Restricted

Liquidity Risk – Introduction and Supervisory Expectations

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Jeff Miller
Senior Financial Sector Specialist
Financial Stability Institute

Outline

- Liquidity risk – concepts
- Elements of a liquidity risk management framework
- Basel III liquidity standards: LCR and NSFR

Liquidity risk – concepts

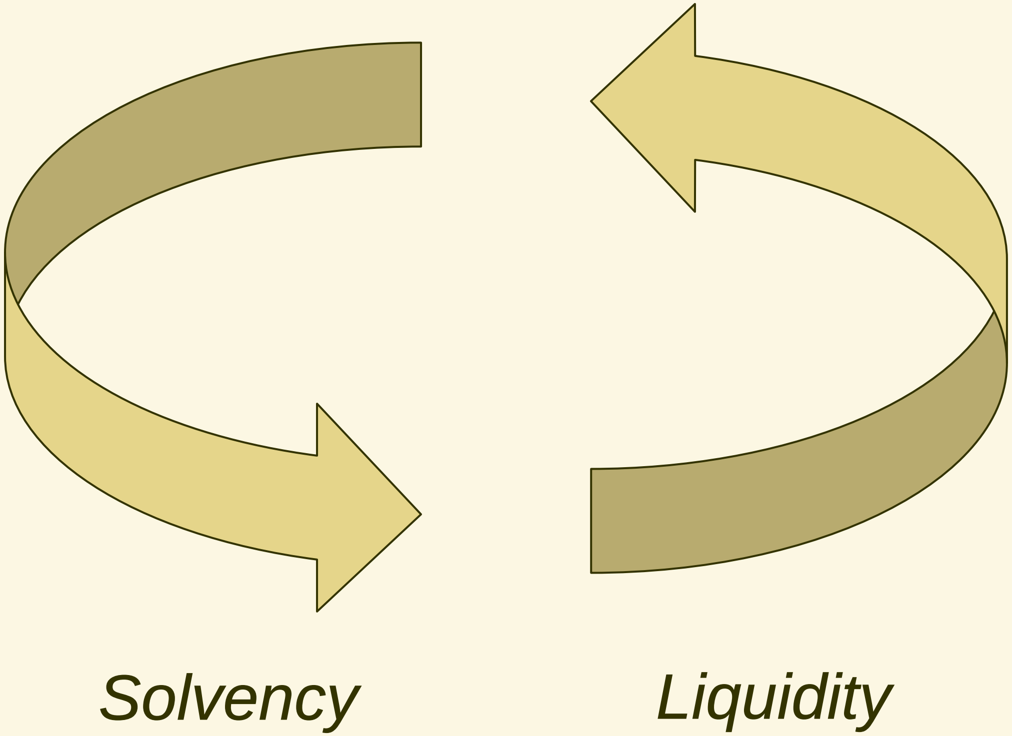
Concepts – what is liquidity risk?

"Liquidity is the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses."

