Too Big to Fail, Too Small to Survive

Redouane Elkamhi[1]   Yilin (David) Yang [2]

[1]Rotman School of Management, University of Toronto

[2]Minnesota Carlson

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Motivation

- Classic global-game bank-run models assume cash as the only outside option.
  - They cannot capture large-scale deposit reallocation across banks during a crisis.

- Macroprudential policy studies typically focus on a single "representative" (often national) bank—e.g. Elenev et al. (2021)—overlooking cross-bank spillovers.

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- 2023 regional-bank turmoil (SVB, First Republic, Signature): rapid deposit flight destabilized regional institutions.
  - Funds migrated overwhelmingly to the four largest national banks; Caglio et al. (2023) show this shift is not fully explained by fundamentals.
- Regional banks underpin U.S. economic growth and financial stability.
  - As of year-end 2023, they manage roughly 30% of industry assets and originate more than 60% of outstanding loans; in rural and micropolitan counties they hold over 57% of deposits.

This paper

- Identify a **safe-neighbor externality**.
  - A slightly more stable neighboring bank is a more attractive run destination than cash.
  - Regulation, liquidity buffers, or implicit TBTF guarantees make the national bank the safe neighbor to many regional banks.
  - Depositors at regional banks rationally run earlier, and inflows endogenously strengthen the national bank—reinforcing the asymmetry.

This paper

- Identify a **safe-neighbor externality**.
- A global-game framework with multiple risky banks and cross-bank deposit mobility.
  - Standard global-game solution techniques break down with multiple risky outside options—cross-bank flows may endogenously strengthen/weaken any bank.

This paper

- Identify a **safe-neighbor externality**.
- A global-game framework with multiple risky banks and cross-bank deposit mobility.
- Develop new proof techniques $\Rightarrow$ unique robust limiting equilibrium.
  - Weakest regularity assumptions in the literature; nests previous results (e.g., Goldstein and Pauzner (2005) and Hanson et al. (2011)) as special cases.
  - A new proof angle for global games exportable to other applications. To our knowledge, absent from the prior literature.

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    (And, for what it's worth, absent from the latest AI models' best efforts at the time of posting.)

Preview of results

- **Matthew effect of fragility** in the unique robust equilibrium.
  - A regional bank that is only marginally riskier in isolation becomes disproportionately weaker once deposit mobility is allowed.

	Without deposit mobility	**With deposit mobility**
National bank	3.3%	1.6%
Regional bank	5.1%	9.2%

Equilibrium default probability. The regional bank's nearly doubles; the national bank's falls by only 1.7 percentage points.

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- **Chain reaction across regions**:
  - Once one regional bank is run, inflows further strengthen the national bank, infecting the next risky regional bank—and so on.
  - Even a regional bank that is safer than the national bank in isolation may be affected and face *disproportionately* higher run risk under deposit mobility.

Preview of results

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- **Chain reaction across regions**:
    - Even a regional bank that is safer than the national bank in isolation may be affected and face *disproportionately* higher run risk under deposit mobility.
- **Policy implication**: regulators should take a holistic perspective.
    - Macroprudential policies calibrated on an isolated-bank model tend to *over-fortify* national banks and *under-protect* regional banks.

Road map

- Introduction
- Model setup
- Bank run (no deposit mobility)
- Bank run (with deposit mobility)
    - Safer neighbor externality
    - Chain reaction of deposit run
- Deposit competition

Part I

Model setup

Baseline model: Agents

- Agents: A regional bank i operates only in its own region i, competing with a single national bank (b) which operates in each of the $\mathcal{N}$ regions. Continuum of uninsured depositors (mass $\mathcal{M}^i$) from region i, each endowed with \$1.

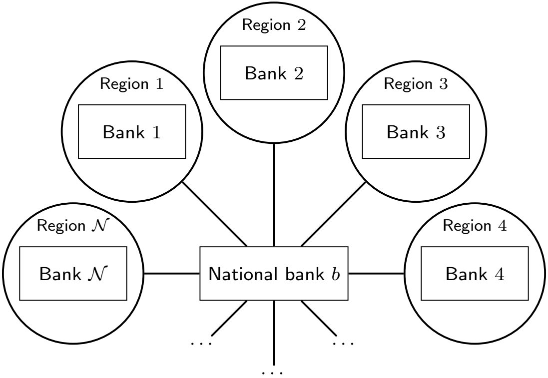

Figure: The timeline of the model.

Baseline model: Timeline

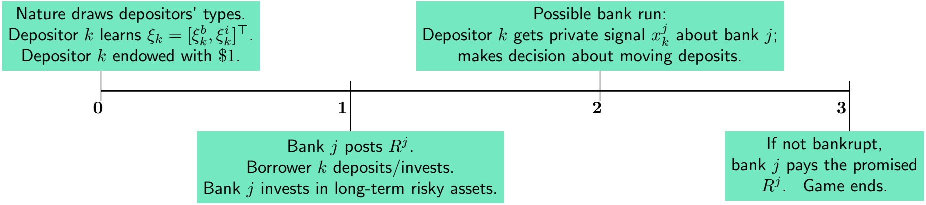

Figure: The timeline of the model.

- From now on focus on region i and study interactions between bank b and bank i. Let $j \in \{i, b\}$ denotes any bank in that region.

