Silicon Valley Bank and Beyond: Understanding the Banking Stress and Ways Forward

Tuesday, April 4, 2023
The Problem

• Since 2021, the Fed has raised short-term rates by 4.5%
  – long-term rates, which reflect expected future short rates, are up 2.5%
• Banks hold $17T of long-term loans and securities with average duration 4 years
  – implied loss of 0.025 x 4 x 17 = $1.7T
  – not hidden or complicated
  – very large compared to $2.2T bank equity
Bank Stocks Held Up Through February; Down 25% in March

KBE Bank Stock Index
Fed funds rate (right)
The Deposit Franchise

• What makes banks special is issuing deposits
  – people like deposits for their convenience and safety
  – willing to accept very low deposit rates

• When rates rise, deposits become much more profitable for banks
  – “deposit beta” only 0.2 – deposit rates rise only 0.2% for every 1% Fed funds rate increase
  – banks capture the other 0.8 x Fed funds rate
The Deposit Franchise Hedge

• There are $17.5T of deposits
  – average deposit rate about 0.9%
  – banks earning 4.5-0.9 = 3.6% deposit spread
  – $0.036 \times 17.5 = $630B more income per year!

• Enough to offset losses on assets in 3 years
  – deposits went from unprofitable to extremely profitable
  – baseline estimate suggests a full offset
  – explains why bank stocks didn’t fall through Feb
Stable Net Interest Margin

Source: Drechsler, Savov, and Schnabl (Journal of Finance 2021)
Risks

• The deposit hedge only works if most deposits stay in the bank
  – depositors may run if they are uninsured
    • a bank run destroys the deposit franchise and the hedge fails
  – deposit betas may rise if depositors seek out higher-paying alternatives
    • if the deposit beta doubles to 0.4, only 1/3 of losses offset
    • the risk is larger for regional banks (big banks could see betas fall)

• Key risks going forward are to the deposit franchise
After SVB failed, $160B in deposits went from small to large banks

Last week, flows from small to large banks stopped
Bank deposits → Money Market Funds

- Deposit outflows from banks to MMFs before SVB: $20B/week
- After SVB failed, outflows increased to $116B (~0.7% of deposits)
- Last week, outflows declined to $66B
March Madness: What Can We Learn from the SVB Debacle?

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New York University
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Presentation at Stern, April 4, 2023, “SVB and Beyond…”
Overview

- What went wrong at SVB?
- A primer on bank capital
- Are there other SVB-like problems at other banks?
- What needs to be done
- Conclusion
What went wrong at SVB?

- Borrow short/lend long – really long!
  - The “carry trade”
  - Like the S&Ls leading up to the early 1980s
    - But the S&Ls had little choice
  - GAAP accounting allowed risks to be muffled
- Over 90% uninsured deposits – highly runnable
- Undiversified lending & undiversified deposit base
- Rapid growth
  - Rapid growth puts stress on any organization
- Inadequate capital and liquidity for the risks
- Inadequate monitoring/supervision by FRBSF
Bank capital: a primer

- What capital isn’t
  - “Cash”
  - “Money”
  - Capital should not be confused with liquidity

- What capital is (approximately)
  - Net worth or owners’ equity
  - The arithmetic difference between the value of assets and the value of fixed liabilities
  - How those values are measured is really – really -- important
Why is bank capital important?

- Adequate capital is crucial in a legal system of limited liability for corporate owners.
- Capital is the “cushion” or buffer that protects fixed liability holders (lenders/uninsured depositors) against losses in the value of assets of the entity to which they have lent.
- Capital is a deterrent to risk-taking
  - The owners have more to lose.
- Lenders (uninsured depositors) should always worry about the adequacy of a borrower’s capital.
- Capital should be measured on the basis of market-value accounting.
A healthy, solvent bank

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
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<tbody>
<tr>
<td>$100 (loans)</td>
<td>$92 (deposits)</td>
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<td>$8 (net worth; owners’ equity; “capital”)</td>
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Capital/assets: 8%
Leverage: 12½/1
An insolvent bank

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Are there other SVB-like problems?

- Other banks have substantial unrecognized losses on long-term investments
- Other banks have high levels of uninsured deposits
- The overall banking system has reduced capital/asset ratios since 2017
  - And this ignores the lurking unrecognized losses!
- Contagion problems can be real – even (especially?) among small and medium-size banks
- Commercial real estate loans have historically been problematic for commercial banks – maybe more so today?
Unrecognized losses (1)

Impact of unrealized securities losses on capital ratios

Percent

Source: JPMAM, Q4 2022. See page 3 for methodology.
FDIC Q4 unrealized bank losses on investment securities
US$, billions

Source: FDIC. Q4 2022.
Uninsured deposits (%)

