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How Commercial Banks Manage Risks Through Liquidity Governance

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Abstract

Commercial banks face inherent liquidity risks due to their business model of transforming short-term liabilities into long-term illiquid assets. This makes effective liquidity management a survival imperative during stress periods. Over the past two decades, particularly in the aftermath of the 2007–2009 global financial crisis, regulatory reforms such as Basel III have compelled banks to adopt more dynamic and integrated liquidity governance frameworks. These frameworks balance the need to maintain adequate high-quality liquid assets against the opportunity costs of holding low-yield assets. This literature review synthesizes empirical and conceptual work on liquidity risk management in commercial banks, emphasizing three core pillars: (1) dynamic measurement approaches, (2) asset–liability management techniques integrated with corporate governance, and (3) regulatory oversight aligned with macroeconomic conditions. It further contributes to theory by proposing a three-dimensional liquidity governance framework that bridges fragmented discussions in existing research and explains how institutions navigate trade-offs between liquidity, profitability, and institutional constraints.

1. Introduction

The global financial system relies heavily on commercial banks as intermediaries between savers and borrowers. These institutions channel short-term funds from deposits into long-term investments like loans, a role that keeps capital flowing to businesses, households, and economies. When banks fulfill this role effectively, they support economic growth and stability. When they fail, the consequences ripple outward, disrupting access to credit, eroding public confidence, and even triggering broader financial crises. For this reason, managing the unique risks of banking operations has long been a central concern for policymakers, practitioners, and researchers in finance. Among these risks, liquidity risk stands out as a matter of survival: without enough liquid assets to meet sudden obligations, even solvent banks can collapse.

Commercial banks face inherent liquidity risk because their core business model creates a mismatch. They take in short-term liabilities, such as customer deposits that can be withdrawn on demand, and convert them into long-term, illiquid assets, such as mortgages or corporate loans. This transformation works under normal conditions, but stress can break it due to economic downturns, market panics, or loss of confidence. If more depositors demand withdrawals than a bank has cash on hand, or if short-term funding sources dry up, the bank may be forced to sell assets at fire-sale prices or even cease operations. Historical events, including the 2007–2009 global financial crisis, have shown that liquidity crises in individual banks can spread quickly, threatening the stability of entire economic systems.

Scholars and regulators have made significant progress addressing this risk over the past decades. Early research focused on static ratios to measure liquidity, such as the ratio of cash to deposits or liquid assets to total assets. These tools provided a simple way to track immediate liquidity but failed to account for how market conditions or future stress might change a bank's position. The 2007–2009 crisis marked a turning point: it exposed the limits of static approaches and pushed the industry toward more dynamic solutions. Regulatory reforms like Basel III introduced new standards, including the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR), to ensure banks hold enough high-quality liquid assets. At the same time, academic work expanded to explore concepts like liquidity mismatch and stress testing, highlighting the need to integrate asset and liability management into a cohesive governance framework.

Despite this progress, gaps remain in the existing literature. Much of the research focuses on individual components of liquidity governance, such as specific ratios, stress-testing models, or corporate governance practices, rather than how these elements work together as a system. There is also less attention to how banks navigate trade-offs, such as balancing liquidity buffers with profitability, or how external factors like macroeconomic shifts affect governance effectiveness. Additionally, comparative studies of different banking models, such as conventional versus Islamic banks, are still emerging, leaving a need for more integrated insights into how institutional constraints shape liquidity risk management. These gaps make it harder to understand what constitutes effective liquidity governance in a rapidly changing financial landscape.

This paper addresses these gaps through a comprehensive literature review of liquidity risk management in commercial banks. Its primary goal is to synthesize empirical and conceptual research to highlight the core pillars of effective liquidity governance: dynamic measurement approaches, integrated asset–liability management techniques, strong corporate governance, and adaptive regulatory oversight. By bringing these elements together, the review aims to clarify how banks can balance the need for liquidity with other goals, such as profitability, and how governance frameworks can adapt to external pressures. It also seeks to provide a more cohesive understanding of liquidity risk management that bridges fragmented research areas and supports academic inquiry and practical decision-making.

