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DETERMINANTS OF SYSTEMATIC AND UNSYSTEMATIC LIQUIDITY RISK IN ISLAMIC BANKS

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ABSTRACT

This study examines whether systematic (macroeconomic) and unsystematic (bank specific) factors determine liquidity risk in Islamic banks. The study employs a sample of Islamic banks from Pakistan, Qatar, Malaysia, UAE, Bangladesh, Bahrain, and Saudi Arabia over the period 2008 – 2019. Using Least Square estimation methods to estimate the model separately for each country, we find the results to be mixed and different across countries. The results also show that non-performing loans, bank size, leverage ratio and return on assets are key unsystematic drivers in determining the liquidity risk of Islamic banks. This study points out the fragility of Islamic banks in relation to managing liquidity risk.

Keywords: Systematic risk, Unsystematic risk, Determinants, Liquidity risk, Islamic banks.
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I. INTRODUCTION

Over the past decades, Islamic banking has emerged and operated alongside with conventional banking in the provisions of financial services in many countries. While Islamic banking differs from conventional banking in that Islamic banking is guided by the Shariah principles, both are essentially financial interdiaries channeling funds from savers or depositors to those we need funds. Conceivably, through the maturity mismatch of sources of funds (normally short term) and uses of funds (normally long term), Islamic banks (IBs) may also face liquidity risk in the same ways as conventional banks (CBs) do.

Essentially, a bank is facing liquidity risk if it can neither demand payments nor can they sell assets in their portfolio when needed (Ruozi & Ferrari, 2013). Under this circumstance, the bank would not be able to respond to emergencies and there might be issues of solvency and bankruptcy. Arena (2008) claims that improper management of liquidity can lead to bankruptcy and default risk. Improper liquidity management also can result in insolvency risks because, in severe scenarios, banks have to fire-sell their assets for fulfilling their obligations. Whereas effective management of liquidity risk ensures that banks will be able to fulfill their cash flow obligations and other necessary requirements (Mohamad, Mohamad & Samsudin, 2013). According to the theory of financial intermediation, it is crucial to manage liquidity risk as banks are considered the main source of creating liquidity in the economy (Allen & Santomero, 1997).

Siddiqui (2008) argues that IBs may face liquidity issues due to limited access to funds under challenging situations and unexpected withdrawals of funds. Meanwhile, CBs can easily control/ manage liquidity risk as they have easy access to various sources of funds via commercial papers, interbank market, foreign exchange swaps, T-bills, and repo operations. In addition, the banks may also source funds from central banks as lenders of last resort at a discount rate (De Grauwe, 2013). As these sources of funds are interest-based, they are out of reach for IBs. Hence, the liquidity management of IBs would be more difficult and more challenging (Jedidia & Hamza, 2015). Accordingly, it is recommended for IBs to maintain a liquidity management system (Jedidia & Hamza, 2015; Abdel Megeid, 2017). Its purpose is to make sure that funds are available at the right time and there are limited withdrawals in adverse economic conditions. The liquidity management system also monitors the banks' current and future debt obligations and plans accordingly for the unexpected demand of funds from firm-specific or systemic (economy-wide) factors. Banks dues are also included when they make payments to third parties (Iqbal, 2012).

Sobol (2012) reports no issue of liquidity shortage for IBs. Instead, the real issue is excess liquidity. He concludes that, as models in IBs are based on Profit and Loss Sharing (PLS), IBs consider their borrowers as partners and share profits and losses with them on pre-determined ratios. Moreover, IBs do not lend money to the borrowers at interest, so there is no guaranteed rate of return on the investment. This is because, in the case of the profit-loss-sharing (PLS) mode of financing, rate of return totally depends on the profits made by the partnership (i.e., Musharaka and Mudaraba). The PLS arrangements are present on assets as well as liabilities side of the balance sheet. So, it is viewed that depositors sharing risks with banks on liability side will also be ready to grip shocks occurring on

assets side. Thus, the real value of bank assets can be determined by depositors' funds (Dusuki, 2007). While this suggests minimal liquidity risk faced by Islamic banks, in practice, the PLS transactions have yet been the dominant form of Islamic bank financing. Accordingly, with preference towards Murabaha, Salam, Istisna and Ijara by IBs (Sobol, 2012), the liquidity risk remains potential.

