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Understanding the Relationship Between Liquidity and Banking Financial Stability in Islamic and Conventional Banks

Mohamed Brahim Omri^a

Abstract

This article delves into the intricate relationship between liquidity and banking financial stability spanning from 2014 to 2021. Through rigorous empirical analysis, the study uncovers compelling evidence of bidirectional causality between liquidity and banking financial stability across the global panel, as well as within both Islamic and conventional banks. This nuanced understanding sheds light on the intricate dynamics at play within the banking sector, particularly regarding the interplay between liquidity levels and financial stability. One noteworthy finding is the presence of bidirectional causality, suggesting that liquidity and banking financial stability mutually influence each other. This implies that banks are not only affected by liquidity conditions but also play an active role in shaping their own stability through liquidity management strategies. Understanding this dual relationship is crucial for policymakers and regulators tasked with safeguarding the stability of the banking system. The implications of these empirical insights are far-reaching, particularly for regulatory authorities seeking to enhance the resilience of banks in the face of financial turmoil. By recognizing the significant impact of liquidity on banking stability, regulators can devise more effective measures to mitigate risks on bank balance sheets and promote greater liquidity management practices. Furthermore, facilitating the liquidation of assets during times of crisis can bolster the overall resilience of the banking sector, enabling banks to navigate turbulent economic conditions more effectively. This study offers valuable insights into the intricate interplay between liquidity and banking financial stability. By shedding light on the bidirectional causality between these two factors, the research provides a deeper understanding of the factors influencing the stability of the banking sector. Ultimately, these findings can inform regulatory efforts aimed at fortifying the resilience of banks and preserving financial stability in an increasingly complex and interconnected global financial landscape.

Keywords: Liquidity, Banking Financial Stability, Bidirectional Causality, Empirical Analysis, Regulatory Measures

JEL Codes: G21, G28, E58.

1. INTRODUCTION

The recent financial crisis underscored the critical role of liquidity risk in exacerbating financial instability, particularly when triggered by collective reactions among market participants (Bervas, 2006). Consequently, policymakers have increasingly focused on addressing liquidity concerns, recognizing that shortages can lead to the failure of institutions and potentially trigger systemic instability. Given this backdrop, it is imperative to assess the resilience of Islamic banking to liquidity shocks. Islamic banking operates on principles that prohibit the payment or receipt of interest and promote risk-sharing and asset-backed financing. While these principles offer certain advantages, such as aligning banking activities with ethical and Sharia-compliant practices, they also introduce unique challenges, particularly concerning liquidity management (Calder, 2020). In conventional banking, liquidity is often managed through interest-bearing instruments and interbank lending markets. However, Islamic banks face restrictions on these conventional liquidity management tools. Instead, they rely on alternative mechanisms such as profit-sharing investment accounts, commodity murabaha, and Islamic interbank money markets to manage liquidity. During periods of financial stress, such as liquidity shocks, the effectiveness of these alternative liquidity management tools may be tested. The ability of Islamic banks to maintain liquidity and continue funding operations without resorting to interest-based instruments becomes crucial (Ahmed, 2015). Additionally, the interconnectedness of Islamic banks with conventional financial markets and the broader economy can influence their liquidity position during crises. Therefore, assessing the resilience of Islamic banking to liquidity shocks involves analyzing various factors, including the robustness of alternative liquidity management mechanisms, the extent of reliance on interbank markets, and the overall risk management framework. It also requires considering the regulatory environment and the role of central banks in supporting liquidity provision to Islamic banks during crises.

By understanding how Islamic banks navigate liquidity challenges and mitigate risks during periods of financial stress, policymakers can develop targeted strategies to enhance the resilience of the Islamic banking sector (Hassan and Aliyu, 2018). This may involve strengthening Sharia-compliant liquidity management tools, fostering greater coordination among Islamic financial institutions, and promoting regulatory frameworks that support stability and financial inclusion within the Islamic finance industry. The recent financial crisis exposed vulnerabilities within the Islamic banking sector, primarily due to structural differences compared to conventional banking systems. One significant challenge Islamic banks faced during the crisis was the underdeveloped nature of Islamic money markets. Unlike conventional banks,

^a College of Business Administration, Northern Border University, Kingdom of Saudi Arabia

Islamic banks had limited access to short-term liquidity instruments and interbank lending facilities, which constrained their ability to manage liquidity effectively. Furthermore, the absence of traditional interest-based tools meant that Islamic banks had to rely on alternative mechanisms for liquidity management, such as profit-sharing investment accounts and commodity murabaha transactions (MADIÈS, 2014). While these instruments were designed to comply with Sharia principles, their effectiveness in addressing liquidity shortages during times of crisis was limited. Moreover, Islamic banks lacked access to a lender of last resort facility provided by central banks, which conventional banks often rely on during liquidity crises. This absence further exacerbated liquidity pressures on Islamic banks, as they had few avenues for obtaining emergency liquidity support.

