Banking Fragility

Itay Goldstein, Wharton

University of South Carolina
Fixed Income and Financial Institutions (FIFI) Conference

October 27, 2023
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):
  – __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 $\theta^*$
  - 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 ($\theta^*$ higher) for banks with high degree of liquidity mismatch.

• For the same decline in fundamental from $\overline{\theta}$ 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

Panel A: Insured vs. uninsured

![Graph showing deposit flow for insured and uninsured with ROA (centered on median) on the x-axis and deposit flow on the y-axis.](image)
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

![Deposit Insurance Coverage Limit Chart](chart.png)
Summarizing the Effect of Deposit Insurance

Welfare impact of change in level of coverage

\[
\frac{dW}{d\delta} = A \times B - C \times D
\]

- **Marginal benefit**
  - \( A \) - Sensitivity of bank failure probability to DI change
  - \( B \) - Utility gain of preventing marginal failure

- **Marginal cost**
  - \( C \) - Probability of bank failure
  - \( D \) - 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?