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

Regulatory liquidity standards for banks

- 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. ($\rightarrow$)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
- LCR $\geq 100\% \Leftrightarrow$ 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

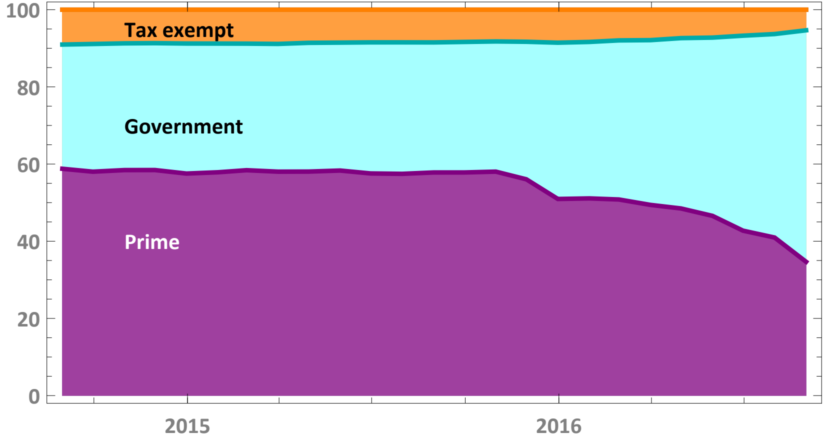
- Pre-crisis money market mutual fund regulation
- Post-crisis changes in money market mutual fund regulation

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.