

DETERMINANTS OF LIQUIDITY RISK IN THE BANKING SYSTEM: A SYSTEMATIC LITERATURE REVIEW

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Abstract:

Background: Post-2008, managing liquidity risk banks' ability to meet short-term obligations without major losses has become crucial. Regulatory measures like Basel III's LCR and NSFR emerged to ensure stability. With the rise of fintech, understanding liquidity determinants is increasingly relevant for stability.

Purpose: This review analyzes primary determinants of liquidity risk in the banking sector, examining systematic (macroeconomic and policy-driven) and non-systematic (bank-specific) factors. It also evaluates the impact of digital banking and fintech innovations on liquidity management to inform effective risk strategies.

Design/Methodology/Approach: A systematic literature review (SLR) of 30 empirical studies most relevant published from 2010 to 2024 was conducted, examining factors such as non-performing loan (financing), capital adequacy, leverage, bank size, profitability, and corporate governance. Keywords used in this study are "Liquidity and Risk" or "Management and Bank" & "Determinants" or "Factors" and "Liquidity Risk" and "Bank*" or "Banking System" or "Banking Sector*".

Finding/Result: Key liquidity risk drivers include bank size, capital buffers, macroeconomic factors, and regulatory frameworks like Basel III. Larger banks with diverse funding face lower risks, while smaller banks, especially in emerging markets, are more vulnerable. Fintech and digital banking support real-time liquidity management but raise cybersecurity concerns.

Conclusion: Liquidity risk is shaped by both internal and external factors. Larger, well-capitalized banks manage it more effectively, while fintech offers new tools that require careful risk oversight. Basel III remains vital, and ESG considerations are influencing sustainable liquidity practices.

Originality/value/research gap: Current research emphasizes integrating Basel III, fintech, and crisis management. Real-time tools like AI enhance liquidity management, although cybersecurity risks remain. ESG factors and the COVID-19 pandemic highlight the need for robust, sustainable liquidity frameworks. This research focuses on the role of technology advancement in liquidity risk management, which has not been widely explored in the context of emerging markets.

Keywords: bank liquidity management, basel III, emerging market, liquidity risk, technology advancement

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INTRODUCTION

Liquidity risk, defined as the risk that a financial institution may not meet its short-term financial obligations without incurring significant losses, has become a critical focus area for financial institutions, particularly banks (Hussain et al. 2022). With the increased complexity of global banking operations, liquidity risk has far-reaching implications for financial stability, market confidence, and overall economic health. Following the financial crisis of 2007-2008, regulatory bodies, including the Basel Committee on Banking Supervision, introduced frameworks such as the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) to mitigate liquidity risks. These measures, along with monetary policy shifts, highlight the importance of understanding both systematic and non-systematic determinants of liquidity risk, especially in today's volatile banking environment.

For emerging and developed economies alike, understanding liquidity risk's determinants is vital to avoiding systemic crises and ensuring the smooth operation of financial markets. This study synthesizes existing research to uncover key determinants influencing liquidity risk, specifically focusing on both systematic factors (e.g., macroeconomic shifts, regulatory changes) and non-systematic factors (e.g., bank-specific characteristics). Previous research has predominantly focused on individual aspects of liquidity risk, such as the relationship between liquidity and profitability or the influence of monetary policy. Studies like Brunnermeier (2009) and Acharya (2012) emphasize the role of liquidity in the contagion of financial crises. However, newer research, particularly post-2019, has begun to examine more granular determinants such as the digital transformation of banking operations and the emergence of fintech-driven liquidity management tools. While earlier research concentrated on developed economies, more recent studies have also expanded to include emerging markets, such as those in Southeast Asia and Africa, revealing regional differences in liquidity risk determinants (Antony 2023; Huynh 2023; Tamakloe et al. 2023; Damayanthi et al. 2023; Widarjono et al. 2022; Mashamba 2022; Sharma et al. 2022; Guo et al. 2023; Tran et al. 2022). Liquidity risk determinants in the banking system in Figure 1.

Liquidity risk remains a critical concern in the banking sector, yet a comprehensive understanding

of its determinants is still evolving. Despite existing research identifying various systematic and non-systematic factors that influence liquidity risk, such as macroeconomic conditions, regulatory frameworks, and bank-specific characteristics, the complexity and dynamic nature of these factors remain underexplored, especially in the context of emerging markets. Moreover, while traditional studies have focused predominantly on developed economies, there is a notable gap in understanding how digital banking and fintech innovations are reshaping liquidity risk management. As banks increasingly adopt technological solutions such as mobile banking, blockchain, and big data analytics, it remains unclear how these innovations impact liquidity risk in banks, particularly in regions with distinct economic and regulatory challenges. This research aims to fill this gap by investigating the evolving role of both traditional determinants and emerging technological trends in shaping liquidity risk management, with a particular emphasis on emerging market countries where such shifts are most pronounced. This review addresses the following central research questions: What are the key systematic and non-systematic determinants of liquidity risk in the banking sector?; How do macroeconomic and policy-driven factors influence liquidity risk across different regions?; What emerging trends, such as digital banking and fintech innovations, impact liquidity risk management in banks, especially in emerging market countries?.

