

Banking Fragility

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Outline

- Banking Fragility: Basic Forces and Recent Events
- Recent Broad-Base Empirical Evidence:
 - “Liquidity Transformation and Fragility in the US Banking Sector,” with Qi Chen, Zeqiong Huang, and Rahul Vashishtha
- Government Guarantees:
 - “Optimal Deposit Insurance,” with Eduardo Davila
- Summary

Banking Fragility: Basic Forces and Recent Events

Earlier This Year: A Vivid Reminder of Bank Fragility



Silicon Valley Bank, Twitter-Fueled Bank Run, 2023

Bank Fragility – in History



A run on American Union Bank, 1931

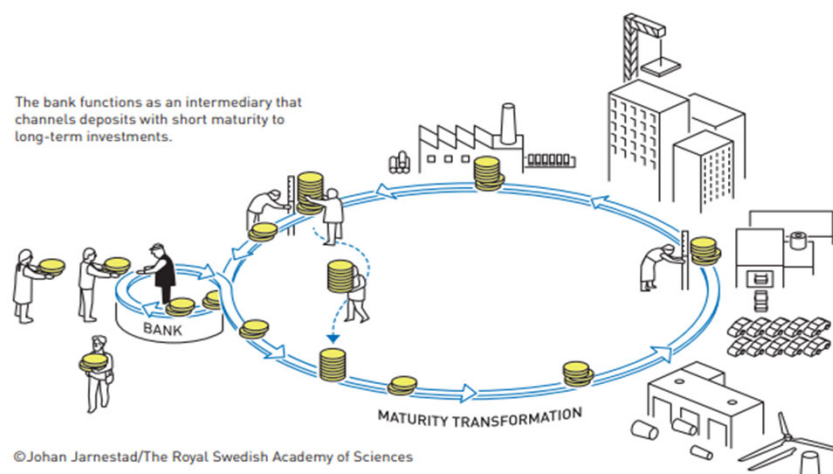
Bank Fragility – in the Movies



It's A Wonderful Life, 1946

Fundamental Tension in financial intermediation

- Liquidity and maturity transformation is at the core of banks' business model
 - By providing liquid deposits and investing in long-term illiquid loans, banks create liquidity, but end up with liquidity and maturity mismatch on their balance sheets
- Liquidity and maturity mismatch render banks vulnerable to panic-based runs (Diamond and Dybvig, 1983)
 - Depositors rush to withdraw deposits expecting that others will do so



Recent Broad-Base Empirical Evidence:

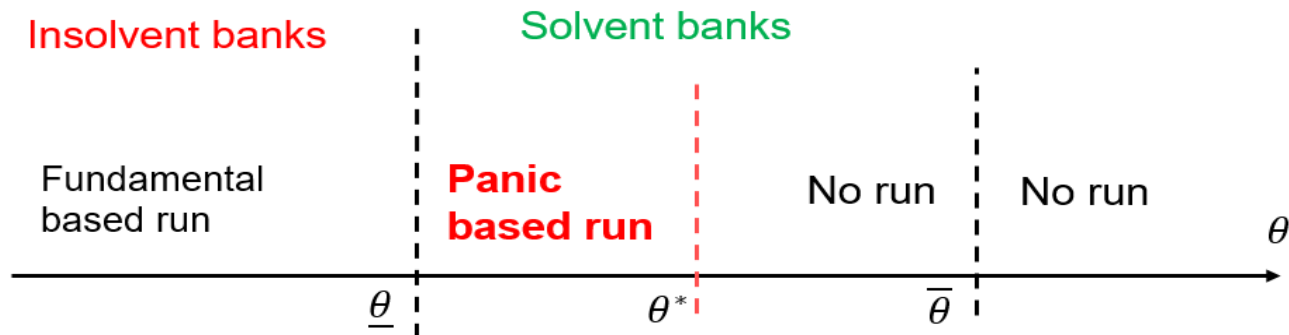
**“Liquidity Transformation and
Fragility in the US Banking Sector”**

Chen, Goldstein, Huang, Vashishtha

Broad-Base Evidence of Fragility in the Banking Sector

- While the above forces are well known, concerns over fragility of banking sector have decreased over the years with many regulatory measures in place
- In addition, identifying panic – runs due to banks' liquidity transformation – in the data is challenging
- Chen, Goldstein, Huang, and Vashishtha (2022):
 - Using universe of US bank data between 1993 and 2016
 - **Uninsured deposits are flighty** and respond negatively to performance decrease
 - Uninsured deposits respond more strongly **when banks perform greater liquidity transformation:**
 - When they have more illiquid assets
 - When they have larger uninsured deposit base