Khan and Ahmed's (2001) assertion underscores a unique aspect of Islamic banking, where depositors share in both the profits and losses of the bank's investment activities. This profit-sharing arrangement, while adhering to Islamic principles, can expose Islamic banks to deposit and withdrawal risks that differ from those faced by conventional banks. One key concern is related to the competitive returns offered to depositors by Islamic banks. If Islamic banks are unable to provide competitive risk-adjusted returns on investment deposits compared to the broader market, depositors may choose to withdraw their funds, seeking better opportunities elsewhere. This could lead to liquidity pressures and potentially undermine the stability of Islamic banks, particularly during periods of economic uncertainty or market volatility. The profit-sharing nature of Islamic banking implies that depositors bear a proportionate share of any losses incurred by the bank's investment activities (Archer and karim 2009). If these investments generate losses, depositors may experience diminished returns or even face losses on their deposits. Such outcomes can erode depositor confidence and contribute to further withdrawals, exacerbating liquidity challenges for Islamic banks. To address these risks, Islamic banks must carefully manage their investment portfolios, ensuring a balance between risk and return that is attractive to depositors. This requires robust risk management practices, effective asset-liability management, and transparent communication with depositors regarding the performance and risks associated with their investments.

Furthermore, regulatory authorities play a crucial role in overseeing Islamic banks and implementing measures to safeguard depositors' interests (Engku et al., 2017). Regulatory frameworks should address issues such as capital adequacy, liquidity management, and disclosure requirements to enhance the stability and resilience of Islamic banking systems. Gerrard and Cunningham's (1997) findings shed light on the unique behavior of Muslim customers in Islamic banks, highlighting a strong commitment to the principles of Islamic finance. The fact that a significant majority of Muslim customers are willing to maintain their deposits even without receiving returns underscores the depth of trust and loyalty within this segment of the financial sector. This loyalty could potentially contribute to the resilience of Islamic banks during periods of financial stress or panic, as compared to conventional banks. Understanding the response of Islamic banking institutions to liquidity shocks is crucial for assessing their overall stability and resilience. In particular, it is important to examine whether Islamic banks are less inclined to reduce lending in response to liquidity shortages compared to conventional banks. If Islamic banks demonstrate a greater reluctance to curtail lending activities during liquidity crises, this could have implications for financial stability and economic resilience.

The contrast between Islamic banking and conventional banking in response to liquidity shocks also raises broader questions about the effectiveness of liquidity management strategies and the role of liquidity buffers in ensuring financial stability (Zaheer and Farooq 2014). Islamic banking institutions, which operate under different principles and regulatory frameworks than their conventional counterparts, may employ distinct strategies for managing liquidity and mitigating liquidity risk. The evolving landscape of banking regulation has seen a notable shift in perspective regarding the importance of liquidity management in ensuring financial stability. Traditionally, the relative illiquidity of bank assets was viewed as a significant vulnerability, particularly during periods of financial stress or market turmoil. However, recent developments have prompted regulators to reassess this paradigm, recognizing the potential benefits of liquidity in bolstering bank stability.

Studies investigating the relationship between liquidity and bank stability have yielded mixed findings, reflecting the complex interplay of factors influencing financial resilience. Some research suggests that liquidity can act as a buffer against idiosyncratic shocks, enabling banks to effectively manage unexpected withdrawals or utilize committed credit lines without unduly compromising their financial position. Carletti et al. (2007) and Diamond and Rajan (2005), among others, have highlighted the risk-mitigating effects of liquidity, emphasizing its role in enhancing the resilience of banks to adverse events. By maintaining sufficient liquidity buffers, banks can better withstand liquidity shocks and disruptions in funding markets, thereby reducing the likelihood of distress or failure. However, the relationship between liquidity and bank stability is nuanced, and the impact of liquidity management strategies may vary depending on the specific context and market conditions. While liquidity can mitigate certain risks, excessive liquidity holdings may also entail costs and inefficiencies, potentially limiting banks' profitability and overall performance.