This SLR focuses on articles published between 2010 and 2024, primarily sourced from Scopus. The review covers both quantitative and qualitative studies on liquidity risk in banking, with an emphasis on empirical research. By synthesizing data from various global regions, including emerging markets, the review contributes a comprehensive understanding of the determinants of liquidity risk. It also identifies future research avenues, particularly regarding digital transformations in banking, and offers practical implications for policymakers and financial managers.

METHODS

This study adopts a Systematic Literature Review (SLR) methodology to comprehensively examine the determinants of liquidity risk in the banking sector (Figure 2). The SLR approach was chosen for its systematic, transparent, and replicable review of

relevant literature. Applying this methodology, the research identifies, evaluates, and synthesizes findings from empirical studies on liquidity risk published between 2010 and 2024. The review focuses on understanding the macroeconomic, policy-related, and bank-specific factors that influence liquidity risk across various regions and banking systems, including both conventional and Islamic banks.

The primary data source for this review consists of 30 peer-reviewed articles obtained from Scopus. The articles were selected based on their relevance to the keywords “liquidity,” “risk,” “management,” and “bank” within the specified period (2010-2024) that was searched by February 2024 (Table 1). These articles were drawn from a range of high-impact journals focusing on banking, finance, risk management, and financial stability. Process of filtering the manuscript in Table 2.

A systematic approach was taken to extract relevant data from the selected articles. Key information from each article was documented, including:

1. Author(s) and year of publication.
2. Study objective: The specific aim of each study regarding liquidity risk.
3. Methodology: The approach, models, and data used in each study (e.g., GMM, panel data, regression analysis).
4. Key findings: Summarized insights related to liquidity risk determinants.
5. Context and region: The geographical and regulatory context (e.g., developed economies vs. emerging markets).
6. Limitations of the study, if discussed. This extraction process allowed the research to systematically compare the findings across different studies and identify both consistent trends and regional variations in liquidity risk determinants.

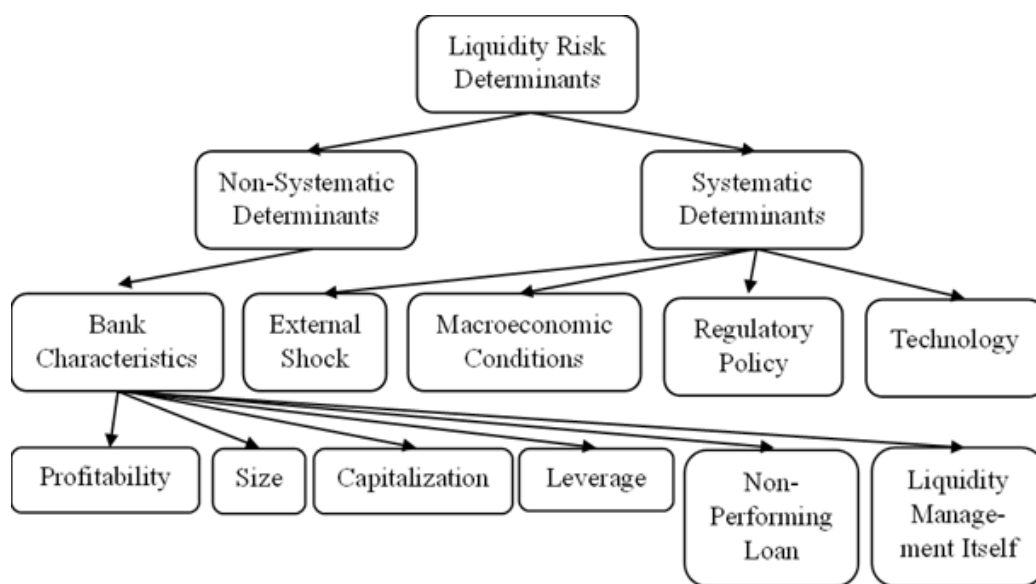


Figure 1. Liquidity risk determinants in the banking system, Scopus Literature from 2010-2024 were processed (2025)

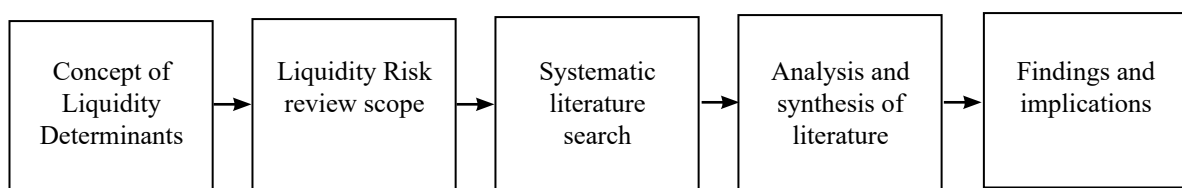


Figure 2. Systematic literature review research design (Brocke et al. 2009)

Table 1. Search keywords and the number of manuscripts before and after filtering

Search terms					Manuscript before filtering	Total after filtering
“Liquidity” AND “Risk”		OR	“Management” AND Bank”		584	30
AND						
"Determinants" OR "Factors"	AND	"Liquidity Risk"	AND	"Bank*" OR “Banking System" OR “Banking Sector*"	583	10

Table 2. Process of filtering the manuscript

Filter feature in Scopus	Inclusion criteria	Exclusion criteria
Year range 2010-2024	Studies published between 2010 and 2024.	Studies not directly related to liquidity risk.
Limited to the article	Articles that explicitly address liquidity risk in the context of banks.	Papers focusing on financial institutions other than banks (e.g., insurance companies, asset management firms).
Sort by relevance	Peer-reviewed empirical studies, including both qualitative and quantitative analyses.	Non-peer-reviewed articles such as opinion pieces, book chapters, and conference presentations.
	Studies focused on both conventional and Islamic banking systems	Duplicate publications across different journals or repositories.

