Outline

• Bank Runs: Basic Forces and Recent Events

• Broad-Base Empirical Evidence:

• Government Guarantees:
  – “Optimal Deposit Insurance,” Goldstein and Davila (2023, JPE, forthcoming)

• Summary
Bank Runs: 
Basic Forces and Recent Events
Bank Fragility – in History

A run on American Union Bank, 1931
Bank Fragility – in the Movies

It’s A Wonderful Life, 1946
Bank Fragility – Now

Silicon Valley Bank, Twitter-Fueled Bank Run, 2023
Liquidity Transformation and Fragility

- Liquidity transformation is at the core of banks’ business model
  - By providing liquid deposits and investing in illiquid loans, banks create liquidity, but end up with liquidity mismatch on their balance sheets

- Liquidity mismatch renders banks vulnerable to panic-based runs (Diamond and Dybvig, 1983)
  - Depositors rush to withdraw deposits expecting that others will do so
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
Definitions and Challenges

• Fundamental-based vs. panic-based bank runs:
  – Fundamental-based runs happen when depositors withdraw just because of unfavorable news about banks’ fundamentals
    • Chari and Jagannathan, 1988; Jacklin and Bhattacharya, 1988; Allen and Gale, 1998
  – Panic-based runs happen when depositors withdraw because they believe others will withdraw
    • The belief can be self-fulfilling because banks do not hold enough liquid assets which create strategic complementarity among depositors (Diamond and Dybvig, 1983)

• Separating panic-based run from fundamental based run is important from a policy perspective
  – Many policies, such as deposit insurance, lender of last resort, suspension of convertibility, are premised on the idea that some bank runs are driven by panics
  – Many believe these policies distort banks’ incentives and create more problems than they solve
Empirically Testing for Panic-Based Runs

• Existing evidence find strong association between bank runs and bank fundamentals (e.g., Gorton, 1988)
  – Such evidence is often interpreted as supporting fundamental based runs and against panic-based runs
• However, this interpretation is incorrect (e.g., Goldstein, 2013):
  – A pre-requisite for panic-based run is weaker fundamentals
  – Strategic complementarity among depositors can exacerbate/magnify the effect of fundamentals
  – Association between run and bad fundamental does not rule out the existence of panic-based behaviors
Illustration: Basic Model of Bank Runs

- Diamond and Dybvig (1983): depositors observe common, perfect signal about bank fundamental $\theta$
- Without strategic complementarity among depositors, only insolvent banks with $\theta < \theta$ should experience run
- With strategic complementarity, self-fulfilling panic-based run can take place (or not) for any solvent bank with $\theta \in [\theta, \bar{\theta}]$
  - Multiple equilibria render the model empirically vacuous and untestable (Gorton, 1988)
Illustration: Updated Model of Bank Runs

Goldstein and Pauzner (2005): relax the assumption of common knowledge about fundamental

- Generate unique equilibrium where runs happen for fundamental below a threshold level of $\theta^*$
- Runs when the fundamental is between $(\theta, \theta^*)$ 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
Illustration: 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 $\bar{\theta}$ to $\theta^*$ ($\theta^* \in (\theta^*_{lo}, \theta^*_{hi})$), 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

- ROA (centered on median)
- Deposit Flow

- Insured
- Uninsured
Uninsured Deposit Flow and Asset Illiquidity

Panel B: Subsamples of Asset Illiquidity

[Graph showing uninsured deposit flow against ROA (centered on median)]
Uninsured Deposit Flow and Uninsured Deposit Base

Panel C: Subsamples of %Uninsured

- Uninsured Deposit Flow
- ROA (centered on median)
- Bottom Tercile
- Top Tercile
Some Regression Results

• 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 (2023, JPE, forthcoming)
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

- **Real (2012)**
- **Nominal**

Chart showing the deposit insurance coverage limit from 1935 to 2015.

- The real limit fluctuates with inflation adjustments.
- The nominal limit remains relatively stable over time.

Chart Source: Federal Deposit Insurance Corporation (FDIC)
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
Final Takeaways from Research and Recent Events

• **Banks are fragile**
  - Recent focus has been on other institutions
  - But fundamental and panic risks are still prevalent in banks

• **Deposit insurance involves tradeoffs**
  - It is an important tool
  - But it cannot be unlimited

• **Other regulatory tools should be strengthened**
  - Increased scrutiny of mid-size banks
  - More imaginative stress tests
  - Capital and liquidity regulation