IBs provide depositors gratification even if they face losses on the asset side as they have to compete with the CBs and CFIs. Therefore, deposits are based on Qard[1] and Wadi'ah[2]YadDhamanah instead of Mudaraba. These contracts guarantee principal whether banks have profit or loss on asset side. IBs offer their depositors Hibah (gift), which is equivalent to the rate of return provided by CBs to their clients. Such offerings change the ideal structure of IBs (Dusuki, 2007). It would not be wrong if we say that the balance sheets of IBs and CBs are quite similar in nature. Both of the institutions are characterized by illiquid assets and liquid liabilities. It is also true that IBs following the guidelines of CBs can face liquidity and solvency issues. Matz & Neu (2006) argue that banking is the riskiest business as most of the risks are directly associated with it and liquidity risk is the cause of all consequences banking institutions face. Ali (2007) concludes that Turkish financial institution, IhlasFinans House, faced bankruptcy issue and were closed down just because of liquidity problem.

The foregoing discussion suggests that it is difficult for IBs to completely follow the CBs in the management of liquidity risk. It is also a challenge for IBs to compete with conventional counterparts on a level playing field (Deloitte Middle East, 2016). While IB industry realizes the problem and some Islamic countries have embarked on resolving this issue, there is still a lack of a strategy and direction that will help IB industry to attain its potential as these countries are separately addressing various issues faced by Islamic banks rather than working collectively (Buckley, Doh & Benischke 2017). In the present context, there seems to be an urgent need in identifying factors that may lead to liquidity risk of Islamic banks.

Accordingly, this study is to examine the determinants of liquidity risk of IBs by focusing on both bank-specific (unsystematic) and macroeconomic (systematic) factors in selected Muslim majority countries, namely, Pakistan, Qatar, Malaysia, UAE, Bahrain, Bangladesh, and Saudi Arabia. Prior literature finds a number of macro and micro factors which affect the liquidity risk of IBs (Riahi, 2019). Bank size, non-performing loans, profitability, and capital requirement are internal factors that banks can directly manage. Macroeconomic factors like GDP, inflation, and interbank rate cannot be directly managed, but banks must prepare to face the problem of liquidity caused by these factors. This can only be done if there is a direction or approach about how to handle these factors as most specialized IBs are either losing money or barely making profits in their struggle for survival in a highly competitive market.

The rest of this paper is structured as follows. Section 2 reviews relevant litreture and develops the hypotheses. Section 3 presents research methodology. Section 4 provides and discusses the empirical findings. The last section is conclusion.

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1 **Qard** refers to a contract of lending money by a lender (Customer) to a borrower (Bank) where the latter is bound to repay an equivalent replacement amount of the Customer

2 **Wadi'ah Yad Dhamanah** refers to the transaction between the depositor (Customer) and the custodian (Bank) for the safe keeping of the goods or money.

II. LITERATURE REVIEW

Banks play a central role in the advancement of an economy by providing liquidity through illiquid assets (Wang, 2002). According to Van Horne & Wachowicz (2000), while banks are the insurers of liquidity, they can also face risks since high liquidity creation can lead to the risk of liquidating illiquid assets to fulfill demands by custormers. Accordingly, they need to manage the liquidity risk as well as any other rik in order to remain in the businesses. The extant literature provides a number of ways for banks to manage liquidity risk. The banks may hold liquidity reserves or issue securities to meet for instance depositors' withdrawals. They can also utilize inter-bank lending or source funds from central banks for the same purpose.

For the sustainability and growth of IBs, liquidity risk management is relatively more important than managing operational risk or the risk of rate of return (Khan & Ahmed, 2001). According to El Tiby (2010) and Mohamad, Mohamad & Samsudin (2013), IBs face liquidity risks because of of limited number of Sharia-compliant instruments in the money market and Islamic financial instruments traded on the secondary market. According to Hassan, Razzaque & Tahir (2013), the Islamic financial system promotes equity-based instead debt-based instruments, which has not been fully reflected in practices. They further argue that Islamic financial products are not properly developed due to lack of Islamic capital and money markets. Accordingly, liquidity risk is highly potential for Islamic banks and hence understanding its determinants is of paramount importance.

