

# BTRM

The Certificate  
of Bank Treasury  
Risk Management

## Liquidity Leverage Ratio: A simple, non-risk-based backstop for LCR model risk

BTRM Working Paper Series #19

Namitha Perera CFA

Senior Manager Liquidity Frameworks, Policy and Governance, HSBC

June 2024

The views expressed in this paper are personal to the author and in no way represent the official position or views of any organisation that they are associated with in a professional capacity.

The introduction of the Liquidity Coverage Ratio (LCR) as part of post-crisis reforms led to the standardisation of liquidity risk measurement across banks and has contributed to a more resilient banking industry.

However, risk-based assumptions made regarding potential stress outflows in the LCR may not always hold true during a real liquidity stress event. This risk is further increased due to the significant digitalisation of payment systems providing 24/7 access to retail customers. As a result, for example, retail customer deposits could be just as flighty as any other deposit during liquidity stress in contrast to the relatively low outflow rate assumed for these deposits in the LCR.

The paper aims to address this by proposing a simple, non-risk-based liquidity coverage metric that considers runnable deposits and liabilities on a 'notional basis' without applying assumed run-off rates. This helps to backstop inherent model risk in risk-based liquidity metrics such as LCR.

## Introduction

The post-crisis reforms saw the rollout of a range of regulatory measures to reduce banks' risk-taking and standardise how liquidity and funding risk are measured across the banking industry. The Liquidity Coverage Ratio (LCR) is one such regulatory measure.

LCR, a coverage ratio, attempts to quantify the likely liquidity requirement a bank faces for 30 days under severe liquidity stress. It does so by assigning on and off-balance sheet liabilities with an assumed outflow factor that represents their propensity to create a liquidity outflow under stress. Similarly, the LCR also provides room to recognise potential liquidity inflows by applying inflow factors to assets, so that the bank can assess the 'Net Liquidity Outflow' (NLO) over the next 30 days. LCR 'covers' the NLO via holding of a Liquid Asset Buffer. (LAB)

The LCR is considered a Pillar 1 liquidity risk metric as it covers the types of liquidity risks most banks face.

## Maximising efficiency in the current regime

While the introduction of the LCR helped to bring about a greater degree of standardisation to the way liquidity risk is quantified across banks, over the years, firms have adopted 'innovative' solutions to efficiently meet the requirements of LCR. Most of this 'financial/model innovation' is made possible by the fact that the LCR has a range of run-off assumptions for deposits and other liabilities (and inflows from assets) that are determined based on a complex set of rules. They differentiate assets and liabilities based on contractual and behavioural maturity, and counterparty type within a relatively shorter survival window of 30 days.

Listed below are some of the commonest financial and model innovations adopted by the industry in response to the LCR.

- 31-day notice accounts or other products which aim to avoid creating a liquidity outflow by being just outside the LCR window.
- Collateral swap transactions where lower-quality collateral is swapped to High-Quality Liquid Assets (HQLA), typically in short-term transactions with the sole aim of bolstering the LCR.
- Benefit of reducing 30-day outflows using eligible modelled inflows.

These represent the market's reaction to maximise efficiency within the rules laid down by the regulators.

Furthermore, LCR by being a risk-based liquidity metric, by design is prone to liquidity shortfalls should the liabilities behave differently from their assumed behaviour under stress. For example, the LCR rewards retail and

SME deposits with a low outflow factor and attempts to differentiate wholesale deposits between operational and non-operational deposits, with the former having a lower outflow factor. However, under stress, all types of deposits can be just as flighty as another. Moreover, such deviations are increasingly probable as retail customers become ever more digital. When this happens, the bank would face a liquidity shortfall.

It should be noted that the regulators are aware of the limitations of the LCR and expect banks to carry out detailed internal risk assessments to ensure that they hold adequate liquidity that is commensurate with their risk profile. However, banks do this by resorting to even more complex internal models to assess their risk which has led to a further increase in the model risk due to subjective risk sensitivity assumptions made therein.

To address the above challenges and to reduce the model risk and financial innovation-related concerns associated with risk-based metrics (LCR or internal), the paper proposes a simple, non-risk-based liquidity metric to complement the regulatory LCR.

$$\text{Liquidity Leverage Ratio [LLR]} = \frac{\text{Available Liquid Resources [ALR]}}{\text{Liquidity at Risk [LaR]}}$$

ALR = [Unencumbered LAB at T90 + Negative MtM on cash pools supporting interest rate risk hedges]

LaR = [Adjusted on-B/S liabilities + Contingent Liquidity Outflows + ILG]

ILG= Individual Liquidity Guidance or Pillar 2 risk buffer

LAB = Liquid Asset Buffer

The remainder of the paper is structured as follows. Section 2 presents the metric and describes its components, section 3 notes the benefits of the proposed non-risk-based metric, section 4 explores known limitations and the way forward and Section 5 carries a conclusion.

## Components of the metric

This section explores the components of the metric in detail along with the rationale for their consideration.

Numerator	Factor	Rationale
<b>Unencumbered LAB at T90</b>		Considers LAB at T90 in line with the extended time horizon considered in this metric. This also allows for contractual roll-off of short-term LCR boosting trades which may prove unsustainable under severe liquidity stress.
• Cash balance at T90	100%	
• Excess CB reserves	100%	
• Regulatory L1 unencumbered assets at T90	100%	As this is a risk-insensitive metric, it is proposed to apply 0% haircuts on L2A and L2B assets considering their market value to be reflective of realisable value. Any risk of slippage is proposed to be factored into the overall limit for this metric. An alternative approach is to have a haircut prescribed under 'factor' in the metric.
• Regulatory L2A unencumbered assets at T90	100%	
• Regulatory L2B unencumbered assets at T90	100%	
• Regulatory L2B unencumbered assets at T90	100%	
<b>Negative MtM on cash pools supporting interest rate risk hedges</b>	100%	Impact of closing hedge-accounted out-of-money swaps. Positive MtM is not recognised on a conservative basis. The asymmetric treatment proposed requires further review.

