

The Determinants of Bank's Liquidity: Comparative Analysis From Global Islamic Banks and Conventional Banks

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Abstract: This study investigates the determinants of bank liquidity in both Islamic and Conventional banks across 15 countries, focusing on key variables such as profitability, capital adequacy, bank size, and credit risk. Utilizing data from 107 Islamic banks and 506 Conventional banks spanning from 2013 to 2022, the analysis reveals significant differences in liquidity management between the two banking systems. The Random Effect Model (REM) was employed based on the Hausman test results to ensure robustness. The findings indicate that profitability negatively impacts liquidity in Islamic banks, likely due to investments in less liquid, Sharia-compliant assets, while it positively influences liquidity in Conventional banks, where profits are often reinvested into liquid assets. Capital adequacy emerges as a crucial determinant of liquidity in both bank types, highlighting the importance of maintaining strong capital buffers. The study also finds that credit risk significantly reduces liquidity in Conventional banks, whereas it has a lesser impact on Islamic banks. These insights contribute to a deeper understanding of liquidity management practices in Islamic and Conventional banks, offering valuable implications for bank managers, policymakers, and regulators.

Keywords: *Islamic banks, Conventional banks, Liquidity, Shariah compliance, Random Effect Model (REM)*

1. Introduction and Background

The banking sector is integral to global economic development, providing the financial infrastructure that supports businesses, facilitates trade, and ensures overall economic stability. At the core of banking operations lies the critical task of liquidity management, which enables banks to meet short-term obligations and maintain customer trust and confidence. Whether operating under conventional frameworks or Islamic principles, banks must navigate the complexities of liquidity management to safeguard against financial instability. However, the approaches to liquidity management differ significantly between conventional and Islamic banks due to their distinct operational principles and regulatory environments (Majeed & Zainab, 2021; Moussa, 2015).

Islamic banks (IB), governed by Shariah law, are characterized by their prohibition of interest (riba) and their commitment to ethical, asset-backed transactions. These unique characteristics present Islamic banks with challenges not typically encountered by their conventional counterparts. For instance, the limited availability of Shariah-compliant financial instruments can restrict Islamic banks' ability to manage liquidity effectively, thereby increasing their exposure to liquidity risk. This issue is particularly critical in a globalized economy where financial shocks can quickly ripple across borders, impacting banks of all types (Jedidia, 2020; Ghenimi et al., 2021).

Despite the importance of effective liquidity management, recent years have witnessed significant challenges for both Islamic and conventional banks. The collapse of Lehman Brothers in 2008, which triggered a global financial crisis, is a stark reminder of the catastrophic consequences that can arise from poor liquidity management. More recently, the failures of Silicon Valley Bank and other financial institutions in the United States have underscored the ongoing vulnerabilities within the banking sector, despite advances in regulatory oversight and risk management practices (Kwaku & Mawutor, 2014). These incidents emphasize the pressing need for banks to develop robust liquidity management strategies that are resilient in the face of economic uncertainties.

The challenges faced by Islamic banks in managing liquidity are further compounded by the constraints imposed by Shariah law. The prohibition of interest and the need to engage only in ethical, profit-and-loss-sharing transactions limit the tools available to Islamic banks, making liquidity management more complex and

less flexible compared to conventional banks. Moreover, there is a significant gap in the academic literature regarding the comparative effectiveness of liquidity management practices between Islamic and conventional banks. While numerous studies have explored the determinants of bank liquidity, few have provided a comprehensive analysis specifically comparing these two banking systems on a global scale (Ghenimi et al., 2021; Jedidia, 2020).

Over the past few decades, the global banking industry has undergone profound transformations driven by rapid technological advancements, evolving regulatory frameworks, and shifting economic landscapes. Banks, whether Islamic or conventional, play a crucial role as intermediaries in the economy, balancing the supply and demand for financial capital. This intermediary function is vital for maintaining liquidity, which is the lifeblood of any financial institution. Liquidity enables banks to fulfill their short-term obligations, such as customer withdrawals and interbank loans, without incurring significant losses. The management of liquidity is, therefore, essential for the stability of banks and, by extension, the broader economy (Moussa, 2015; Munteanu, 2012).