Essentially, the bank-specific factors are potential determinants of liquidity. Existing literature has documented findings that non-performing loans, bank size, bank capital, leverage or lending activity and profitability are significantly related to liquidity risk. In a study of Malaysian banks, Joseph et al. (2012) discover that there are efficient and well-organized fully functioned IBs, but they are still less organized as compared to CBs. They find some major systematic and unsystematic determinants of liquidity risk, where non-performing loans (NPL) are one of them. They note that that the NPLs worsen bank liquidity and profitability. Furthermore, the NPLs bear adverse bearings on real economic activities and consequently on profits and liquidity (Sharma, 2005). Other Emprical studies also indicate that NPLs are significantly related to liquidity risk (Auronen, 2003).

Another determinant of liquidity risk is bank size, which is normally represented by banks' total assets. Ahmed, Akhtar & Usman (2011) examine a sample of six IBs in Pakistan from 2006-2009 and conclude that bank size directly influences liquidity risk. Bank size contributes to its level of liquidity because it affects the ability of bank to assemble funds from external sources as well as the cost of external financing (Shen, Chen, Kao & Yeh, 2009).

Capital adequacy ratio (CAR) is also viewed as a major determinant of liquidity risk in IBs (Jedidia & Hamza, 2015). More specifically, CAR enables banks to absorb losses, maintain stability in banking system and protect depositors (Cantor, 2001). Al-Khouri (2012) argues that CAR determines the financial power of banks. If banks are able to make payments to their depositors on demand and still have enough funds for lending, then they will be financially strong and powerful. Apart from determining financial power, CAR also determines the capability of bank for growth. IBs with high CAR will tend to grow and will have low liquidity risk

(Abusharba, Triyuwono, Ismail & Rahman, 2013). Ongore & Kusa (2013) argue that CAR displays the inner potential of the banks and controls the situation at the time of crisis. By changing the funding mixture, banks can change their liquidity (Raghavan, 2003). From one point of view, capital adequacy promotes optimal risk sharing and limits imprudent risk taking. From the other point of view, CAR reduces the possibility of insolvency and eventually put a ceiling on the cost of financial distress (Caggiano & Calice, 2011).

Some studies have investigated liquidity risk factors in IBs. Ghenimi & Omri (2015) examine the factors affecting liquidity risk in IBs and CBs in the Gulf countries and find that such bank-specific factors as CAR and ROE impact the liquidity risk of IBs positively whereas NPLs, ROA, and bank size are negatively related to liquidity risk of IBs. These finding differ from those for CBs where bank size, ROE, CAR positively impact the liquidity risk of CBs while ROA and NPLs are negatively related to their liquidity risk. These differences suggest that IBs are more sensitive than CBs.

Banks play a central role in the advancement of an economy by providing liquidity through illiquid assets (Wang, 2002). As a liquidity provider, banks can boost an economy by providing cash and demand deposits. According to Van Horne & Wachowicz (2000), banks are the insurers of liquidity, but they can also face risks because higher liquidity creation leads to the risk of disposing illiquid assets in order to meet the customers' demand. According to the anticipated income concept of liquidity, term loans are very important. Thus, policies in relation to bank loans play an important part in the process of credit (Wang, 2002).

On the basis of the foregoing discussion, we state the following hypotheses that link liquidity risk of Islamic banks to bank-specific factors.

H1: *There is association between liquidity risk of Islamic banks and non-performing loans.*

H2: *There is association between liquidity risk of Islamic banks and bank size.*

H3: *There is association between liquidity risk of Islamic banks and capital adequacy ratio.*

H4: *There is association between liquidity risk of Islamic banks and leverage ratio.*

H5: *There is association between liquidity risk of Islamic banks and profitability ratio.*

Apart from the bank-specific factors, macroeconomic factors may also influence liquidity risk of Islamic banks. In Ghenimi & Omri (2015) and other studies, gross domestic product (GDP) is noted to be a significant determinant of liquidity risk. Likewise, inflation can also be important (Ghenimi & Omri, 2015). Accordingly, we develop the following hypotheses to be tested:

H6: *There is association between liquidity risk of Islamic banks and Gross domestic product*

H7: *There is association between liquidity risk of Islamic banks and inflation*

H8: *There is association between liquidity risk of Islamic banks and output gap.*