Data were analyzed using a thematic analysis approach, where the extracted information was grouped into common themes or categories based on the determinants of liquidity risk identified in each study. The analysis was conducted in two stages: Initial categorization of findings into two broad themes systematic and non-systematic determinants of liquidity risk. Sub-categorization of these determinants is based on specific factors, including macroeconomic conditions, regulatory policies, bank-specific characteristics (e.g., size, capital adequacy), and external shocks such as the COVID-19 pandemic.

A comparative analysis was then performed to identify regional differences, particularly between developed economies and emerging markets, as well as between conventional and Islamic banking systems. The review also incorporates models from key studies on liquidity risk contagion and macroprudential policies.

In addition, models such as the Generalized Method of Moments (GMM) and Panel Data Regression were examined as frequently used analytical tools in the reviewed literature for assessing liquidity risk. The synthesis of these models forms the conceptual basis for analyzing how different variables (e.g., bank size, funding structure, regulatory interventions) affect liquidity risk.

This SLR is limited by the availability and accessibility of articles within the specified time frame (2010-2024). Furthermore, the research is dependent on the scope of existing literature, which may not fully address emerging liquidity risks related to technological advances or rapidly changing market conditions. The exclusion of non-English publications also presents a limitation, as significant research conducted in other languages may have been overlooked. Additionally, since the review focuses on peer-reviewed articles, insights from real-time case studies or practitioner-led research may not be fully represented.

RESULTS

The systematic literature review of 30 academic articles (2010-2024) on liquidity risk reveals a range of factors influencing the liquidity position of banks. These factors are categorized into two broad groups: non-systematic determinants, which include internal bank characteristics and management decisions, and systematic determinants, which consist of macroeconomic conditions, regulatory frameworks, and external market shocks. Additionally, the review highlights the growing role of digital technologies and fintech in transforming liquidity risk management, as well as the impact of recent economic disruptions such as the COVID-19 pandemic.

Non-Systematic Determinants

In the banking sector, non-systematic determinants of liquidity risk refer to internal factors that are unique to each individual bank, and they include elements such as bank size, capital structure, profitability, and risk management practices. These factors are largely influenced and controlled by the bank's own management, meaning that banks have a degree of control over how they manage these internal variables to mitigate liquidity risk.

One of the most significant factors is bank size and capital adequacy. Larger banks tend to experience lower liquidity risk, as they often have more diversified funding sources and stronger capital buffers. Research by Kalimashi et al. (2022) and Damayanthi et al. (2023) highlights that larger institutions are typically better positioned to weather liquidity shocks due to their robust capital reserves. This is particularly true when these banks adhere to standards like Basel III, which requires banks to maintain sufficient capital to absorb liquidity shocks. In contrast, smaller banks, particularly in times of economic instability, are more susceptible to liquidity pressures due to their limited access to capital and diversified funding sources.

Another critical determinant of liquidity risk is profitability and earnings management. A bank's profitability directly influences its ability to generate internal liquidity, which in turn reduces reliance on external sources of funding. Studies such as those by Arief & Anees (2012) indicate that more profitable banks have greater internal resources to manage liquidity risks. However, aggressive earnings management practices can exacerbate liquidity risk. When banks prioritize short-term profit maximization at the expense of long-term stability, they may compromise their liquidity position, making them more vulnerable to unexpected financial pressures.

The loan-to-deposit ratio and asset composition also play pivotal roles in determining a bank's liquidity risk. Banks with high loan-to-deposit ratios, especially during times of financial stress, face heightened liquidity risks. As argued by Ismail & Ahmed (2023), when banks have a significant portion of their assets tied up in loans and limited liquid assets, they are more likely to encounter liquidity shortfalls, particularly when non-performing loans begin to rise. A well-balanced asset portfolio that includes both liquid and illiquid assets

can help mitigate these pressures, allowing banks to manage liquidity risks more effectively in turbulent times.

Systematic Determinants

Unlike non-systematic determinants, systematic determinants are external factors that influence all banks within a specific market or economy. These factors, which include broader macroeconomic conditions, regulatory changes, and industry-wide shocks, affect the entire banking sector and are beyond the direct control of individual banks.

One of the most influential of these external factors is macroeconomic conditions. Research by Mashamba et al. and Magwedere & Marozva (2022) underscores the close relationship between liquidity risk and broader economic variables, such as inflation, interest rate fluctuations, and economic growth. During periods of economic instability, such as the COVID-19 pandemic, liquidity risks intensify as banks face increased loan defaults and a tightening of market liquidity. The economic disruption during such crises forces banks to deal with heightened liquidity pressures, which can severely impact their ability to meet short-term obligations.