In conventional banking (CB), liquidity management is typically achieved through the use of interest-based instruments and interbank lending. However, Islamic banks, adhering strictly to Shariah principles, face additional challenges in this regard. The prohibition of interest necessitates the use of alternative, Sharia-compliant financial instruments, which are often less flexible and less readily available than their conventional counterparts. Consequently, Islamic banks must navigate a more complex landscape in managing liquidity, balancing the demands of Shariah compliance with the practical needs of maintaining sufficient liquidity levels (Majeed & Zainab, 2021).

As the global Islamic banking industry continues to grow—now accounting for a significant portion of global banking assets—it is imperative to develop a deeper understanding of how liquidity is managed within this sector. The distinct operational principles of Islamic banks necessitate a different approach to liquidity management compared to conventional banks, raising important questions about the comparative effectiveness of these approaches. This study seeks to address this gap by conducting an in-depth comparative analysis of the determinants of bank liquidity in global Islamic and conventional banks. By focusing on key bank-specific factors such as profitability, capital adequacy, bank size, and credit risk, this research aims to uncover the nuanced ways in which these variables influence liquidity across different banking systems namely Islamic banking, conventional banking and banks. The findings are expected to contribute valuable insights into the unique challenges faced by Islamic banks and provide broader implications for the stability and performance of the global banking sector (Munteanu, 2012; Moussa, 2015).

2. Literature Review

Bank liquidity management has been a critical area of study, particularly in understanding the trade-offs banks must navigate between profitability and liquidity.

The Trade-off Theory suggests that banks face a fundamental decision: they can either hold liquid assets to safeguard against insolvency or invest in less liquid assets that typically offer higher returns. According to Eljelly (2004) and Achampong (2022), while liquid assets enhance a bank's ability to meet short-term obligations, they generally yield lower returns, thus reducing overall profitability.

The Too Big to Fail (TBTF) Theory further complicates this dynamic. This theory, which gained prominence in the 1984 bailout of Continental Illinois Bank, argues that large banks may engage in riskier behavior because they expect government intervention in the event of failure. As Gorton and Tallman (2016) note, TBTF institutions might deprioritize liquidity management, assuming they will be bailed out, which could exacerbate their vulnerability during financial crises.

The Bad Management Theory posits that poor internal management practices, including inadequate risk assessment and liquidity management, can lead to significant financial distress. This theory emphasizes that internal factors, such as inefficient asset-liability management, can create liquidity problems even in the absence of external shocks (Ghoshal, 2005).

Finally, the **Buffer Capital Theory** suggests that maintaining a capital buffer above the regulatory minimum can protect banks against unexpected losses and improve their liquidity positions. This theory argues that well-capitalized banks are better positioned to absorb shocks and maintain liquidity during periods of financial stress (Munteanu, 2012).

Empirical Literature Review

Empirical research on bank liquidity has identified several key factors that influence liquidity management across different banking systems. These factors include profitability, capital adequacy, bank size, and credit risk.

Profitability is often seen as a double-edged sword in the context of liquidity management. On one hand, profitability can enhance a bank's capital base, providing more resources for liquidity. However, studies by Al-Harbi (2020) and Mokni and Rachdi (2014) suggest that higher profitability may lead banks to invest in less liquid, higher-yielding assets, thereby reducing their overall liquidity. This inverse relationship is particularly evident in Islamic banks, where profitability is often lower than in conventional banks due to the constraints of Shariah-compliant financing.

Capital Adequacy is another critical determinant of bank liquidity. Capital adequacy ratios, which measure a bank's capital relative to its risk-weighted assets, are crucial for ensuring financial stability. Munteanu (2012) and Al-Harbi (2020) found that banks with higher capital adequacy ratios tend to have better liquidity management. This is especially true for Islamic banks, which must maintain higher capital buffers to comply with Shariah principles and mitigate liquidity risks.

