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# Unintended consequences of liquidity regulation

**Omar Abdelrahman**  
Financial Stability Department  
Bank of Canada  
oabdelrahman@bankofcanada.ca

**Josef Schroth**  
Financial Stability Department  
Bank of Canada  
jschroth@bankofcanada.ca

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## Liquidity regulation, funding costs and liquidity stress

This note discusses potential unintended consequences that liquidity regulation can have on the solvency and soundness of banks. The key argument is that tighter liquidity regulation creates a pecuniary externality that impacts banks' funding costs. Specifically, tighter liquidity regulation encourages banks to hold more safe assets ([Sundaresan and Xiao 2024](#)). This increases their funding needs and thus makes it necessary for banks to offer more attractive rates on additional (wholesale) deposits.

When bank regulators do not account for this externality, liquidity regulation is excessive and hurts the profitability of banks to an extent that is socially harmful. This effect works through banks' capital positions. Specifically, when banks pay more on deposits, they are less profitable. This reduces their attractiveness to the (equity) funding market. Banks are then not able to hold as much costly capital as is desirable from a holistic macroprudential perspective.

Thus, an unintended side effect of liquidity regulation can be to make it more, not less, likely that banks face serious liquidity constraints. The reason is that when capital is insufficient, concerns about solvency are inefficiently high. But solvency concerns, rather than pure liquidity concerns (e.g., sun spot runs), have been identified as the main driver of financial instability ([Correia, Luck and Verner 2024](#); [Kelly et al. 2025](#)).

The side effects of liquidity regulation presented here are unintended because they are driven by a pecuniary externality (which materializes only in general equilibrium). That is, when liquidity regulations that make a given bank safer are imposed on all banks, the banking system as a whole can potentially become less safe.

## Bank assets and regulatory liquidity requirements

Banks' core business model—intermediation—is based on funding long-term assets (e.g., mortgages, business loans, credit lines) with shorter-term liabilities (e.g., deposits, unsecured wholesale debt).

The liquidity mismatches inherent in banks' business models expose them to market and funding liquidity risks. Unexpected liability outflows could force a bank to sell assets, occasionally at a loss. In extreme cases, a bank's assets may not be sufficient to meet liability outflows, at which point the bank would risk insolvency.

## The role and evolution of liquidity regulation

Holding enough reserves to match all liabilities is costly, which means that liquidity risk is inherent in banks' business models. To lower this risk, domestic and international prudential regulations and standards have been developed to ensure banks maintain sufficient liquidity buffers and resilient funding structures. These regulations serve as a first line of defence against liquidity stress events. They help minimize the need for central banks to intervene as lenders of last resort ([Carlson, Duygan-Bump and Nelson 2015](#)).

Basel III, the current version of these international standards, was developed by the Basel Committee on Banking Supervision in response to the 2008–09 global financial crisis. These standards include a deeper focus on liquidity risks than earlier versions did ([Gomes and Wilkins 2013](#)).<sup>1</sup>

## Zooming in on the Basel III liquidity framework

Basel III introduced two key metrics that banks must adhere to: the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR).<sup>2</sup>

The LCR requirement ensures banks maintain a sufficient stock of high-quality liquid assets (HQLAs) to meet outflows during short-term liquidity stress events. HQLAs are the safest and most liquid financial assets, but they typically return a lower yield than loan portfolios and other illiquid assets. The NSFR ensures that banks maintain stable funding structures proportionate to the liquidity of assets being funded.