Another critical external factor influencing liquidity risk is the regulatory environment and monetary policy. Monetary policy plays a crucial role in shaping the liquidity conditions in the banking sector. During times of financial stress, expansionary policies, such as lowering interest rates or central bank liquidity injections, can alleviate liquidity pressures by making it easier for banks to access funding. However, contractionary policies, on the other hand, can increase the cost of funding for banks, thereby amplifying liquidity risks. Guo et al. highlight how central bank interventions, such as Standing Lending Facilities (SLFs), can directly affect liquidity in the interbank market, sometimes even encouraging excessive risk-taking by banks.

Lastly, external shocks, such as the COVID-19 pandemic, have profound implications for liquidity risk. Magwedere & Marozva (2022) discuss how the pandemic, particularly in emerging markets, led to significant liquidity shortages in banks. With rising loan defaults and reduced economic activity, banks found themselves struggling to maintain liquidity. Although

government interventions, including stimulus packages and liquidity support programs, helped stabilize the financial system, they also introduced new risks, such as increased public debt and the potential for future regulatory tightening. These interventions, while necessary, created a complex balancing act between immediate relief and long-term financial stability. Figure 3 illustrates the flowchart of the systematic and non-systematic liquidity risk determinants.

Managerial Implication

The findings from the reviewed articles offer several key insights into effective bank management strategies for mitigating liquidity risk. One of the most critical recommendations is the prioritization of liquidity buffers. Bank managers must ensure that liquidity buffers are robust and readily available, particularly during periods of economic uncertainty. Compliance with regulatory liquidity requirements, such as those set forth by Basel III, plays a vital role in safeguarding banks against liquidity crises. Maintaining adequate reserves not only ensures compliance but also provides a safeguard against unexpected liquidity shocks, enhancing the bank's ability to meet its obligations during challenging times.

Another essential strategy is to diversify funding sources. Banks that rely heavily on short-term or volatile funding sources are particularly vulnerable to liquidity risk. To reduce exposure, bank management should actively seek to diversify their funding base.

This includes exploring long-term funding options and securing stable deposits from diverse markets. By broadening the funding portfolio, banks can strengthen their resilience to market fluctuations and avoid the liquidity pressures that often arise from relying on less stable, short-term financing.

In addition, conservative risk management practices are crucial in mitigating liquidity risk. Proactive risk management, including cautious earnings management and prudent capital allocation, helps banks better navigate periods of financial instability. By adopting more conservative approaches, banks can ensure smoother liquidity flows, even in times of economic downturns. This approach minimizes the risk of overexposure to risky assets and fosters long-term stability by maintaining a more balanced risk profile.

Policy Implication

Regulatory authorities can draw several important lessons from the review regarding the management of liquidity risk. One key takeaway is the need for stronger regulatory oversight. Policies that mandate stronger capital and liquidity buffers, particularly for smaller and mid-sized banks, are essential in preventing systemic liquidity crises. The review highlights the effectiveness of Basel III measures in enhancing liquidity risk management across the banking sector, reinforcing the importance of maintaining adequate reserves to safeguard against potential liquidity shortfalls.

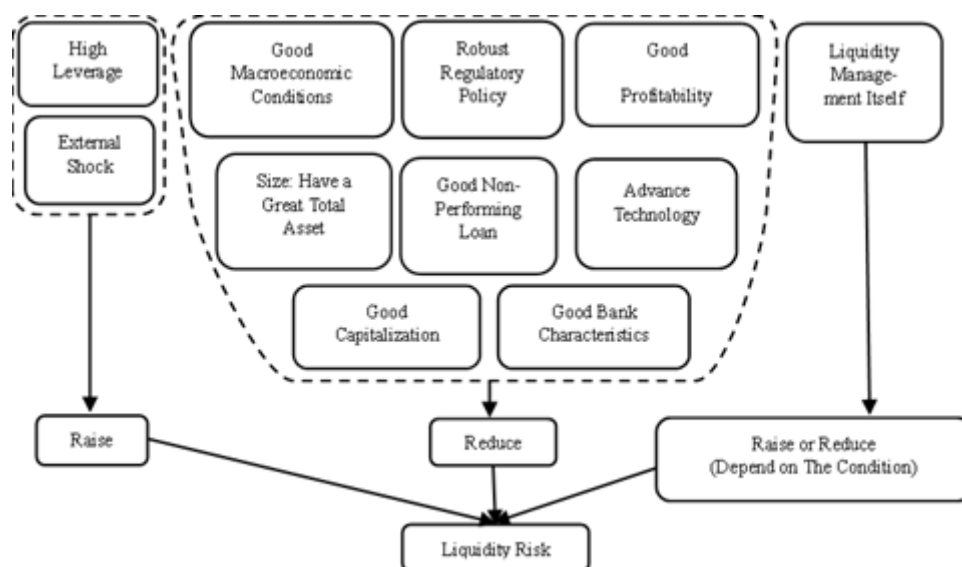


Figure 3. Flowchart of the relationship between liquidity risk determinants

Another critical aspect is the establishment of crisis management frameworks. Regulatory bodies must ensure that banks have robust liquidity crisis management plans in place, which should include clear provisions for accessing emergency liquidity and managing liquidity during periods of market disruption. Having well-defined frameworks helps banks respond quickly and efficiently to financial crises, minimizing the risk of instability.

