Liquidity Risk Management, Challenges and Issues for Insurers

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Network of Consulting Actuaries
Agenda

Liquidity risk background

Regulatory expectations and developments

Framework for managing liquidity risk

Practical challenges – measuring and monitoring
Background
Liquidity Risk Definition
Regulatory and Management Perspectives

Regulatory Focus:
- Liquidity risk is “the risk that an insurer is unable to realise its investments and other assets in a timely manner in order to meet its financial obligations, including collateral needs, as they fall due.”
- Source: IAIS – Glossary, November 2019

Market Risk:
- Meet liquidity requirements without incurring high additional costs.

Funding Risk:
- Withstand early redemptions and more challenging roll-over environments.

Strategic Aspect:
- Meet liquidity requirements without affecting existing investment strategy.
Liquidity Risk – Why Now?

Past Experience

- Fortunately, history does not provide many examples of insurers suffering material liquidity related problems, but
- Past performance is not necessarily a reliable guide to the future!

Challenges Looking Ahead

- Increased use of central clearing for derivatives
- Changes in the liquidity of underlying investment markets
- Pressures in the banking sector
- Shift of business mix towards unit-linked
- Greater investment in illiquid assets
Open-Ended Funds: Recent Events

June 2016
UK commercial real estate funds

December 2018
Leveraged loans

Late 2018
Corporate Bonds

July 2019
Analyst estimates large UK shares fund time to sell 20% of stressed portfolio is 13 WD

June 2019
LF Woodward Equity Income Fund

March 2020
Real estate funds

Why does Liquidity Risk Matter?

- Increasing interest from the regulator
- Distinct to capital risks
- Interaction with other business objectives
- Influence of external market factors
Why does Liquidity Risk Matter?
Distinct to capital risk

**Impacts capital**
- Higher longevity of annuity book
- Mortality risk
- Expense risk

**Impacts liquidity**
- Collateral calls for derivative holdings
- Stressed market conditions reduce liquidity of investments
- Catastrophe
- Mass Lapse
- Operational risk
Why does Liquidity Risk Matter?
Interaction with other business objectives

**Liquidity**

**Profit**

How do I invest?

**Investment strategy**

**SCR Impact**

**Conflicting objectives**

- More liquid investments often have lower yields
- Holding only liquid investments may result in:
  - Poor duration matching
  - High concentration risk

Hold Cash!
Why does Liquidity Risk Matter?
Investment strategy - simple example

Corporate bonds
- Traditional insurance portfolio holds these

Combination of cash and illiquid assets
- Can hold illiquid assets to gain a higher yield
- However – need to consider how much cash needed to compensate for reduced liquidity especially under stress
- Is the yield pick up worth it given lost yield from holding more cash?
Why does Liquidity Risk Matter?
Influence of external factors: Maintaining liquidity under stress

- As the level of liquidity available reduces, a firm is compelled to take action to address this.
- As more drastic actions are required, these have business consequences.

**Adequate liquidity**
Meet obligations with liquid investments in accordance with business plan

**Liquidity strain**
- Sell investments you don’t want to
- Management actions
- Change business strategy

**Severe liquidity strain**
- Recovery/Resolution plan
- Stop/delay payments
An illustrative case

General American
Regulatory Expectations
The Regulatory Response


**PRA** – SS5/19: Liquidity Risk Management For Insurers

**BoE/FCA** - plan a review of the liquidity risk posed by open-ended funds

**Solvency II** – various requirements relating to liquidity risk
SS5/19 - Structure

- Liquidity risk management framework
- Sources of liquidity risk
- Stress testing
- Liquidity buffers
- Risk monitoring and reporting
- Liquidity contingency plan

PRA published CP4/19: March 2019
Consultation closed: June 2019
Publication of SS5/19: September 2019
Health warning

“reliance on an existing capital management framework is not generally sufficient or appropriate for assessing liquidity risk.”

