

Liquidity Coverage Ratio:

Implications and a Pragmatic Approach to Implementation



Introduction

Before the global financial crisis starting in 2008, liquidity was taken for granted. The assumption was that funds were always available, at no (or very low) cost. Proper projection models for liquidity—as opposed to those for capital planning—were not very well developed. As a consequence, banks lacked strong liquidity practices, and business models such as state financing relied upon the refinancing of long-term assets with short-term liabilities to help ensure profitability. The possibility of a lack of liquidity was not taken seriously, and when such scenarios did unfold it was too late for any actions. To make matters worse, short-term profitability was the only consideration driving funding and investment decisions; the long-term need for stable liquidity and sustainable profits was neglected.

As liquidity risk is one of the risk types most affected by the financial crisis, it made liquidity risk management an important strategic and tactical topic for both banks and regulators. Banks should now understand that liquidity would be obtained at a price. This is reflected in the observable increases in liquidity spreads experienced during the last couple of years. Due to this, and for the foreseeable future, there may be very few "lenders of last resort" in liquidity crisis situations, and liquidity should remain on bankers' priority lists for some time to come.¹



Liquidity Coverage Ratio

In December 2010, the Basel committee introduced liquidity standards as a part of the Basel III capital regime, including the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR).2 The effect was to increase banks' short- and long-term resilience. The LCR addresses whether banks have adequate high quality assets to survive stressed liquidity conditions over a 30-day period, while the NSFR guides banks to adopt more stable sources of funding over the long-term. In addition to these two ratios, the Basel III initiative also introduced monitoring tools to track the diversification of funding sources, identify encumbrances on assets, and facilitate disclosure to supervisors.3

At the end of 2013 the US Federal Reserve System ("the Fed") followed these international initiatives by issuing its own mandatory liquidity rule. While using the term liquidity coverage ratio with slightly different definitions of details, the Fed obliges banks and other financial companies to have available

sufficient short-term liquidity (high-quality liquid assets or HQLA) to cover short-term liquidity requirements. These requirements are defined as the net outflows over a 30-day time horizon under an acute liquidity stress scenario for the bank and the market. As in similar concepts the available liquidity must exceed the required liquidity, meaning the LCR must be at least 100%.4

$$LCR = \frac{Stock \text{ of HQLA}}{Total \text{ Net Cash Outflows}} \ge 100\%$$

The "stock of HQLA" contains assets of only the highest credit and liquidity quality, such as US Treasury securities. For the denominator, the netted cash in- and outflows are considered with a prudent minimum of 25% of the cash outflows (that is, the cash inflows are capped at 75% of the cash outflows).⁵ This conservative definition helps ensure that a bank never has to rely exclusively on expected inflows.

Figure 1 below provides a timeline for the LCR percentage coverage required by banks. Figure 2 provides a timeline for the LCR reporting frequency required by banks.

This new regulation mandates a daily assessment of liquidity, raising many issues of data availability and quality.⁸ As the key performance indicator (KPI), LCR becomes a function of a variety of elements such as balance sheet positions, the client and business partner stock, or the geographic setup of a company.

Figure 1. LCR percentage coverage timeline6

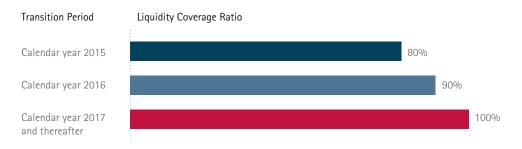


Figure 2. LCR reporting frequency ⁷		January 1, 2015 - June 30, 2015	July 1, 2015 - June 30, 2016	July 1, 2016 and thereafter
Total assets ≥ \$250bn or ≥ \$10bn in on-balance sheet foreign exposure	Total consolidated assets ≥ \$700bn or assets under custody ≥ \$10 tn	Monthly	Daily	Daily
	Total consolidated assets ≥ \$250bn or total on-balance sheet foreign exposure ≥ \$10 bn	Monthly	Monthly	Daily
Total assets ≥ \$50bn but < \$250bn		Monthly	Monthly	Monthly

Key Considerations

Through our work with clients in Europe and the US, including global Tier 1 investment banks, global retail banks, and financial holding companies and their subsidiaries, we have identified a number of key challenges clients consistently face in meeting regulatory mandates.