## How the liquidity coverage ratio impacts the composition of bank assets and funding

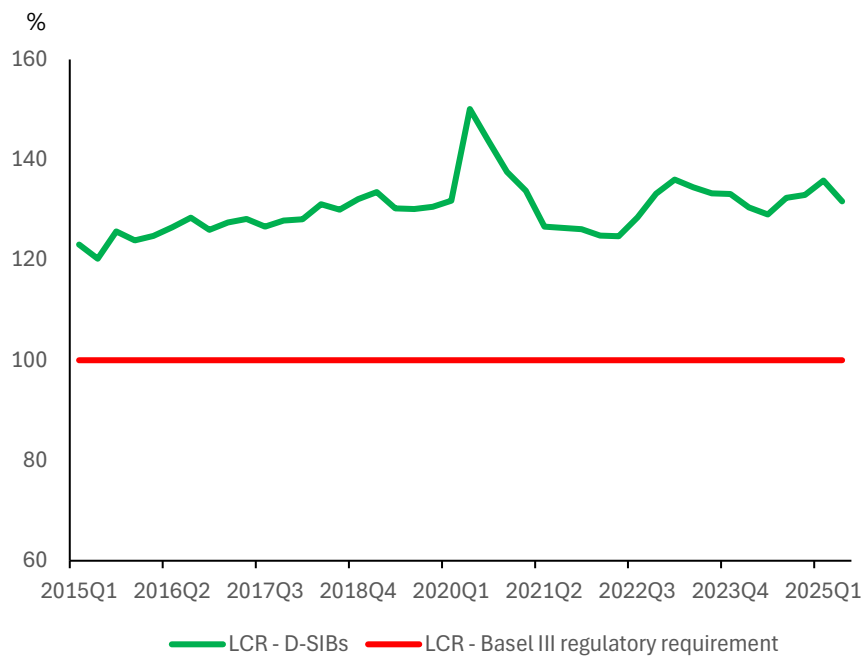
Banks must decide their balance sheet mix subject to the constraints imposed on them by liquidity regulation. Our focus is on the LCR, which requires banks to hold a sufficient stock of HQLAs (e.g., government securities) to cover 100% of stressed net cash outflows in a 30-day stress scenario (**Chart 1** and **Chart 2**).

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<sup>1</sup> The Basel III framework builds on Basel II (finalized in 2004) and Basel I (finalized in 1988). It includes, among others, capital, liquidity and leverage requirements. Additionally, capital and liquidity buffers are designed so that banks would not need to significantly curtail their critical lending activities in stressed times ([Gomes, King and Lai 2017](#)).

<sup>2</sup> In Canada, key requirements of the supervisory review process applicable to liquidity include, among others, net cumulative cash flow and survival horizon monitoring and intraday liquidity monitoring ([Office of the Superintendent of Financial Institutions 2025](#)).

**Chart 1: Liquidity coverage ratios—required versus actual**



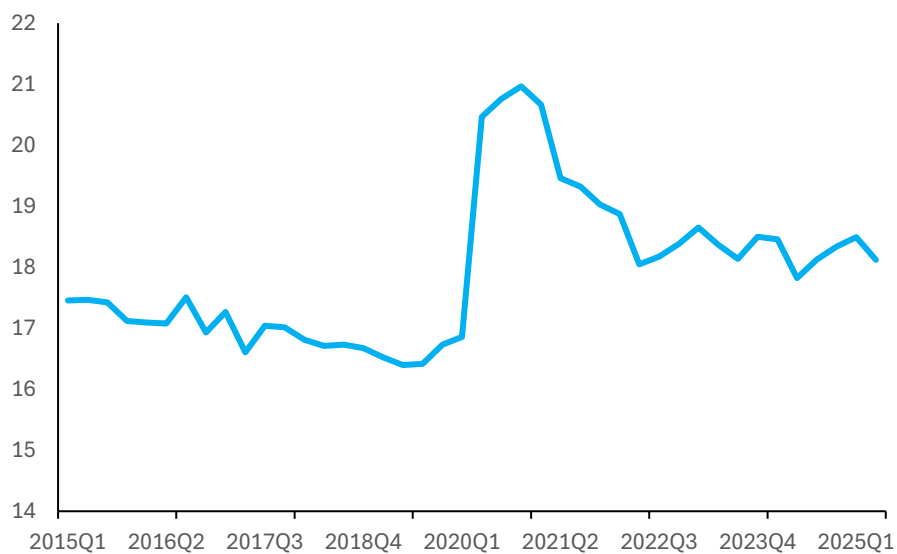
Note: LCR means liquidity coverage ratio. D-SIBs means domestic systemically important banks.

Source: Office of the Superintendent of Financial Institutions

Last observation: 2025Q2

**Chart 2: High-quality liquid assets of domestic systemically important banks**

HQLAs (after applying LCR haircut) as a percentage of total assets



Note: HQLAs means high-quality liquid assets, and LCR means liquidity coverage ratio

Source: Office of the Superintendent of Financial Institutions

Last observation: 2025Q2

These HQLAs act as banks' liquidity buffer, as shown below:

$$LCR = \frac{HQLAs}{net\ cash\ outflows} \geq 100\%$$

The 100% LCR constraint affects both sides of the balance sheet (see **Figure 1**).<sup>3</sup> To adhere to this, banks must allocate a proportion of their portfolios to liquid securities (on the asset side). At the same time, they are also incentivized to rely on more longer-term funding instruments (on the liability side). Longer-term funding instruments are typically more expensive than shorter-term instruments.

This can result in higher funding costs and lower interest income, impacting profitability.