Finally, tailored policies for emerging markets are crucial, as these regions face unique challenges that differ from those in developed economies. Regulatory frameworks should be adapted to the specific economic conditions of these markets. Liquidity contagion models are especially important in emerging markets to identify risks within the interbank market, particularly in areas with underdeveloped financial systems. By incorporating such models, regulators can better understand and mitigate the liquidity risks specific to these regions, ensuring more effective and targeted policy interventions.

Emerging Themes and Future Research Directions

The reviewed literature has identified several emerging themes that are shaping the landscape of liquidity risk management. One of the most notable trends is the rise of digital banking and fintech solutions. As banks increasingly adopt digital platforms, the integration of fintech innovations is transforming how liquidity risk is monitored and managed. Studies such as those by Yan & Song (2022) explore how technologies like the Internet of Things (IoT) and big data analytics are enabling real-time tracking of liquidity risks. These advancements allow banks to respond more swiftly and effectively to liquidity pressures, enhancing their ability to manage risks proactively in an increasingly fast-paced financial environment.

Another important theme that is gaining momentum is the growing emphasis on sustainability and ESG (Environmental, Social, and Governance) factors. As sustainability becomes a central concern for both investors and regulators, ESG criteria are increasingly being integrated into liquidity risk management frameworks. There is a rising need for further research to explore how these ESG factors influence liquidity risks, particularly in the context of socially responsible

or green banking. Understanding how these non-financial considerations impact liquidity management will be critical as the financial industry continues to adapt to global sustainability goals.

Long-term trend

The review highlights several key long-term trends that are expected to significantly influence liquidity risk management in the years to come. One of the most important trends is the evolution of regulatory frameworks. As the financial landscape continues to adapt in response to crises like the COVID-19 pandemic, regulatory bodies are likely to refine and strengthen liquidity risk standards. The Basel Committee, for instance, is expected to further enhance its liquidity requirements, focusing particularly on stress testing and more robust liquidity coverage ratios. These adjustments are designed to ensure that banks are better equipped to withstand future shocks and maintain financial stability during times of crisis.

Another critical trend is the growing role of digital innovations in liquidity risk management. The integration of artificial intelligence (AI) and blockchain technologies is poised to become a standard practice within banking systems. These technologies offer the potential to revolutionize liquidity operations by making them more efficient, secure, and responsive. Studies such as those by Yan & Song (2022) emphasize how AI and blockchain can improve the resilience of banks, enabling them to better manage liquidity risks and respond more effectively to liquidity shocks. The adoption of these technologies is expected to play a pivotal role in shaping the future of liquidity risk management, enhancing both operational efficiency and the overall stability of financial systems.

Digital and Risk Management

The adoption of digital tools, including fintech platforms and artificial intelligence, is transforming the landscape of liquidity risk management. As discussed by Yan & Song (2022), banks are increasingly utilizing big data analytics to predict liquidity shortages and automate liquidity decisions. This shift toward real-time, data-driven risk management systems has the potential to reduce liquidity risk by allowing for faster decision-making and more precise forecasting.

Comparative Analysis

The review highlights significant differences in liquidity risk management between developed and emerging markets. Banks in developed markets typically benefit from stronger regulatory frameworks and more diversified funding sources, which help mitigate overall liquidity risk. These advantages provide greater stability, particularly in times of economic stress. In contrast, banks in emerging markets often face heightened liquidity risks, as discussed by Mourad et al. (2022). This is due to factors such as economic instability and limited access to global capital markets, which make it more challenging for these banks to secure the necessary funding during periods of financial turbulence.

Additionally, the review examines the differences in liquidity risk management between conventional and Islamic banks. Islamic banks, which operate under Sharia law, face unique liquidity challenges due to the prohibition of interest-based products. However, studies by Hussain et al. and Sunarsih et al. (2022) reveal that Islamic banks often maintain stronger capital buffers and experience lower liquidity volatility during crises. This resilience is attributed to their focus on risk-sharing principles and their ability to avoid excessive leverage. As a result, in certain contexts, Islamic banks are more capable of managing liquidity risks compared to their conventional counterparts, offering a unique approach to stability during times of financial disruption.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This systematic literature review (SLR) on the determinants of liquidity risk in the banking sector uncovers several key insights drawn from the analysis of 30 academic articles published between 2010 and 2024. The review identifies both non-systematic and systematic determinants that influence how banks manage liquidity risk, with a particular focus on internal bank characteristics, macroeconomic factors, and the regulatory environment.

Among the non-systematic determinants, factors such as bank size, capital adequacy, profitability, and loan-to-deposit ratios play a pivotal role in determining

the level of liquidity risk a bank faces. Larger banks, with their diversified funding sources and stronger capital buffers, tend to experience lower liquidity risk. Conversely, smaller banks especially those in emerging markets are more vulnerable, particularly when their loan portfolios are less liquid or when they engage in aggressive earnings management. These factors often expose smaller banks to higher liquidity risks, highlighting the importance of internal management practices in mitigating such vulnerabilities.

On the other hand, systematic determinants, including macroeconomic conditions, monetary policy, and regulatory changes, also play a critical role in shaping liquidity risk across the banking sector. The review points to the significant influence of regulatory frameworks, such as Basel III, which have helped improve liquidity risk management by enforcing capital adequacy and liquidity coverage ratios. However, macroeconomic disruptions, like the COVID-19 pandemic, have amplified liquidity risks, particularly in regions with fragile economic conditions and less developed financial systems. These external shocks highlight the need for robust regulatory frameworks and risk management strategies to address liquidity challenges during times of global instability.

