CAPITAL AND LIQUIDITY STRESS TESTING

SUERF Webinar on 2023 Banking Turmoil
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A business of Marsh McLennan
BANKS’ FINANCIAL INTERMEDIATION EXPOSES THEM TO THREE TYPES OF RISK – CREDIT RISK, INTEREST RATE RISK ... AND LIQUIDITY RISK

**Credit Risk**
- Borrowers’ ability to meet contractual obligations
- A severe recession: significant increase in unemployment driving up credit risk
- Recession $\rightarrow$ High Unemployment $\rightarrow$ Drop interest rates

**Interest Rate Risk**
- Mismatch in maturity & adjustment speed of assets and liabilities
- High inflation following period of low rates, high growth, spike in rates
- Inflation $\rightarrow$ Increase interest rates

- Inspired by the GFC, the canonical bank stress scenario is characterized by a severe global recession scenario which assumes that interest rates are not expected to increase but decrease
- A second testing scenario is needed to probe the interest rate risk inherent in banks during and following high inflation time periods
THE BIG CREDIT RISK EXPOSURE IS IN COMMERCIAL REAL ESTATE: DFAST SCENARIOS

Commercial Real Estate Price Index (change indexed to PQ0): DFAST 2011-2023
Severely Adverse scenarios vs. historical observations

Most severe shocks were in DFAST 2018, 2022, 2023

Source: Fed SCAP and DFAST-2011-2023 scenario disclosures
Note: For SCAP-2009, DFAST-2011 and DFAST-2012, only baseline and adverse scenarios were released. Therefore, adverse scenario data for these years is shown for comparison to severely adverse scenario data for DFAST-2013-2022. Historical data does not include restatements to preserve the jump-off point for historical DFAST scenarios. Fully restated historical data is available on the FRB website (https://www.federalreserve.gov/supervisionreg/dfa-stress-tests-2023.htm)

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The banks in the 2023 stress test own ~20% of the office/downtown commercial real estate loans held by all banks.

Office loss rate, cumulative 9 quarter

Source: Federal Reserve Board DFAST-2023 disclosures
WHAT ABOUT INTEREST RATE ... AND LIQUIDITY RISK?

• Bank financial intermediation makes them naturally long credit and interest rate risk
• Maturity transformation exposes banks to liquidity risk on both sides of the balance sheet
  – Liabilities: demand deposits
  – Assets: lines of credit and loan commitments
  – Kashyap, Rajan and Stein (2002 JF): don’t worry, in systematic liquidity shock, deposits hedge line/commitment draws
  – Run to (not from) bank, e.g. LTCM in 1998, Fall 2007
• Deposit insurance provides condition for that hedge
  – Pennacchi (2006 JME) shows this “natural” hedge didn’t exist before introduction of deposit insurance (FDIC)
• Deposits also “hedge” against interest rate risk
  – Cheap (insured) deposits are resistant to interest rate rise
  – Deposit beta << 1 (Δ deposit rates / Δ interest rates)
• Why should we worry?
  – Deposit franchise value derives from insured deposits (Drechsler, Savov, Schnabl, Wang (2023))
  – E.g.: SVB share of insured deposits was 6%
• Hard to hide interest rate driven losses in securities portfolio
A DISASTER HIDING IN PLAIN SIGHT DRIVEN BY INTEREST RATE RISK

Unrealized Gains (Losses) on Investment Securities

Source: FDIC Quarterly Banking Report 2022Q4
Note: Insured Call Report filers only.
In 2022, banks moved almost $1T in securities from AFS to HTM

Fed’s Bank Term Funding Program outstanding at $168B (24 Jan 2024)
STRESS TESTING TRANSLATES SCENARIOS INTO FINANCIAL IMPACTS USING DYNAMIC PROJECTIONS OF BALANCE SHEET, P&L AND RELEVANT RATIOS

Regulatory ratios required to be above thresholds throughout period
• Only as good as the capital regulations
• Beholden to accounting regime
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Starting balance sheet → T+1 income statement → T+1 B/S → T+2 income statement → T+2 B/S → T+H B/S

H-period dynamic forecast
“CAPITAL” AND “LIQUIDITY” STRESS TESTS EXIST ON A CONTINUUM OF ASSESSING BANK RESILIENCE TO SHOCKS

**Liquidity Stress Testing**
*Higher Frequency (Minutely / Hourly / Daily)*

- Intraday Liquidity Stress Testing (Hourly / Minutely)
- LCR-type Stress Testing (Daily / Weekly / Monthly)

**Capital Stress Testing**
*Lower Frequency (Quarterly / Annual)*

- US DFAST Capital Stress Testing (Quarterly)
- EBA (and others) Capital Stress Testing (Annual)

- **Goal:** Ensure liquidity needs in stress can be met
- **Time Horizon of Key Drivers:** short; potential shocks evolve quickly requiring frequent testing
- **Complicating Factors:**
  - Liquidity at the legal entity vs. bank/group level
  - Commitment drawdowns
  - Can miss scenarios in which the bank is liquid but insolvent

- **Goal:** Ensure capital adequacy (solvency) through stress
- **Time Horizon of Key Drivers:** longer; potential shocks evolve more slowly based on macroecon. conditions
- **Complicating Factors:**
  - Capital at the legal entity vs. bank/group level
  - Commitment drawdowns
  - Bank may become insolvent within measurement period
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