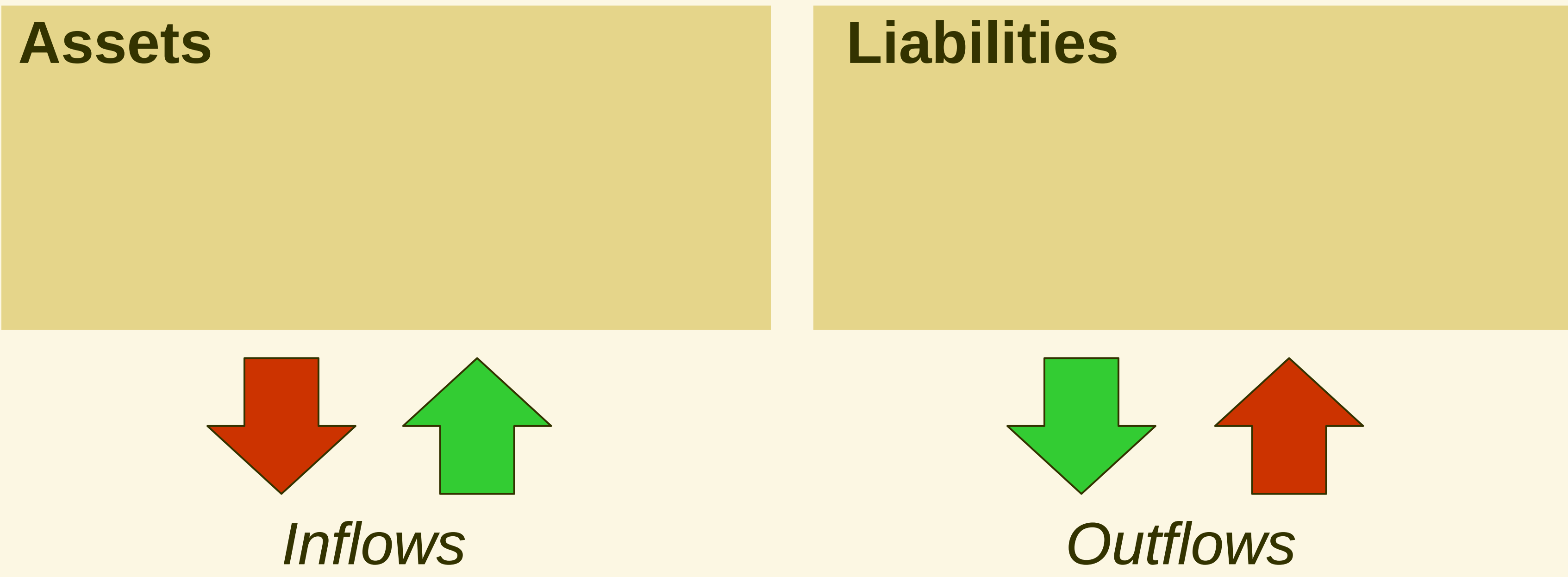
Principles for Sound Liquidity Risk Management and Supervision, Basel Committee on Banking Supervision, September 2008

- Banks are inherently susceptible to liquidity shocks
  - Maturity transformation of short-term deposits into long-term loans

Concepts – what is liquidity risk?

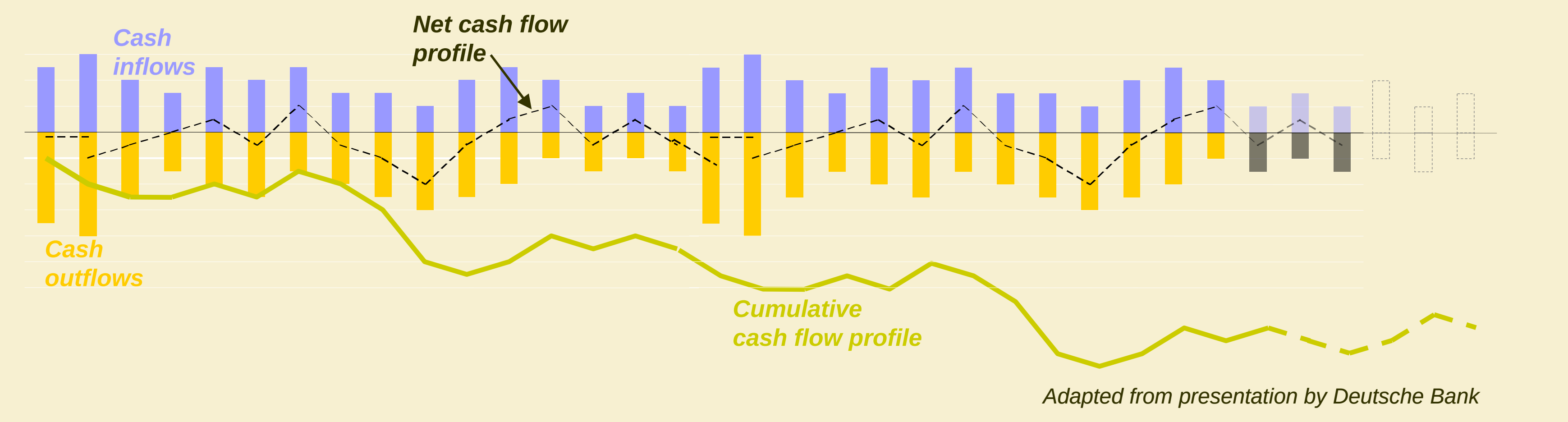


Concepts – what is liquidity risk?



1. Business as usual
2. Stress situation: (i) idiosyncratic/name-specific (ii) systemic

Concepts – what is liquidity risk?