2. REVIEW OF LITERATURE

Studies examining stability in banks, particularly in the context of Islamic and conventional banking systems, have garnered significant attention from researchers in recent years. Abedifar et al. (2013), Hasan and Dridi (2010), and Beck et al. (2013) are among the scholars who have made notable contributions to this field of inquiry. Hasan and Dridi (2010) conducted a comprehensive analysis of the performance metrics of Islamic and conventional banks, particularly in the wake of the global financial crisis. Their study delved into various aspects of bank performance, including profitability, credit growth, asset growth, and external ratings, to assess the resilience of both Islamic and conventional banking sectors in the face of economic turbulence. By comparing the performance ratios of Islamic and conventional banks, Hasan and Dridi (2010) sought to shed light on the relative strengths and vulnerabilities of these banking models during periods of

financial stress. Their findings provided valuable insights into the resilience of Islamic banking institutions vis-à-vis their conventional counterparts, offering implications for policymakers, regulators, and industry stakeholders. Similarly, Abedifar et al. (2013) contributed to the literature on banking stability by exploring the determinants of bank fragility and the role of regulatory frameworks in mitigating systemic risks. Their study employed empirical methods to analyze the factors influencing bank stability, with a focus on Islamic financial institutions and their unique risk profiles.

Beck et al. (2013) further advanced our understanding of banking stability by examining the impact of regulatory reforms on bank resilience and systemic stability. Their research underscored the importance of regulatory interventions in enhancing the soundness and stability of banking systems, particularly in the aftermath of the global financial crisis. The findings of Abedifar et al. (2013) and Beck et al. (2013) contribute valuable insights into the comparative performance and stability of Islamic and conventional banks, particularly in the context of the global financial crisis. Abedifar et al. (2013) conducted a comprehensive analysis of credit risk and insolvency characteristics in Islamic and conventional banks. Their study revealed few significant differences between the two banking models, indicating that both types of banks exhibit similar credit risk profiles and characteristics of insolvency. Moreover, Abedifar et al. (2013) found that profit-sharing and loss-sharing contracts, which are distinctive features of Islamic banking, have a limited role in reducing credit risk. This suggests that the risk mitigation mechanisms employed by Islamic banks may not significantly differ from those utilized by conventional banks in managing credit risk.

Similarly, Beck et al. (2013) examined the performance and stability of Islamic and conventional banks during both pre-crisis and post-crisis periods. Their analysis revealed no significant differences in performance and stability between the two types of banks, indicating comparable resilience to the challenges posed by the global financial crisis. Beck et al. attributed the relatively better performance of Islamic banks during the crisis to factors such as increased liquidity reserves and higher levels of capitalization, which enabled Islamic banks to withstand financial shocks and maintain stability. The findings of Abedifar et al. (2013) and Beck et al. (2013) highlight the resilience of Islamic banks and their ability to navigate through turbulent economic conditions, such as the global financial crisis. These studies underscore the importance of liquidity management, capital adequacy, and risk mitigation strategies in enhancing the stability of banking systems, irrespective of their organizational structure or religious orientation. By identifying areas of convergence and divergence between Islamic and conventional banks, researchers aim to inform policymakers and industry stakeholders in their efforts to promote financial stability and resilience in banking sectors worldwide.

The literature examining the relationship between financial stability and bank liquidity encompasses a wide range of studies that shed light on the mechanisms and factors influencing banking stability. Wagner (2007) and Nguyen et al. (2012) are among the researchers who have contributed to this body of literature by exploring various aspects of liquidity and stability in banking systems. Early studies by Bryant (1980) and Diamond and Dybvig (1983) laid the groundwork for understanding the inherent instability of banks due to maturity mismatches between assets and liabilities, which can render them susceptible to panic-driven bank runs. These seminal works highlighted the importance of liquidity management in mitigating the risks associated with liquidity mismatches and preserving financial stability. More recent research has delved deeper into the dynamics of liquidity and stability in banking. Studies by Acharya and Viswanathan (2011) and Demiroglu and James (2011) have examined the impact of banks' choice of liquidity assets on their stability, emphasizing the role of asset composition in determining resilience to liquidity shocks. Additionally, research by Diamond and Rajan (2011) has investigated how banks' concerns about fire sales of illiquid assets can influence their stability, highlighting the interplay between liquidity management and asset quality in safeguarding financial soundness. By exploring these dimensions of liquidity and stability, researchers aim to provide insights into the mechanisms underlying banking stability and inform policymakers and regulators about the factors that contribute to systemic resilience. Understanding the relationship between liquidity and stability is crucial for designing effective regulatory frameworks and risk management practices that promote the stability and integrity of banking systems in both normal and stressed conditions.

