iLaw_i + \beta_{H1}H_i + \beta_{H2}H_iLaw_i + \beta_X X_i + \beta_r R_i + \varepsilon_i$

- **Asymmetry of results**: assets (Priv Cred) vs. liabilities (LL)
  - Negative effects of generosity on LRFD more pronounced for *Priv* than *LL* ($|\beta_{G1}|$ for $Y_i=\text{Priv}$ $\ll |\beta_{G1}|$ for $Y_i=\text{LL}$)
  - Law negates those effects more for *LL* than *Priv* ($\beta_{G2}$ for $Y_i=\text{LL}$ $\gg \beta_{G2}$ for $Y_i=\text{Priv}$)
  - LL, less negative generosity effect, more easily overcome; Priv, more negative generosity effect, less easily overcome
  - Implication: almost all levels of *Law* $\uparrow$ more *LL* growth; but, only for high *Law* $\uparrow$ more *Priv* growth
Conclusions

- Deposit insurance leads to financial instability in lax regulatory environments
- Desired impact on financial development and growth under good regulatory/rule of law
- Entry hurdle results are surprising, but consistent with time-inconsistency of deposit insurance premia in controlling bank risk incentives
- Deposit insurance and bank concentration
- Limitations and extensions:
  - capital regulation effects
  - alternative indications of institutional development
  - financial development in the non-banking sector