Furthermore, the review emphasizes the growing role of digital technologies and fintech innovations in liquidity risk management. Technologies like real-time monitoring and automation of liquidity decisions have revolutionized how banks manage liquidity. However, while these innovations offer significant benefits, they also introduce new risks, particularly related to cybersecurity and data management. As financial technologies continue to evolve rapidly, future research will need to focus on how these digital transformations impact liquidity risk, especially in the face of emerging technological and regulatory challenges.

Recommendations

For effective management of liquidity risk, bank management plays a pivotal role in safeguarding the financial stability of institutions. One of the primary strategies for achieving this is by strengthening liquidity buffers. In light of regulatory requirements like Basel III, banks should prioritize maintaining robust liquidity buffers. By ensuring that capital adequacy ratios are met or even exceeded, they can act as a protective measure against unforeseen liquidity shocks, thereby

ensuring the bank's ability to weather financial storms. Additionally, to further mitigate liquidity risk, banks must take steps to diversify their funding sources. Heavy reliance on short-term funding can exacerbate liquidity risks, particularly when market conditions are unfavorable. Therefore, it's crucial for banks to explore long-term and stable funding options, such as deposits from a wide range of markets or establishing diverse lines of credit. These actions will help buffer the bank against liquidity strain, providing a more resilient funding structure.

Another vital component of modern liquidity management is leveraging digital tools. Embracing fintech innovations, such as big data analytics and machine learning, allows banks to enhance their liquidity risk monitoring systems. These tools offer the capability to make real-time decisions based on accurate data, improving the bank's ability to forecast potential liquidity shortages with greater precision. In a rapidly changing financial environment, this ability to respond quickly and efficiently can be a game-changer for liquidity management.

Moreover, banks must adopt conservative earnings management practices to avoid liquidity stress. By carefully managing exposure to riskier loans and optimizing the use of liquid assets, banks can better manage liquidity flows, especially during economic downturns. This more cautious approach ensures smoother operations during periods of financial uncertainty and strengthens the bank's overall liquidity position.

From the perspective of regulators and policymakers, it is imperative to strengthen the supervisory frameworks governing liquidity risk. Regulatory bodies should enforce more stringent oversight, particularly in emerging markets, where liquidity risks may be more pronounced. This supervision must ensure that banks maintain adequate liquidity reserves and are equipped with clear, actionable plans to manage liquidity during crisis situations. By doing so, regulators can help prevent systemic shocks that could impact the broader financial system.

Equally important is the development of crisis management frameworks. Regulatory authorities need to establish robust frameworks that allow banks to quickly access emergency liquidity during crises. These frameworks should also include mechanisms

to monitor and mitigate systemic liquidity risks, particularly in interconnected banking systems, where the failure of one bank could lead to broader financial instability.

In emerging markets, where liquidity risks often vary due to unique economic conditions, regulators should adapt their policies to suit local circumstances. By providing tailored support for smaller banks, such as ensuring access to central bank liquidity facilities, regulators can help mitigate risks and foster a more resilient banking system. This tailored approach will be crucial for the stability of financial markets in regions with evolving economic conditions.

Moreover, with the growing importance of sustainability in the financial sector, incorporating Environmental, Social, and Governance (ESG) considerations into liquidity risk management frameworks is becoming increasingly vital. As sustainability principles gain traction, regulators should encourage banks to integrate ESG criteria into their liquidity risk frameworks. Not only does this align financial practices with global sustainability goals, but it also supports banks in managing liquidity risks effectively, ensuring long-term stability.

Looking ahead, future research in liquidity risk management should explore several critical areas that have yet to be fully examined. One important direction is the role of digital transformation in shaping the future of liquidity risk management. The integration of cutting-edge technologies like artificial intelligence, blockchain, and real-time liquidity monitoring systems has the potential to revolutionize the way liquidity risk is managed in banks. Research focusing on the long-term impact of these technologies will be invaluable in understanding how they can be leveraged to mitigate liquidity risk effectively.

Another significant area for exploration is the impact of ESG factors on liquidity risk. As ESG considerations become increasingly central to financial decision-making, it is essential to understand how these factors influence the liquidity risk profile of banks. Research in this area could provide valuable insights as regulatory frameworks begin to incorporate sustainability metrics and could help financial institutions better manage their exposure to liquidity risks in a more socially responsible manner.

Additionally, research should continue to explore the regional differences in liquidity risk management. There are significant differences between developed and emerging markets, particularly in how local economic conditions and regulatory environments shape liquidity risks. By investigating these variations, future research can identify tailored solutions that address the specific challenges faced by banks in different parts of the world, contributing to a more comprehensive understanding of global liquidity risk management.