The study conducted by Nguyen et al. (2012) represents a significant contribution to understanding the relationship between liquidity and bank stability, particularly in the context of bank market power. By analyzing data from 113 developed and developing countries spanning the period from 1996 to 2010, the researchers sought to investigate whether liquidity plays a role in enhancing bank stability and how this association may be influenced by the level of market power held by banks. Their findings provide valuable insights into the dynamics of liquidity and stability in banking systems. Specifically, Nguyen et al. (2012) concluded that liquidity indeed has a positive effect on bank stability. Banks with higher levels of liquidity, whether in the form of more liquid assets or as net lenders in the interbank markets, tend to exhibit greater stability. This underscores the importance of maintaining adequate liquidity buffers as a means of enhancing resilience to financial shocks and mitigating the risk of instability. However, the study also highlights the nuanced relationship between liquidity and stability in the presence of market power. While liquidity generally enhances stability, the positive impact of liquidity on bank stability is diminished in the presence of higher levels of market power. This suggests that the influence of liquidity on stability may be mediated by the competitive dynamics within the banking sector. The findings of Nguyen et al. (2012) contribute to a deeper understanding of the role of liquidity in ensuring financial stability and underscore the importance of considering market structure and competitive dynamics in assessing the effectiveness of liquidity management strategies. These insights have important implications for policymakers and regulators seeking to design policies that promote financial stability and resilience in banking systems across diverse economic contexts. The studies by Aghion et al. (2000) and Freixas et al. (2000) shed light on the mechanisms through which interbank trading and relationships can contribute to financial contagion and informational spillovers within the banking system. Aghion et al. (2000) identified that the ability of banks to engage in trading activities with one another

can serve as a channel for transmitting shocks and contagion throughout the financial system. This occurs as distress or instability in one bank can spread to other interconnected institutions through the interbank market. The interconnectedness of banks through asset trading channels amplifies the propagation of shocks, potentially leading to systemic instability and contagion.

Similarly, Freixas et al. (2004) highlighted the role of interbank relationships in creating informational spillovers and facilitating mutual credit exposures among banks. In interconnected banking networks, banks rely on shared information and credit relationships to conduct lending and borrowing activities. However, this interconnectedness also creates vulnerabilities, as adverse developments in one bank can quickly transmit information and liquidity strains to other banks with which it has credit relationships. This can result in a contagion effect, where financial distress in one institution spreads rapidly throughout the banking system. The findings of these studies underscore the importance of understanding the dynamics of interbank relationships and trading activities in assessing the vulnerability of the financial system to contagion and systemic risk. Policymakers and regulators must consider the implications of interconnectedness and information sharing among banks when designing measures to enhance financial stability and mitigate the risks of contagion in the banking sector.

The research by Wagner (2005) suggests that while interbank diversification may reduce the risk profile of individual banks, it can paradoxically increase systemic risk by incentivizing banks to hold less liquidity. This reduction in liquidity holdings across the banking sector could potentially exacerbate the severity of financial crises and increase the likelihood of systemic disruptions. As a result, while individual banks may appear less risky due to diversification, the collective effect on the financial system as a whole may be heightened fragility. Furthermore, studies by Allen and Gale (2003) and Wagner (2007) delve into the dynamics of asset sales by banks and their impact on overall financial fragility. These studies suggest that the ability of banks to sell assets can lead to a transfer of risk between sectors, potentially shifting systemic fragility from one sector to another. In particular, this mechanism may result in a redistribution of fragility from the banking sector to other sectors of the financial system, altering the overall stability landscape. These findings underscore the complex interplay between interbank diversification, liquidity management, and systemic risk. While diversification strategies may offer benefits at the individual bank level, they can have unintended consequences for systemic stability if they lead to reduced liquidity buffers or facilitate the transfer of risk between sectors. Understanding these dynamics is crucial for policymakers and regulators tasked with safeguarding financial stability and resilience.

Fecht's (2004) research sheds light on an often-overlooked aspect of liquidity and its impact on financial stability. By demonstrating that heightened asset liquidity can alter the orientation of financial markets, Fecht's (2004) highlights the intricate relationship between liquidity and systemic stability. Increased asset liquidity can lead to a more market-oriented financial system, where assets are readily tradable and markets play a central role in allocating resources. While this may enhance market efficiency and liquidity provision in normal times, it can also amplify instability during periods of stress or crisis.

In a market-oriented financial system, sudden shifts in investor sentiment or liquidity conditions can lead to rapid price movements and exacerbate systemic risks. Moreover, the interconnectedness of markets and the ease of asset trading can facilitate contagion effects, where disturbances in one market quickly spread to others. Overall, Fecht's (2004) findings underscore the importance of considering the broader implications of liquidity enhancements in financial markets. While liquidity can enhance market functioning and efficiency, policymakers and regulators must be mindful of its potential to amplify systemic risks and destabilize the financial system, particularly during periods of heightened uncertainty or market stress.