Bank Size also influences liquidity management, though its impact can vary. Larger banks typically have more diversified portfolios and greater access to external funding, which can enhance their liquidity. However, as Al-Homaidi et al. (2019) and Vodová (2019) observed, larger banks might hold fewer liquid assets due to their broader investment opportunities, making them potentially more vulnerable to liquidity crises.

Credit Risk is closely linked to liquidity, as higher credit risk can undermine a bank's ability to convert assets into cash. Munteanu (2012) and Al-Harbi (2017) demonstrated that banks with higher credit risk tend to have lower liquidity, as they may struggle to liquidate assets without incurring significant losses. This relationship highlights the importance of effective credit risk management in maintaining adequate liquidity.

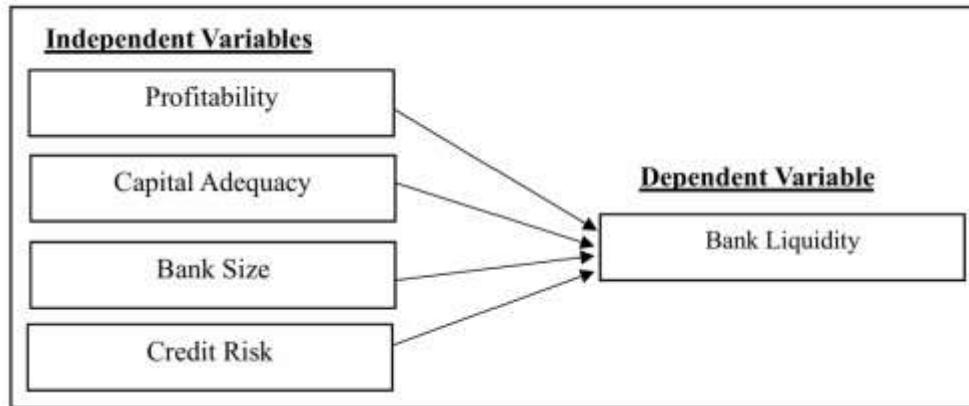
3. Research Methodology

The study examines the relationship between the dependent and independent variables. The dependent variable is the LIQ, while the independent variables are selected based on the review of previous studies which are PROFIT, CAP, BSIZE, CR and type of banks. The research methodology outlines the theoretical framework, hypothesis statements, variables and measurements, data collection methods, and the statistical techniques employed to analyze the data.

Theoretical Framework

The study consists of three models of the theoretical framework because this study compares the factors determining the LIQ in IBs and CBs globally. Model A and Model B address Islamic banking and conventional banks respectively while Model C focuses on the whole groups of banks.

Figure 1: Proposed Framework



Models A, B and C

Table 1: Variables and Measurement

Variables	Notation	Proxy and Measurement	Unit
Dependent Variable			
Bank Liquidity	LIQ	Net Loan to Deposit Ratio = $\frac{\text{Net loans}}{\text{Deposit}} \times 100$	%
Independent Variables			
Profitability	PROFIT	ROAA = $\frac{\text{Net income}}{\text{Average Total Asset Value}} \times 100$	%
Capital Adequacy	CAP	Tier 1 Cap. Ratio = $\frac{\text{Tier 1 Capital}}{\text{Total risk-weighted asset}} \times 100$	%
Bank Size	B SIZE	Natural Logarithm of Total Asset = log (total assets)	USD Million
Credit Risk	CR	NPL Ratio = $\frac{\text{NPL}}{\text{Gross loan}} \times 100$	%
Dummy Variable			
Type of Banks (Dummy)	TYPE	0 is for Islamic banks, 1 is for Conventional bank	

Data Collection

The study examines the determinants of bank liquidity in a sample of global Islamic and Conventional banks across 15 countries, including Malaysia, Saudi Arabia, Indonesia, and others. Data were collected from 107 Islamic and 506 Conventional banks, covering the years 2013 to 2022, to capture the most recent trends in liquidity. These countries were selected based on their performance in the Islamic Finance Development Indicator (IFDI) 2022 report. The study utilizes data from FitchConnect, resulting in 6,130 observations (1,040 from Islamic banks and 5,090 from Conventional banks). The data were refined through several tests to ensure accuracy and were analyzed using Stata 12 SE.