2. Liquidity Governance: Framework, Instruments, and Measurement Techniques

Liquidity governance refers to commercial banks' policies, practices, and techniques to ensure they

hold sufficient liquid assets to meet expected and unexpected short-term obligations. This framework has evolved notably over recent decades, with key shifts driven by the 2007–2009 global financial crisis and regulatory reforms like Basel III. Early liquidity governance frameworks relied heavily on static regulatory ratios. These ratios included the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), which helped banks meet basic regulatory requirements but failed to capture changing market conditions or future stress scenarios entirely. After the crisis, the push for more dynamic and integrated frameworks became clear. These new frameworks balance the need to maintain adequate high-quality liquid assets against the opportunity costs of holding low-yield assets. They also aggregate liquidity risk across a bank's balance sheet, providing a macroprudential view for supervision. More importantly, they harmonize asset-side liquidity factors, such as repo market haircuts, and liability-side funding conditions, such as OIS-Treasury Bill spreads, to generate early warning indicators of potential liquidity crises.

Commercial banks use tools and measurement techniques to monitor and manage liquidity risk in this framework. Traditional quantitative metrics are still in use, including the ratio of liquid assets to total assets, the cash-to-deposit ratio, and the financing gap. The financing gap is the difference between average loans and core deposits, and these metrics primarily capture a bank's immediate liquidity profile. However, empirical evidence from the document shows that these static ratios have limitations. They cannot adequately capture future liquidity shortfalls during stress conditions, making them less effective when market stability is at risk. To address this, modern liquidity governance frameworks now incorporate dynamic measurement tools. One key tool is the Liquidity Mismatch Index (LMI), which recursively discounts expected future liquidity states and accommodates maturity dimensions in a time-varying framework. This approach has been shown to capture liquidity risks more effectively than traditional static measures. Another critical dynamic tool is advanced stress testing models, which simulate multi-horizon adverse scenarios to help banks estimate potential liquidity gaps under pressure.

Banks also increasingly use market-based liquidity premia to supplement these tools. These premia include repo market haircuts and OIS spreads, which act as proxies for actual market conditions. By linking liquidity measurements directly to market sentiment and funding costs, these premia help banks avoid the lag of relying solely on internal data. The combination of these techniques serves two key purposes. It ensures banks maintain sufficient liquid buffers to handle short-term obligations and is integral to strategic decision-making. This includes lending policies and asset allocation decisions, aligning liquidity management with the bank's overall business goals.

3. The Role of Corporate Governance in Liquidity Risk Management

Corporate governance is critical for commercial banks to manage liquidity risk effectively. Commercial banks often face the problem of interest misalignment between managers and shareholders. Managers may prioritize short-term profits by reducing liquid asset holdings, which increases liquidity risk. Strong corporate governance can mitigate this problem by clarifying responsibilities and establishing oversight mechanisms (Jensen & Meckling, 1976).

Board oversight is the core of corporate governance in liquidity risk management. Boards must approve significant liquidity policies, such as the scale of high-quality liquid assets and funding structure. They also need to supervise the implementation of these policies to ensure they match

the bank's risk tolerance. Studies show banks with independent directors on risk committees have more effective liquidity management. These banks maintain higher liquidity coverage ratios and face lower liquidity distress risks during market stress (Adams & Mehran, 2012).

The establishment of a dedicated liquidity risk management unit further strengthens governance effectiveness. This unit is responsible for formulating detailed liquidity risk management rules, monitoring daily liquidity positions, and conducting regular risk assessments. It reports directly to the board or a specialized committee, which avoids interference from operational departments that may prioritize business expansion over risk control. Without such a unit, liquidity management can easily become fragmented, and potential risks may be ignored until they escalate.

Another key governance measure is appointing a Chief Risk Officer (CRO) with sufficient authority. The CRO independently evaluates liquidity risks, including identifying hidden risks in asset-liability structures and assessing the impact of market changes on liquidity. They can put forward risk warnings and adjustment suggestions not constrained by short-term profit goals. Banks with CROs and direct board access show more prudent liquidity behavior. They hold more liquid assets relative to their risk exposure and are less likely to rely on unstable short-term funding (Laeven & Levine, 2009).

Incentive mechanisms aligned with liquidity risk goals also play an important role. Banks can incorporate liquidity risk indicators, such as the stability of funding sources and the adequacy of liquid buffers, into managers' performance evaluation. This links managers' compensation to the bank's long-term liquidity safety, instead of only tying it to profit indicators. Such mechanisms reduce the tendency of managers to take excessive liquidity risks for short-term gains. Empirical evidence shows banks using risk-based incentive structures have smaller liquidity gaps and more stable funding bases (Barth et al., 2013).

