Lecture notes on risk management, public policy, and the financial system

Funding liquidity regulation

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Regulatory liquidity standards for banks

Money market mutual fund regulation
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Pre-crisis international liquidity regulation
Post-crisis international liquidity regulation

Money market mutual fund regulation
FDIC and central bank liquidity standards for banks

- Liquidity risk a longstanding element of bank supervision, e.g. (→)CAMELS ratings
- Central banks have long used reserve requirements to control money supply
  - Reserve requirements also serve to protect banks against losses due to sudden deposit withdrawal
Basel liquidity standards

- Motivation: prevent runs on wholesale funding sources, such as 2008 “run on repo”
- Two key measures are essentially liquidity stress test results with different time horizons

**Liquidity Coverage Ratio** (LCR)
- Requires High-Quality Liquid Assets (HQLA) to cover cash outflows over 30 day stress scenario
- Economics: requires liquid assets in excess of “runable” liabilities

**Net Stable Funding Ratio** (NSFR)
- Requires amount of stable funding to cover 1 year of extended stress
- Economics: requires stable funding (liabilities) in excess of illiquid assets
- Apply to large banks only ($\geq$50 bill. assets)
- More stringent rules apply to largest banks
Liquidity Coverage Ratio: metric and motivation

- Banks compare stock of HQLA they hold to estimate of net outflows in 30-day stress environment
- When fully implemented, rule will require
  \[
  \frac{\text{stock of HQLA}}{\text{net cash outflows over the next 30 days}} \geq 100\%
  \]
- Denominator represents total net cash outflows in a short-term liquidity crisis
- Numerator represents liquid assets immediately available to cover the net outflow
- \(\text{LCR} \geq 100\% \iff \text{firm has sufficient liquid assets to survive severe cash outflow lasting 30 days}\)
- Focus on tenuousness of short-term funding
Estimating outflows and inflows for LCR

**Outflows:** sources of potential liquidity drain within 30 calendar days
- **Maturing funding:** deposits, short-term funding secured by illiquid assets or unsecured
- **Collateral calls** due to credit deterioration, counterparties demanding fullest security within agreements
- **Commitments and lines of credit drawn** in anticipation of lender distress

Calculated by applying stress **run-off rates** to liabilities and off-balance sheet items maturing or callable within 30 days
- **Example:** repo run-off rate between 0 and 100 percent depending on collateral quality
- Unsecured wholesale funding assumed to have high run-off rate
- **Trade-off:** banks can rely more on wholesale funding if operating deposits high

**Inflows:** largely interest receivable and loan repayments from performing borrowers
- **Insurance:** includes policy premiums due over next 30 days
Estimating net outflows for LCR

- **Total net cash outflows**: outflows minus inflows
- Offsetting impact of inflows capped at 75 percent of outflows
  
  \[
  \text{total net outflows} = \text{outflows} - \min(\text{inflows}, 0.75 \times \text{outflows})
  \]
- Prevents denominator of LCR from becoming small or negative even if estimated outflows very large
Treatment of deposits in LCR

- Deposits are sight obligations, but differ widely in assumed “stickiness” and stress run-off rates

- **Operating deposits**: used by depositors for day-to-day business and to support transactions
  - Retail as well as non-financial and financial-firms
  - Assumed to have low run-off rate, esp. insured retail deposits
  - Retail deposits treated as long-term debt, although par-redeemable on demand→compliance with LCR does not immunize bank from runs

- **Nonoperating deposits**: used primarily as investments or liquidity reserve rather than to support transactions
  - More run-prone than operating deposits
  - Shouldn’t be used to fund long-term assets such as C&I loans
  - Assumed to have high run-off→LCR renders them less attractive to banks
Definition of High-Quality Liquid Assets

- Numerator of LCR: HQLA must “cover” the net outflow
- Weighted average of values of assets deemed liquid under the rule

**Level 1 assets:** not subjected to haircut, includes
  - Cash
  - U.S. and sovereign bonds with zero Basel risk weight
  - Central bank excess reserves

**Level 2 assets:** capped at 40 percent of HQLA
  - Thus capping Level 2 at $\frac{2}{3}$ of Level 1 assets in HQLA

**Level 2a:** subject to 15 percent haircut, includes,
  - “Highest-rated” corporate bonds—down to AA-
  - Sovereigns with non-zero but relatively low Basel risk weights