Multiple Linear Regression Models

To investigate the determinants of bank liquidity, the study employs multiple linear regression models. These models enable the analysis of the relationship between the dependent variable and several independent variables (profitability, capital adequacy, size, and credit risk).

Model A: Islamic banks

$$LIQ_{it} = \alpha_0 + \alpha_1 PROFIT_{it} + \alpha_2 CAP_{it} + \alpha_3 BSIZE_{it} + \alpha_4 CR_{it} + \varepsilon_{it}$$

Model B: Conventional banks

$$LIQ_{it} = \beta_0 + \beta_1 PROFIT_{it} + \beta_2 CAP_{it} + \beta_3 BSIZE_{it} + \beta_4 CR_{it} + e_{it}$$

Model C: Islamic and Conventional Banks

$$LIQ_{it} = \gamma_0 + \gamma_1 PROFIT_{it} + \gamma_2 CAP_{it} + \gamma_3 BSIZE_{it} + \gamma_4 CR_{it} + \gamma_5 TYPE_{it} + u_{it}$$

Where,

LIQ_{it} = Bank liquidity I at year t

$PROFIT_{it}$ = Profitability of the bank I at year t

CAP_{it} = Capital adequacy of the bank I at year t

$BSIZE_{it}$ = Size of the bank I at year t

CR_{it} = Credit risk of the bank I at year t $TYPE_{it}$ = Types of banks I at year t

$\varepsilon_{it}, e_{it}, u_{it}$ = error term α, β, γ = intercept

β_1, \dots, β_5 = regression coefficient

Estimation Techniques

To estimate the parameters of the regression models, this study employs both the Fixed Effects Model (FEM) and the Random Effects Model (REM). These techniques are chosen based on the nature of the panel data and the results of the Hausman test, which determines the suitability of FEM or REM for the dataset.

Fixed Effects Model (FEM): Controls for time-invariant characteristics of the firms, addressing potential biases due to unobserved heterogeneity.

Random Effects Model (REM): Assumes that individual firm effects are random and uncorrelated with the independent variables, offering efficiency in estimation if the assumption holds.

Diagnostic Tests

The validity of the regression models is evaluated through various diagnostic tests:

Multicollinearity Test: Assesses the presence of multicollinearity among the independent variables using the Variance Inflation Factor (VIF).

Heteroscedasticity Test: Checks for heteroscedasticity using the Breusch-Pagan/Cook-Weisberg test.

Autocorrelation Test: Evaluate the presence of autocorrelation using the Wooldridge test for panel data.

4. Data Analysis and Results

The data analysis involves several steps:

Descriptive Statistics: Summarize the central tendencies and dispersion of the variables.

Correlation Analysis: Examine the relationships between the independent variables and the dependent variable.

Regression Analysis: Assess the impact of the independent variables on the dividend payout ratio using FEM and REM.

Diagnostic Tests: Include multicollinearity, heteroscedasticity, and autocorrelation tests to ensure the validity and reliability of the regression models.

Results

This study analyzes the determinants of bank liquidity in Islamic and Conventional banks across 15 countries, covering the period from 2013 to 2022. The data includes 107 Islamic banks and 506 Conventional banks, focusing on key variables such as profitability (PROFIT), capital adequacy (CAP), bank size (BSIZE), and credit risk (CR). The descriptive statistics reveal that Conventional banks generally exhibit higher profitability and liquidity compared to Islamic banks, which tend to maintain stronger capital adequacy ratios.

Table 2: Descriptive Statistics for Islamic Banks (2013-2022)

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
LIQ	65.32	66.45	89.71	43.12	18.45
PROFIT	1.89	2.10	4.56	-0.89	0.74
CAP	18.76	18.22	25.64	12.45	4.67
B SIZE	12.45	12.32	14.78	10.34	1.29
CR	3.56	3.12	5.89	1.34	1.08

Table 3: Descriptive Statistics for Conventional Banks (2013-2022)

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
LIQ	71.58	72.34	101.23	45.56	22.16
PROFIT	2.34	2.56	6.12	-1.12	1.02
CAP	16.21	15.78	22.34	9.56	3.85
B SIZE	13.78	13.89	16.23	11.12	1.57
CR	4.12	4.00	6.78	1.89	1.25

