

Factors Affecting Liquidity Risk in Islamic Banking in Pakistan

SALMAN AHMED SHAIKH¹

Abstract

This study aims to examine the influence of market cost of funds, credit risk, profitability, and size on the funding strategy and liquidity risk in Islamic banking. The analysis utilizes quarterly aggregated time series data on Islamic banking from September 2006 to June 2022. All variables are found to be integrated into order one, indicating they are I(1). The study employs the Vector Error Correction Model (VECM) to investigate the short-run and long-run relationships. The findings indicate that size and credit risk are positively associated with liquidity risk. Furthermore, credit risk demonstrates a long-term co-movement with liquidity risk. Additionally, the results reveal a negative association between profitability and funding strategy, suggesting that higher profitability is associated with a more conservative funding approach. Lastly, the cost of funds exhibits a negative association with funding strategy, implying that lower market cost of funds is linked to a more aggressive funding strategy.

Key words: Islamic banking, Funding strategy, Liquidity risk, Credit risk.

Overview of Islamic Banking in Pakistan

Table 1 shows the stylized facts about Islamic banking in Pakistan. The asset base is nearly touching the Rs 7 trillion mark by June 2022 and the branch network has swelled to surpass the 4,000 mark. Market share in overall banking assets stands at 19.5%.

Table 1: Stylized Facts about Islamic Banking in Pakistan.

Islamic Banking Indicators	Values (As on June 2022)
Assets (in billion Rs.)	6,781
Deposits (in billion Rs.)	4,856
Net financing (in billion Rs.)	2,961
Market share (%)	19.5
Number of branches	4,086
Number of Islamic banking institutions	22

¹ Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST) University, Pakistan. salman.shaikh@szabist.edu.pk.

Source: Data from Islamic Banking Bulletin, June 2022.

During the 15-year period from September 2006 to June 2021, Islamic banking assets, deposits and equity has increased consistently. The growth is much steeper since 2013 as can be seen in Figure 1. Even average quarterly growth in assets has been as impressive as 6.65%. The growth has happened organically as well as inorganically. Besides organic growth, MCB's launch of separate Islamic bank, Meezan Bank's acquisition of stake in HSBC, Bank Islami's acquisition of Citibank's mortgage portfolio and recent transformation of Faysal Bank into a full-fledged Islamic bank has contributed to the expedited growth as well.

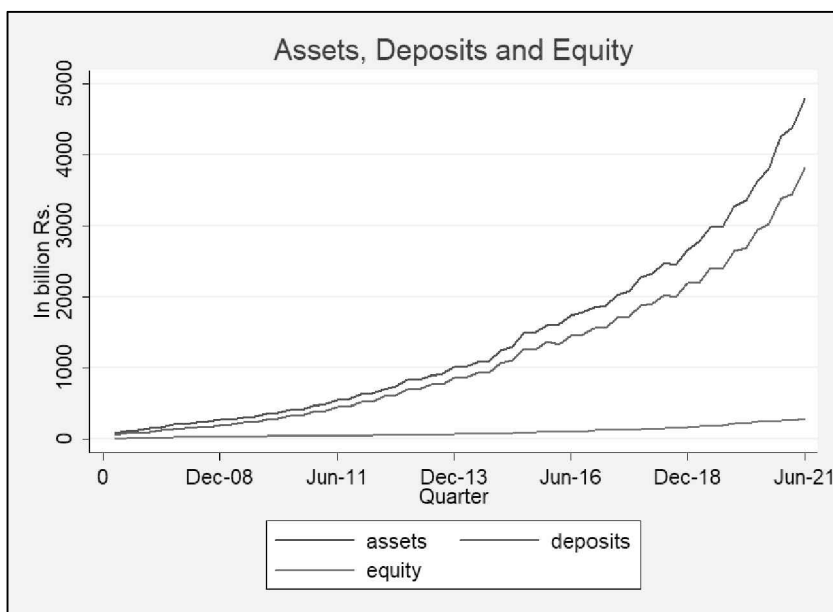


Figure 1: Assets, Deposits and Equity in Islamic Banking.

Source: Data from Various Issues of Islamic Banking Bulletin.

There is steady increase in the branch network which is nearly touching the 4,000 mark by the end of 2021. With financial inclusion still at a dismal level, extension in branch network is crucial for growth in deposits and assets.

In 2002, Meezan Bank was established as the first full-fledged Islamic bank in Pakistan. From a 2.5% market share in September 2006, the share of Islamic banking in assets has gone up to 17%. However, after reaching the 10% mark in 2014, the market share was expected to go up even higher in the next seven years that followed, especially given the Strategic Vision for Islamic banking shared by the State Bank of Pakistan (SBP) for the industry. Nonetheless, despite

support from acquisition and transformation of Faysal bank into a full-fledged Islamic bank, the market share has gone up, but at a slower pace since 2014. Going forward, SBP in its Strategic Plan for 2021-25 has set forth a plan for Islamic banking to achieve 30% market share in overall banking assets and deposits.

Gross financing in Islamic banking has also grown from Rs 53 billion in September 2006 to reach Rs 2,160 billion by June 2021. The average quarterly growth in gross financing in this period has been recorded at an impressive 6.28%. In the credit crunch following the global financial crisis of 2007-08 whose repercussions were also felt in Pakistan, the finance to deposit ratio of Islamic banking stood tall during the crisis and early recovery period. Nonetheless, due to limited products for short term financing and liquidity management, the finance to deposit ratio declined to less than 35% in post-crisis period. The launch of Running Musharakah product provided stability to the finance to deposit ratio and it revived to reach the level of 70% by 2018. Challenging macroeconomic conditions have resulted in further pressure on finance to deposit ratio since 2019 as can be seen in Figure 2.