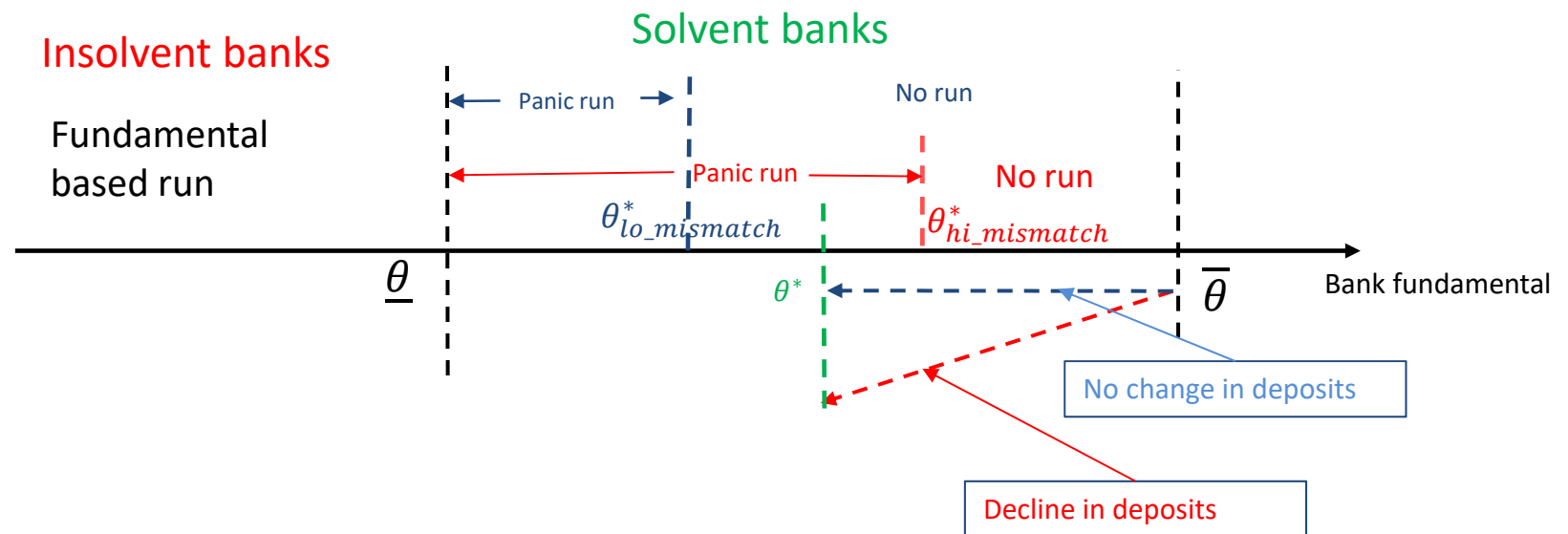
Conceptual Framework of Bank Runs



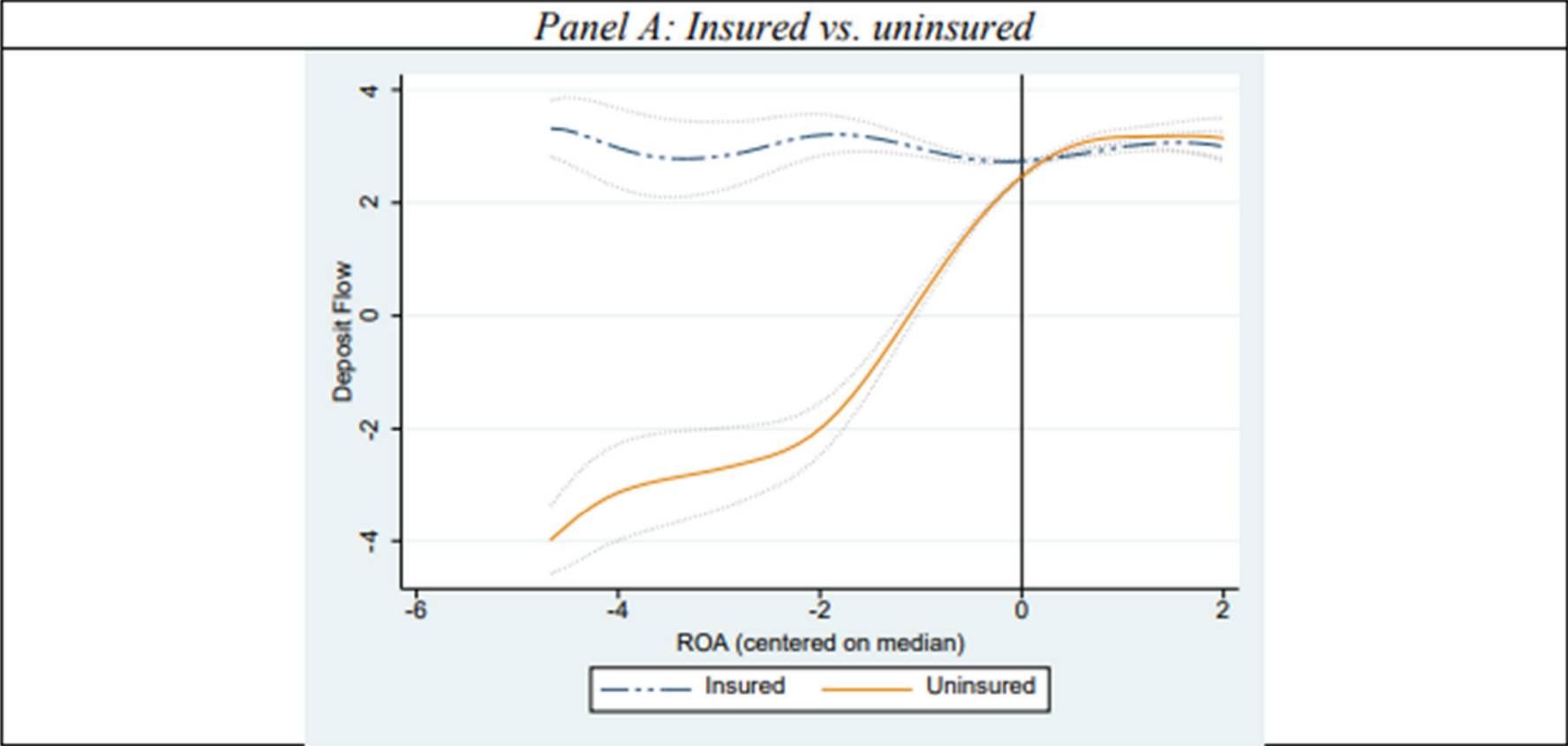
- Goldstein and Pauzner (2005):
 - Unique equilibrium where runs happen for fundamental below a threshold level of θ^*
 - Runs when the fundamental is between $(\underline{\theta}, \theta^*)$ are considered panic-based, because they would not occur in the absence of coordination failure
 - But, they are still linked to fundamentals
- Theory is testable. Comparative statics: panic-run region is larger for banks with greater liquidity mismatch

Taking the model to the data

- Panic region is larger (θ^* higher) for banks with high degree of liquidity mismatch.
- For the same decline in fundamental from $\bar{\theta}$ to $\theta^* \in (\theta_{lo}^*, \theta_{hi}^*)$, banks with high liquidity mismatch will experience more deposit outflows than banks with low liquidity mismatch.
 - Testable implication: stronger sensitivity of deposit flows to bank performance for banks with more liquidity mismatch.



Deposit Flow: Insured vs. Uninsured



Empirical Evidence for Panic Mechanism

- Banks with more illiquid assets and/or uninsured deposits
 - Exhibit stronger sensitivity of uninsured deposits outflows to bad performance
 - Exhibit higher outflows conditional on low performance
- Pattern is reversed for insured deposits
 - Banks raise insured deposits to substitute for uninsured ones
 - Yet, this is generally not enough to completely compensate banks for deposit loss
- Pattern is stronger when performance shock is systematic than when it is idiosyncratic
 - Complementarities strengthen when aggregate conditions are bad