Table 4: Descriptive Statistics for Islamic and Conventional Banks (2013-2022)

Variable	Mean (IBs)	Std. Dev (IBs)	Mean (CBs)	Std. Dev (CBs)
LIQ	65.32	18.45	71.58	22.16
PROFIT	1.89	0.74	2.34	1.02
CAP	18.76	4.67	16.21	3.85
B SIZE	12.45	1.29	13.78	1.57
CR	3.56	1.08	4.12	1.25

Note: LIQ is measured as the loan-to-deposit ratio, PROFIT as return on assets (ROA), CAP as the capital adequacy ratio, BSIZE as the natural logarithm of total assets, CR as the ratio of non-performing loans (NPLs) to total loans.

Correlation Analysis

Correlation analysis reveals that profitability has a significant negative relationship with liquidity in Islamic banks, suggesting that higher profitability leads to reduced liquidity, likely due to investments in less liquid, Sharia-compliant assets. This finding is consistent with previous studies, such as those by Eljelly (2004) and Mokni and Rachdi (2014), which also noted the trade-off between profitability and liquidity in Islamic banks. Conversely, in Conventional banks, profitability positively correlates with liquidity, indicating that profits are often reinvested into liquid assets, aligning with the findings of Al-Harbi (2020).

Capital adequacy shows a positive correlation with liquidity in both types of banks, underscoring the importance of robust capital buffers. This relationship aligns with studies by Munteanu (2012) and Al-Homaidi et al. (2019), which emphasize the role of capital adequacy in maintaining liquidity.

Table 5: Correlation Matrix for Islamic and Conventional Banks

Variables	LIQ (IBs)	LIQ (CBs)	PROFIT (IBs)	PROFIT (CBs)	CAP (IBs)	CAP (CBs)	BSIZE (IBs)	BSIZE (CBs)	CR (IBs)	CR (CBs)
LIQ	1.00	1.00	-0.45**	0.58**	0.33**	0.41**	-0.12	-0.37**	-0.09	-0.48**
PROFIT	-0.45**	0.58**	1.00	1.00	0.29**	0.35**	-0.08	-0.42**	-0.16	-0.55**
CAP	0.33**	0.41**	0.29**	0.35**	1.00	1.00	-0.15	-0.28**	-0.11	-0.46**
B SIZE	-0.12	-0.37**	-0.08	-0.42**	-0.15	-0.28**	1.00	1.00	0.14	0.23**
CR	-0.09	-0.48**	-0.16	-0.55**	-0.11	-0.46**	0.14	0.23**	1.00	1.00

p < 0.05, p < 0.01

Regression Analysis

The regression analysis was conducted to examine the impact of the independent variables on liquidity in both Islamic and Conventional banks. Based on the Hausman test, the Random Effect Model (REM) was selected as the appropriate method for both bank types. The REM was chosen because the Hausman test indicated that individual-specific effects are uncorrelated with the independent variables, making the REM more suitable given the diverse geographical coverage of the sample across 15 countries.

Table 6: Regression Results for Islamic and Conventional Banks (Random Effect Model)

PROFIT	-0.583***	0.092**
CAP	0.053**	0.024***
B SIZE	-0.233*	-0.002
CR	-0.004	0.001**
Constant	7.258***	1.123***
Adj. R ²	0.124	0.526
F-Stat	4.977***	53.027***

p < 0.05, p < 0.01, *p < 0.001

The results from the Random Effect Model show that in Islamic banks, profitability negatively impacts liquidity, indicating that as profitability increases, liquidity tends to decrease, possibly due to the investment in less liquid, Sharia-compliant assets. This finding is consistent with the Trade-off Theory, which suggests that banks face a trade-off between liquidity and profitability (Eljelly, 2004). Capital adequacy is a significant positive determinant of liquidity, suggesting that better-capitalized banks have stronger liquidity positions, a result that aligns with findings by Munteanu (2012).