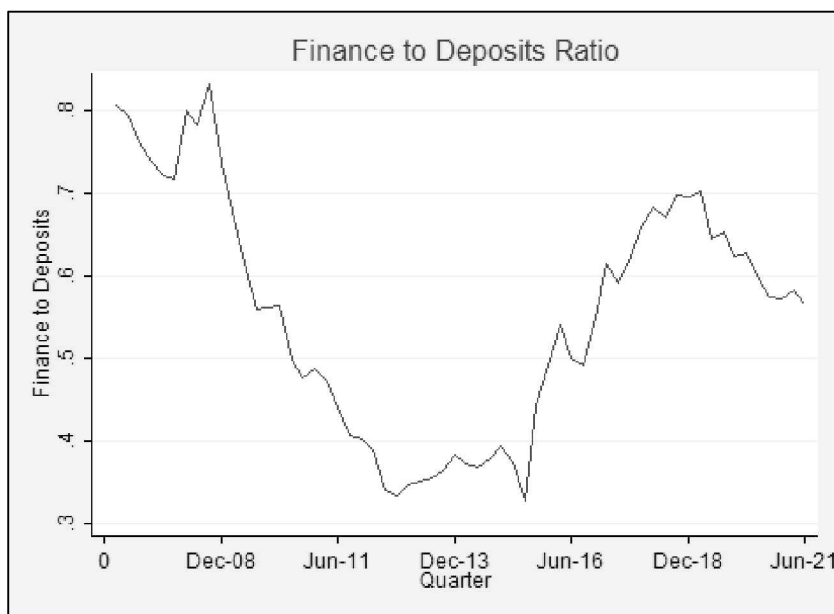


Figure 2: Finance to Deposit Ratio in Islamic Banking.

Source: Data from Various Issues of Islamic Banking Bulletin.

During the initial years, with limited range of products for short term financing, Islamic banks were parking their surplus liquidity more into investments

as compared to extending their financing portfolio. With no lender of the last resort facility until recently, Islamic banks were hesitant to take as much exposure to agriculture and Small and Medium Enterprises (SME) sector as compared to conventional banks. The investments surpassed financing during 2011-2014. But, i) launch of Running Musharakah product, ii) increased use of Diminishing Musharakah and iii) inorganic growth fuelled by acquisition of portfolio of HSBC and Citibank and establishment and transformation of MCB Islamic and Faysal Islamic bank respectively has resulted in a reversal of trend. The wedge between financing and investments since 2016 has increased as reflected in Figure 3. As of June 2021, Islamic banks lead the mortgage financing market and have also achieved price competitiveness in this segment to cement their growth.

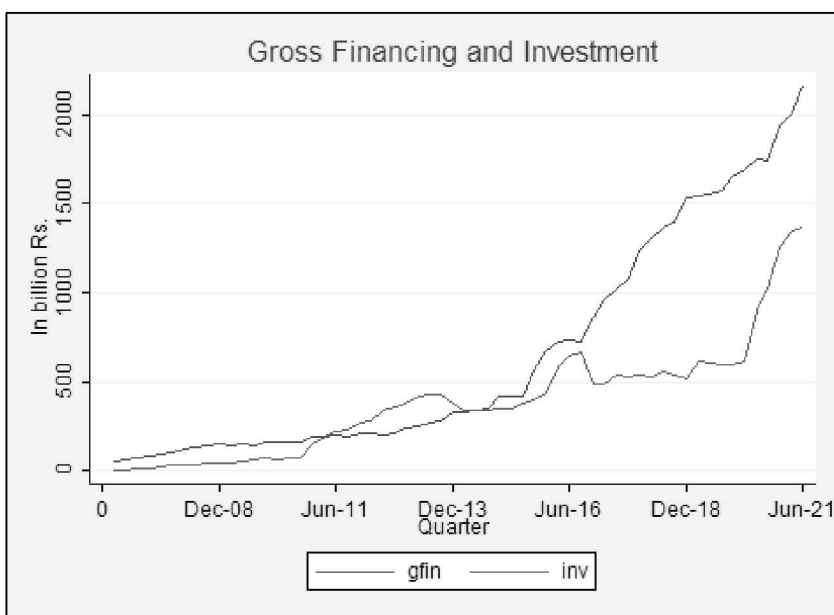


Figure 3: Financing and Investment in Islamic Banking.

Source: Data from Various Issues of Islamic Banking Bulletin.

When it comes to non-performing financing, Islamic banks have an edge on conventional banks both from the viewpoint of structure and portfolio composition. Islamic banking financing assets are by and large real asset backed. This provides a cushion against credit risk. Secondly, due to liquidity constraints (no lender of the last resort facility from SBP until recently) and re-pricing constraints in restructuring and rescheduling trade-based contracts, Islamic banks put together a much solid and robust risk management framework. This results in better risk management in Islamic banking as compared to conventional banking.