In implementing an LCR project, these should be categorized and dealt with in distinct phases, including:

- Regulatory interpretation of rules and intentions;
- Gap assessment of the client's data, tools, processes and controls;
- Technical implementation of the calculations (including initial compliance as well as sustainable usability of the implemented solution); and
- Embedding the LCR concept into liquidity management as well as broader stress testing and balance sheet management.

The table below summarizes these challenges and identifies the phase when each challenge should be addressed:

Challenge	Description	Realization Phase
Completeness of balance sheet or cash flow items	A pure balance sheet view might not be sufficient for deriving all necessary cash in- or outflows. Accounting treatments very often do not reflect the real cash flow behavior (e.g. amortization schemes); therefore interpretation work has to be done to deduct cash flows from Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards (IFRS) values.	Regulatory interpretation
Maturity of quantitative models	Very often the necessary models for creating cash flow patterns for complex products such as loans, mortgages and derivatives either do not exist or are not fully available. When models do exist, they are often used across units and tasks such as pricing, reporting, and risk calculation in a way that can lead to ambiguity and uncertainty. Similarly, models used for the calculation of collateral value (margins) might not be immediately available when it comes to LCR reporting purposes.	Regulatory interpretation
Lack of clarity of regulatory guidance	In some parts the LCR rule has redundant, vague or even contradictory prescriptions leaving to the client's discretion how to specifically treat some of the balance sheet items.	Regulatory interpretation
Data availability	Specific attributes necessary for the correct data mapping of products according to the rule's distinctions may be missing. Other frequently encountered data shortcomings include insufficient frequency of updates, reliance on third parties with lack of data completeness, and poor data quality as well as missing data history (which might be needed for internal or regulatory-driven modeling).	Gap assessment and technical implementation
Handling a (complex) group structure	As LCR rules primarily cover big financial or banking groups, we have experienced several challenges related to the complex structures of these client types. The challenges include the proper separation and treatment of intra-group business and the definition of materiality levels that reflect the size of the respective subsidiaries.	All phases
Accessibility to internal subject matter experts and senior management	sject matter experts and and tool-related knowledge, such as comprehension of client-specific products and	



Regulatory Interpretation

As with most regulatory requirements, the LCR requirements established by the Fed follow a "one-size-fits-all" approach. As previously described, due to widely varying product features as well as the range of business models used by different banks, many of the specific rules are open to interpretation. When interpreting the rules based on a bank's specific business and operating model, it is advisable to start with a complete (liquidity) balance sheet, including off balance sheet positions. In this context, the pure balance sheet values, and more importantly, all cash flows linked to the respective positions should be considered. This helps achieve a consistent treatment of the balance sheet items as well as a thorough interpretation in light of the existing business. This approach can be complemented by including possible new business items, in case they differ in their liquidity characteristics from the existing ones. Another important aspect in our view is the need to remain consistent with other regulatory filings such as FR Y-9C, Comprehensive Capital Analysis and Review (CCAR), Basel and others.

In defining guiding principles best suited to a covered company's business and operating model, we have taken a structured approach to appropriately interpret the regulation, list possible options, evaluate these options and develop a suitable LCR treatment for each rule.

The two examples on the following page illustrate this approach.



Example 1: Asset-Backed Securities

Banks might hold asset-backed securities that are collateralized by accounts receivable. Contracts require these banks to prefund the debt maturity in advance, prior to the actual maturity date. The prefunded amount is usually classified as restricted cash.

The rules related to these securities are not clear and there is no specific guidance for such a scenario. There are at least two options that banks may consider for defining outflows within the LCR calculation:

Option 1: Apply an outflow of 100% on the date of maturity and an inflow of the same amount due to release of restricted cash. Restricted cash, prior to

the maturity date, will not be considered as inflow due to liquidity restrictions.

While this option is the most obvious, it does not take into account the cash outflows for prefunding, which are a contractual requirement. In this option, no net outflow has been applied to the LCR calculation through the life of the security. On the date of maturity, the outflow for the debt maturity is offset by the inflow from the release of restricted cash.

Option 2: Apply an outflow based on the prefunding schedule; no outflow or inflow will be applied on the date of maturity, as the payment to debt holders is netted off from the release of prefunded balance and/or restricted cash reserve.

This option allows for an outflow based on operational characteristics and is more consistent with the rule's requirements, where an outflow is applied on days when prefunding is done and such balances are not available for liquidity needs.