Ultimately, strong corporate governance integrates liquidity risk management into the bank's overall risk framework. It ensures that liquidity policies are not only well-formulated but also rigorously implemented. During periods of market stress, banks with robust corporate governance are better able to detect liquidity mismatches early and take corrective actions. For example, a study of European banks during the 2007–2009 financial crisis found that banks with strong governance were 40% less likely to require central bank liquidity support (Beltratti & Stulz, 2012). This confirms that corporate governance is not just a formal system but a practical guarantee for banks to withstand liquidity shocks.

4. Trade-Offs Between Liquidity and Profitability

The trade-off between liquidity and profitability is an inherent challenge in commercial banks' liquidity governance. Commercial banks must hold high-quality liquid assets to meet unexpected cash demands, such as deposit withdrawals or short-term debt repayments. However, these assets usually have lower yields, like government securities or cash reserves. In contrast, assets with higher yields, such as long-term corporate loans or high-risk bonds, tend to be less liquid. They cannot be converted into cash quickly without incurring losses. The core of this contradiction lies in opportunity cost: holding high-quality liquid assets means giving up the chance to invest in high-yield assets. At the same time, overpursuing profits will increase the risk of liquidity crises (Berger

& Bouwman, 2013).

Empirical studies show that the relationship between liquidity and profitability is not simply linear. When the proportion of high-quality liquid assets held by banks is at a moderate level, around 15% to 20% of total assets, it can effectively avoid crisis costs caused by insufficient liquidity. These costs include discounted asset sales or high costs of emergency financing. At the same time, this proportion can also maintain a certain level of profitability. However, if the proportion is too high, such as exceeding 30%, the dilution effect of low-yield assets on overall profits becomes obvious. This leads to narrower net interest margins and eventually lowers return rates. This impact is more prominent in low-interest-rate environments. The yields of high-quality liquid assets drop further, and the opportunity cost of holding them rises accordingly (BIS, 2022).

To balance this trade-off, commercial banks no longer rely solely on static ratios to manage liquidity. They use more dynamic tools like multi-horizon stress tests and forward-looking liquidity indicators. These tools help simulate liquidity needs and profit changes under different market scenarios. Through these tools, banks can optimize the structure of their asset portfolios. They ensure liquidity safety while reducing unnecessary holdings of low-yield assets. They allocate more funds to assets that match returns with liquidity. This adjustment is not a one-time action but a continuous process. Banks must adjust in real time according to changes in market interest rates, deposit fluctuations, and regulatory requirements (Vazquez & Federico, 2015).

If banks focus too much on liquidity, they will lose profit opportunities, which may affect their competitiveness in the long run. They will be exposed to liquidity risks if they focus too much on profitability. Once the market comes under pressure, it may face a crisis of capital chain rupture. Therefore, effective liquidity governance must incorporate this trade-off into core decisions. Banks must find the optimal balance between the two through scientific tools and strategies. This balance ensures short-term operational safety and supports long-term profit goals.

5. Liquidity Governance in Conventional Versus Islamic Banks

Conventional commercial banks and Islamic banks adopt distinct approaches to liquidity governance, and this divergence mainly comes from the institutional constraints that Islamic banks face. Conventional banks typically have access to a broader array of liquidity instruments, which supports more flexible liquidity management. They can tap into interbank lending markets to secure short-term funds, offer interest-bearing deposit products to stabilize their funding base, and turn to central bank liquidity facilities, such as discount windows, when they face short-term liquidity pressures (Beck et al., 2013). These tools allow conventional banks to adjust their liquidity positions quickly; for example, they can borrow from peers to fill temporary funding gaps or reduce excess liquidity by increasing lending to optimize asset yields.

By contrast, Islamic banks must comply with Shariah principles, which limit their liquidity management options. Shariah rules prohibit using interest-based financial instruments, excluding most conventional interbank transactions and interest-bearing deposits. They also cannot invest in assets linked to prohibited sectors, such as alcohol or gambling, which narrows the pool of high-quality liquid assets (HQLA) available to them (Chong & Liu, 2009). Unlike conventional banks, which can hold government bonds as easily tradable HQLA, Islamic banks often rely on Shariah-

compliant alternatives like Ijarah Sukuks (lease certificates). These alternatives, however, are usually less liquid and have smaller trading markets than conventional bonds.