Figure 4 reveals that non-performing financing to gross financing for Islamic banks did go up during 2008-2012 period. It happened primarily because of security and energy crisis which hurt the manufacturing sector severely. Islamic banking provides asset backed financing and manufacturing and commodity sectors are usually the main target market for Islamic financing products. However, having obtained an opportunity to provide short term financing solutions to established corporates through Running Musharakah, Islamic banks were able to reduce the overall credit risk in their portfolio which resulted in declining non-performing financing to gross financing ratio.

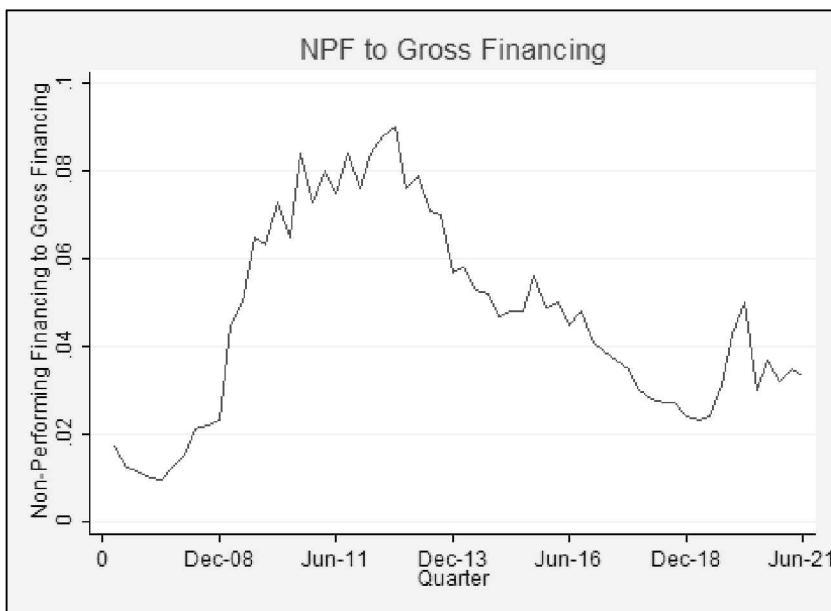


Figure 4: Non-Performing Financing to Gross Financing.

Source: Data from Various Issues of Islamic Banking Bulletin.

When it comes to efficiency, Islamic banks have taken time to achieve efficiency. It is understandable since gaining market share from scratch is difficult in an industry dominated by big players which are all conventional and who have several advantages of economies of scale and scope. Nonetheless, as conventional banks themselves look for penetration in Islamic banking, market cannibalization is happening to an extent. As size and market share grows, there are signs of improving efficiency as indicated by operating expense to gross income ratio overtime in Figure 5. Decline in this ratio is an indication of improved efficiency. Since 2016, operating expense to gross income ratio is exhibiting a decreasing trend which bodes well for future growth and competitiveness of Islamic banking sector in Pakistan.

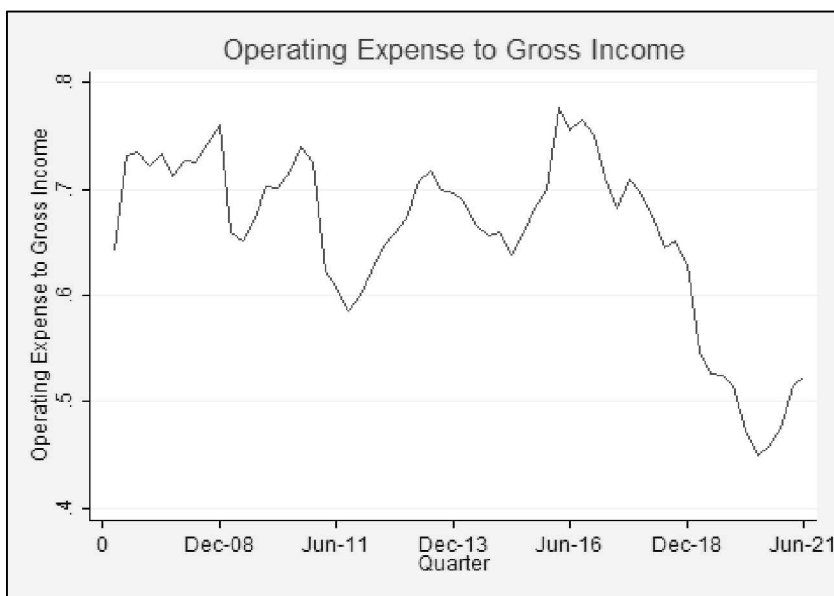


Figure 5: Operating Expense to Gross Income.

Source: Data from Various Issues of Islamic Banking Bulletin.

In addition to that, it will be worthwhile to see how Islamic banks respond to macroeconomic environment. Figure 6 shows the trend in return on equity along with changes in inflation rate and interbank rate, i.e. 6-months Karachi Interbank Offered Rate (KIBOR). It can be seen that the profitability moves in the same direction as the interbank rates. Due to regulatory compulsions and limited size of Islamic money market, Islamic banks also use the interbank rate in pricing their contracts and financing products. Therefore, increase in interbank rate positively influences profitability. One plausible reason for this is that depositors in Islamic banking are loyal and less sensitive to profit rate. Hence, deposits are much less responsive to changes in policy rate and interbank rate as compared to the largely floating rate based financing portfolio.