As an additional consideration, actual prefunding is usually based on a percentage of actual account receivables and, given that actual account receivables are not available in advance, a historical analysis is recommended to estimate the prefunding schedule and, outflows. Consequently, the estimated prefunding would need to be adjusted on a daily basis when actual prefunding starts. We usually recommend this option.

Example 2: Brokered Deposits for Retail Customers

The outflow rates on deposits are determined by the end customer and not by the broker who issues the deposits. The broker is only an intermediary regardless of its wholesale status. The regulation describes two scenarios for retail brokered certificates of deposits (CDs):9

Scenario 1: A 10% outflow rate when the brokered CDs are not maturing within 30 days of the calculation date.

 Rationale: Despite a contractual maturity date that is more than 30 days away from the calculation date, some customers may opt for early withdrawal in times of liquidity stress, regardless of the early withdrawal penalty. Application: Applicable to retail brokered CDs with a maturity date more than 30 days from the calculation date.

Scenario 2: A 100% outflow rate when the brokered CDs mature within 30 days of the calculation date.

- Rationale: In times of liquidity stress, all customers will withdraw deposits that mature within the next 30 days.
- Application: Applicable to retail brokered CDs with a maturity date less than or equal to 30 days from the calculation date.

Treatment Options for Brokered CDs:

Treatment Option 1: Consider brokered CDs to be retail and fully insured—consistent with FR Y-9C reporting and the fact brokers are instructed by the bank to sell only to individuals and to restrict deposits to \$250,000.

 Implication: The outflow rate would be 10% for CDs maturing after 30 days and 100% for CDs maturing within the next 30 days.

Treatment Option 2 (conservative view):

Some brokered CDs are with wholesale customers and, since it is not possible to distinguish such accounts, the conservative view would require that the portfolio be considered as wholesale, and also to assume that no counterparty information is currently available.

• Implication: The outflow rate will be 40% for deposits from non-financial entities and 100% from financial entities (regardless of maturity date).

In our view, Option 1 is the recommended avenue to consider due to the immaterial nature of possible wholesale counterparties.

Gap Assessment and Technical Implementation

In our experience, organizations have approached the assessment and interpretation phase in two steps:

- 1. Initial compliance: This is a tactical solution to help provide LCR compliance within stringent regulatory timelines. Typically, this is an ad hoc solution wherein ongoing improvements should be tracked with a view to developing a sustainable model.
- 2. Sustainable model: This is a strategic solution to help integrate LCR compliance within the broader technology infrastructure and the organizational operating model, and align LCR compliance with other ongoing enterprise level regulatory programs such as BCBS 239 and CCAR.

A lack of time or of available high quality data may require firms to take the initial compliance approach. Organizations doing so need to acknowledge the limitations of the solution and maintain a view of a strategic roadmap for developing a sustainable model. The following items should be considered as part of the strategic roadmap:

- Reduction of manual intervention—in data sourcing and report production
- Removal of data gaps—with enhanced data availability on a daily basis
- Enhanced LCR reporting and analytical tools—build/buy/extend to automate data sourcing and reconciliation, leading to an enhanced reporting capability

The suggested program methodology is not necessarily exhaustive, but it is based on international experience with a range of clients, including global Tier 1 investment banks and global retail banks. Different clients present different challenges due to the nature of their businesses and the often complex nature of their balance sheets. The following methodology is a tested blueprint for LCR implementation, whether the client seeks to perform initial compliance or a sustainable model.



Gap Assessment

The objective of the gap assessment phase is to help understand the impact on the client of the rule implementation. The key deliverable should be the documentation of the impact of regulatory guidance on LCR production, as well as identification of key challenges and proposed next steps.

Conduct Gap Assessment

Once it is known which LCR requirements affect the client, it is possible to assess whether the client currently satisfies these requirements. In some instances there could be no gap; for example, when the client holds certain assets and is able to report the exact value of these assets as part of the LCR calculation. In other instances a gap may exist. This may happen when the client is aware of outflows related to certain products, but a detailed breakdown of the products is not available for the purpose of LCR reporting. The gaps identified feed the implementation phase of the program.

Document Interpretations and Gap Assessment

Regulatory interpretations, along with the results of the gap assessment, should be documented to a standard that can be shared with the regulator. If any assumptions are made in relation to the treatment of assets, outflows, and inflows, the regulator will expect a detailed rationale. In addition to satisfying the regulator, this deliverable should act as a point of reference throughout the implementation phase of the program. It should be considered a living document and updated whenever new decisions are made or assumptions are revisited.