**Level 2b:** subject to higher haircuts, includes
  - Lower-rated investment-grade corporates
  - Residential mortgage bonds
  - Non-financial common equity
Liquidity Coverage Ratio example

- **Denominator of LCR:** bank estimates for 30 day stress scenario
  - Estimated outflows of funding and commitments $200 bill.
  - Estimated inflows of interest and repayments $160 bill.
  - Offset from inflows capped at $0.75 \times 200 \Rightarrow$net outflow $50 bill.

  \[
  200 - \min(160, 0.75 \times 200) = 50
  \]

- **Numerator of LCR:** bank has
  - Level 1 assets $30 bill.
  - Level 2a assets $40 bill.
    - Subject to 15 percent haircut, contribution to HQLA $34 bill.
      \[
      0.85 \times 40 = 34
      \]
    - Limited to 40 percent of total HQLA
      \[
      \frac{x}{30 + x} = 0.4 \quad \Rightarrow \quad x = \frac{2}{3} \times 30 = 20,
      \]
      with $x$ the eligible portion of Level 2 assets
  - LCR is 100 percent, exactly meeting minimum threshold:

\[
\frac{\text{stock of HQLA}}{\text{net cash outflows}} = \frac{30 + 20}{50} = 1.0
\]
Net Stable Funding Ratio

- When fully implemented, rule will require
  \[
  \text{NSFR} = \frac{\text{available stable funding}}{\text{required stable funding}} \geq 100\%
  \]

- Focus on appropriate funding of assets
- Intended to discourage short-term wholesale funding, limit maturity mismatch
- Requires that assets with longer maturities and/or lower market liquidity be financed with longer-term or “sticky” short-term funding

**Required stable funding** is a weighted average of assets
  - Zero weight: cash, short-term securities, matched-book reverse repo

**Available stable funding** is a weighted average of liabilities
  - 100 percent: Tier 1 and 2 capital instruments, e.g. equity
  - High weight: sticky retail deposits as well as those of small businesses
  - Zero weight: short-term wholesale funding by a broker-dealer
Implementation of Basel liquidity standards

- **LCR:**
  - Basel Committee standard issued 07Jan2013
  - U.S. more stringent, implementation in final rule 03Sep2014, compliance deadline 2017

- **NSFR:**
  - Basel Committee standard issued 31Oct2014
  - U.S. more stringent, proposed rule 03Sep2014, anticipated compliance deadline 2018
Market impact of new liquidity standards

- “Matched books” of repo lending and borrowing more expensive
  - Repo generally on balance sheet from accounting standpoint
  - Netting generally limited to same counterparty, settlement platform, settlement date
- Increase demand for T-bills, TDF deposits
- U.S.: do not apply to FBOs
Regulatory liquidity standards for banks

**Money market mutual fund regulation**

- Pre-crisis money market mutual fund regulation
- Post-crisis changes in money market mutual fund regulation
Money market fund reform

Amendments to SEC Rule 2a-7 adopted 23Jul2014, compliance by 14Oct2016:

- Intended to preclude runs on MMMFs and eliminate need for implicit guarantee
- **Stable net asset value** (NAV) permitted for two fund types:
  - By assets: government MMMF, has 99.5% of assets in government securities and repo
  - By investor type: retail MMMF, owned by “natural persons”
- **Floating NAV**: daily share prices to be based on mark-to-market value rather than amortized cost for remaining fund types:
  - By assets: prime (corporate securities) and municipal/tax-exempt
  - By investor type: institutional MMMFs (all non-retail)
- **Liquidity fees and redemption gates**: if “liquid assets” (SEC definition) of any non-government MMMF drop below
  - 30% of total: MMMF *may* impose 2% fee on and temporary suspension of redemptions
  - 10% of total: MMMF *must* impose 1% fee on redemptions
- Additional reporting requirements, including stress-testing results
Money market funds by type 2014–2016

Shares of money market mutual fund types in total fund assets, percent. Source: U.S. Securities and Exchange Commission, Division of Investment Management, Money Market Fund Statistics.