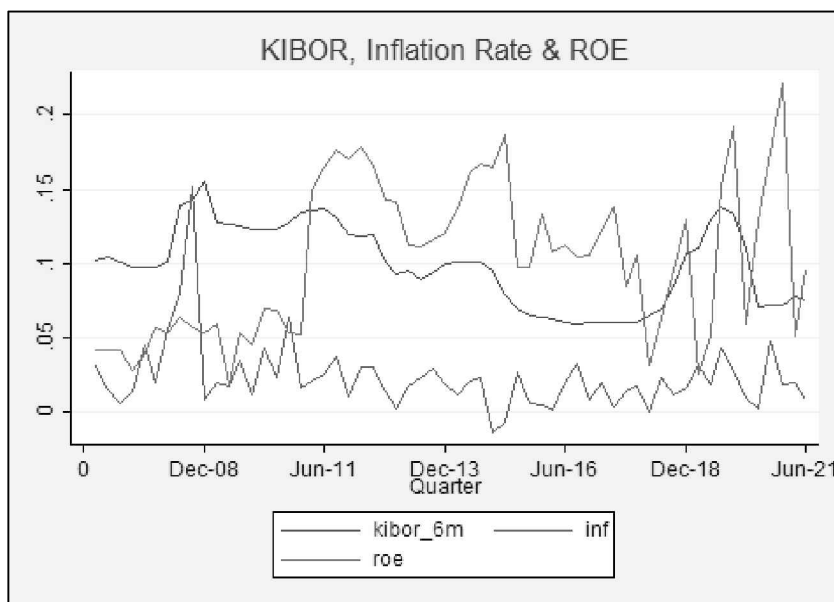


Figure 6: Operating Expense to Gross Income.

Source: Data from Various Issues of Islamic Banking Bulletin and State Bank of Pakistan.

Review of literature

Liquidity Risk and its Determinants in Islamic Banks

There are various risks faced by Islamic banks in liquidity management due to the i) absence of an Islamic inter-bank market, ii) lack of Shari'ah compliant alternatives for liquidity management, both at the inter-bank and central bank level, iii) absence of liquid Islamic Sukuk both in short and long term maturities and iv) absence of Islamic discount window at the central bank level for Islamic financial institutions.

In liquidity management, banks often have surplus liquidity as well as a shortage of liquidity. The problem becomes more pressing as there are lesser alternatives for managing liquidity shortage for Islamic banks. An Islamic bank can take investment from any financial institution and invest it in Shari'ah compliant financing assets. However, it cannot invest its surplus liquidity on equity financing basis with conventional banks since they are operating on the basis of interest based loans in all their operations including lending and deposit mobilization.

The nature of liquidity risk is also different in Islamic banks since the instruments and contracts available for Islamic banks in the money market and treasury operations are different for Islamic banks as compared to conventional banks. Likewise, Islamic

banks face greater repercussions if there is a delay in repayment of financial obligations by the clients. Any late payment received in order to maintain financial discipline cannot be taken as income by the Islamic bank. Secondly, the price of asset in Murabaha financing cannot be altered even if the price is not received at maturity. Finally, new debt cannot be created by rescheduling or rolling over loan as it happens in conventional banking.

Islamic banks also have some unique challenges as compared to conventional banks. They do not have access to the central bank as the lender of last resort in many jurisdictions. Islamic banks also do not invest in Treasury bills in order to meet statutory reserve requirements. In some jurisdictions, they invest in Sovereign Sukuk and also face greater cash reserve requirements if there is a lack of Sovereign Shari'ah compliant instruments available. Thus, Islamic banks have to be more watchful and prudent in their financing operations to mitigate liquidity risk.

Usually, the average maturity of deposits in banks is shorter than average maturity of financing provided. Islamic banks are no exception as they compete in the same market and also need to follow the BASEL requirements (Mohammad, 2013). Liquidity risk management in Islamic banking becomes more difficult due to restriction on sale of debt and absence of alternate instruments for short term liquidity management (Ali, 2013).

Ismael (2010) calls for more alternative liquidity management instruments which are compliant with Shari'ah together with development of new deposit products, such as special purpose deposits, Bancassurance (bank and insurance) deposits, children deposits, and pilgrimage deposits to expand the deposit base. In this regard, use of equity financing can ensure pure-pass through returns. Furthermore, securitization of investments with secondary trading can also enable the depositors to liquidate their investment in the secondary market rather than withdrawing deposits which are not replaced by another depositor.

Empirical Studies Using Cross Country Data

In this subsection, we provide a concise overview of the empirical literature that employed panel data analysis to investigate the performance of Islamic banks in various countries. For instance, Mohammad et al. (2020) examined data from 145 commercial banks across 21 countries between 1996 and 2015. The study findings indicate that Islamic banks are more vulnerable to liquidity risk compared to conventional and hybrid banks. The research also revealed that strict capital regulations and credit risk have a negative and significant impact on the liquidity risk of Islamic banks. Moreover, the study identified bank size, governance, ownership concentration, and GDP as crucial control variables that can mitigate the liquidity risk

exposure of Islamic banks. Therefore, the identified variables can be instrumental in developing effective liquidity risk management strategies for Islamic banks.

Musa et al. (2021) conducted a study that investigated the factors that determine the liquidity position of Islamic and conventional banks using data from European banks from 2017 to 2021. The authors found that banks with larger capital buffers, indicating higher solvency, had better liquidity positions.