Technical Implementation

The objective of the technical implementation phase is to source all the data required for the LCR calculation and to implement a reporting routine. The key deliverable is a functioning tool capable of running the LCR calculation,

as well as a reporting structure (which includes analytics). This phase of the program can be broken down into the following key activities:



Source: Accenture, February 2015

Create a Solution Blueprint

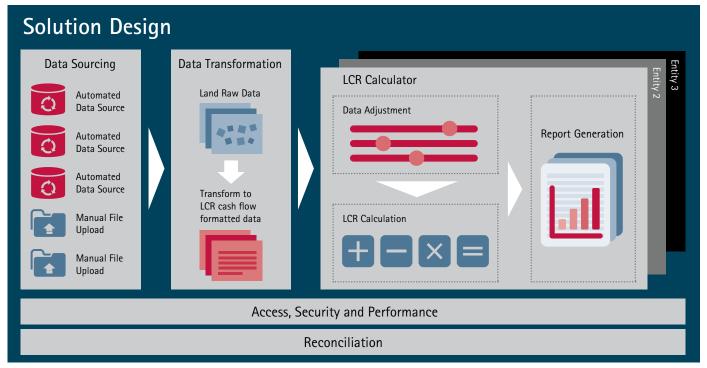
This activity includes the development of an LCR data sourcing structure (source systems and exact data attributes) as well as a mechanism for interaction with the responsible stakeholders. These stakeholders might include data and process owners for various product groups, as well as central finance areas such as regulatory reporting or accounting. A lack of data, as well as the unavailability of key stakeholders, can be among the challenges faced in creating such a blueprint.

Build a Reporting Tool

As seen in Figure 3, a reporting architecture is complex and multi-faceted. Multiple data sources, both automated and manual, are used to gather the information required to run the LCR calculation. This data must be transformed into a format that can be used for LCR reporting. For example, maturity dates are used to create total inflows/outflows for each asset class and for each of the 30 days. This data may be adjusted for technology errors or for known data gaps

through a governed process, complete with audit trail. The calculation is then run applying the runoff rates as defined by the regulator.

Figure 3. Typical solution design for LCR reporting



Similar architectures have been implemented at our clients using various tools, from spreadsheets to custom built solutions to vendor software solutions. In our experience, there is no single system covering all requirements, especially if the LCR solution is embedded into a broader liquidity management system architecture.

An integrated solution (such as the one shown in Figure 4) can help a company cope with other regulations such as the requirements set out by BCBS 239 (Risk Data Aggregation and Reporting Principles). All liquidity risk data is sourced and stored in one repository, with a comprehensive reporting capability running off the data. The reporting capability should help reduce many of the manual processes involved in producing and reconciling the reports, as well as providing greater confidence in the data through automated reconciliation to the general ledger, which is particularly important for accurate forecasting.

Test Data and Design Control Framework

Testing the completeness and accuracy of all sourced data is important for confirming a quality LCR calculation. For any manual sources, checks and balances should be installed to the fullest extent possible. Testing can be driven by defined scripts, with all defects logged for resolution. Testing sign-off should come from the appropriate stakeholders to confirm satisfaction with the source data being used to account for assets, outflows, and inflows.

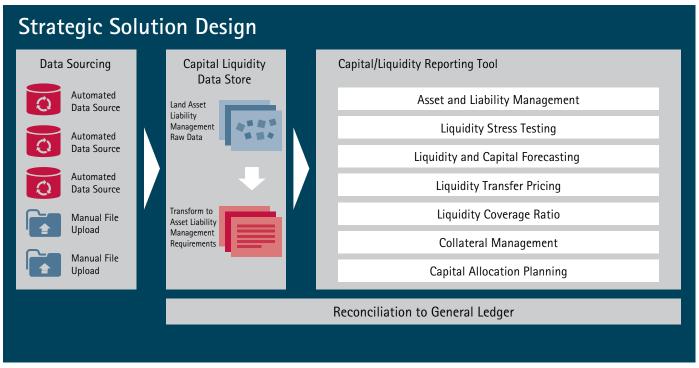
Robust controls can be developed throughout the end-to-end reporting process. Examples include data reconciliation between outputs and the source systems; stringent data aggregation controls; and a defined process for updating and/or maintaining mapping tables. These key control points can then overlay the end-to-end process to flow to and demonstrate holistic coverage, or to highlight potential areas for improvement.