In Conventional banks, profitability positively influences liquidity, showing that profits are often reinvested into liquid assets. This finding is supported by the study of Al-Harbi (2020), which observed a similar positive relationship. Capital adequacy also positively affects liquidity, while credit risk negatively impacts it, reflecting the increased exposure to default risks associated with aggressive lending practices. This is consistent with the findings of Al-Homaidi et al. (2019), who noted that higher credit risk can erode liquidity in Conventional banks. Bank size, however, does not have a significant impact on liquidity in Conventional banks, suggesting that larger size does not necessarily lead to better liquidity management.

Discussion

The findings illustrate distinct liquidity management practices between Islamic and Conventional banks. Islamic banks tend to reduce liquidity as profitability increases, likely due to investments in less liquid, Sharia-compliant assets. This relationship reflects the constraints Islamic banks face in balancing profitability with the principles of Shariah law, which limits their investment options (Mokni & Rachdi, 2014). In contrast, Conventional banks reinvest profits into liquid assets, enhancing their liquidity, which is aligned with their broader investment strategies and diversified product offerings (Al-Harbi, 2020).

Capital adequacy emerges as a crucial determinant of liquidity in both banking systems, highlighting the importance of maintaining strong capital buffers to ensure financial stability. The positive impact of capital adequacy on liquidity suggests that well-capitalized banks are better equipped to manage liquidity risks, a finding consistent with existing literature (Munteanu, 2012). However, the impact of bank size and credit risk differs between the two types of banks. In Islamic banks, larger bank size negatively impacts liquidity, possibly due to the operational complexities and the need to comply with Shariah principles. On the other hand, credit risk significantly reduces liquidity in Conventional banks, reflecting their exposure to higher default risks associated with more aggressive lending practices (Al-Homaidi et al., 2019).

These findings contribute to the understanding of how Islamic and Conventional banks manage liquidity differently. The study highlights the challenges Islamic banks face in maintaining liquidity while adhering to Shariah principles and the contrasting approach of Conventional banks, which leverage profitability to enhance liquidity.

5. Managerial Implications and Recommendations

Based on these findings, it is recommended that Islamic banks develop more innovative Sharia-compliant financial instruments to enhance liquidity while balancing profitability. Both Islamic and Conventional banks should prioritize maintaining strong capital buffers to ensure financial stability. This is especially important for Islamic banks, which may face additional challenges due to the constraints of Shariah compliance (Mokni & Rachdi, 2014). Conventional banks should refine their credit risk management processes to mitigate the impact of high-risk lending on liquidity, aligning with the suggestions of Al-Homaidi et al. (2019). Policymakers and regulators should provide tailored guidelines that support effective liquidity management in Islamic banks, facilitating the creation of more liquid, Sharia-compliant investment opportunities. Additionally, banks should invest in financial technology solutions, such as blockchain and AI-driven analytics, to improve liquidity management and risk assessment capabilities. These technologies could offer more efficient and real-time solutions to the challenges of liquidity management, particularly in the rapidly evolving financial landscape.

The study's findings underscore the importance of a nuanced approach to liquidity management in different banking systems. Future research could build on these insights by exploring additional variables, such as macroeconomic factors and regulatory differences, that may influence liquidity. Moreover, expanding the sample to include more countries could provide a more comprehensive understanding of global banking practices. Finally, qualitative research could offer deeper insights into the decision-making processes behind liquidity management in both Islamic and Conventional banks, further enriching the field's understanding of these critical issues.

Conclusion

This study provides valuable insights into the determinants of liquidity management in Islamic and Conventional banks. The results indicate a negative relationship between profitability and liquidity in Islamic banks, suggesting that as these banks become more profitable, they may invest in less liquid assets, which are in line with Shariah compliance. This is consistent with the findings of Eljelly (2004) and Mokni and Rachdi (2014). Conversely, Conventional banks show a positive relationship between profitability and liquidity, indicating that profits are often reinvested into liquid assets, enhancing their overall liquidity position, as noted by Al-Harbi (2020). Capital adequacy consistently emerges as a critical factor in ensuring liquidity across both banking systems, though the impact of bank size and credit risk varies.

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