Al-Harbi (2020) conducted an extensive investigation using pre-crisis data, utilizing an unbalanced panel dataset of 110 Islamic banks that operated in the Organization of Islamic Cooperation countries during the 1989-2008 period. The aim of the study was to identify the factors that determine liquidity risk in Islamic banks. The research revealed that liquidity in Islamic banks was adversely affected by several factors, including foreign ownership, credit risk, profitability, inflation rate, monetary policy, and deposit insurance. Conversely, factors such as capital ratio, size, gross domestic product growth, and concentration had a positive impact on liquidity.

This study presents the outcomes of Alzoubi's (2017) examination of the determinants of liquidity risk in Islamic banks. Employing a panel dataset of 42 banks across 15 countries from 2007 to 2014, the study identified cash holdings and marketable investments as critical factors in mitigating liquidity risk. Furthermore, the study found that larger banks were better equipped to manage liquidity risk due to their superior depositor trust and greater access to interbank markets. Additionally, the research revealed a positive relationship between liquidity risk and credit risk. These findings are valuable for banking industry practitioners and regulators.

One of the notable studies in this regard is by Rashid et al. (2017), who investigated the determinants of liquidity risk using a panel of 39 Islamic banks from Malaysia and the Gulf Cooperation Council countries between 2009 and 2014. The study found that liquidity risk is significantly affected by lagged liquidity risk, bank size, loan loss provision, and two external factors, namely, money supply and GDP growth.

In panel data analysis, Jedidia and Hamza (2015) explored the impact of multiple factors on liquidity risk among 60 Islamic banks in Southeast Asian and MENA countries from 2004 to 2012. Their findings showed that profitability had a positive influence on exposure to liquidity shortage, while capital adequacy had a negative impact. The study, however, found no significant association between bank size and liquidity risk.

Hassan et al. (2019) utilized a simultaneous structural equation approach to investigate the interdependence of credit risk and liquidity risk in 52 Islamic and conventional banks from selected Organization of Islamic Cooperation countries between 2007-2015. The study findings revealed a negative association between credit risk and liquidity risk.

Similarly, Ghenimi et al. (2020) examined the relationship between liquidity risk and various bank-specific and macroeconomic factors using data from 27 Islamic banks and 49 conventional banks operating in MENA during the period from 2005 to 2015. The study revealed that liquidity risk was positively associated with credit risk while negatively related to profitability and capital adequacy.

El-Massah et al. (2019) conducted a comprehensive analysis of liquidity risk in 257 banks comprising 90 Islamic and 167 conventional banks during the period of 2009-2016. The study examined the impact of various bank-specific and macroeconomic factors on liquidity risk. The findings indicated that bank size had a positive effect on liquidity risk across all sample banks. Additionally, capital adequacy positively affected liquidity risk in all sample banks regardless of bank type. However, profitability was found to have no significant impact on liquidity risk, while credit risk was found to have a negative effect on liquidity risk for both Islamic and conventional banks.

Abdul-Rahman et al. (2017) conducted a study to examine the liquidity risk in 27 conventional and 17 Islamic banks in Malaysia over the period of 1994-2014. The study found a positive association between real estate financing and the stability of short-term financing structure with liquidity risk.

Empirical Studies Using Single Country Data

This section provides a brief summary of the literature related to liquidity risk with a specific focus on single-country studies. Arif and Anees (2012) conducted a study on 22 banks operating in Pakistan during 2004-2009 and revealed that liquidity risk negatively affects bank profitability.

In Malaysia, Abdul-Rahman et al. (2017) examined the liquidity risk in 27 conventional and 17 Islamic banks over the period of 1994-2014. The study found a positive association between real estate financing and the stability of short-term financing structure with liquidity risk.

Ahamed (2021) conducted an empirical analysis of liquidity risk in the banking sector of Bangladesh using data from 23 banks for the period of 2005-2018. The results revealed that bank size has a significant negative impact on liquidity risk.

Megeid (2017) analysed data from eight banks during the period of 2004-2011 to examine liquidity risk management in Islamic and conventional banking in Egypt. The study found that Islamic banks faced greater constraints in managing their liquidity risk as compared to conventional banks.

Gogo and Arundina (2021) conducted a research study on liquidity risk in Islamic banking in Indonesia, which utilized data from nine banks over the period of 2013-

2019. The results of the study revealed that liquidity risk was influenced by profitability, credit risk, and capital adequacy. Similarly, Sukmana and Suryaningtyas (2016) examined the factors contributing to liquidity risk in Islamic and conventional banks in Indonesia. Their study found that profitability had a negative correlation with liquidity risk, while capital adequacy had a positive relationship with liquidity risk.

Research methodology

This paper endeavours to analyse how funding strategy or liquidity risk in Islamic banking is influenced by market cost of funds, credit risk, profitability and size. This study uses finance to deposit ratio for incorporating funding strategy and liquidity risk in Islamic banking. A higher ratio represents more reliance on other funding sources as compared to deposits for the financing operations while a lower ratio represents less reliance on other funding sources as compared to deposits for the financing operations. Deposits, especially in Islamic banks are mostly placed in checking accounts. Current accounts are zero-return deposits while investment deposits mobilized in checking account do not on average have higher return. In fact, the returns on Islamic investment deposits is usually lower than conventional. Hence, if financing is mostly reliant on these low-cost investment deposits and zero-return safekeeping deposits, then cost of funds will be lower as compared to relying on other external sources of funds.