Baseline model: Action

- At $t = 1$ each bank $j \in \{b, i\}$ posts a gross deposit rate $R^j > 1$ to attract demand deposits.
- Assume no equity. Bank j invests in a long-term asset that yields a random payoff z_j at $t = 3$.
- Depositors decide where to place $1: bank i, bank b or cash.
- At $t = 2$ depositor k observes a private signal x_k about the aggregate state θ and may (possibly mix):
  - **Stay**: stay with her current bank j;
  - **Leave**: withdraw into cash (canonical option) (Diamond and Dybvig, 1983; Goldstein, Kopytov, et al., 2024);
  - **Move**: move deposits from bank j to the rival bank — **our key extension**.
- At $t = 3$ bank j defaults if its equity value is negative.

Baseline model: Depositor payoff

Payoff to depositor k at $t = 3$

- Stayed at bank j since $t = 1$; j survives: $R^j + \xi_k^j$.
  - $\vec{\xi}_k = [\xi_k^i, \xi_k^b]^\top$ captures heterogeneous banking service utility; drawn from CDF F_ξ.
- Moved to j at $t = 2$; j survives: $1 + \chi^j \, \xi_k^j$.
  - $\chi^j \in [0, 1]$ captures banking-service-value depreciation when switching late.
- Stayed at or moved to bank j by $t = 3$; bank j defaults at $t = 3$: get FDIC partial recovery Λ (Dávila and Goldstein, 2023).
  - For today: set $\Lambda = 0$; full model allows $\Lambda > 0$.

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  - For today: set $\Lambda = 0$; full model allows $\Lambda > 0$.
- **Sequential-service constraint:** Withdrawal success probability M^j is endogenous: a run can deplete liquidity before depositor k is served.
  - We impose sequential service constraint only in the limit. see details.

Baseline model: Banker payoff

Banker j's payoff at $t = 3$ (no early withdrawals)

$$\underbrace{\theta}_{\text{Common state}} \cdot \overbrace{G^j(A^j)}^{\text{Production function}} + \underbrace{(H^j \qquad\qquad)^+}_{\text{Cash held by } j \text{ (0\% int.)}} - R^j(L^j \qquad)$$

- At $t = 1$, bank $j \in \{b, i\}$ posts rate R^j; raises deposits L^j; invests $A^j = L^j - H^j$ in long-term asset with payoff $\theta \cdot G^j(A^j)$ at $t = 3$.

- Equity $=$ assets payoff – liability $(R^j L^j)$.

Baseline model: Banker payoff

Banker j's payoff at $t = 3$ (with early withdrawals)

$$\underbrace{\theta}_{\text{Common state}} \cdot \overbrace{G^j(A^j)}^{\text{Production function}} + \underbrace{(H^j - O^j \quad)^+}_{\text{Cash held by } j \text{ (0\% int.)}} - R^j\left(L^j \underbrace{- O^j}_{\text{Withdrawals} \downarrow \text{debt}}\right) - \overbrace{C^j\left(A^j, (O^j - H^j \quad)^+\right)}^{\text{Value lost from fire sale}}$$

- Deposit outflow $O^j > H^j \Rightarrow$ forced liquidation of some long term investment.
- Value destroyed in early liquidation (fire-sale cost) $C^j(A^j, (O^j - H^j)^+)$.
- Early withdrawals earn 1 instead of R^j, lowering liabilities.

Baseline model: Banker payoff

Banker j's payoff at $t = 3$ (with early withdrawals and deposit inflow)

$$\underbrace{\theta}_{\text{Common state}} \cdot \overbrace{G^j(A^j)}^{\text{Production function}} + \underbrace{(H^j - O^j + I^j)^+}_{\text{Cash held by } j \text{ (0\% int.)}} - R^j\left(L^j - O^j\right) - \overbrace{C^j\left(A^j, (O^j - H^j - I^j)^+\right)}^{\text{Value lost from fire sale}} - \underbrace{I^j}_{\text{Inflow into } j \text{ (0\% int.)}}$$

- Inflow I^j partly offsets outflow O^j.
- Bank holds I^j as cash. Pays only face 1 on inflow.
- Relative to holding cash, movers receive extra banking service utility $\chi^j\, \xi_k^j$.

Baseline model: Banker payoff

Payoff for banker j at $t = 3$ is

$$\underbrace{\theta}_{\text{Common state}} \cdot \overbrace{G^j(A^j)}^{\text{Production function}} + \underbrace{(I^j + H^j - O^j)^+}_{\text{Cash held by } j \text{ (0\% int.)}} - \overbrace{C^j\big(A^j, (O^j - H^j - I^j)^+\big)}^{\text{Value lost from fire sale}} - R^j\left(L^j - O^j\right) - \underbrace{I^j}_{\text{Inflow into } j \text{ (0\% int.)}}$$

- Assumptions:
  - Production G^j is twice differentiable with ${G^j}'(x) \geq 1$ and ${G^j}''(x)$ decreasing.
  - Fix any A, $C^j_{xx}\big(A, x\big)$ is increasing for $x \geq 0$.
  - Fix any A, $C^j\big(A, 0\big) = G^j(0) = 0$.
  - Fix any A, the marginal fire-sale cost of the first dollar $C^j_x\big(A, 0\big)$, exceeds $\mathbb{E}[\theta^+]{G^j}'(A) \geq R^j > 1$.

    Intuition: Liquidating \$1 forfeits the expected return $\mathbb{E}[\theta]G'(A)$ plus the fire-sale wedge $C^j_x\big(A, 0\big) - \mathbb{E}[\theta]G'(A)$.