III. METHODOLOGY

In the study, we employ the following regression equation to ascertain whether bank-specific and macroeconomic factors significantly influence liquidity risk of Islamic banks:

$$LQR_{i,t} = \beta_0 + \beta_1(NPL)_{i,t} + \beta_2(CAR)_{i,t} + \beta_3(LR)_{i,t} + \beta_4(BS)_{i,t} + \beta_5(ROA)_{i,t} + \beta_6(ROE)_{i,t} + \beta_7(GDP)_{i,t} + \beta_8(INF)_{i,t} + \beta_9(OG)_{i,t} + \varepsilon_{i,t}$$

where LQR is liquidity risk, NPL is non-performing loans, CAR is capital adequacy ratio, LR is leverage ratio, BS is bank size, ROA is return on assets, ROE is returns on equity, GDP is gross domestic products, INF is inflation, OG is output gap, ε is the error term, and i represents bank t represent time (year).

LQR is the ratio of unweighted values of loan to deposit (Van den End, 2016; Matz & Neu, 2006). It measures the loans covered by stable funding, generally deposits from households and non-financial companies (Van den End, 2016). Liquidity position of banks can be increased if there is room to extend loans. Therefore, when the ratio between loan and deposit is high, the liquidity risk tends to be low. NPL (Non-performaing loans) is measured by the ratio of default loans to gross loans. CAR (Capital Adequacy Ratio) is calculated by the ratio of capital expenditure to asset (Ogege, Williams & Emerah, 2012). LR (Leverage ratio) is calculated by the ratio between total debt and total assets. If the ratio is high, the liquidity risk tends to be high (Ogege et al., 2012). BS (bank size) is measured by log of total assets. ROA (Return on Asset) is the ratio between net income to total asset while ROE (Return on Equity) is the the ratio between net income to total equity. GDP represents the growth rate of GDP. INF (inflation) is measured by the percentage increase in the price of goods and services. Finally, the OG (Output gap) is the difference between actual and potential output. The description of dependent and independent variables is presented in Table 1.

Table 1.
Variables Description

Variables	Abbreviation	Calculation	References
LQR	Liquidity Risk	Loans / Deposits	Matz & Neu (2006)
BS	Bank size	Log of Total Assets	Berger & Bouwman (2009)
NPL	Non-Performing loans	Default loans / Gross loans	Awan (2009)
CAR	Capital Adequacy Ratio	Capital / Assets	Ogege, Williams & Emerah (2012)
LR	Leverage ratio	Total debt / Total assets	Ogege, Williams & Emerah (2012)
ROE	Return on Equity	Net Income / Equity	Painceira (2010)
ROA	Return on Assets	Net Income / total assets	Painceira (2010)
GDP	Gross Domestic Product	GDP Growth Rate	Akhtar, Ali & Sadaqat (2011), IssathNimsith, Shibly & Irfan (2015) and Anam (2012)
INF	Inflation	The percentage increase in the price of goods and services	Akhtar, Ali & Sadaqat (2011), IssathNimsith, Shibly & Irfan (2015) and Anam (2012)
OG	Output Gap	The amount by which the actual output of an economy falls short of its potential output	Akhtar, Ali & Sadaqat (2011), Anam (2012), IssathNimsith, Shibly & Irfan (2015)

This study applies Hetroskedasticy generalized least square and Panel ordinary least squares to estimate the model for each country (i.e. Pakistan, Malaysia, UAE, Saudi Arabia, Bangladesh, Qatar and Bahrain, respectively having 5, 4, 5, 5, 5, 5 and 5 banks). We note that there is no autocorrelation and multicollinarity in the data. The hetroskedasticy generalized least square is used to control the heteroscedasticity problem.

The bank-level data span from the period from 2008 to 2019. Data on bank specific variables are from Banks' annual reports while those of macroeconomics variables are from the World Development Bank indicator. Table 2 and Table 3 respective provide descriptive statistics and correlation coefficients of bank-specific variables used in the analysis.