Santomero and Trester's (1998) research delves into the relationship between financial innovations and risk-taking behavior by banks, particularly in the context of liquidity crises. Their findings suggest that innovations in financial markets can reduce the costs associated with overcoming informational asymmetries, especially during times of crisis. This reduction in transaction costs and informational frictions may lead to an increase in the liquidity of assets during periods of stress, enabling banks to more easily sell off assets to meet liquidity demands. However, Santomero and Trester's (1998) also observe that this increased liquidity can have unintended consequences, particularly in terms of encouraging greater risk-taking by banks. When banks perceive that they can easily liquidate assets in times of distress, they may be more inclined to take on higher levels of risk in their investment and lending activities. This heightened risk appetite can potentially exacerbate systemic vulnerabilities and contribute to financial instability. Santomero and Trester's (1998) findings highlight the complex interplay between financial innovations, liquidity dynamics, and risk-taking behavior in banking systems. While innovations may enhance liquidity and efficiency in normal market conditions, they can also introduce new sources of risk and vulnerability, particularly during periods of crisis. Understanding these dynamics is crucial for policymakers and regulators in designing effective measures to safeguard financial stability.

Instefjord's (2005) study delves into the impact of credit derivatives on risk-taking behavior in banks, specifically examining how access to these financial instruments for risk management purposes influences banks' attitudes towards risk. Unlike Santomero and Trester's (1998) focus on the overall impact of financial innovations on banking stability, Instefjord (2005) zooms in on the specific effects of credit derivatives. His findings suggest that innovations in credit derivative markets, which provide banks with new tools for managing credit risk, may paradoxically lead to increased risk-taking behavior. The availability of credit derivatives offers banks enhanced opportunities to hedge and manage their credit exposures more efficiently. However, instead of solely using these instruments for risk mitigation, banks may also perceive them as a means to take on more risk, confident in their ability to hedge against adverse credit events. This phenomenon, often referred to as the "risk transfer paradox," highlights the unintended consequences of financial innovations. While credit derivatives offer valuable risk management capabilities, they may also incentivize banks to

engage in riskier activities under the assumption that they can easily transfer or hedge away the associated risks. As a result, the net impact on banking stability becomes more nuanced, with potential trade-offs between risk mitigation and increased risk-taking. Insteffjord (2005) findings contribute to a deeper understanding of how financial innovations shape risk behavior in banking systems and underscore the importance of carefully assessing the implications of such innovations for overall financial stability.

3. THE MODEL

The model proposed in this study aims to elucidate the intricate relationship between liquidity and financial stability. Building on the findings of previous research by Nguyen et al. (2012) and Wagner (2007), which highlighted the significant impact of bank liquidity on financial stability, our model incorporates multiple variables to capture this relationship comprehensively. The model posits that financial stability (S) is a function of several key factors, including liquidity (L), the size of the bank, return on equity (ROE), capital adequacy ratio (CAR), crisis indicators, the presence of Big4 auditing firms, listing status, efficiency measures, inflation rate, and GDP real growth rate. Each of these variables represents important dimensions of a bank's operations and external environment, which collectively contribute to its overall stability. On the other hand, the model also considers liquidity (L) as an endogenous variable influenced by financial stability (S) and the same set of explanatory factors. This reciprocal relationship acknowledges the dynamic interplay between liquidity and financial stability, where the liquidity position of a bank can both influence and be influenced by its overall stability. By simultaneously examining the relationships between liquidity, financial stability, and various determinants, the model offers a comprehensive framework for understanding the factors that contribute to the resilience and robustness of banking institutions. This holistic approach enables a deeper analysis of the mechanisms through which liquidity dynamics impact financial stability, providing valuable insights for policymakers, regulators, and industry stakeholders in managing and safeguarding the stability of the banking sector.