- Balance sheet solvency and cashflow solvency do not necessarily go hand-in-hand.
- The events that drive capital requirements may be quite different to those driving funding crises.
- In particular, liquidity problems can arise over very short time horizons.
Risk monitoring and reporting

- Risk alerts
- Regular reporting at least monthly
- Metrics to be approved by the board
- Stress test results
  - LCR
  - XS liquidity
- Document benefits and shortcomings of metrics

Used to assess liquidity buffer
- Reported to senior management and board
- Integrated into business planning
- Inform exposure limits
- Inform risk management strategy and metrics
- Support development of liquidity contingency plan
Liquidity Contingency Plan

“- - should set a framework with a high degree of flexibility so that an insurer can respond quickly to a variety of liquidity stresses which disrupt its ability to fund some or all of its activities in a timely manner and at a reasonable cost”.

“To ensure it remains operationally robust an insurer should periodically test and update its liquidity contingency plan through simulation exercises”.

1. How do you identify the liquidity stress event using early warning indicators?

2. Which actions to take in response a stress?

3. Assign responsibility and roles to decision makers
   Clear communication to stakeholders
Food for thought: risks from other sectors

Early Warning Indicators from Banking Sector

- CP4/19 encourages the development of early warning indicators and stress tests.
- Consider share prices of major banks before GFC.
- Consider results from latest BoE liquidity stress test exercise:
  - What are the direct impacts if similar scenarios hit my firm?
  - What are the indirect impacts from our exposures to the banking sector and banks likely responses to such events?

Source: Milliman analysis using Bloomberg data
Food for thought: risks from open-ended funds

CP4/19 encourages the development of early warning indicators and stress tests:

Monitor exposures to open-ended funds according to underlying asset class liquidity and a measure of expected customer resilience in the face of financial market stress.

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### Asset Class Liquidity (days to redeem k% of funds)

- **<2**
- **2 - 5**
- **>5**

### Fund Stickiness Score

- **High**
- **Med**
- **Low**

Increasing Risk

Monitor exposures to open-ended funds according to underlying asset class liquidity and a measure of expected customer resilience in the face of financial market stress.
Framework for managing liquidity risk

Overview

Management plan
- Who is responsible and what is the process

Risk appetite and limits
- What are my preferences and tolerances for liquidity risk?

Monitoring and risk report
- Where are we now? Where am I headed?

Exposure Analysis
- Where are the risk exposures?
Framework for managing liquidity risk

Management Plan

- Roles and responsibilities

Diagram:
- Treasury
- Actuarial
- Finance
- Risk
- Investment
- Board
Framework for managing liquidity risk

Management Plan

Management actions
What actions are available? Under what circumstances should they be used?

Contingency plan
What actions are taken in the case of a severe liquidity stress?

Liquidity policy
What processes and principles should be followed to manage liquidity risk?

Investment strategy
How are assets invested in order to manage liquidity?
Framework for managing liquidity risk

Appetite and Limits

- Link to strategic objectives
- Meaningful to the business
- Upper and lower limits
- Support decision making
- Risk preference
- Risk tolerance
Framework for managing liquidity risk

Monitoring and reporting

Which Metric?

Over what time horizon?

Measures of liquidity supply and demand

Internal and External Metrics

How is the MI used?
Framework for managing liquidity risk

Exposure Analysis

Allows a company to understand their sources of demand, supply and therefore their liquidity risk profile.

- Historical analysis
- Forward looking perspective
- Classify assets according to their liquidity

Exposure analysis will also cover the tools available to a company in time of liquidity distress.