Table 2.
Descriptive Statistics

		LQR	NPL	BS	CAR	ROE	ROA	LR
Bahrain	N	40	40	40	40	40	40	40
	Min	0.491	0.010	19.854	0.116	-0.545	-0.045	0.095
	mean	0.848	0.051	20.975	0.203	-0.018	0.001	0.479
	SD	0.800	0.047	20.682	0.201	0.029	0.005	0.453
	max	1.346	0.170	22.820	0.415	0.337	0.059	0.820
Bangladesh	N	40	40	40	40	40	40	40
	Min	0.799	0.009	21.822	0.093	0.067	0.002	0.868
	mean	0.886	0.034	25.544	0.127	0.359	0.012	0.918
	SD	0.887	0.033	25.690	0.125	0.273	0.012	0.921
	max	1.011	0.079	27.311	0.181	1.957	0.030	0.939
Malaysia	N	32	32	32	32	32	32	32
	Min	0.383	0.001	19.570	0.118	-0.100	-0.012	0.803
	mean	0.820	0.030	23.313	0.164	0.413	0.009	0.884
	SD	0.767	0.014	23.195	0.149	0.085	0.009	0.889
	max	1.375	0.127	25.040	0.266	2.879	0.023	0.945
Pakistan	N	40	40	40	40	40	40	40
	Min	0.385	0.001	22.127	0.106	-0.139	-0.211	0.090
	mean	0.570	0.048	22.849	0.198	0.052	0.021	0.816
	SD	0.531	0.041	22.605	0.169	0.018	0.017	0.899
	max	1.114	0.155	23.995	0.510	0.456	0.246	0.950
Qatar	N	40	40	40	40	40	40	40
	Min	0.082	0.001	17.626	0.120	0.013	0.003	0.237
	mean	1.019	0.028	24.521	0.178	0.367	0.022	0.676
	SD	0.988	0.017	24.473	0.163	0.170	0.022	0.838
	max	1.725	0.180	27.448	0.454	1.503	0.049	0.908
Saudi Arabia	N	40	40	40	40	40	40	40
	Min	0.137	0.005	17.130	0.120	0.002	0.001	0.070
	mean	0.841	0.026	22.454	0.170	0.187	0.018	0.608
	SD	0.830	0.022	23.618	0.170	0.221	0.016	0.840
	max	1.355	0.079	26.831	0.228	0.533	0.049	0.907

Table 2.
Descriptive Statistics (Continued)

		LQR	NPL	BS	CAR	ROE	ROA	LR
UAE	N	40	40	40	40	40	40	40
	Min	0.085	0.001	18.220	0.108	-0.185	-0.021	0.733
	mean	0.856	0.048	23.141	0.187	0.155	0.010	0.867
	SD	0.861	0.035	24.031	0.169	0.107	0.014	0.887
	max	1.125	0.197	25.497	0.370	0.740	0.023	0.937
Total	**N**	**272**	**272**	**272**	**272**	**272**	**272**	**272**

Table 3.
Correlation Analysis

Pakistan	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	**LR**
LQR	1						
NPL	-0.2408	1					
BS	-0.4520	0.0928	1				
CAR	0.4885	0.0076	-0.5412	1			
ROE	-0.4160	0.1632	0.4850	0.4103	1		
ROA	-0.3880	0.2231	0.3137	0.4087	0.9041	1	
LR	-0.3093	0.3167	0.1162	0.2417	0.2343	0.1824	1
Bahrain	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	***LR***
LQR	1						
NPL	0.1338	1					
BS	0.5789	0.2727	1				
CAR	-0.2074	0.4514	-0.6334	1			
ROE	0.0216	0.3104	-0.1807	0.5092	1		
ROA	-0.1172	0.3564	-0.2373	0.5367	0.8774	1	
LR	0.2797	0.2917	0.5525	-0.0935	0.2191	0.2084	1
UAE	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	***LR***
LQR	1						
NPL	-0.0260	1					
BS	0.1062	-0.0781	1				
CAR	0.4324	0.0665	0.0230	1			
ROE	0.1329	-0.3720	0.2123	-0.1250	1		
ROA	0.4016	-0.2367	-0.2247	0.2392	0.5234	1	
LR	-0.4322	0.0053	0.0121	-0.9336	0.0918	0.3297	1
Qatar	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	***LR***
LQR	1						
NPL	0.1052	1					
BS	-0.1893	-0.1162	1				
CAR	-0.0910	0.5998	-0.1988	1			
ROE	-0.5202	-0.2829	0.5550	0.1625	1		
ROA	0.3520	-0.2970	0.1354	0.4248	0.1393	1	
LR	-0.3951	-0.3104	0.2381	0.3490	0.4092	0.2283	1