In the empirical model, interest rate is taken to analyse the effect of cost of funds on funding strategy or liquidity risk of Islamic banking. Log of assets is taken to incorporate the effect of size on funding strategy. Non-performing financing to total financing is taken to measure the effect of asset quality or credit risk on funding strategy. A higher ratio represents lower quality of assets and greater credit risk while a lower ratio represents higher quality of assets and lower credit risk. Finally, return on equity ratio is also taken to incorporate the effect of profitability on funding strategy. A higher ratio represents higher return on investment to the shareholders while a lower ratio represents higher return on investment to the shareholders.

The quarterly time series data is obtained from September 2006 to June 2022 from various issues of Islamic banking bulletin, published by State Bank of Pakistan (SBP). Overall, there are 64 observations on each variable in the study. The data for interest rate and money supply is obtained from SBP.

The theoretical framework can be illustrated by Figure 7. Dependent variable is finance to deposit ratio as measured by total gross financing divided by total deposits. The independent variables include interest rate, log of assets, non-performing financing to total financing ratio and return on equity.

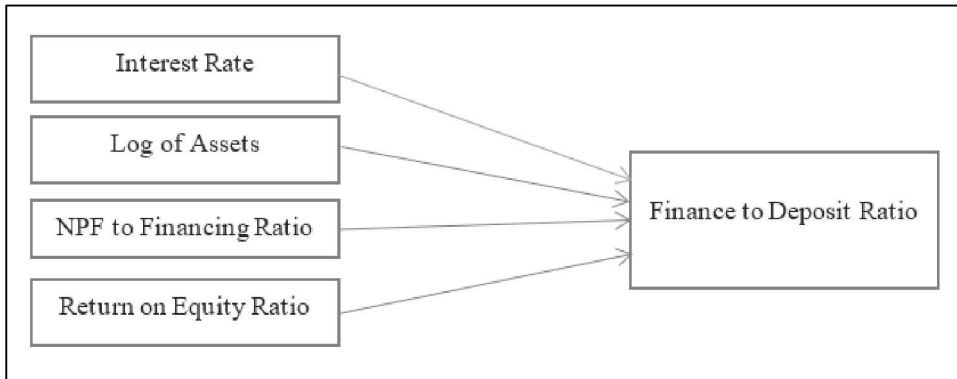


Figure 7: Theoretical Framework.

The long run model equation using Vector Error Correction Model (VECM) framework with finance to deposit ratio as dependent variable is given in equation (1).

$$\Delta fd_t = \beta_0 + \sum_{i=1}^{k-1} \beta_i \Delta \ln a_{t-i} + \sum_{j=1}^{k-1} \beta_j \Delta r_{t-j} + \sum_{l=1}^{k-1} \beta_l \Delta roe_{t-l} + \sum_{m=1}^{k-1} \beta_m \Delta npf_{t-m} + \lambda_1 E_{t-1} + \epsilon_{1t} \text{ -- (1)}$$

Here, fd_t represents financing to deposit ratio, $\ln a_t$ represents log of assets, r_t represents repo rate, roe_t represents return on equity and npf_t represents non-performing financing to total financing ratio. Finally, E_t represents error correction term.

To evaluate the stationarity of time series variables, a common approach is to conduct unit root tests. The Dickey and Fuller (1979) test is applied in this study and all variables are found to be non-stationary at levels but become stationary after taking the first difference, indicating that they are integrated of order one (i.e. I (1)). To investigate the short-run and long-run relationship between these variables, a vector error-correction model (VECM) is employed with the variables treated as endogenous.

The optimal lag length for the VECM model is determined using Schwarz’s (1978) Bayesian information criterion (SBIC) criteria, which suggests the inclusion of one lagged term. Then, the number of co-integrating equations is estimated using Johansen’s (1995) maximum likelihood estimator. According to the results of the trace statistic and maximum-eigenvalue statistic, the null hypothesis of one or fewer co-integrating equations cannot be rejected at the 5% level of significance, thus supporting the use of the VECM model.

Analysis and Findings

We run five model equations for each of the endogenous variables. In each model equation, there are two parameters including a constant term and one error correction term.

In the short run results, the coefficient of adjustment parameter for finance to deposit ratio is found to be -0.017 and significant at 5% level of significance. It implies adjustment towards equilibrium at a convergence speed of 1.7% next quarter. The estimates of the long run are presented in the co-integrating equation results in Table 2.

Table 2: Co-Integrating Equation Results.

Johansen Normalization Restriction Imposed				
Beta	Coefficient	S. E	Z	P>z
Finance to Deposit	1.0000	.	.	.
Log of Assets	-.5406712	.0947104	-5.71	0.000
NPF to Financing	-11.86102	3.840004	-3.09	0.002
Return on Equity	5.215982	1.420227	3.67	0.000
Interest Rate	8.013204	3.957765	2.02	0.043
Constant	3.770559	.	.	.

It can be seen that all variables are statistically significant in the cointegrating equation. Rearranging the equation for finance to deposit ratio, the signs of coefficients are reversed to interpret the results. Size and credit risk have a positive association with liquidity risk. It is plausible since big size banks are in a position to afford a funding strategy by funding their finance operations from other sources than deposits. On the other hand, credit risk in long run goes hand in hand with liquidity risk. Lower asset quality might lower the cushion of deposits and hence leading to higher liquidity risk for banks in the long run.