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- Two-way strategic complementarity:
  - Other depositors run $\Rightarrow$ larger outflow O^j $\Rightarrow$ more likely to default $\Rightarrow$ stronger incentive to run.
  - Depositors at the other bank move in $\Rightarrow$ larger inflow I^j $\Rightarrow$ less likely to default $\Rightarrow$ stronger incentive to move in (or stay).

Bank-run subgame: Information

- At $t = 2$, depositor k gets a signal x_k about θ: $x_k = \theta + \sigma\epsilon_k$.
  - Our goal is to analyze the limiting equilibrium as $\sigma \to 0$.
- Prior: $\theta \sim F_\theta$ with continuous pdf f_θ; support includes 0. Noise: ϵ_k independent across k, atomless CDF F_{ϵ_k}, mean 0, distributions f_k may differ across k.
- Regularity (weakest in the literature): f_θ is Lipschitz continuous over a sufficiently large interval and the $\operatorname{ess\,sup}\{f_{\epsilon_k}\}$ is finite almost everywhere.
- Hence each agent may have an arbitrary independent noise law.
- Also, ξ can be arbitrarily distributed.

Part II

Isolated benchmark: bank-run equilibrium *without* deposit mobility

New result: optimal liquidity regulation

Bank-run equilibrium (No deposit mobility)

- "**Economy of isolated bank-run**"—depositors may stay or leave; they **cannot** switch banks.

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Lemma. *Suppose that $H^j = 0$. Under the stated distributional assumptions, the $t = 2$ bank-run subgame admits an essentially unique limiting PBE as $\sigma \to 0$:*

1. *Depositors stay if $\theta > \theta_B^j$ and run if $\theta < \theta_B^j$.*
2. *Let $\mathsf{s}_{\xi,j} = 1_{\left[\{\text{type } \vec{\xi} \text{ deposits with bank } j \text{ at } t=1\}\right]}$. The cutoff is*

$$\theta_B^j = \frac{C^j\big(A^j, O_B^j\big) + R^j(L^j - O_B^j)}{G^j(A^j)}, \quad O_B^j = \mathcal{M}^j \int_{\vec{\xi}} \frac{\mathsf{s}_{\xi,j}}{R^j + \xi^j} \, dF_{\vec{\xi}}.$$

3. *The equilibrium can be solved via iterated elimination of dominated strategies.*

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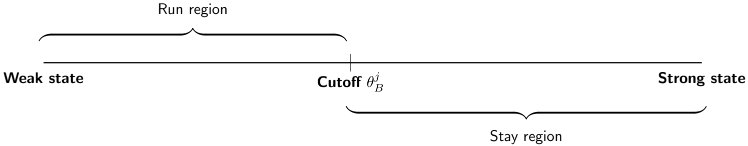
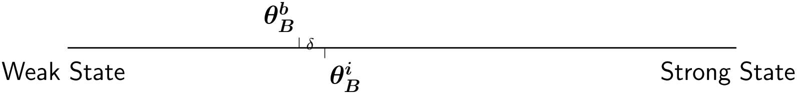


Part III

Bank-run equilibrium *with* cross-bank deposit mobility

Equilibrium with deposit mobility

- "**Economy of connected bank-run**"—depositor actions: stay, leave *or* move.
- Start with two–bank setup: regional bank i (set $H^i = 0$) and national bank b.
- Assume that the bank b is "safer" than bank i in isolation: $\theta_B^b < \theta_B^s$.
  - Gap can stem from technology G, C, E or extra liquidity $H^b > 0$.
  - Only the inequality $\theta_B^b < \theta_B^s$ matters for our main results.



Equilibrium key cut-offs

- **Always exists** an equilibrium with run cut-offs $\underline{\theta}_D^b$ (national bank) and $\overline{\theta}_D^i$ (regional) satisfying

$$\underline{\theta}_D^b \leq \theta_B^b < \theta_B^i < \overline{\theta}_D^i.$$

- **Sometimes exists** a second equilibrium with cut-offs $\overline{\theta}_D^b$ and $\underline{\theta}_D^i$ such that

$$\overline{\theta}_D^b > \theta_B^b, \qquad \underline{\theta}_D^i < \theta_B^i.$$

- Full math details of those cutoffs appear in the appendix see details.

Equilibrium with deposit mobility: Illustration

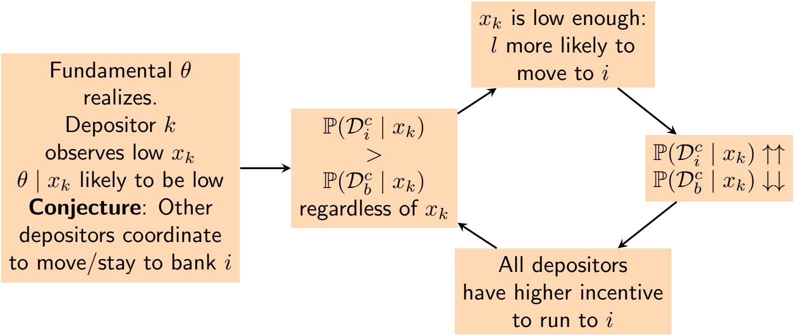


Figure: The feedback loop in a coordinated bank run that change the fragility order of banks.