- Cash flow projection based on (i) contractual maturity and (ii) behavioural expectations
- Maintain liquidity above defined limit
- Potential use as early warning indicator

Concepts – inter-related dimensions of liquidity

Short-term liquidity (operational liquidity)	**Medium- and long-term liquidity** (structural liquidity)	**Fungibility** (asset liquidity)	**Market access liquidity** (contingent liquidity)
Ability to meet near-term obligations when they fall due (cash flow management)	Ability to finance long-term and/or illiquid assets with long-term funding (cost of funding)	Ability to liquidate assets or unwind trading positions at a fair price when needed (market depth)	Ability to fund in capital and/or interbank markets (functioning of macro environment)

Concepts – how is liquidity risk measured?

INPUT	METHOD	OUTPUT
Balance sheet	Models and/or formulae	Liquid asset holdings

Concepts – how is liquidity risk measured?

How much liquidity is 'enough' liquidity?

INPUT	METHOD	OUTPUT
Balance sheet	Models and/or formulae	Liquid asset holdings

Risk appetite
Regulatory rules
Market expectations

Concepts – why worry about liquidity risk?

- Extensive info requirements, affected by external events
- Market developments with liquidity implications
  - Originate-to-distribute model – warehousing, other risks
  - Increased volume and speed of cross-border flows
    - Contagion risk and impact on supervision
  - Increased reliance on wholesale vs retail funding
  - Increased use of collateral (growth in repo market, collateralised derivatives) – risk of collateral calls
- Diversity in liquidity risk supervision across borders
- Recent (and ongoing?) financial crisis

Elements of a liquidity risk management framework

BCBS principles for liquidity risk

- Sept 2008 paper – *Principles for Sound Liquidity Risk Management and Supervision* (update of 2000 paper)
- New areas of guidance / emphasis, for example:
  - Alignment of risk-taking incentives with risk
  - Maintenance of a cushion of highly liquid assets
- Areas where guidance has been expanded
  - Measurement of off-balance sheet exposures
  - Stress-testing
- Elaboration on role of supervisors

Liquidity risk management framework

Governance →

1. Overarching principle
2. Appropriate risk tolerance
3. Strategy, policies, practices
4. Alignment of incentives

Measurement and management →

5. Identify, measure, monitor, control
6 Group-wide and legal entity levels
7. Funding diversification
8. Intraday liquidity
9. Collateral management
10. Stress testing
11. Contingency planning
12. Liquid asset pool

Public disclosure →

13. Liquidity risk management and position

Governance

1. Overarching principle

- Robust liquidity risk management framework that ensures sufficient liquidity
  - Cushion of unencumbered highly liquid assets
  - Stress events that give rise to loss of unsecured *and* secured funding
- Supervisors should assess both the risk management framework and the liquidity position of the bank

Governance

2. Appropriate risk tolerance

- Articulate liquidity risk tolerance that is appropriate for business strategy and role in financial system
- Expressed in terms of:
  - Survival horizon or ‘maximum gap’
    - Cash flow/maturity mismatch model
  - Balance sheet metrics/ratios
  - Funding cost
    - ‘Earnings at risk’

Governance

2. Appropriate risk tolerance *(cont'd)*

- Examples of risk tolerance statements:
  - To ensure the bank's pool of unencumbered liquid assets is sufficient to meet its 30-day survival horizon
  - To maintain a minimum credit rating of A at all times
  - To ensure the bank's borrowing capacity remains above 30% of total funding in normal conditions
  - To ensure that at least 60% of the bank's customer assets are funded long-term

Governance

3. Strategy, policies, practices

- Establish strategy and policies consistent with tolerance
  - Appropriate for the nature, scale and complexity of the bank's activities
- Elements of liquidity risk strategy might include:
  - Composition and maturity of assets and liabilities
  - Diversity and stability of funding sources
  - Approach for managing liquidity in different currencies and across borders, business lines, legal entities

Governance

3. Strategy, policies, practices *(cont'd)*

- Board reviews and approves, monitors – and is ultimately responsible

Board of Directors

Audit Committee | Risk Committee | Remuneration

Governance

3. Strategy, policies, practices *(cont'd)*

- Senior management establishes and implements

ALCO	Operational Risk	Internal Audit
Credit Risk	Market Risk	

- Key considerations include:
  - Roles and levels of responsibility
  - Segregation of duties
  - Linkages between committees