**Figure 1: Liquidity risk of assets and funding liabilities**

		Asset	LCR haircut			Liability	LCR outflow rate
HQLAs	No contribution to net cash outflows in the LCR	Cash, central bank reserves, sovereign bonds assigned a 0% risk weight	0%	Contribution to net cash outflows in the LCR	No contribution to net cash outflows in the LCR	Term deposits and funding with contractual maturity > 30 days	Not applicable
		Covered bonds, other qualifying sovereign bonds and corporate debt securities	15%			"Stable" retail deposits (e.g., insured, relationship deposits)	3%–5%
		Certain residential mortgage-backed securities	25%			"Less stable" retail deposits (e.g., uninsured and brokered retail deposits)	10% and above
		Other marketable securities qualifying as HQLA	50%			Uninsured corporate operational deposits	25%
Non-HQLAs		Business and retail loans (mortgages, consumer loans, etc.)	Not applicable			Unsecured wholesale funding from financial institutions	100%

Note: LCR means liquidity coverage ratio, and HQLAs means high-quality liquid assets.

## Model and computational analysis

The analysis employs a dynamic stochastic general equilibrium model with occasional credit and liquidity crunches (Schroth 2021). A key economic channel is that banks do not have an inexhaustible supply of cheap deposits—that is, banks' funding supply is elastic. As a result, banks' funding costs increase as their funding needs increase, regardless of their level of soundness. We combine this channel with empirical observations in Sundaresan and Xiao (2024) that banks tend to meet pressure to satisfy

<sup>3</sup> Figure 1 is a simplified illustration of asset and liability liquidity risks in the context of the LCR. Details of the LCR requirements in Canada are available on the [website](#) of the Office of the Superintendent of Financial Institutions.

their LCR requirements with increased holdings of HQLAs. This means that tighter LCR requirements increase banks' funding needs and consequently their funding costs.

This channel in the model implies that liquidity regulation creates pressure from banks' stockholders, which in turn lowers banks' ability, and willingness, to hold equity capital. In other words, bank managers cannot convince shareholders to retain more earnings within the bank if the expected return on equity is too low.

Model simulations show that when banks have too large a proportion of HQLAs, they face serious liquidity stress more often over the course of the financial cycle. Serious liquidity stress forces banks to reduce assets, despite economic needs for bank intermediation, and therefore adversely affects real economic activity.

Numerical results suggest that banks should reduce their holdings of safe assets by one-third and increase their capital ratio by 50 basis points. In the model, these changes in the composition of banks' balance sheets lead to a significant reduction in the frequency of financial crises. While numerical implications from a single model should always be taken with a grain of salt, there is a strong indication that a reduction in HQLA positions together with a strengthening of capital positions would improve financial stability.

In summary, liquidity regulation has been designed to make a given bank's (deposit) funding access more stable. However, because liquidity regulation is in practice imposed on all banks, there is an unintended (general equilibrium) effect that makes the funding access of all banks less stable. This happens when banks, because of costly liquidity regulation, hold less equity capital. But when capital is lower, concerns about solvency are potentially higher, and this may adversely impact banks' ability to roll over funding. The policy implication is that liquidity regulation tools, such as the LCR, should be calibrated with the caveat presented here in mind.

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## References

- Carlson, M., B. Duygan-Bump and W. R. Nelson. 2015. "Why Do We Need Both Liquidity Regulations and a Lender of Last Resort? A Perspective from Federal Reserve Lending During the 2007–09 US Financial Crisis." Bank for International Settlements Working Paper No. 493.
- Correia, S. A., S. Luck and E. Verner. 2024. "Failing Banks." National Bureau of Economic Research Working Paper No. 32907. Revised June 2025.
- Gomes, T., S. King and A. Lai. 2017. "Shoring Up the Foundations for a More Resilient Banking System: The Development of Basel III." Bank of Canada *Financial System Review* (November): 35–42.
- Gomes, T. and C. Wilkins. 2013. "The Basel III Liquidity Standards: An Update." Bank of Canada *Financial System Review* (June): 37–43.
- Kelly, S., V. Arnold, G. Feldberg and A. Metrick. 2025. "Ad Hoc Emergency Liquidity Programs in the 21st Century." *Journal of Financial Crises* 7 (1).
- Office of the Superintendent of Financial Institutions. 2024. "Liquidity Adequacy Requirements (LAR) - Guideline (2025)."
- Schroth, J. 2021. "Optimal Monetary and Macroprudential Policies." Bank of Canada Staff Working Paper No. 2021-21.
- Sundaresan, S. and K. Xiao. 2024. "Liquidity Regulation and Banks: Theory and Evidence." *Journal of Financial Economics* 151: 103747.