Equilibrium with deposit mobility

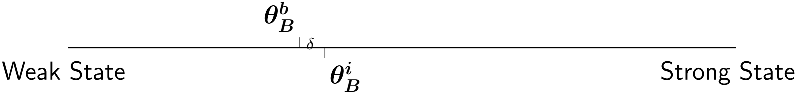
Theorem. Two-bank cutoff rules

1. **Case A (order-preserving):** *if $\overline{\theta}^b_D < \underline{\theta}^i_D$, then unique limiting PBE as $\sigma \to 0$:*
   - *National-bank (b) depositors: stay if $\theta > \underline{\theta}^b_D$; run to cash if $\theta < \underline{\theta}^b_D$.*
   - *Regional-bank (i) depositors: stay if $\theta > \overline{\theta}^i_D$; switch to b if $\underline{\theta}^b_D < \theta < \overline{\theta}^i_D$; run to cash if $\theta < \underline{\theta}^b_D$.*
2. **Case B (reverse-flight):** *if $\overline{\theta}^b_D \geq \underline{\theta}^i_D$ then two possible limiting equilibria—the Case A one and the one below:*
   - *Regional-bank depositors: stay if $\theta > \underline{\theta}^i_D$; leave to hold cash if $\theta < \underline{\theta}^b_D$.*
   - *National-bank depositors: stay if $\theta > \overline{\theta}^b_D$; move to i if $\underline{\theta}^i_D < \theta < \overline{\theta}^b_D$; leave if $\theta < \underline{\theta}^i_D$.*

- Case B is *fragile*: equilibrium needs (i) a large inflow to i and (ii) a common belief that b always fails before i; global-game selection alone cannot eliminate it.

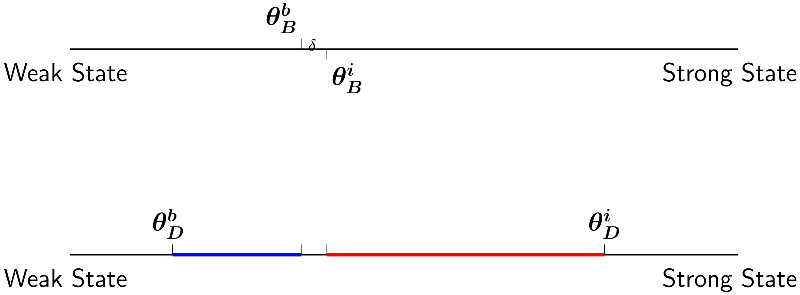
- Paper appendix: Adding infinitesimal private uncertainty to deposit-mobility parameter Λ selects the unique Case A equilibrium.

Safer neighbor externality



- Ignoring deposit mobility, the national bank is only δ safer than the regional bank.
- If so, tightening regulations on national banks helps stabilise the broader financial network due to their centrality.

Safer neighbor externality

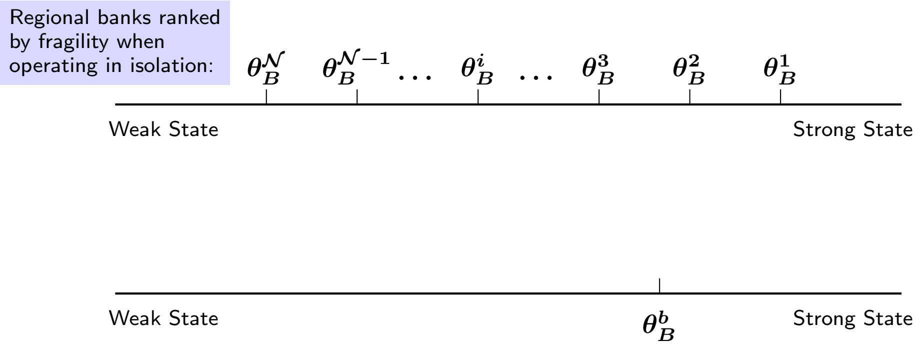


- In reality: deposit mobility hurts regionals ("safer neighbor externality"), helps nationals.
  - National-bank gain is sub-linear; regional-bank loss is super-linear.
- Ignoring safer neighbor externality $\Rightarrow$ researchers and regulators over-target b (JPM) and under-protect i (Signature).

Equilibrium with deposit mobility

- Empirical evidence: deposit flows run into national banks—the reverse direction is quantitatively second-order.
- Impose additional assumption $\chi^i = 0$ (no extra service value when moving to a regional bank) $\rightarrow$ cleaner cutoffs and sharper policy insights.

Chain reaction of deposit flows



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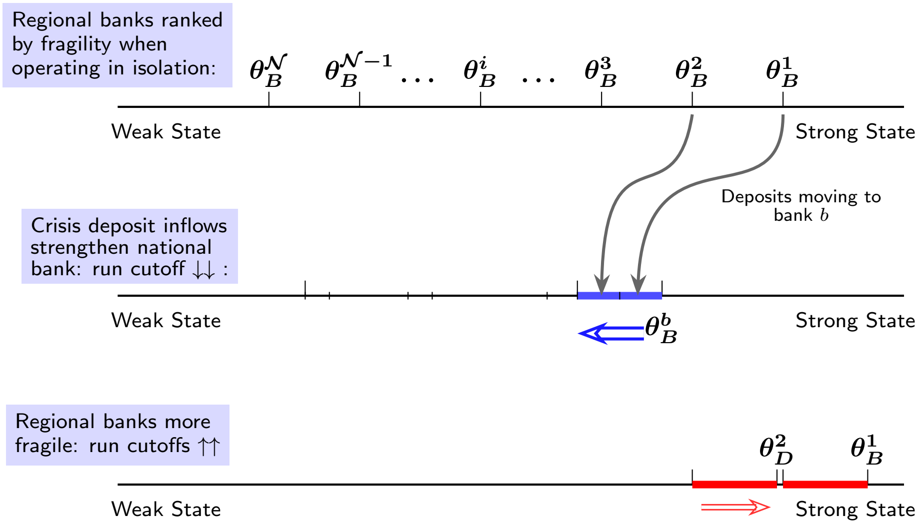