- What tools are available and are there any gaps?
- Effectiveness and consequences of tools available
- Restrictions on use?
Liquidity risk management strategy

Key steps:

1. Identify sources and align to tolerances
2. Cash flow components and projections
3. Stress scenario design and application
4. Liquidity needs and buffer levels determined

Buffer composition
Ongoing monitoring and early warning indicators
Implementation and Challenges

MI Aspects
Fundamental Components of Liquidity Risk Management

- CP4/19 (and latterly SS5/19) considers the following to be fundamental:
  - Proper systems to report management information
  - Information flows in the group top-down and bottom-up
  - Scenario analysis and stress testing programmes
  - Early warning indicators

- Suited to business intelligence platforms

Consultation Paper | CP4/19
Liquidity risk management for insurers
March 2019
Dashboard: Overview

Key measures
- LCR v risk appetite

Impact of LCP measures

Reinsurance exposures

Liquidity buffer analysis

Dividend cover analysis

Incremental Funding Potential

Cash-flow analysis
- Inflows by type and by time period

Cash-flow analysis
- Outflows by type and by time period

Net cash-flow analysis
- Volatility, deficiencies, trends

Functionality
- Present results for different parts of the corporate structure

Functionality
- Present results across multiple stress scenarios
Dashboard

LCR Projection

Scenario LCR

Daily Cashflows
Dashboard

Projected Buffer and HQLA Composition

Daily Buffer

Liquidity buffer composition - 1 month horizon

Tier 1 Tier 2

0 5 10 15 20 25 30

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Could Actuarial Models do More?

Actuarial Modelling Platform

Admin Systems

Data Exchange Interface

Inforce Translation / ETL

Parameter & Assumption Overlay

Scenario Generation

Calculation Engine(s)

Post Processing

Database

Reporting

Custom Extracts

Analytics

Finance Technicians (Model Operators)

MI Designers
Extension of Current Model

Actuarial Modelling Extensions
- Need to project cash (and similar) position
- Incorporate (project) derivative margin calls
- Higher frequency rollforward
- Higher granularity of timesteps

Treasury / Investment Feeds
- Current Assets + Liabilities
- Expense timings (salaries etc.)
- No combined stresses functionality

Actuarial and treasury/investment systems each in robust environments. Need to adapt and draw from each.
Practical Challenges

Increased Throughput of Data
- Granularity increase
- Non-availability of model compression in same form as used for solvency

On-Demand Availability
- High-dimensionality drill-down is compute intensive
- Information must be timely

Rollforward
- If intra-cycle refreshes are provided they must be reliable
- Daily solvency monitoring has addressed similar challenges

Multidisciplinary Implementation Team
Summary

- Liquidity risk is a growing focus of regulators
- Liquidity risk management has its own unique challenges
- It is important for firms to ensure their framework for managing liquidity risk is robust
Suggested Further Reading

http://assets.milliman.com/ektrom/Liquidity_risk_management_An_area_of_increased_focus_for_insurers.pdf

(23 page white paper, unrestricted access)
Any questions?

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Appendix – Extra SS5/19 Extracts
Stress testing

“an insurer is expected to conduct liquidity stress tests to identify sources of liquidity strain”

- MI systems expected to support the collection, processing and aggregation of the liquidity stress testing data and information required.
- Scenarios should:
  - Capture all relevant material risk drivers
  - Address implications for both liquidity uses (outflows) and sources (inflows)
  - Be severe but plausible
- Stress conditions should contemplate:
  - Idiosyncratic, market wide and combined events including the adverse impacts of market disruption
  - The reactions of others in an environment of liquidity stress
  - A variety of time horizons depending on business model e.g. intra-day -> 1 year
Sources of Liquidity Risk

Liquidity risk drivers are unique to each business but many will fall into the following:

1. Liability-side risks
2. Asset-side risks
3. Concentration risks
4. Off-balance sheet risks
5. Funding risks
6. Cross-currency risks
7. Intra-day risks
8. Franchise risk
Liquidity buffers

Buffer level:

“An insurer must maintain an adequate stock of liquid assets sufficient to meet liabilities as they fall due, and is expected to do so under both benign and stressed conditions.”

Buffer characteristics:

- Exclude assets committed to future payments
- Exclude assets lent or posted as collateral
- Comprised of assets of “primary” and “secondary” liquidity
- Unhindered access and control by the liquidity management function
- Valuation haircuts applied to less liquid assets
- Currency denomination vs net outflows
- Constraints on use of assets classed as “secondary” liquidity
- Regularly review and test market access
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