Table 3.
Correlation Analysis (Continued)

Malaysia	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	***LR***
LQR	1						
NPL	-0.5558	1					
BS	-0.4172	0.3360	1				
CAR	0.2534	-0.1302	-0.4675	1			
ROE	0.2800	-0.2810	0.1525	-0.3107	1		
ROA	-0.1808	-0.0561	-0.0457	0.1486	0.1065	1	
LR	-0.3280	-0.0676	0.2394	-0.6337	0.1248	0.0981	1
Bangladesh	***LQR***	**NPL**	**BS**	**CAR**	**ROE**	**ROA**	**LR**
LQR	1						
NPL	0.1458	1					
BS	0.1254	0.5982	1				
CAR	-0.1120	0.2633	-0.1301	1			
ROE	0.1259	0.0757	0.2072	-0.1420	1		
ROA	0.3160	0.0257	-0.2238	0.4071	0.2508	1	
LR	0.3359	0.6547	-0.5855	-0.1552	0.1632	0.0412	1
Saudi Arabia	***LQR***	***NPL***	***BS***	***CAR***	***ROE***	***ROA***	***LR***
LQR	1						
NPL	0.1733	1					
BS	-0.0736	-0.3020	1				
CAR	0.0975	-0.1647	0.5754	1			
ROE	0.1994	-0.4214	0.6787	0.4712	1		
ROA	0.2845	-0.3916	0.4670	0.2709	0.2826	1	
LR	0.3498	0.0252	0.3325	0.4232	0.4016	0.1417	1

LQR = Liquidity Risk; NPL= Non-Performing Loans; CAR = Capital Adequacy Ratio; LV = Leverage Ratio; BS = Bank Size; ROA = Return on Assets and ROE = Return on Equity

From Table 2, we may note that. on average, banks in Qatar face more liquidity problems as compared to other countries and banks in Bahrain are suffering from non-performing loans. Moreover, Bahrain has more capital available to deal with non-performing loans (CAR is higher than other countries). In Bangladesh, banks have higher growth rate as compared to all other countries. Also, leverage ratio is high in Bangladesh which shows that banks in Bangladesh have more debts as compared to their assets. The mean values of ROA and ROE show that banks are making lower profits as compared to the risks that they are facing. Compared to other countries, that Malaysian banks are performing betterin terms of ROE while Islamic banks of Pakistan and Qatar are performing comparatively better in terms of ROA.

IV. EMPIRICAL FINDINGS

Table 4 presents estimation results of the model. As may be observed from Table 4, the NPL, profitability, bank size and leverage ratio are major determinants of liquidity risk.

Table 4.
Results of Heteroscedasticity Generalized Least Square and Panel Ordinary Least Square