Develop a Reporting Routine

When developing a reporting routine for submission to the regulator the following considerations may be important:

- Accounting for proper resourcing;
- Awareness of timing differences between the data availability date and regulatory deadlines; and
- Implementation of controls and escalation processes.

Figure 4. Typical strategic solution design for an integrated liquidity management solution





Operating Model

Given the impact of the LCR rule on liquidity and funding, most banks need to operationally expand their treasury and/or liquidity management function to include LCR-specific considerations, for example, by including the cost of extra liquidity buffers in product pricing. Dedicated resources of the regulatory reporting area can also be used to run the ratio calculation and generate reports, both for internal stakeholders and supervisory bodies, on a daily basis.

To perform these tasks, a bank may need to invest in ongoing training programs for resources to help them better understand the rules and requirements related to data quality, recordkeeping, audit trails, documentation, and reporting.

A bank should also put in place a governance structure capable of providing the right level of stakeholder engagement. Key stakeholders such as senior management, business teams, technology, audit, legal and compliance functions can help improve quality control and contribute to an attestation of the LCR process. Additional responsibilities may include:

1. Process Ownership for LCR Calculation

The process owner should understand the assumptions made in the calculation and continuously try to improve on their accuracy. Understanding the rule is essential in assisting decision makers improve a firm's balance sheet as it relates to LCR. As part of broader reporting and/or accounting concerns, the process owner function may also help reconcile the underlying data with other disclosures and sources (such as general ledger), as well as overall data governance and quality.

2. Decision Making Based on LCR

LCR is expected to have an impact on the asset structure as well as the funding profile of the company. LCR forecasts may therefore become an integral part of decisions by the Asset Liability Committee (ALCO) or Risk Committee (RICO). Typically, operational treasury departments such as liquidity management perform the respective measures. A wide range of decisions may be affected, such as the structure of the funding plan (for example, wholesale versus retail), asset allocation within HQLA categories, derivative collateral exchange agreements or management of issuances.

Balance Sheet Management

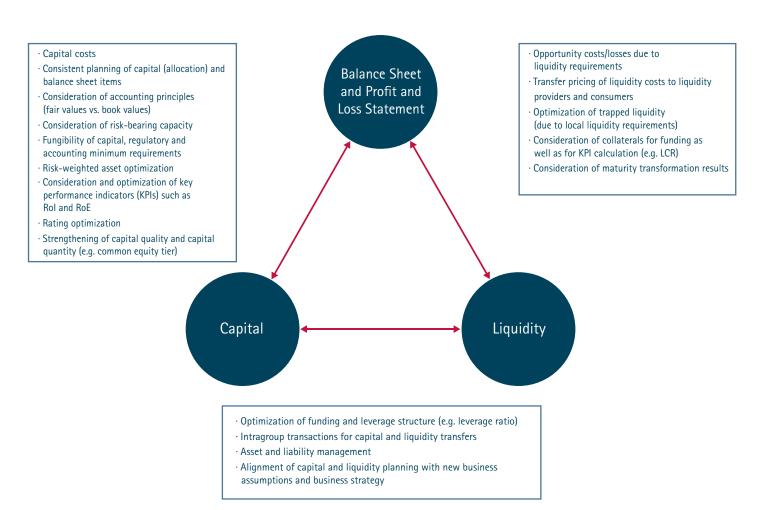
LCR is one of the key pillars of liquidity risk management, which is driven both by external (such as regulatory requirements, market conditions, and the behavior of market players) and internal drivers (such as business perspectives, balance sheet optimization, allocation of transfer prices, and support for new product introductions).

LCR reporting and the broader liquidity risk management framework should form an integrated part of an effective balance sheet and profit and loss (P&L) optimization, complementing existing capital management as shown in Figure 5 below:

Figure 5. Integral view to a bank's financial management

The "Magic Triangle"

Integrated financial management of a bank is a multidimensional optimization process, taking into consideration the inter-dependence of capital, liquidity and earnings



The inter-dependencies among liquidity, capital and profitability are affected by LCR requirements in multiple ways.