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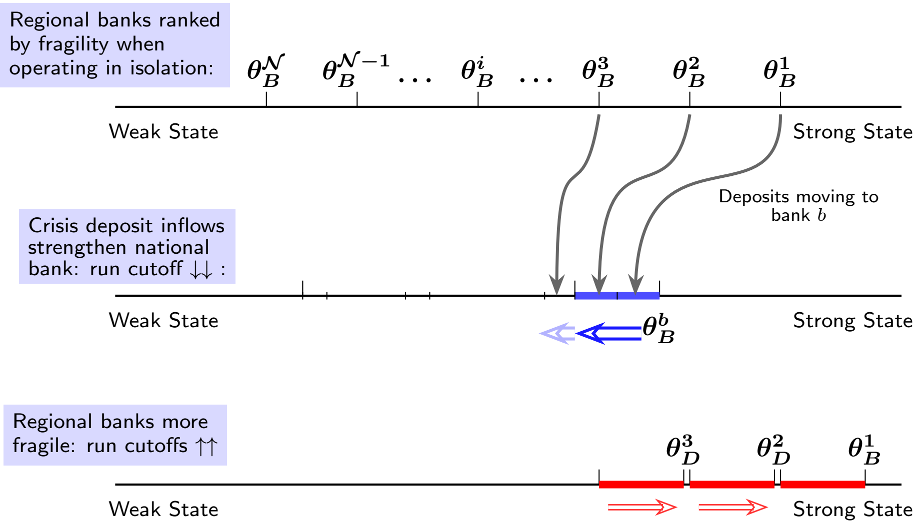

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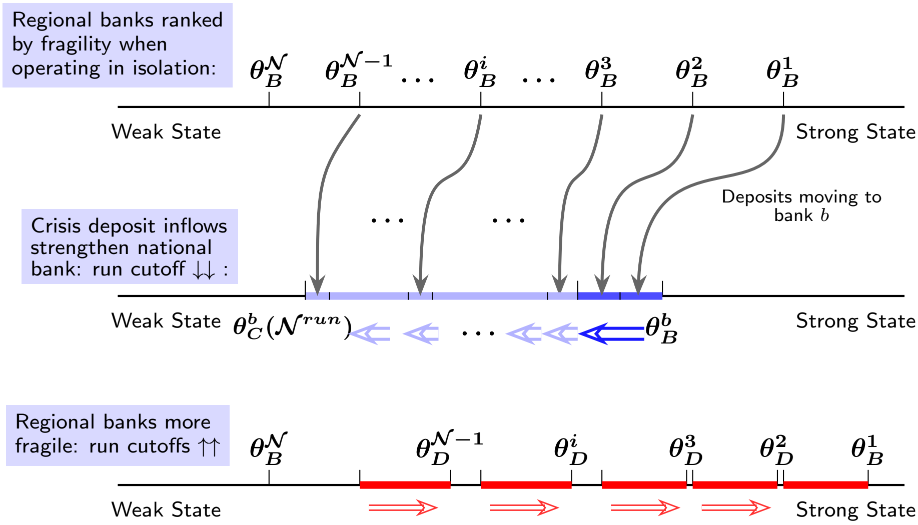
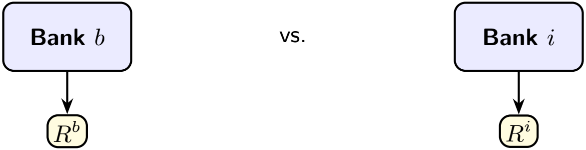


Part IV

Deposit competition

Deposit competition at $t = 1$ anticipates the $t = 2$ outcome



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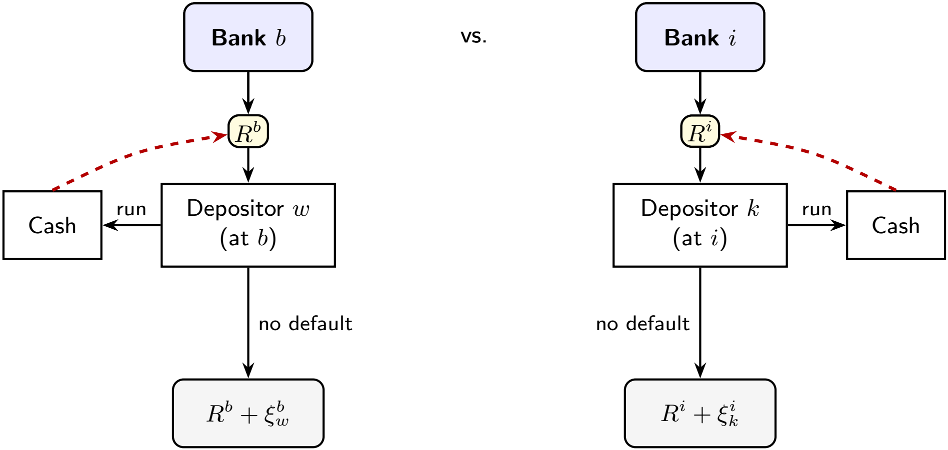