	Heteroscedasticity Generalized Least Square							Ordinary Least Square						
	Bahrain	Bangladesh	Malaysia	Pakistan	Qatar	Saudi Arabia	UAE	Bahrain	Bangladesh	Malaysia	Pakistan	Qatar	Saudi Arabia	UAE
	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p	b/p
NPL	0.462	-1.200*	-2.364**	-1.019	0.768	-0.027	-0.083	-0.195	-1.516**	-3.141*	-0.833	0.547	-0.209	0.048
	(0.598)	(0.032)	(0.004)	(0.118)	(0.378)	(0.975)	(0.833)	(0.855)	(0.010)	(0.013)	(0.310)	(0.677)	(0.945)	(0.939)
BS	0.205***	0.015***	0.054*	0.052	0.016	0.012**	0.005	0.243***	0.01	0.061	0.052	0.015	0.007	0.013
	(0.000)	(0.001)	(0.050)	(0.113)	(0.375)	(0.008)	(0.506)	(0.000)	(0.091)	(0.098)	(0.309)	(0.521)	(0.667)	(0.257)
CAR	1.002	0.083	1.125	0.429	0.81	0.614	1.512	1.05	0.031	0.119	0.408	0.451	1.23	0.611
	(0.092)	(0.833)	(0.172)	(0.080)	(0.179)	(0.395)	(0.109)	(0.152)	(0.946)	(0.940)	(0.145)	(0.581)	(0.483)	(0.637)
ROE	0.463	0.01	0.088	0.269	0.340**	0.404*	0.067	0.508	0.000	0.068	0.023	0.335***	-0.361	-0.052
	(0.094)	(0.431)	(0.071)	(0.187)	(0.001)	(0.038)	(0.618)	(0.157)	(0.994)	(0.141)	(0.951)	(0.001)	(0.372)	(0.785)
ROA	-4.159	5.919**	-12.139**	0.009	21.173***	14.758***	1.218	-4.136	4.320*	-9.164	-0.316	23.583***	8.960*	8.166
	(0.122)	(0.001)	(0.003)	(0.978)	(0.000	(0.000)	(0.709)	(0.229)	(0.020)	(0.100)	(0.548)	(0.000)	(0.035)	(0.070)
LR	-0.038	0.589	-1.362	-0.015	-0.408***	-0.332***	0.597	-0.186	-0.056	-1.789	-0.004	-0.334*	-0.26	-0.088
	(0.827)	(0.336)	(0.055)	(0.838)	(0.000)	(0.000)	(0.597)	(0.348)	(0.931)	(0.152)	(0.970)	(0.028)	(0.050)	(0.958)
GDP	-1.309	1.564	1.896*	2.161	-1.481	-0.343	-0.37	-1.107	1.083	1.01	4.166	-1.911	-1.222	0.349
	(0.591)	(0.147)	(0.041)	(0.360)	(0.346)	(0.645)	(0.497)	(0.706)	(0.502)	(0.486)	(0.307)	(0.362)	(0.578)	(0.694)
INF	0.936	0.045	1.243	-0.437	-3.91	-0.121	-0.132	1.448	-0.098	-1.465	-0.288	-6.241*	1.613	-0.233
	(0.826)	(0.883)	(0.688)	(0.542)	(0.081)	(0.908)	(0.448)	(0.781)	(0.837)	(0.762)	(0.824)	(0.029)	(0.613)	(0.367)
OG	-0.93	-0.013	-3.513	2.04	0.799	-0.144	4.528*	-0.869	0.135	-2.46	3.34	0.454	-1.164	-0.925
	(0.811)	(0.894)	(0.350)	(0.163)	(0.573)	(0.723)	(0.046)	(0.850)	(0.429)	(0.678)	(0.165)	(0.814)	(0.303)	(0.759)
C	-3.642**	0.602	3.060**	1.783*	1.045*	1.297***	0.005	-4.350**	1.125	3.908*	1.675	1.028	0.813*	0.413
	(0.004)	(0.308)	(0.001)	(0.017)	(0.048)	(0.000)	(0.996)	(0.003)	(0.069)	(0.013)	(0.157)	(0.161)	(0.018)	(0.797)

The results show that the NPL has a significant impact on liquidity risk in Bangladesh and Malaysia; however, there is no effect found in other countries. These results are consistent with the study of Choon (2013) and Zolkifli, Hamid & Janor (2015). Apart from the NPL, ROA also impacts liquidity risk for Bangladesh, Malaysia, Qatar, and Saudi Arabia. Moreover, ROE has a significant impact on liquidity risk of banks in Qatar and Saudi Arabia. Banks in these countries could pay more attention towards asset/equity utilization for improving profitability, as a result of decreasing liquidity risk. In addition, the results reveal that banks should also pay attention to efficient utilization of their resources, so that they can better manage their liquidity issues. Additionally, bank size has a significant impact on liquidity risk of banks in Bahrain, Bangladesh, Malaysia, and Saudi Arabia. In these four countries, large banks are managing their risks in a better way.

Leverage ratio is also found to be an unsystematic determinant of liquidity risk in Qatar and Saudi Arabia but not in other countries. These results are consistent with Racic, Stanisic & Stanic (2016), and it was found that leverage increases the exposure to liquidity risk in banks while larger banks with a large share of capital tend to reduce the exposure to liquidity risk. Furthermore, Ahmed, Ahmed & Naqvi (2011) support this finding that leverage is a significant determinant of the liquidity risk. Further, we have found that there is no impact of CAR on liquidity risk in all countries. Similar findings are also presented by Ghenimi & Omri (2015).