The results also reveal a negative association between profitability and funding strategy. Profitable banks would have lower liquidity risk and would be in a position to cover their financing operations mostly from deposits. Lastly, the cost of funds also has a negative association with funding strategy. One explanation could be that rise in interest lowers liquidity risk and bank moves to rely more on deposits. It is because deposits are less sensitive and elastic to rise in interest rate as compared to the financing contracts. Hence, rise in interest rate bodes well for the liquidity risk as the bank is able to raise revenues from financing contracts more substantially as compared to the rise on cost of funding from deposits.

The Lagrange-multiplier (LM) test is used to assess the autocorrelation in the residuals of the Vector Error-Correction Model (VECM) to ensure that the model is correctly specified. The results of the LM test indicate that there is no autocorrelation at the first lag, which suggests that the model has been specified correctly and there is no evidence of misspecification. This diagnostic test provides support for the validity of the VECM and the reliability of the estimated coefficients.

In the eigenvalue stability condition, it is also found that the model is stable. Finally, Jarque-Bera (1980) test is employed to check the normality of disturbances. In the finance to deposit ratio equation, the null hypothesis of normality could not be rejected at 5% level of significance.

Subsequently, our focus is on analyzing the impulse response functions (IRF) to examine the consequences of disturbances to the response variable. The IRF illustrates the dynamic changes in the variable due to a one-period standard deviation shock to another variable.

Figure 8 shows the effect of one standard deviation shock in log of assets, non-performing financing total financing, return on equity and interest rate on liquidity risk.

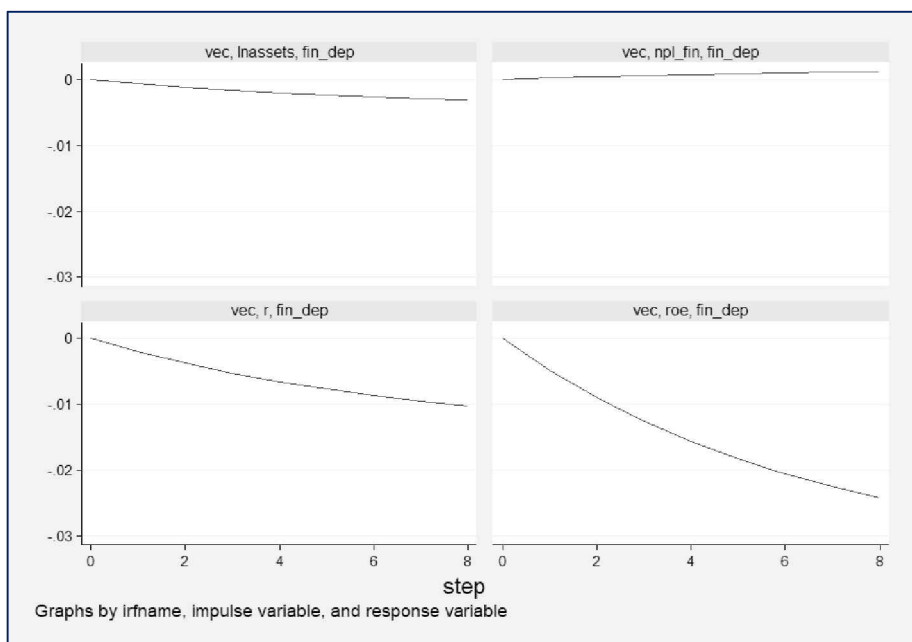


Figure 8: IRF with Size, Credit Risk, Cost of Funds and Profitability as Shock and Liquidity Risk as Response Variable.

Impulse response functions reveal that one standard deviation shock in log of assets lowers the liquidity risk. Thus, big size banks have greater cover for liquidity risk. One standard deviation shock in non-performing financing to total financing has a positive effect on liquidity risk. Thus, credit risk goes hand in hand with liquidity risk. Lower asset quality bodes negatively for liquidity as well.

In addition to that, one standard deviation shock in cost of funds lowers the liquidity risk. It means that rise in interest after controlling the effect of interest rate lower the liquidity risk. There is greater increase in revenues from financing operations than the rise in cost of funds from deposits. Finally, one standard deviation shock in return on equity also bodes well for liquidity risk. Deposit funds are sticky with profitable banks. Evidence also confirms that profitable banks are able to keep their deposits intact.

Conclusion & Recommendations

The study established that size and credit risk have a positive association with liquidity risk. Big size banks are in a position to afford a funding strategy by funding their finance operations from other sources than deposits. On the other hand, credit risk in long run goes hand in hand with liquidity risk. Lower asset quality might lower the cushion of deposits and hence leading to higher liquidity risk for banks in the long run.

The results also reveal a negative association between profitability and funding strategy. Profitable banks would have lower liquidity risk and would be in a position to cover their financing operations mostly from deposits. Lastly, the cost of funds also has a negative association with funding strategy. One explanation could be that rise in interest lowers liquidity risk and bank moves to rely more on deposits. It is because deposits are less sensitive and elastic to rise in interest rate as compared to the financing contracts. Hence, rise in interest rate bodes well for the liquidity risk as the bank is able to raise revenues from financing contracts more substantially as compared to the rise on cost of funding from deposits.