4. EMPIRICAL RESULTS AND DISCUSSION

The summary statistics provided in Table 1 offer a detailed comparison between Islamic and conventional banks across various key variables. Looking at liquidity, Islamic banks have a higher mean liquidity (0.132) compared to conventional banks (0.091), indicating potentially better access to liquid assets. However, Islamic banks also exhibit higher variability in liquidity, as evidenced by their higher standard deviation (0.119) and coefficient of variation (CV) of 0.902, compared to 0.869 for conventional banks. In terms of size, conventional banks have a slightly higher mean size (3.977) compared to Islamic banks (3.805). Both banking systems display notable variability in size, with Islamic banks showing a slightly higher standard deviation (1.289) and CV (0.339) compared to conventional banks. Profitability metrics such as Return on Equity (ROE) and Return on Assets (ROA) indicate differences between Islamic and conventional banks. Conventional banks generally outperform Islamic banks in terms of mean ROE (10.508 vs. 6.644) and mean ROA (1.373 vs. 0.973), but they also exhibit higher variability in these metrics. Financial stability indicators like Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) show comparable mean values between Islamic and conventional banks, with slight differences in variability. Islamic banks demonstrate a higher mean NPL (6.459) compared to conventional banks (4.961), indicating potentially higher credit risk. Other variables such as Net Interest Margin (NIM), liquidity gaps, presence of Big4 banks, listing status, exposure to financial crises, operational efficiency, inflation rate, and GDP growth rate also exhibit differences between Islamic and conventional banks, highlighting the unique characteristics of each banking system. The notes provided clarify that standard deviation (Std.Dev.) and coefficient of variation (CV) are used to measure variability, while CAR represents the capital adequacy ratio, NPL denotes Non-Performing Loans, ROA refers to the return on assets, ROE indicates the return on equity, NIM represents the Net Interest Margin, and GDP signifies real growth GDP.

The outcomes of the Generalized Method of Moments (GMM) analysis, presented in Table 2, provide insights into the determinants of stability for Islamic and conventional banks. For Islamic banks, liquidity demonstrates a statistically significant positive association with stability, with a coefficient of 12.213 (p-value = 0.0147). Similarly, conventional banks also exhibit a significant positive relationship between liquidity and stability, with a coefficient of 16.091 (p-value = 0.001). Size appears to have a negative impact on stability for conventional banks, indicated by a coefficient of -0.938 (p-value = 0.009), whereas its effect on Islamic banks is statistically insignificant. Both Islamic and conventional banks show positive associations between stability and Return on Equity (ROE), with coefficients of 0.275 (p-value = 0.000) and 0.129 (p-value = 0.000) respectively, indicating that higher ROE is associated with greater stability. Other variables, such as Capital Adequacy Ratio (CAR) and exposure to financial crises, also demonstrate significant positive associations with stability for both types of banks. For instance, Islamic banks exhibit a CAR coefficient of 0.636 (p-value = 0.000), while conventional banks show a slightly lower coefficient of 0.510 (p-value = 0.000). Interestingly, the presence of Big4 banks has a significant positive impact on stability for conventional banks, with a coefficient of 4.197 (p-value = 0.000), while its effect on Islamic banks is statistically insignificant. The results also include constant terms for both types of banks, along with diagnostic tests such as the AR2 test, Hansen J-test, and Durbin-Watson test to assess model validity and goodness-of-fit. Overall, the GMM analysis provides valuable insights into the determinants of stability for Islamic and conventional banks, highlighting the importance of liquidity, profitability, capital adequacy, and other factors in maintaining stability within the banking sector.

Table 1: Summary Statistics of The Used Variables for Islamic and Conventional Banks

	Descriptive Statistics	Conventional banks	Islamic bank	Panel
Liquidity	Mean	0.091	0.132	0.105
	Std.Dev.	0.079	0.119	0.096
	CV	0.869	0.902	0.915
Size	Mean	3.977	3.805	3.917
	Std.Dev.	1.031	1.289	1.129
	CV	0.260	0.339	0.289
ROE	Mean	10.508	6.644	9.172
	Std.Dev.	26.944	16.129	23.826
	CV	2.565	2.428	2.598
ROA	Mean	1.373	0.973	1.235
	Std.Dev.	2.456	2.605	2.513
	CV	1.789	2.678	2.035
NIM	Mean	0.044	0.036	0.041
	Std.Dev.	0.213	0.015	0.173
	CV	4.841	0.417	4.220
Liquidity gaps	Mean	3.083	2.929	3.029
	Std.Dev.	1.040	1.31	1.142
	CV	0.338	0.448	0.378
NPL	Mean	4.961	6.459	5.479
	Std.Dev.	9.51	14.865	11.653
	CV	1.917	2.302	2.127
CAR	Mean	11.038	11.275	11.119
	Std.Dev.	13.141	17.992	14.983
	CV	1.191	1.596	1.348
BIG4	Mean	0.755	0.679	0.728
	Std.Dev.	0.431	0.468	0.446
	CV	0.571	0.689	0.613
Listed	Mean	0.811	0.714	0.778
	Std.Dev.	0.391	0.453	0.416
	CV	0.482	0.635	0.535
Crisis	Mean	0.25	0.25	0.25
	Std.Dev.	0.434	0.433	0.433
	CV	1.736	1.732	1.732
Efficiency	Mean	1.56	1.672	1.599
	Std.Dev.	0.138	0.177	0.162
	CV	0.089	0.106	0.102
Inflation rate	Mean	2.096	2.099	2.097
	Std.Dev.	0.070	0.079	0.073
	CV	0.034	0.038	0.035
GDP	Mean	5.375	4.946	5.227
	Std.Dev.	4.953	4.81	4.904
	CV	0.922	0.973	0.939