As far as the selected country specific variables are concerned, all variables except GDP show a significant relationship with liquidity risk in Malaysia. Meanwhile, the output gap significantly affects liquidity risk in the UAE. In fact, inflation is a market factor, and it is possible that firms are mostly affected with bank specific factosr. The findings of this study are also supported by Khemraj (2009), Ahmed, Akhtar & Usman (2011), Bunda & Desquilbet (2008), Akhtar, Ali & Sadaqat (2011), IssathNimsith, Shibly & Irfan (2015), and Anam (2012).

V. DISCUSSION AND CONCLUSION

This study examines the systematic and unsystematic determinants of liquidity risk of Islamic banks by applying panel ordinary least square and heteroscedasticity generalized least square estimation methods for Pakistan, Malaysia, Bahrain, United Arab Emirates (UAE), Bangladesh, Saudi Arabia, and Qatar. The study finds that non-performing loans, bank size, leverage ratio and return on assets are key unsystematic drivers of liquidity risk. The results of show that the NPL exerts significant impacts on liquidity risk for Bangladesh and Malaysia. More specifically, when the NPLs of a bank increase, its liquidity risk tends to decline. This could be because of the shortage of cash. Our results show that there is no significant relationship between CAR and liquidity risk. However, Ha (2019) states that the CAR ratio is also positively influenced by credit growth. The CAR is also positively associated with liquidity risk (Ahamed, 2021). A significant relationship is also documented between bank size and liquidity risk among banks in Bahrain, Bangladesh, Malaysia, and Saudi Arabia. Further, the leverage ratio is significantly associated with liquidity risk in the banks of Qatar and Saudi Arabia. This means an increase in leverage ratio could reduce liquidity risk. These

results seem understandable as banks having easy access to leverage can manage emergency situations and can have liquid assets in critical situations.

Regarding systematic factors, interestingly, the study presents a significant positive relationship between GDP and liquidity risk of banks in Malaysia. This is inconsistent with other studies showing the inverse effect. If GDP of a country is boosted, this strengthens the economy and financial sector. An increase in GDP could generate bank liquidity, then reducing the liquidity risk. The findings also show no significant impacts of inflation on liquidity risk. This finding contrasts Ahamed (2021) who notes that that inflation negatively affects the liquidity risks.

From a broader perspective, the growth of Islamic financial institutions depends on how regulators, bankers, and Sharia scholars understand the risks and act against them. Islamic banking is trying to gain prestige as compared to conventional banking and is important from a religious stance. The future of Islamic banking will be prosperous if it is properly regulated. IBs need to focus on the identification and prioritization processes of risk. In order to survive in the banking industry, IBs should be strong enough to face and manage the risks from both systematic and unsystematic sources.

IBs**,** just like their conventional counterparts, are exposed to liquidity risk. However, in contrast to CBs, they face more constraints. For Islamic banks, the number of sharia-compliant liquidity management instruments is limited. The Islamic interbank money market is underdeveloped and the secondary markets for most short-term instruments are illiquid. Moreover, Islamic institutions cannot rely on the help of the Central Bank acting as a lender of last resort. It should be also added that because of different interpretation of sharia in different jurisdictions, it is very difficult to develop international money markets.

It is observed that liquidity risk in one of the major risks faced by banks. In order to avoid this risk, banking institutions should control factors that affect it. Banks can control unsystematic determinants because they are controllable. They should try to maintain their NPL ratio as low as possible to lower the exposure to liquidity risk. Larger banks should maintain a level between lending and deposits. Leverage of banks explains the burden of debt which should be minimized. If banks control their unsystematic factors properly, they will be able to face less systematic shocks. IBs also face liquidity risk due to limited number of Islamic instruments and products. There should also be well organized instruments in IBs like CBs. Islamic banking is growing, and its survival is only possible when there are standard rules and regulations and effective products.

This study points out the fragility of IBs in relation to managing liquidity risk. There is a need to strengthen the framework of liquidity risk management. The research findings in this study can contribute to this process. By doing so, banks will be able to build a positive image in the mind of stakeholders and market participants, which ultimately will enhance their reputation, strengthen their ratings, and improve their profitability. Future research could look at IBs from other countries. Only three macroeconomic variables are used in this study, while there are many macroeconomic factors affecting liquidity risk. It is therefore suggested that market and industry specific variables be assessed in future studies on the subject.

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