Impulse response functions reveal that one standard deviation shock in log of assets lowers the liquidity risk. Thus, big size banks have greater cover for liquidity risk. Likewise, one standard deviation shock in cost of funds lowers the liquidity risk. It means that rise in interest after controlling the effect of interest rate lower the liquidity

risk. There is greater increase in revenues from financing operations than the rise in cost of funds from deposits. Additionally, one standard deviation shock in return on equity also bodes well for liquidity risk. Deposit funds are sticky with profitable banks. Finally, one standard deviation shock in non-performing financing to total financing has a positive effect on liquidity risk. Thus, credit risk goes hand in hand with liquidity risk.

For effective liquidity management, Islamic banks shall look to diversify sources of funds. An increase in non-remunerative deposits can reduce the cost of raising funds from the public. Reliance on a few big deposits is risky. It is better to have a widespread deposit base.

Islamic banks also need to reduce the concentration of funding base. It is better to have an efficient liability mix with adequate availability of short term and long term deposits. Maturity matching on both sides of the balance sheet can solve much of the problem systematically.

In financing operations, all else equal, it is better to rely on financing of marketable assets. It is better to finance those assets on a priority basis that have a secondary market and that are somewhat standardized and widely used in the real sector of the economy.

REFERENCES

- Abdul-Rahman, A., Said, N. L. H. M., & Sulaiman, A. A. (2017). Financing Structure and Liquidity Risk: Lesson from Malaysian Experience. *Journal of Central Banking Theory and Practice*, 6(2), 125 – 148.
- Ahamed, F. (2021). Determinants of Liquidity Risk in the Commercial Banks in Bangladesh. *European Journal of Business and Management Research*, 6(1), 164 – 169.
- Al-Harbi, A. (2020). Determinates of Islamic Banks Liquidity. *Journal of Islamic Accounting and Business Research*, 11(8), 1619 – 1632.
- Ali, S. S. (2013). State of Liquidity Management in Islamic Financial Institutions. *Islamic Economic Studies*, 21(1), 63 – 98.
- Alzoubi, T. (2017). Determinants of Liquidity Risk in Islamic Banks. *Banks & Bank Systems*, 12(3), 142 – 148.
- Arif, A., & Anees, A. N. (2012). Liquidity Risk and Performance of Banking System. *Journal of Financial Regulation and Compliance*, 20(2), 182 – 195.
- El-Massah, S., Bacheer, S. M., & Al Sayed, O. (2019). Liquidity Risk in the MENA Region Banking Sector: Does Bank Type Make a Difference? *The Journal of Developing Areas*, 53(1), 1 – 18.
- Ghenimi, A., Chaibi, H., & Omri, M. A. B. (2020). Liquidity Risk Determinants: Islamic vs Conventional Banks. *International Journal of Law and Management*, 63(1), 65 – 95.
- Gogo, T. L., & Arundina, T. (2021). Analysis of Factors Affecting Liquidity Risk in Indonesian Islamic Banking. *International Journal of Business and Economy*, 3(1), 98 – 114.
- Hassan, M. K., Khan, A., & Paltrinieri, A. (2019). Liquidity Risk, Credit Risk and Stability in Islamic and Conventional Banks. *Research in International Business and Finance*, 48, 17 – 31.
- Ismal, R. (2010). Strengthening and Improving the Liquidity Management in Islamic Banking. *Humanomics*, 26(1), 18 – 35.
- Jarque, C. M., & Bera, A. K. (1980). Efficient Tests for Normality, Homoscedasticity and Serial Independence of Regression Residuals. *Economics Letters*, 6(3), 255 – 259.

- Jedidia, K. B., & Hamza, H. (2015). Determinants of Liquidity Risk in Islamic Banks: A Panel Study. *Islamic Management and Business*, 2(2), 137 – 146.
- Johansen, S. (1995). *Likelihood-Based Inference in Co-integrated Vector Autoregressive Models*. Oxford: Oxford University Press.
- Megeid, N. S. A. (2017). Liquidity Risk Management: Conventional versus Islamic Banking System in Egypt. *Journal of Islamic Accounting and Business Research*, 8(1), 100 – 128.
- Mohammad, S. (2013). Liquidity Risk Management in Islamic Banks: A survey. *Afro Eurasian Studies*, 2(1-2), 215 – 230.
- Mohammad, S., Asutay, M., Dixon, R., & Platonova, E. (2020). Liquidity Risk Exposure and its Determinants in the Banking Sector: A Comparative Analysis between Islamic, Conventional and Hybrid Banks. *Journal of International Financial Markets, Institutions and Money*, 66, 101196.
- Musa, H., Musova, Z., Natorin, V., Lazaroiu, G., & Bod'a, M. (2021). Comparison of Factors Influencing Liquidity of European Islamic and Conventional Banks. *Oeconomia Copernicana*, 12(2), 375 – 398.
- Rashid, M., Ramachandran, J., & Bin Tunku Mahmood Fawzy, T. S. (2017). Cross-Country Panel Data Evidence of the Determinants of Liquidity Risk in Islamic Banks: A Contingency Theory Approach. *International Journal of Business & Society*, 18, 3 – 22.
- Schwarz, G. E. (1978). Estimating the Dimension of a Model. *Annals of Statistics*, 6(2), 461 – 464.
- Sukmana, R., & Suryaningtyas, S. (2016). Determinants of liquidity risk in Indonesian Islamic and conventional banks. *Al-Iqtishad: Jurnal Ilmu Ekonomi Syariah*, 8(2), 187 – 200.