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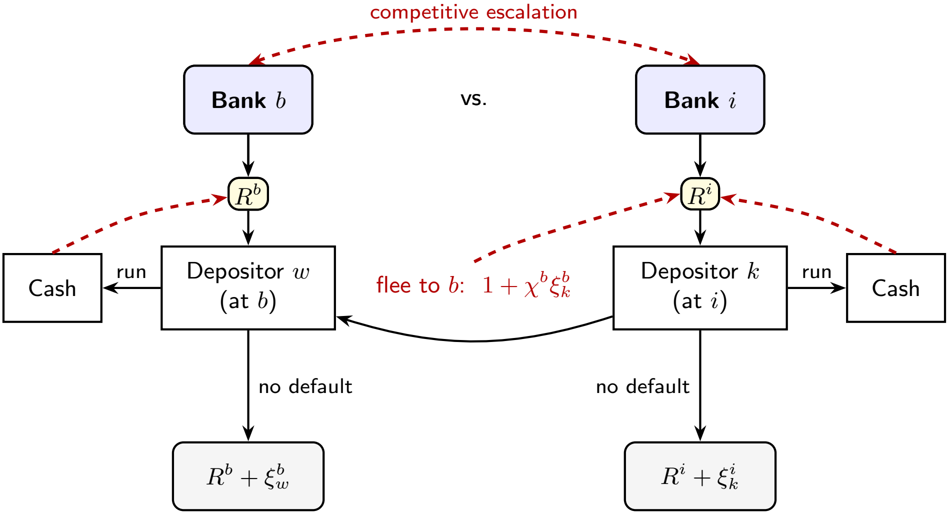

Deposit-market feedback loop

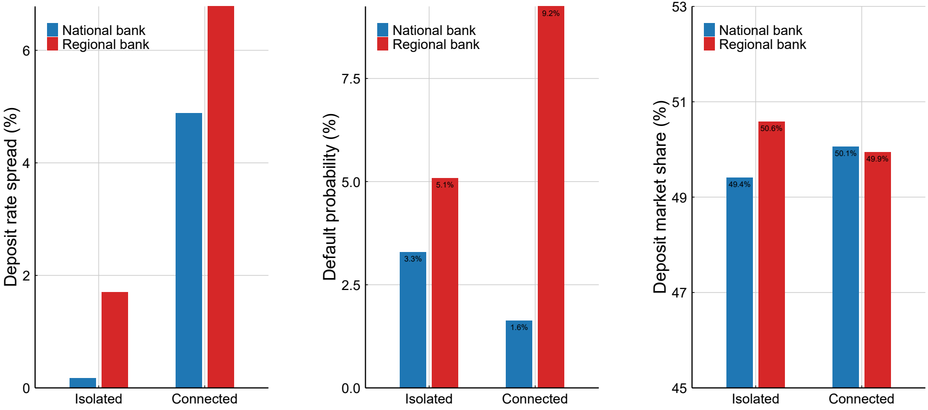

Figure: **Baseline equilibrium comparison.** Left panel: deposit rate spread above the risk-free rate. Center panel: equilibrium default probabilities (annotated). Right panel: deposit market shares. In each panel, bars are grouped by economy (isolated vs. connected) with red bars for the regional bank and blue bars for the national bank.

Deadweight loss from bank run

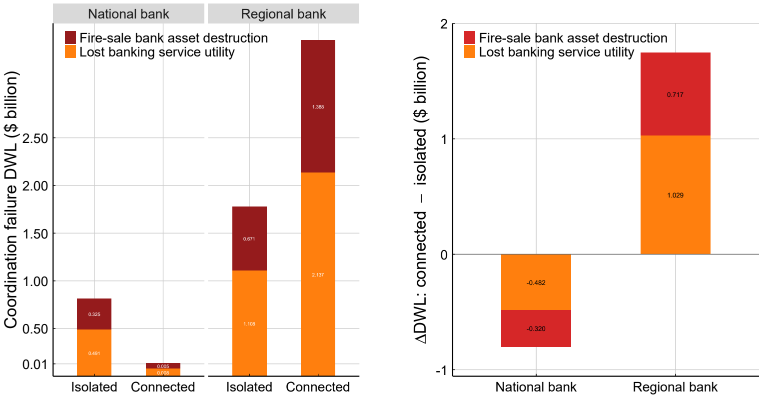

Figure: **Deadweight loss from coordination failure.** Left panel: DWL decomposition by bank and economy, with fire-sale asset destruction (dark) and lost banking service utility (light) stacked. The national bank's connected-economy bar is magnified $10\times$ (dashed outline) for visibility. Right panel: change in DWL from isolated to connected economy (ΔDWL), decomposed by component. All quantities are in billions of dollars under the $100 billion normalization.

Effects of liquidity regulation

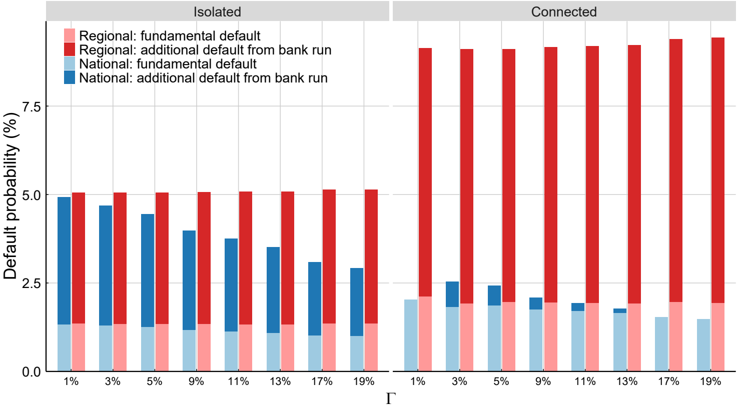

Figure: **Default probability decomposition across** Γ (the regulatory required fraction of liquid-asset holdings for the national bank). At each value of Γ, side-by-side bars represent the national bank (blue, left) and the regional bank (red, right). Light shading indicates the fundamental default probability; the darker extension above represents the additional default probability caused by coordination failure. The total bar height equals the overall equilibrium default probability.