Denominator	Factor	Rationale
<b>Adjusted on-balance sheet Liabilities</b>		This represents the total on-B/S 'runnable' liabilities of the bank
<b>Total on B/S liabilities</b>	100%	
<b>Less:</b>		
· CET1 + AT1 + T2 (excl. those up for redemption)	100%	As these will not create a liquidity outflow under stress
· Debt > 6 months (considering min of earliest call/residual maturity)	100%	As these will not create a liquidity outflow under stress (90 days with cliff risk protection)
· On balance sheet derivatives	100%	Liquidity risk is captured via contingent outflows
· Settlement accounts	100%	The numerator is assessed on a current ownership basis
· B/S value of repo < 90 days	100%	As they have matured in the numerator
<b>Contingent Liquidity Outflows</b>		
· LCR derivative outflows	100%	Either the same value as LCR or a 90-D estimate
· LCR off-balance sheet risk-related outflows	100%	Either the same value as LCR or a 90-D estimate
<b>Individual Liquidity Guidance (ILG)</b>	<b>100%</b>	This is relevant for banks with regulatory Pillar 2 (P2) charges. Alternatively, a bank can add an internal assessment of P2 charges such as Initial Margins, debt buyback, intraday, internalisation or debt/deposit termination risk

## Benefits of the proposed non-risk-based metric

By its non-risk-based design and longer horizon, the metric provides the following benefits in comparison to traditional risk-based measures.

- It treats all runnable deposits and liabilities uniformly without subjective risk-sensitivities thereby reducing model risk associated with modelling behavioural outflows.
- By excluding > 6-month issuances from the denominator, the metric encourages a ‘contractually long and stable’ funding profile.
- Adjusting LCR Liquid Asset Buffer (LAB) to show the position as of T90 allows for the roll-off of any short-term collateral swap and other secured funding transactions that have been executed to bolster LCR. In doing so the metric conservatively assumes that the market for these transactions could get dislocated under a severe stress event.
- It recognises the impact of closing negative mark-to-market (MTM) IRR hedges. (double duty of cash as a source of liquidity and as the asset that supports pay floating-receive fixed swaps)
- It can be enforced at a single currency level to limit cross-currency liquidity leverage.
- It can accommodate firm-specific buffers such as additional regulatory P2.
- Neatly complements other Pillar 1 liquidity metrics including the LCR.
- Banks could use this metric or its variants as an ‘internal’ metric to supplement their internal models to backstop model risk.

## Known limitations and the way forward

The proposed metric’s simplicity and certain design features result in some known limitations, which are listed below.

- (i) As a risk-insensitive metric, it has the risk of understating liquidity requirements for banks that run inherently risky funding profiles. For example, a bank with a high level of wholesale deposits will benefit from the risk insensitivity of this metric compared to a bank that is mostly funded by retail deposits.
- (ii) Metric does not consider any benefit from assumed liquidity inflows such as loan repayments as there is no guarantee that they will materialise as planned. However, this may overstate the real liquidity requirement under stress.
- (iii) The metric does not capture Cash Flow Mismatch Risk (“CFMR”). Therefore, the adequacy of liquidity to survive each day is not assured by this metric.

Limitations (i) and (ii) can be overcome by using the metric as a complementary measure to LCR. Limitation (iii) is common to LCR as well and is covered by the P2 regime in the UK.

Furthermore, a cost-benefit analysis would have to be carried out to determine an appropriate ‘limit’ for this metric that represents a safe level of maturity transformation for most regulatory regimes and markets. For example, a higher limit can be unduly restrictive for the ability to transform runnable liabilities into illiquid assets which can impact banks’ role in supporting economic activity. Similarly, certain design features such as the 90D time horizon could impact demand for short-term liquidity products like short-term notice products and/or collateral swaps.

## Conclusions

The post-crisis reform agenda has largely worked as intended as evidenced by how the financial industry averted a 2008-like crisis both during the 2020 COVID-induced severe market stress and during the 2023 banking sector turmoil. Liquidity regulations, particularly the LCR, have played a major role in improving the resilience of banks to liquidity stress events.

While LCR has functioned as intended, the paper notes that the financial industry has adopted innovative methods to circumvent constraints placed on firms that sometimes could undermine their liquidity resilience. Further, the LCR makes complex risk-based assumptions such as deposit run-off rates which could prove inaccurate under real-stress scenarios. (i.e., model risk). Together, this could mean that the firms may face liquidity shortfalls during stress events when these assumptions don't hold.

The paper attempts to address this issue through the introduction of a simple, non-risk-based backstop for the financial industry's innovation to circumvent the LCR and LCR's inherent model risk.

More specifically, the proposed metric does not assume any run-off rates for on-balance sheet liabilities but considers them on a notional basis. It also factors in contingent liquidity outflows and non-standard risks such as those covered via the Individual Liquidity Guidance (ILG)/Pillar 2 regime. Furthermore, the stock of liquidity is adjusted to suit a 90D window thereby reducing the effects of structured products/transactions executed with the specific objective of window-dressing LCR. Finally, it accounts for the effects of the double duty of cash as a source of liquidity and as the asset that supports 'pay floating-receive fixed' swaps.

However, the metric has some known limitations primarily owing to its non-risk-based simple design. Therefore, it is recommended for this metric to complement the regulatory LCR, rather than being used instead of, or in isolation from, the LCR metric.