Notes: Std.dev. and CV indicate standard deviation and coefficients of variation (standard deviation-to-mean ratio), respectively. CAR; indicates capital adequacy ratio, NPL is the Non Performing Loan, ROA is the return on assets, ROE is the return on equity, NIM is the Net Interest Margin, GDP is the real growth GDP.

Table 3 presents the outcomes of the Generalized Method of Moments (GMM) analysis with liquidity as the dependent variable for both Islamic and conventional banks. For Islamic banks, Non-Performing Loans (NPL) exhibit a statistically significant negative association with liquidity, with a coefficient of -0.003 (p-value = 0.005). Conversely, conventional banks show a slightly weaker negative association between NPL and liquidity, with a coefficient of -0.002 (p-value < 0.001). Size does not appear to have a significant effect on liquidity for either Islamic or conventional banks, as indicated by coefficients of -0.007 (p-value = 0.834) and 0.018 (p-value = 0.431) respectively. Return on Equity (ROE) demonstrates a statistically significant positive association with liquidity for Islamic banks, with a coefficient of 0.004 (p-value = 0.001), while its effect on conventional banks is statistically insignificant. Similarly, Return on Assets (ROA) shows a significant negative association with liquidity for Islamic banks, with a coefficient of -0.028 (p-value < 0.001), but its effect on conventional banks is not significant. Other variables such as Net Interest Margin (NIM), Liquidity Gaps, Capital Adequacy Ratio (CAR), Inflation rate, and Gross Domestic Product (GDP) exhibit mixed effects on liquidity for both types of banks, with some variables showing significant associations while others do not. The constants in the models represent the intercept terms, and diagnostic tests such as the AR2 test, Hansen J-test, and Durbin-Watson test are included to assess the validity of the models. Overall, the outcomes of the GMM analysis provide insights into the determinants of liquidity for Islamic and conventional banks, highlighting the importance of factors such as non-performing loans, profitability, and macroeconomic indicators in influencing liquidity levels within the banking sector.

Table 2: Table 3: Outcomes of GMM

	Dependent Variable: Stability	
	Islamic bank	conventional bank
Liquidity	12.213 (0.0147)**	16.091 (0.001)***
Size	-0.274 (0.641)	-0.938 (0.009)***
ROE	0.275 (0.000)***	0.129 (0.000)***
ROA		
NIM		
Liquidity gaps		
CAR	0.636 (0.000)***	0.510 (0.000)***
BIG4	0.544 (0.733)	4.197 (0.000)***
Listed	0.333 (0.872)	0.167 (0.854)
Crisis	-1.132 (0.491)	-1.679 (0.042)**
Efficiency	-5.919 (0.0217)**	4.282 (0.108)
Inflation rate	9.161 (0.329)	0.014 (0.998)
GDP	-0.227 (0.136)	-0.151 (0.033)**
Constants	34.065 (0.101)	-5.507 (0.667)
AR2 test (p-value)	1.14 (0.256)	1.43 (0.152)
Hansen J-test (p-value)	19.26 (0.505)	26.10 (0.163)
DWH test (p-value)	157.708 (0.000)	195.316 (0.000)

Table 3: Outcomes of GMM

	Dependent Variable: Liquidity (Model 2)	
	Islamic bank	conventional bank
NPL	-0.003 (0.005)***	-0.002 (0.002)****
Size	-0.007 (0.834)	0.018 (0.431)
ROE	0.004 (0.001)***	0.001(0.510)
ROA	-0.028 (0.000)***	-0.001 (0.901)
NIM	0.107 (0.832)	0.005 (0.796)
Liquidity gaps	0.001 (0.009)***	0.017 (0.461)
CAR	0.001 (0.047)**	0.007 (0.365)
BIG4	-	-
Listed	-	-
Crisis	-	-
Efficiency	-	-
Inflation rate	0.143 (0.0143)**	0.317 (0.000)***
GDP	0.002 (0.306)	0.001 (0.079)*
Constants	0.475 (0.019)**	-0.59 (0.000)***
AR2 test (p-value)	-0.65 (0.515)	-1.25 (0.212)
Hansen J-test (p-value)	17.41 (0.626)	32.54 (0.038)
DWH test (p-value)	3.997 (0.046)	6.762 (0.009)