Concluding remarks

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- Regional banks remain essential for relationship lending and local growth (Berger et al., 2005). Their fragility and the distortions in deposit competition may have real economic consequences.

- Our findings align with recent evidence (Baron, Schularick, and Zimmermann, 2023):
  - A country's largest banks (i.e., the top-5 by assets) typically gain market share in crises, as smaller banks fail more often.
  - The survival and expansion of the largest banks, despite their greater losses during crises, appear linked to the fact that their deposit flows are more insensitive to bank-specific shocks.
  - Depositors likely to pre-emptively move funds to the national banks in banking crisis $\Rightarrow$ direct empirical support the self-fulfilling flight-to-safety of our model.

Thank you!

Appendix

Liquidity regulation (No deposit mobility)

- In the **economy of isolated bank-run** with regulation-mandatory cash buffer $H^j > 0$, bank j defaults when

$$\theta\, G^j(A^j) + \big(H^j - O^j\big)^+ - C^j\big(A^j, (O^j - H^j)^+\big) - R^j(L^j - O^j) \ \leq 0.$$

- **Key difficulty:** A *small* outflow $(O^j < H^j)$ raises the banker's net worth by $R^j - 1$ $\to$ bank less likely to fail $\to$ stronger incentive to stay as others withdraw $\to$ breaks strategic complementarity locally.
    - Sequential-service constraint alone already breaks complementarity—first pointed out by Goldstein and Pauzner, 2005.

- **Lack of global strategic complementarity** $\to$ canonical global-game proofs fail.

- Our new proof method still delivers uniqueness $\to$ study liquidity regulation.

Optimal liquidity regulation (No deposit mobility)

- **Policy trade-off:** A higher cash buffer H^j reduces costly fire sales but shrinks the investment $A^j = L^j - H^j$, lowering profitability and raising default risk absent of a run.
  - **Fundamental-default boundary** $\widehat{\theta}^j(H)$: if $\theta < \widehat{\theta}^j(H)$ bank j defaults absent of a run.

$$\widehat{\theta}^j(H)\, G^j(L^j - H) + H - R^j L^j = 0$$

- **Optimal liquidity regulation:** There exists a unique $\widehat{H}^b \in (0, O_B^b)$ solving

$$C^j\big(A^j,\, O_B^j - \widehat{H}^j\big) + \widehat{H}^j \;=\; R^j O_B^j.$$

- First main result: $\widehat{H}^j$ minimizes overall default probability.

Optimal liquidity regulation (No deposit mobility)

Lemma. *There is an essentially unique limiting PBE as* $\sigma \to 0$ *when* $H^j \geq 0$.

1. $H^j < \widehat{H}^j$: *Depositors stay when* $\theta > \theta_B^j(H^j)$ *and run when* $\theta < \theta_B^j(H^j)$, *where*

$$\theta_B^j(H^j) = \frac{C^j\big(A^j, O_B^j - H^j\big) + R^j\left(L^j - O_B^j\right)}{G^j(A^j)}, \quad O_B^j = \sum_i \mathcal{M}^i \int_{\xi_k} \frac{\mathsf{s}_{\xi_k,j}}{R^j + \xi_k^j}\, dF_\xi.$$

2. $H^j \geq \widehat{H}^j$: *Depositors stay when* $\theta > \widehat{\theta}^j(H^j)$ *and run when* $\theta < \widehat{\theta}^j(H^j)$, *where* $\widehat{\theta}^j(H^j)$ *is the* **fundamental-default boundary**.

Optimal liquidity regulation (No deposit mobility)

Lemma. *There is an essentially unique limiting PBE as $\sigma \to 0$ when $H^j \geq 0$.*

1. $H^j < \widehat{H}^j$: *Depositors stay when $\theta > \theta_B^j(H^j)$ and run when $\theta < \theta_B^j(H^j)$, where*

$$\theta_B^j(H^j) = \frac{C^j(A^j, O_B^j - H^j) + R^j(L^j - O_B^j)}{G^j(A^j)}, \quad O_B^j = \sum_i \mathcal{M}^i \int_{\xi_k} \frac{\mathsf{s}_{\xi_k, j}}{R^j + \xi_k^j} \, dF_\xi.$$

2. $H^j \geq \widehat{H}^j$: *Depositors stay when $\theta > \widehat{\theta}^j(H^j)$ and run when $\theta < \widehat{\theta}^j(H^j)$, where $\widehat{\theta}^j(H^j)$ is the* **fundamental-default boundary**.