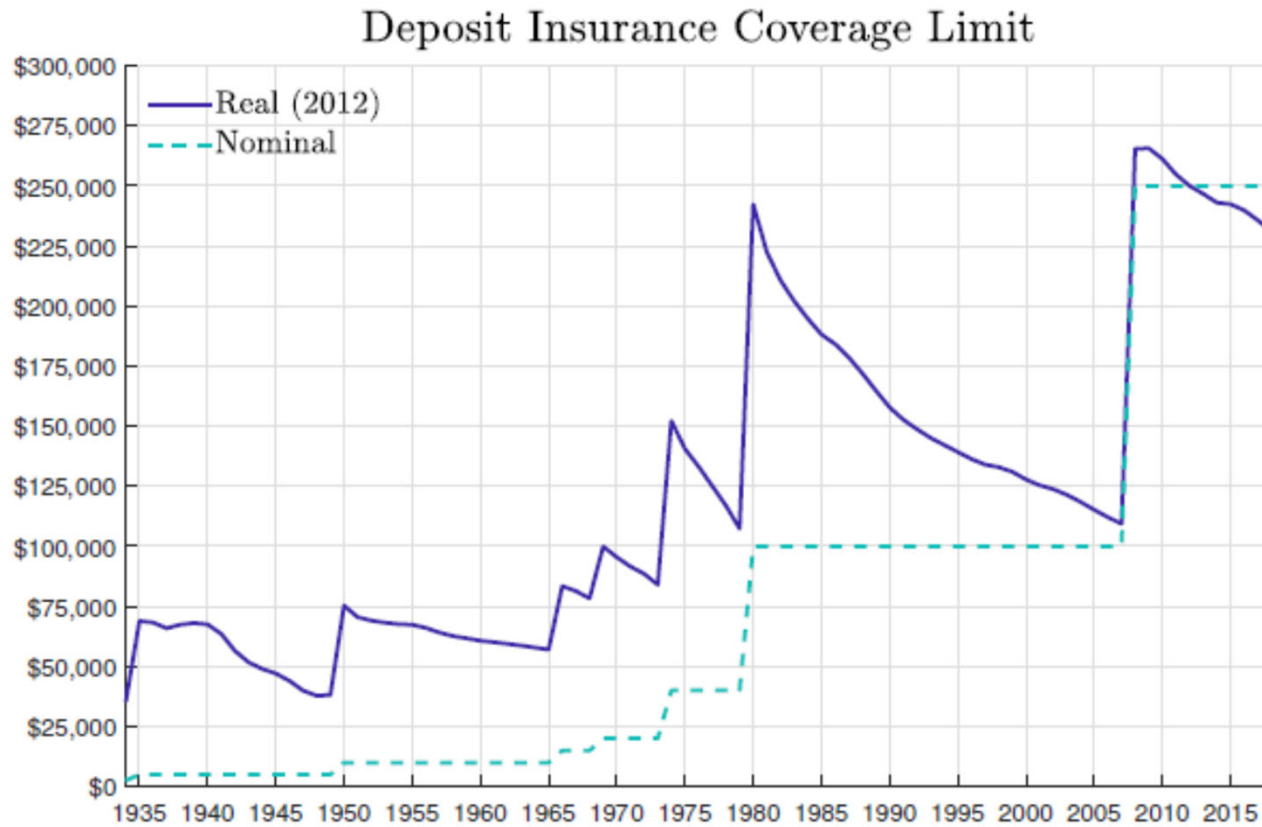
Government Guarantees:
“Optimal Deposit Insurance”

Goldstein and Davila

Government Response and Deposit Insurance

- Government **response to recent events was forceful**, guaranteeing uninsured deposits and providing loans to other banks
- There are growing calls for strengthening this support further, e.g., by providing **unlimited deposit insurance**
- However, deposit insurance involves a **tradeoff**
- Davila and Goldstein (2023) provide a **sufficient-statistic framework**
 - Diamond-Dybvig type model where deposit insurance reduces the probability of a run, but involves costs when implemented
 - Model provides guidance for determining optimal deposit insurance based on measurable statistics

Deposit Insurance Limit in the US



Summarizing the Effect of Deposit Insurance

Welfare impact of change in level of coverage

$$\frac{dW}{d\delta} = \boxed{A} \times \boxed{B} - \boxed{C} \times \boxed{D}$$

- Marginal benefit
 - \boxed{A} -Sensitivity of bank failure probability to DI change
 - \boxed{B} Utility gain of preventing marginal failure
- Marginal cost
 - \boxed{C} Probability of bank failure
 - \boxed{D} Expected marginal social cost of intervention in case of bank failure

Key Results and Insights

- Sufficient Statistic formula provides indication of whether it is currently optimal to increase or decrease deposit insurance limit based on observable or measurable statistics
- Model calibration can assess optimal deposit insurance limit
 - Sufficient statistic helps identify the different forces behind optimal limit
 - Application to 2008 suggests optimal limit was slightly higher than what was implemented
- As long as failures happen in equilibrium and public funds are costly, unlimited insurance will not be optimal
- Optimal deposit insurance should be supplemented by other regulations so that banks internalize the fiscal externalities

Summary

New Dimensions to Consider

- **The events of 2023 put bank fragility firmly back on the regulatory agenda with some new dimensions to consider:**
 - **Banks' fragility driven more strongly by pure maturity mismatch**
 - SVB was exposed to interest rate risk because of holding long-term treasuries
 - Is this what banks should be doing?
 - **Role of mid-size regional banks**
 - Not “too big to fail” but play a major role in the economy
 - How should they be regulated?
 - **Bank fragility in the digital age**
 - Digital banking had an important role in the speed of withdrawals
 - Has fragility become too threatening?
 - **Adjustments to deposit insurance policy**
 - What is the role of limits after uninsured deposits were quickly guaranteed?
 - How should we think about depositors splitting their deposits across banks?
 - What are the differences between household and corporate accounts?