Uninsured share of customer deposits
Percent above FDIC guarantee threshold

Declining bank capital since 2017

G-SIB Capital Ratio: Crisis Regulatory Cycle

Note: Jun 2020-Mar 2021 SLR (Basel III) ratio bounce reflects Fed’s COVID-period definition of exposure
Source: Interpolated from Chart 1 of FRB KC Bank Capital Analysis, 2Q 2022
What needs to be done

- Increase bank capital levels generally
- Measure capital better: market-value accounting!
  - Market-to-market; “fair value”
- Increase deposit insurance levels
  - Reduces the runnability and contagion problems
  - Expands ability to release CAMELS ratings
  - The moral hazard issue is a red herring: Depositors are lousy monitors!
- Require subordinated debt or some equivalent
- Improve bank regulation/supervision
  - Better staffed, better paid, better trained, better managed
Conclusion

- “You never want a serious crisis to go to waste … an opportunity to do things that you think you could not do before.”
  - Rahm Emanuel
SVB and Beyond: Understanding the Banking Stress and Ways Forward

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Department of Finance
NYU Stern School of Business
4th April 2023
Why is the deposit outflow so rapid this time around?
Growth of Uninsured Deposits and What Caused It?

• Extraordinary monetary stimulus and its likely unintended consequence

• Quantitative easing (Acharya, Chauhan, Rajan and Steffen, “Liquidity Dependence and the Waxing and Waning of Central Bank Balance Sheets”, based on presentation at Jackson Hole Economic Symposium, August 2022)
  
  - Not just an expansion of Fed balance-sheet but also of commercial banks
  - Flooded with uninsured deposits, backed by low-yielding reserves, search for yield
  - For a while it looks a profitable franchise, until the tail risk of runs materializes
  - As Fed starts QE all over again: “Hotel California”, no exit

• This Time Isn’t Different, but It’s Magnified...
  - Our research shows that uninsured bank deposits expand each time QE is undertaken
QE: Typically, a purchase from public/non-banks

Initial Balance Sheet Conditions

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The Fed Purchases Assets from the Public

Balance Sheet Effects

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ZLB + Quantitative Easing

Source: Federal Deposit Insurance Corporation (FDIC), Q1 2023
Uninsured/Insured Demandable/Time Deposits (% of GDP)

Source: Acharya, Chauhan, Rajan and Steffen (2023), using FRED and FDIC data
Total unrealized losses in this rate-hike cycle relative to the previous highlight saliently the “scale” of the bank balance sheets.
G-SIB Capital Ratio: Crisis Regulatory Cycle

2008: Crisis triggers G-SIB recapitalization
2010: Dodd-Frank introduces annual stress tests (boosts effective capital requirements)
2017: New Admin aims to scale back Dodd-Frank rules
2018: S. 2155 relaxes regulations (especially on midsize banks)
2019: Fed eases supervision of midsize banks
2023: Midsize bank crisis
2023: New bank rules ...

Note: Jun 2020-Mar 2021 SLR (Basel III) ratio bounce reflects Fed's COVID-period definition of exposure (denominator).
Source: Interpolated from Chart 1 of FRB KC Bank Capital Analysis, 2Q 2022
So what should be done with banks now?

• Backstop it all, provide guarantees?
  - This helps stem runs, but does not restore confidence or bring down the vol, as in 2007-09
  - Another variant of risk-seeking: Remaining under-capitalized. Healthier banks may skip too
  - The social problem is to produce the “optimal” quantity of deposits, so get risks internalized

• What worked in the past can provide some guidance...
G1: Required to raise capital after stress test of Feb-May 2009

G2: Not required to raise capital after stress test

Source: NYU-Stern VLAB (vlab.stern.nyu.edu/welcome/risk)

- First Republic Bank
- Silvergate
- Western Alliance
- First Foundation
- PacWest
- KeyCorp
- Comerica
- Silicon Valley Bank
- Signature
- Truist
The Case for a Stagflation Stress Test

• Stress test + capital-raising, as in Feb-July 2009, for stagflation (poly-crisis)
  - Mark capital honestly in Asset Quality Review for rate hike + recession + house-price declines + decline in commercial real estate (CRE)
    - Stress it for plausible losses and cross-check with independent metrics like NYU Stern’s SRISK
  - Get banks to raise capital or sell assets/franchise to more valuable banks
  - If not raise it for them via government-funded (preferred) stakes in equity
  - If done well, government funds might not be required as in 2009

• Give some formulaic concession in marking-to-market (MTM) of assets based on truly stable, insured, retail deposit base of banks

• It is best to assume remaining debts might be all due and payable
  - Diagnosis: (Fragile) Deposit franchise vs Manufacturing tail risk / Carry trades ?
  - Regardless of the diagnosis, safe to raise bank capital -> lower uninsured deposits
  - Recognize the fiscal limits on deposit insurance, guarantees, the size of Fed’s put, etc.
Banks get run:
Slow at first, and then fast...

Is there a robust response?

Increase private deposit insurance

Bank capital: Mark it, stress it, raise it
Silicon Valley Bank and Beyond:
Understanding the Banking Stress and Ways Forward

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