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REFERENCES

- Ahmeti, A., Ahmeti, Y., & Ahmeti, S. (2022). The impact of cost efficiency on liquidity risk in the banking sector: Evidence from Kosovo. *Cuadernos de Economía*, 45(127), 113–119. <https://doi.org/10.32826/cude.v1i127.609>
- Antony, T. M. (2023). Determinants of liquidity risk: Empirical evidence from Indian commercial banks. *Banks and Bank Systems*, 18(3), 101–111. [https://doi.org/10.21511/BBS.18\(3\).2023.09](https://doi.org/10.21511/BBS.18(3).2023.09)
- Aqel, S. (2022). Bank specific and macroeconomic determinants of liquidity: Evidence from Palestine. *Montenegrin Journal of Economics*, 18(1), 61–76. <https://doi.org/10.14254/1800-5845/2022.18-1.5>
- Arif, A., & Anees, N. M. (2012). Liquidity risk and performance of banking system. *Journal of Financial Regulation and Compliance*, 20(2), 182–195. <https://doi.org/10.1108/13581981211218342>
- Baros, A., Croci, E., Elliot, V., & Willeson, M. (2023). Bank liquidity and capital shocks in unconventional times. *The European Journal of Finance*, 29(14), 1678–1703. <https://doi.org/10.1080/1351847X.2022.2146521>
- Ben-Ahmed, K., Kasraoui, N., & Souلامي, A. (2023). Exploring the interplay of credit and liquidity risks: Impacts on banks' profitability. *International Journal of Advanced and Applied Sciences*, 10(8), 64–70. <https://doi.org/10.21833/ijaas.2023.08.007>
- Bianchi, J., & Bigio, S. (2022). Banks, liquidity management, and monetary policy. *Econometrica*, 90(1), 391–454. <https://doi.org/10.3982/ecta16599>
- Brocke, J. V., Simons, A., Niehaves, B., Reimer, K., Plattfaut, R., & Cleven, A. (2009). Reconstructing the giant: On the importance of rigour in documenting the literature search process [Paper presentation]. European Conference on Information Systems (ECIS), Verona, Italy.
- Chen, Y. K., Shen, C. H., Kao, L., & Yeh, C. Y. (2018). Bank liquidity risk and performance. *Review of Pacific Basin Financial Markets and Policies*, 21(1), Article 1850007. <https://doi.org/10.1142/S0219091518500078>
- Damayanthi, I. G. A. E., Wiagustini, N. L. P., Suartana, I. W., & Rahyuda, H. (2023). Strategies to reduce credit risk and liquidity risk to increase bank profitability. *Uncertain Supply Chain Management*, 11(4), 1759–1768. <https://doi.org/10.5267/j.uscm.2023.6.015>
- Dat, P. T., & Nguyen, K. Q. T. (2023). Foreign ownership and national governance quality affect liquidity risk—case in Vietnam. *Cogent Business & Management*, 10(2), Article 2244752. <https://doi.org/10.1080/23311975.2023.2244752>
- de Mendonça, H. F., & da Silva, R. B. (2017). Effect of banking and macroeconomic variables on systemic risk: An application of ΔCoVaR for an emerging economy. *The North American Journal of Economics and Finance*, 42, 644–658. <https://doi.org/10.1016/j.najef.2017.10.011>
- Ghenimi, A., Chaibi, H., & Omri, M. A. B. (2020). Liquidity risk determinants: Islamic vs conventional banks. *International Journal of Law and Management*, 62(4), 309–329. <https://doi.org/10.1108/IJLMA-03-2018-0060>
- Guerra, P., Castelli, M., & Côte-Real, N. (2022). Machine learning for liquidity risk modelling: A supervisory perspective. *Economic Analysis and Policy*, 74, 175–187. <https://doi.org/10.1016/j.eap.2022.02.001>
- Guo, T., Wang, Y., & Zhang, W. (2023). Standing lending facility in interbank market: Evidence from China. *PLoS ONE*, 18(5), Article e0284470. <https://doi.org/10.1371/journal.pone.0284470>
- Helhel, A., & Helhel, Y. (2023). The developments following the COVID-19 outbreak from the perspective of the Turkish banking sector. *Interdisciplinary Journal of Management Studies*, 17(1), 53–69. <https://doi.org/10.22059/>