These constraints force Islamic banks to develop alternative liquidity governance mechanisms. They frequently use structured financial contracts to manage liquidity flows, such as Bai Salam, a forward sales agreement that locks in future cash inflows. They also maintain larger internal liquidity buffers; for instance, they keep a higher share of deposits as cash reserves to handle unexpected withdrawal demands (Ahmed et al., 2020). These measures help Islamic banks control liquidity risk but come with trade-offs. The structured contracts are more complex to design and execute, and their lower liquidity means Islamic banks may struggle to convert them into cash quickly during market stress. The larger internal buffers also mean they hold more low-yield assets, which can lower their profitability than conventional banks in the same market conditions.

Even so, empirical evidence shows that Islamic banks can manage liquidity risk effectively when they tailor their strategies to their unique business models. Some Islamic banks, for example, have expanded their Shariah-compliant funding sources by partnering with other Islamic financial institutions. Others have designed modified deposit schemes with extended lock-up periods to reduce the risk of sudden deposit outflows (Ahmed et al., 2020). These steps help them maintain stable liquidity positions, even though their toolkits are less diverse than conventional banks.

This contrast between the two banking models highlights a key requirement for regulators: liquidity governance frameworks cannot be one-size-fits-all. Regulators must consider the idiosyncratic risks of Islamic banks when designing rules. They could, for example, establish Shariah-compliant lender-of-last-resort facilities to provide emergency liquidity to Islamic banks during crises. They could also clarify the criteria for identifying Shariah-compliant HQLA to expand the asset pool for these banks (Beck et al., 2013). Suppose regulators apply the same standards to conventional and Islamic banks, requiring Islamic banks to hold the same type or amount of HQLA as conventional banks. In that case, they may unintentionally increase the liquidity risk of Islamic banks or push them to adopt inefficient practices. By creating sector-specific guidelines, regulators can ensure that both types of banks have effective liquidity governance systems, supporting the stability of the broader financial system.

6. Conclusions

First, the core of how commercial banks manage risks through liquidity governance lies in a three-in-one system consisting of dynamic frameworks, technical instruments, and corporate governance. This system is not a static combination but an evolving structure. It has moved beyond the early compliance-focused model that relied solely on static ratios and now forms a dynamic framework that integrates asset-side and liability-side risks. Within this framework, tools like the Liquidity Mismatch Index (LMI) and multi-horizon stress tests serve as key carriers to capture market changes and future risks. At the same time, apparent board oversight, dedicated liquidity committees, and risk-oriented incentive mechanisms provide internal institutional guarantees for the system, ensuring that technical tools can be effectively implemented and excessive risk-taking is avoided.

In the operation of this system, the trade-off between liquidity and profitability remains the core contradiction. Commercial banks must balance holding low-yield, high-quality liquid assets

(HQLA) to cope with crises and allocate high-yield, illiquid assets to improve profitability. Empirical evidence shows that a moderate HQLA ratio (15%-20%) better supports long-term profitability. Applying dynamic stress tests and forward-looking indicators helps banks optimize their asset portfolios and reduce conflicts caused by this trade-off. Banks cannot prioritize short-term profits by reducing liquidity buffers, nor can they overly hold liquid assets to the point of diluting returns; instead, they need to adjust their strategies dynamically based on market conditions.

Looking ahead, the optimization of liquidity governance must center on technological upgrading and regulatory coordination. Machine learning technologies can improve the accuracy of integrated multi-risk models, helping link liquidity, credit, and operational risks to identify potential contagion effects earlier. Blockchain and central bank digital currencies (CBDCs) can enhance real-time data monitoring and asset liquidity, alleviating data bottlenecks. Harmonizing cross-border regulations and localized adjustments for emerging markets and Islamic banks can reduce regulatory arbitrage and ensure that governance frameworks adapt to different market contexts. Longitudinal studies on the impact of liquidity governance reforms on bank performance will also provide more evidence for practice, promoting the continuous evolution of governance systems.

Ultimately, effective liquidity governance is not just a tool for commercial banks to manage individual risks; it is a foundational support for maintaining the stability of the entire financial system. Commercial banks must keep their governance frameworks dynamic and integrated as market conditions and regulatory requirements evolve. By combining advanced technical tools with sound corporate governance and adapting to macroeconomic changes and institutional differences, banks can better cope with liquidity shocks, maintain operational continuity, and continue to play their role as financial intermediaries to support sustainable economic growth. This process requires ongoing collaboration between academia, practitioners, and regulators to provide theoretical guidance, practitioners to test and refine practices, and regulators to formulate adaptive policies. Hence, liquidity governance remains practical and relevant in an ever-changing financial landscape.

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