Management of Liquid Assets

To improve returns and liquidity requirements in accordance with the LCR rules, investment teams may need to adjust their portfolio mix. In particular, exclusion of certain asset classes from consideration as Level 1 or even Level 2 HQLA will change asset allocation policies and guidelines. The regulation also imposes certain operational requirements for HQLA securities; for example, banks should periodically monetize a portion of their HQLA, and their HQLA should be managed by a specific team. Companies should consider the marginal impact of investments with respect to an increase in the **HQLA** position, earnings or opportunity losses, capital consumption and other events. Therefore, any possible investment has to undergo a multi-dimensional optimization approach to help banks meet LCR requirements while also meeting profitability metrics.

Funding Plans and Strategies

In the context of LCR compliance, a bank should also make decisions regarding the optimal funding mix, and in several dimensions: short-term versus long-term, wholesale versus retail, and types of deposits taken (such as stable, brokered, term, and others). Appropriate LCR contributors (those with small outflows) might not always quarantee cheap funding or low risks, so optimization is important. Strategic funding considerations should also include possible intercompany transactions, to make use of the transferability of liquid assets and to minimize trapped liquidity. Therefore, optimization of the funding mix could affect both the balance sheet structure of the bank and its profitability profile.

Liquidity Transfer Pricing

The LCR driven requirement to hold sufficient HQLA or rely on retail funding sources entails opportunity losses, specifically, extra funding costs. These might be transfer priced to the consumers of liquidity, as is done with standard (risk) capital costs.

Capital Planning and CCAR/DFAST (Dodd-Frank Act Stress Testing) Reporting

Funding and liquidity considerations related to LCR compliance could directly affect the overall capital planning process as well as several other regulatory requirements, such as the funding forecast used for CCAR/DFAST. Conversely, forecasting the LCR will require inputs based on CCAR/DFAST forecasts.

Collateral Management

The LCR regulation places a significant emphasis on effective collateral management and penalizes lower quality collateral with higher outflow rates. The rule therefore requires organizations to have an efficient and robust collateral management framework in place, to help confirm that collaterals are enhanced across all entities at all times.

Other Considerations

When implementing LCR according to the Fed rules, covered companies may have to incorporate the respective project and work streams in a meaningful and cost effective way into other regulatory driven programs such as Intermediate Holding Company (IHC) legislation or—if the client operates internationally—into the full landscape of Basel regulations (Basel II, Basel III and the recent Basel III.5 on trading books).

As there can be considerable overlap among regulatory initiatives, in time alignment, joint resource planning, and synergies such as the use of the same data warehouses or data processing tools have helped organizations reduce costs and accelerate the journey towards full compliance.

Ideally, through the use of a properly defined data and system architecture, it is possible to speed up the availability of data for regulatory reporting to T+1 (transaction date plus one day), that is, to the following business day. Regulators are aiming at this target and the Fed, for example, has already increased the pressure on its LCR regulation in comparison to European reporting requirements for LCR.





Expand the GAAP Balance Sheet to a Liquidity Risk Balance Sheet

Robert C. Merton in his paper "You Have More Capital Than You Think" (Harvard Business Review, November 2005) introduced the concept of a risk balance sheet which not only reflects the basic balance sheet values of all assets and liabilities but also their capital demands, such as provisions represented by the risk measure of Value-at-Risk or VaR. This is a valid way of viewing optimization of capital with respect to the various parts of the business and hence forms a natural link between capital optimization and managing profits and losses.

Merton's concept can also be used for viewing a balance sheet from a short-term liquidity risk perspective. For this purpose, all positions have to be identified by their respective contribution to either the LCR's numerator (HQLA) or its denominator (cash in- and outflows), weighted by the respective regulatory parameters. In the table below we present a sample balance sheet.

GAAP Balance Sheet Item	GAAP Asset Value	GAAP Liability Value	HQLA Contribution	Cash Outflow Contribution	Cash Inflow Contribution
US treasuries	85,000,000	-	85,000,000	-	0
Securities issued by Fannie Mae	40,000,000	-	34,000,000	-	0
Unsecured lending to regulated financial companies	375,000,000	-	0	-	375,000,000
Commercial papers	-	350,000,000	-	350,000,000	-
Direct term retail deposits	-	100,000,000	-	10,000,000	-
Shareholder equity	-	50,000,000	-	0	-
Totals	500,000,000	500,000,000	119,000,000	360,000,000	375,000,000

Source: Accenture, February 2015

In this example, the LCR would be \$119 million divided by \$90 million (25% of \$360 million outflows due to cap), as the inflows of \$375 million would be capped at 75% of the \$360 million outflows.