Theorem. *Under some regularity assumptions, $\widehat{H^j}$ minimizes overall default probability.*

1. *Optimal buffer $\widehat{H}^j$ is* **strictly below** *the run outflow O_B^j at the run cutoff—much less than the total runnable liability L^j.*
2. *Holding liquidity beyond $\widehat{H}^j$ increases overall default probability.*

Optimal liquidity regulation (No deposit mobility)

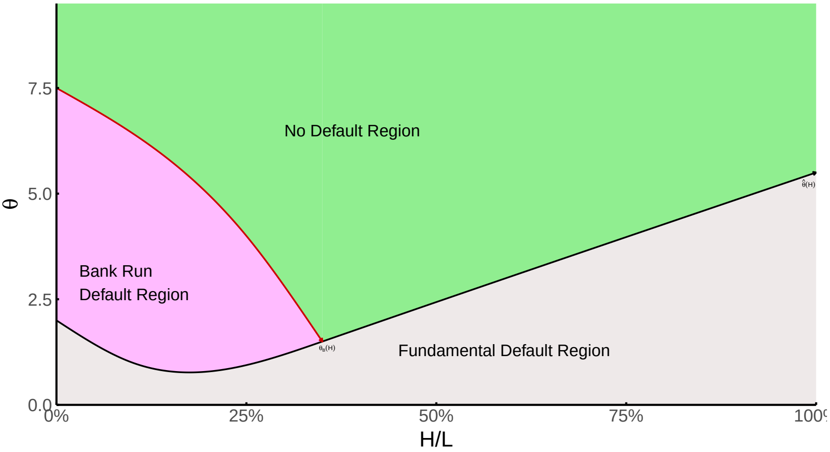

Figure: A larger fraction of cash buffer H/L dampens run risk but lowers lending efficiency, eventually raising fundamental/overall default risk.

Key takeaway

- Basel III LCR uses a **30-day** outflow horizon, yet the March 2023 runs emptied SVB and First Republic within **hours**.
  - 9 Mar 2023: SVB lost $42 bn (about 25% of deposits) in 8 hours.
- Policy discussion: faster outflow $\rightarrow$ bigger liquidity buffers
  - G-30 (Jan 2024) urges collateral pre-positioned to cover "all runnable liabilities" via HQLA plus discount-window access.
- Model insight: a *full-coverage* buffer $H = O_B$ can backfire
  - Too much liquidity increases banks' overall fragility.
  - And, as prior work shows, excessive liquidity locks up balance-sheet capacity and reduces banks' efficiency.

Back

Equilibrium with deposit mobility: Key variables I

- $\mathbb{O}^j(\theta)$: maximum payout bank j can honour in state θ. Total outflow O^j + sequential service constraint $\Rightarrow$ withdrawal-success probability $M^j = \mathbb{O}^j(\theta)/O^j$.

Lemma. *The following has a unique fixed point.*

$$\overline{I}_D^b = \mathcal{M}^i \int_{\xi_k} \frac{\mathbb{O}^i\left(\underline{\theta}_D^b(H^b)\right)}{L^i} \frac{\mathsf{s}_{k,i}\chi^b \xi_k^b}{1+\chi^b\xi_k^b-\Lambda}\, dF_{\widetilde{\xi}}(\xi_k),$$

$$\underline{\theta}_D^b(H^b) = \max\left\{\frac{C^b\left(A^b,(O_B^b-\overline{I}_D^b-H^b)^+\right)-(H^b+\overline{I}_D^b-O_B^b)^+ + R^b(L^b-O_B^b)+\overline{I}_D^b}{G^b(A^b)}, \widehat{\theta}^b(H^b)\right\},$$

$$\overline{O}_D^i = \mathcal{M}^i \int_{\xi_k} \frac{\mathsf{s}_{k,i}\,(1-\Lambda+\chi^b\xi_k^b)}{R^i+\xi_k^i-\Lambda}\, dF_{\widetilde{\xi}}(\xi_k), \qquad \overline{\theta}_D^i = \frac{C^i\left(A^i,\overline{O}_D^i\right)+R^i(L^i-\overline{O}_D^i)}{G^i(A^i)}. \tag{1}$$

- $(\overline{I}_D^b, \underline{\theta}_D^b, \overline{O}_D^i, \overline{\theta}_D^i)$ pins down one equilibrium.

Equilibrium with deposit mobility: Key variables II

Lemma. *The following has a unique fixed point.*

$$\overline{I}^i_D = \mathcal{M}^i \int_{\xi_w} \frac{\mathbb{O}^b\left(\underline{\theta}^i_D\right)}{L^b} \frac{\mathsf{s}_{w,b}\chi^i\xi^i_w}{1+\chi^i\xi^i_w-\Lambda}\, dF_{\widetilde{\xi}}(\xi_w),$$

$$\underline{\theta}^i_D = \max\left\{ \frac{C^i\left(A^i,(O^i_B-\overline{I}^i_D)^+\right) - (\overline{I}^i_D - O^i_B)^+ + R^i(L^i-O^i_B)+\overline{I}^i_D}{G^i(A^i)}, \widehat{\theta}^i \right\}, \qquad (2)$$

$$\overline{O}^b_D = \mathcal{M}^i \int_{\xi_w} \frac{\mathsf{s}_{w,b}\left(1-\Lambda+\chi^i\xi^i_w\right)}{R^b+\xi^b_w-\Lambda}\, dF_{\widetilde{\xi}}(\xi_w), \qquad \overline{\theta}^b_D = \frac{C^b\left(A^b,(\overline{O}^b_D - H^b)^+\right) - (H^b - \overline{O}^b_D)^+ + R^b(L^b - \cdots}{G^b(A^b)}$$

- $(\overline{I}^i_D, \underline{\theta}^i_D, \overline{O}^b_D, \overline{\theta}^b_D)$ pin down the alternative equilibrium. Back

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