Governance

4. Alignment of incentives

- Align risk-taking incentives with resulting risk exposures
  - Incorporate liquidity costs, benefits and risks in product pricing, performance measurement, and new product approval process
- Cost of funding a particular asset should reflect:
  - Funding liquidity
  - Market liquidity
  - Contingent liquidity
- Motivate appropriate behaviour, discourage inappropriate

Measurement and Management

5. Identify, measure, manage, control

- Establish process for identifying, measuring, monitoring, and controlling liquidity risk
- Measure and project cash flows for all on- and off-balance sheet assets and liabilities over a range of time frames
  - Contractual and non-contractual commitments
  - Include behavioural assumptions
  - Business-as-usual and stress (idiosyncratic and system-wide) conditions
- Prudent, realistic asset valuations

Measurement and Management

5. Identify, measure, manage, control *(cont'd)*

- Use range of tools – static (eg loans to deposits ratio) and dynamic (eg cash flow analysis)
- Establish 'tiered' limit structures and escalation procedures
- Develop early warning indicators, such as:
  - Rapid growth funded by potentially volatile liabilities
  - Growing concentrations in assets or liabilities
  - Rising wholesale or retail funding costs
  - Negative publicity
- MIS capable of tracking risk the way it is managed

Measurement and Management

6. Group-wide and legal entity levels

- Manage within and across entities, business lines and currencies
  - Group-wide view important, but also legal entity
  - Local knowledge essential
- Consider limitations to transferability of liquidity
  - Legal, operational and regulatory barriers

Measurement and Management

7. Funding diversification

- Diversify funding by *tenor* …
  - Short, medium and long term
- … and by *source*
  - Wholesale vs retail, geography, etc
- Reflect in funding plans, align with budget and business planning process
- Manage market access
  - Don't assume access (i) if never used (ii) in stress

Limits

Measurement and Management

8. Intraday liquidity

- Actively manage intraday liquidity positions to meet payment obligations in normal and stressed conditions
- Growing interest among central banks due to interdependency across payment systems and related contagion effects

Measurement and Management

9. Collateral management

- Actively manage collateral
  - Encumbered vs unencumbered assets
  - Monitor legal entity and physical location where held
  - Consider central bank eligibility
  - Understand operational and timing requirements for mobilising collateral in various locations
  - Monitor potential for demands on collateral arising from derivative (eg downgrade triggers) and other transactions

Measurement and Management

10. Stress testing

- Conduct stress tests regularly and use outcomes to manage risk
  - Adjust strategies, policies, processes, positions, and contingency plans
- Institution-specific and market-wide, individually and in combination
  - Range of scenarios, time horizons
  - Severe but plausible
- Regularly review scenarios and revise as appropriate

Measurement and Management

11. Contingency planning

- Establish formal contingency funding plans
- Suitable for range of stress events, consistent with stress tests
- Components include:
  - Defined ‘triggers’ and related course of action
  - Authority to invoke / take action
  - Communication plan – who? what? when?
- Review and test regularly to ensure effectiveness, feasibility

Measurement and Management

12. Liquid asset pool

- Maintain a cushion of unencumbered, highly liquid assets as insurance against range of stress scenarios
- Size of pool depends on outcome of stress event *and* risk tolerance
- Assets to include:
  - No legal, regulatory or operational impediment to using to obtain funding
  - Cash and government bonds = core
  - Other – consider marketability, realistic haircuts

Public disclosure

13. Public disclosure

- Publicly disclose sufficient, meaningful information about liquidity risk management and liquidity position
- ‘Regular’ basis
- Sufficient depth, breadth, frequency to enable informed judgment by market participants
  - Qualitative – org structure, centralized vs decentralized management, risk management framework
  - Quantitative – size and composition of liquid asset pool, key monitoring metrics

BCBS principles – for supervision

Role of supervisors *(4)*

- Regularly perform comprehensive assessment of liquidity risk management framework and liquidity position
- Monitor internal reports, prudential reports, and market information
- Intervene to require remedial action to address deficiencies in management or liquidity position
- Communicate with other supervisors and public authorities, domestic and cross-border

Basel III liquidity standards: LCR and NSFR

Lessons about liquidity from the crisis

- Capital is only part of the story … liquidity matters
- Stress testing has been inadequate
- Interaction of market liquidity, credit risk, and funding liquidity under stress was not well understood
- Interbank markets can experience difficulties
- Off-balance sheet exposures must be honestly assessed
- Some key assumptions were misguided
- Cross-border supervisory cooperation is essential