NSFR, the other Basel liquidity KPI is defined as the ratio of available stable funding (ASF) to required stable funding (RSP). When looking at the contributions of liabilities to ASF and assets to RSF, these

can be used to set up a long-term liquidity balance sheet. The simplest examples being: ASF (equity) = 100% x equity and RSF (cash) = 0% x cash.¹⁰

Focus on Creating Business Value Beyond Compliance

The incorporation of regulatory requirements involving liquidity into day-to-day business decisions can have a huge impact on banks' business portfolios. For example, there could be an effect on product and services development that would either provide higher liquidity or demand lower liquidity. This could lead to the elimination of business units that consume liquidity with low returns or high capital needs and the introduction of new business lines or the reallocation of other lines.

Similarly, LCR implementation could provide incentives for better risk management in the following ways:

- Risk transfer could be achieved by opening liquidity lines with counterparties that are favored by the LCR rule;
- Risk exchange by collateral management or cash pooling across stakeholders could help allocate liquidity buffers to the areas where they are needed; or
- Operations could be managed by restructuring contracts or re-allocating resources across facilities.

Liquidity Management, More Than Projection of Cash Flows

Modern liquidity (risk) management not only assists with cash flow projection but also provides important input into the strategic decision-making process including:

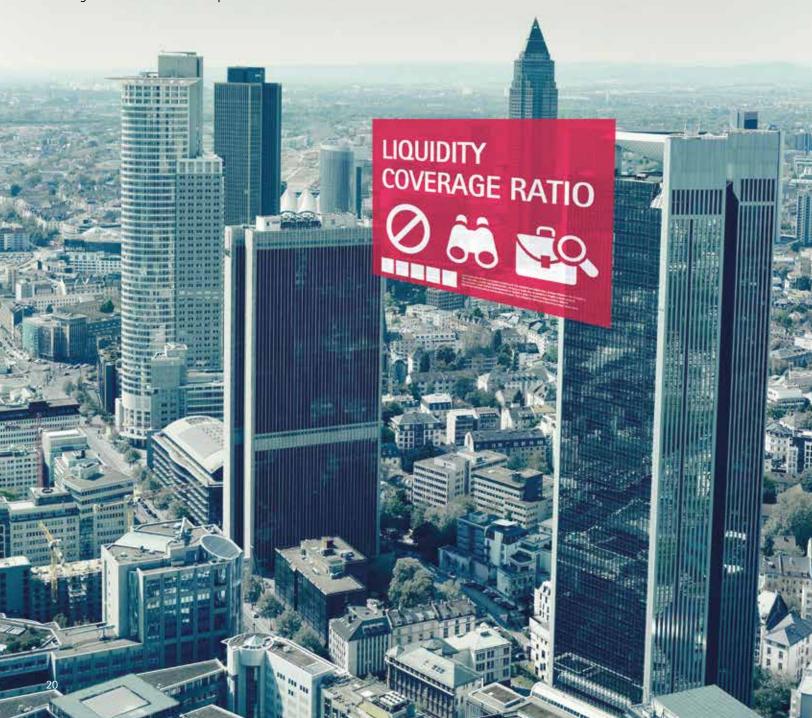
- Sources of funding under business as usual and stress scenarios
- Stability of funding sources
- Contingency funding planning
- Identifying stress scenarios the organization should consider for testing the strength of the balance sheet in respect to liquidity; these could include:

- 1. Market-wide stresses,
- 2. Idiosyncratic stresses, or
- 3. Historic cases (such as those represented by Long Term Capital Management L.P., Barings Bank, Lehman Brothers Holdings Inc., and others).

Under all stress scenarios—whether prescribed by regulators or conceived by the bank—a sufficiently high LCR will affect investment and funding decisions in ways that go beyond mere compliance.

Conclusion

Organizations are encouraged to take steps to understand the possible implications of LCR requirements and their linkages to capital held to cover other risks, as well as balance sheet components and the earnings related to these requirements. This involves well-directed efforts to chart out a plan to seamlessly integrate this requirement into the bank's decision-making process—across multiple functions and teams. This will allow the bank to more appropriately manage its liquidity, aligning it to capital and earnings targets and thus improve the balance sheet. While the reporting and analysis is mandated, banks that undertake this project in a comprehensive, strategic manner will be best-positioned to benefit from the results.



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Notes

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