ijms.2023.341751.675067

- Hussain, A., Kijkasiwat, P., Ijaz, B., & Deari, F. (2022). Efficiency and liquidity risk of Islamic banks: Emerging markets perspective. *Journal of Islamic Monetary Economics and Finance*, 8(2), 325–340. <https://doi.org/10.21098/jimf.v8i2.1474>
- Huynh, J. (2023). Earnings management and bank liquidity creation in an emerging market. *Malaysian Journal of Economic Studies*, 60(2), 215–235. <https://doi.org/10.22452/mjes.vol60no2.4>
- Ismail, S., & Ahmed, E. (2023). The impact of liquidity risk, credit risk, and operational risk on financial stability in conventional banks in Jordan. *Uncertain Supply Chain Management*, 11(2), 433–442. <https://doi.org/10.5267/j.uscm.2023.3.006>
- Jedidia, K., & Salah, I. (2022). Asymmetric causal linkages between liquidity and profitability for MENA Islamic banks. *Journal of Islamic Monetary Economics and Finance*, 8(4), 501–516. <https://doi.org/10.21098/jimf.v8i4.1546>
- Kalimashi, A., Ahmeti, S., & Aliu, M. (2022). The relationship between liquidity risk management and commercial bank performance: Evidence from the Western Balkans. *International Journal of Applied Economics, Finance and Accounting*, 14(2), 129–136. <https://doi.org/10.33094/ijaefa.v14i2.689>
- Kočišová, K. (2015). Analýza ukazovateľa Loan to Deposit v krajinách Vyšehradskej skupiny [Analysis of the loan-to-deposit indicator in the Visegrad Group countries]. *Ekonomický časopis*, 63(10), 1053–1075.
- Laštůvková, J. (2016). Liquidity determinants of the selected banking sectors and their size groups. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis*, 64(3), 971–978. <https://doi.org/10.11118/actaun201664030971>
- Macchiati, V., Brandi, G., Di Matteo, T., Paolotti, D., Caldarelli, G., & Cimini, G. (2022). Systemic liquidity contagion in the European interbank market. *Journal of Economic Interaction and Coordination*, 17(2), 443–474. <https://doi.org/10.1007/s11403-021-00338-1>
- Magwedere, M., & Marozva, G. (2022). The nexus between bank credit risk and liquidity: Does the Covid-19 pandemic matter? A case of the oligopolistic banking sector. *Folia Oeconomica Stetinensia*, 22(1), 152–171. <https://doi.org/10.2478/fole-2022-0008>
- Mahmood, H., & Gan, C. (2017). Maturity transformation risk factors in Islamic banking: Implication of Basel III liquidity regulations. *Managerial Finance*, 43(11), 1270–1288. <https://doi.org/10.1108/MF-07-2017-0259>
- Mashamba, T. (2022). Liquidity dynamics of banks in emerging market economies. *Journal of Central Banking Theory and Practice*, 11(1), 179–206. <https://doi.org/10.2478/jcbtp-2022-0008>
- Mohammed, A. S., Al-Sadi, S., Mohammed, A., & Al-Mamouri, T. (2022). The impact of asset management on achieving bank profitability (Applied study within Al-Khaleej commercial bank). *Periodicals of Engineering and Natural Sciences*, 10(5), 5–13. <http://dx.doi.org/10.21533/pen.v10i5.3266>
- Molyneux, P., Wang, Q., Xie, R., & Zhao, B. (2023). Bank funding constraints and stock liquidity. *The European Journal of Finance*, 29(1), 1–16. <https://doi.org/10.1080/1351847X.2022.2098046>
- Mourad, H., Fahim, S., Burlea-Schiopoiu, A., Lahby, M., & Attioui, A. (2022). Modeling and mathematical analysis of liquidity risk contagion in the banking system. *Journal of Applied Mathematics*, 2022, Article 5382153. <https://doi.org/10.1155/2022/5382153>
- Nistor, S., & Ongena, S. (2023). The impact of policy interventions on systemic risk across banks. *Journal of Financial Services Research*, 64(2), 155–206. <https://doi.org/10.1007/s10693-023-00404-8>
- Satya, K. S. R., Bijoy, K., & Sahay, A. (2022). Issues in liquidity management in banking system: An empirical evidence from Indian commercial banks. *Cogent Economics & Finance*, 10(1), Article 2122190. <https://doi.org/10.1080/23322039.2022.2122190>
- Sunarsih, Al-Hashfi, R., Munawaroh, U., & Suhari, E. (2022). Nexus of risk and stability in Islamic banks during the pandemic: Evidence from Indonesia. *Journal of Islamic Monetary Economics and Finance*, 8(4), 599–614. <https://doi.org/10.21098/jimf.v8i4.1444>
- Tran, O., Duong, K., & Nguyen, N. (2022). Innovations and liquidity risks: Evidence from commercial banks in Vietnam. *Journal of International Studies*, 15(3), 145–157. <https://doi.org/10.14254/2071-8330.2022/15-3/10>
- Vojtková, M., & Mihalech, P. (2023). Intraday liquidity

- modelling using statistical methods. *Argumenta Oeconomica*, 50(1), 151–178. <https://doi.org/10.15611/aoe.2023.1.08>
- Von Tamakloe, B., Boateng, A., Mensah, E., & Maposa, D. (2023). Impact of risk management on the performance of commercial banks in Ghana: A panel regression approach. *Journal of Risk and Financial Management*, 16(7), Article 322. <https://doi.org/10.3390/jrfm16070322>
- Wang, C., & Zhuang, L. (2022). Bank liquidity and the risk-taking channel of monetary policy: An empirical study of the banking system in China. *PLoS ONE*, 17(12), Article e0279506. <https://doi.org/10.1371/journal.pone.0279506>
- Widarjono, A., Wijayanti, D., & Suharto, S. (2022). Funding liquidity risk and asset risk of Indonesian Islamic rural banks. *Cogent Economics & Finance*, 10(1), Article 2059911. <https://doi.org/10.1080/23322039.2022.2059911>
- Yan, W., & Song, Y. (2022a). Intelligent evaluation and early warning of liquidity risk of commercial banks based on RNN. *Computational Intelligence and Neuroscience*, 2022, Article 7325798. <https://doi.org/10.1155/2022/7325798>
- Yan, W., & Song, Y. (2022b). Security optimization management for IoT-assisted bank liquidity risk emergency using big data analytic-based case reasoning. *Wireless Communications and Mobile Computing*, 2022, Article 8396931. <https://doi.org/10.1155/2022/8396931>
- Yang, Y. (2022). Linear fractional differential equations in bank resource allocation and financial risk management model. *Applied Mathematics and Nonlinear Sciences*, 7(1), 729–738. <https://doi.org/10.2478/amns.2021.2.00148>