Basel Committee Working Group on Liquidity

- Sept 2008 paper – *Principles for Sound Liquidity Risk Management and Supervision*
  - Opened the door to quantitative requirements
- Dec 2010 paper – *Basel III: International framework for liquidity risk measurement, standards and monitoring*
  - Internationally consistent short-term and structural standards

Framework – key components

- Standards
  - Liquidity Coverage Ratio (LCR)
  - Net Stable Funding Ratio (NSFR)
- Monitoring tools
  - Contractual maturity mismatch
  - Concentration of funding
  - Available unencumbered assets
  - LCR by currency
  - Market-related monitoring tools

Liquidity Coverage Ratio – objectives

"… aims to ensure that a bank maintains an adequate level of unencumbered, high-quality liquid assets that can be converted into cash to meet its liquidity needs for a 30 calendar day time horizon under a significantly severe liquidity stress scenario specified by supervisors."

"… expected to meet this requirement continuously …"

"… aware of any potential mismatches within the 30-day period and … meet any cashflow gaps throughout the month."

LCR – definition

$$\frac{\text{Stock of high quality liquid assets}}{\text{Net cash outflows over a 30-day time period}} \geq 100\%$$

- Supervisory scenario (idiosyncratic and market-wide)
  - 3-notch downgrade (triggers)
  - Partial loss of retail deposits
  - Loss of unsecured wholesale and secured, short-term funding (except for ‘liquid’ assets per this standard)
  - Increased collateral calls and/or haircuts
  - Draws on committed lines, non-contractual obligations

LCR – assets (numerator)

- ‘High quality liquid’ = liquid in times of stress and *ideally* central bank eligible
- Operational requirements
  - Not used as hedges on trading positions
  - Not designated as collateral
  - Under control of liquidity risk management ‘function’
- Qualifying criteria address credit risk, market liquidity, contagion risk (no financial institution paper)

LCR – assets (numerator)

- Tier 1 = no limit on amount
  - Cash and withdrawable central bank reserves, qualifying sovereign debt (0% risk weight *or* domestic sovereign)
  - Haircuts = discretional
- Tier 2 = limited to 40% of the pool
  - Qualifying sovereign debt (20% risk weight), corporate debt (rating ≥ AA-, non-financial), covered bonds
  - Minimum haircut = 15%

LCR – net cash outflows (denominator)

- Total net cash outflows = total expected cash outflows *minus* total expected cash inflows for the subsequent 30 days in the specified stress scenario
- Inflows and outflows calculated by multiplying outstanding balances against ‘factors’
  - Most ‘factors’ harmonised, some for national discretion
  - Factors reflect relative ‘certainty’ of inflows, outflows
  - Include contractual *and* non-contractual
- No double-counting (assets included in pool cannot also be counted in denominator as cash inflows)

Net Stable Funding Ratio – objectives

"… promote more medium- and long-term funding of the assets and activities of banking organisations …"

"… establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institution's [on- and off-balance sheet] assets and activities over a one-year horizon."

"… incent structural changes … away from short-term funding mistmatches …"

"… offset incentives … to fund … liquid assets with short-term funds that mature outside the 30-day horizon [of the LCR] …"

NSFR – definition

$$\frac{\text{Available amount of stable funding (ie, sources)}}{\text{Required amount of stable funding (ie, uses)}} > 100\%$$

- Uses with maturity > 1 year should be funded by sources that are expected to be available for a period > 1 year
- Supervisory scenario = extended idiosyncratic stress
  - Decline in profitability and/or solvency
  - Potential downgrade in credit rating
  - Reputational event
- Factors applied to 'available' to reflect relative 'stickiness'
- Factors applied to 'required' (uses) reflect relative 'liquidity'

Observation period and transition
(all dates as of 1 January)

	2011	2012	2013	2014	2015	2016	2017	2018
Liquidity Coverage Ratio	Obser begins	Report to supers	Revise (mid-year)		Min standard			
Net Stable Funding Ratio		Obser begins; Report to supers				Revise (mid-year)		Min standard

Closing remarks

- Ultimately, liquidity is a function of trust and reputation
- Liquidity and solvency are equally important for sound banks and banking systems
- Supervisors now have internationally consistent liquidity standards for banks

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