5. CONCLUSIONS

The main objective of this study is to examine the direction of causality between liquidity and financial stability during the period from 2014 to 2021. Our findings regarding banks can be summarized as follows: Firstly, concerning the causal relationship between liquidity and financial stability for both Islamic and conventional banks, our results provide support for the conservation hypothesis. This hypothesis suggests that there is a bidirectional causality between liquidity and a bank's stability, indicating that changes in liquidity levels can affect financial stability, and vice versa. This finding underscores the interconnectedness of liquidity and financial stability within banking institutions. Secondly, when considering the panel results, we observe a similar pattern of bidirectional causality between liquidity and financial stability across the entire banking sector. This finding further reinforces the presence of the conservation hypothesis, suggesting that the relationship between liquidity and financial stability is not limited to individual banks but extends to the broader banking industry. The policy implications derived from our study are significant. Firstly, the identification of bidirectional causality between liquidity and financial stability supports the feedback hypothesis, indicating that these two factors are closely interlinked. This implies that actions taken to enhance liquidity can contribute positively to financial stability, and vice versa. Therefore, policymakers and regulators should recognize the mutual dependence between liquidity and financial stability when formulating policies and implementing regulatory measures. Furthermore, our findings suggest that efforts to improve liquidity levels within the banking sector can potentially lead to enhanced financial stability. By implementing policies aimed at bolstering liquidity reserves and ensuring adequate funding sources, authorities can strengthen the resilience of banks and mitigate the risk of financial instability. Additionally, fostering a regulatory environment that promotes sound liquidity management practices and encourages transparency in reporting liquidity positions can further support the stability of the financial system. The presence of bidirectional causality underscores the importance of adopting a holistic approach to banking regulation and supervision. By addressing both

liquidity and financial stability in tandem, policymakers can better safeguard the integrity and stability of the banking sector. The utilization of liquidity, encompassing the efficient management and deployment of available funds, plays a pivotal role in fostering financial stability within the banking sector. By ensuring adequate liquidity levels, banks enhance their ability to meet short-term obligations and withstand unforeseen market fluctuations, thereby fortifying their overall viability. These findings shed light on the multifaceted impact of liquidity, extending beyond mere financial solvency to encompass broader aspects of bank performance. Notably, the positive correlation between liquidity and financial stability underscores liquidity's pivotal role as a cornerstone of bank profitability, resilience, and investor trust. This symbiotic relationship highlights how the prudent management of liquidity not only mitigates risks but also catalyzes growth opportunities, positioning banks for sustained success in dynamic market environments. Consequently, liquidity emerges as a linchpin in the intricate web of banking operations, serving as a conduit for optimizing returns, managing risks, and nurturing stakeholder confidence. The inherent interdependence between liquidity and financial stability underscores the imperative for banks to proactively manage liquidity risks while aligning strategic objectives with market dynamics. As such, the convergence of liquidity and financial stability forms a cornerstone of prudent banking practices, shaping the trajectory of banks and the broader financial ecosystem alike. In striving to uphold stability within the financial system, it is imperative to advocate for collaborative efforts among regulators and central banks to safeguard against the looming threat of systemic collapse. However, our research findings indicate that a comprehensive approach to liquidity risk management within individual banks holds significant potential for bolstering overall stability. Our study underscores the transformative impact of concurrently managing liquidity and credit risks within a bank, presenting a compelling case for a synergistic strategy in mitigating systemic vulnerabilities. By adopting a holistic perspective that integrates liquidity and credit risk management practices, banks can effectively fortify their resilience against adverse market conditions and unforeseen shocks, thereby enhancing the stability of the financial system at large. These findings lend robust support to recent regulatory initiatives such as the Basel III framework, which advocates for a more stringent and nuanced approach to risk management. Emphasizing the integral role of liquidity risk management alongside asset quality and credit risk assessment, Basel III aligns with the core tenets of our research, advocating for a holistic risk management framework that addresses the multifaceted nature of systemic risks. In essence, our findings underscore the imperative for regulatory bodies and financial institutions alike to embrace a proactive stance towards risk management, recognizing the intrinsic interplay between liquidity and credit risks in shaping overall stability. By fostering a culture of prudence and foresight, informed by empirical evidence and collaborative engagement, stakeholders can collectively strengthen the resilience of the financial system and mitigate the adverse impacts of future crises.

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