

Liquidity Risk of Islamic Banks in Indonesia

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Abstract—The main aim of this paper is to investigate the factors that influence the liquidity risk of Islamic banks in Indonesia. The topic of Islamic banking liquidity risk is interesting because Islamic banks run based on the principle of profits sharing as well as third-party funds that are managed using *wadi'ah* and investment agreement, placing Islamic banks at a higher liquidity risk than conventional banks. We employed data from 13 Islamic banks in 2010-2016. We use multiple linear regression method in investigating the relationship between liquidity risk, capital adequacy, assets quality, third-party funds, and profitability. The results indicate that capital adequacy, asset quality, and third-party funds have a significant effect on banks liquidity risk. Meanwhile, profitability does not effect on liquidity risk of the banks.

Keywords—Islamic bank; liquidity risk; capital adequacy; assets quality; third-party funds; profitability

I. INTRODUCTION

Establishment of Islamic banks in Indonesia began with a workshop on "Bank and Banking Interest" on 18-20 August 1990, which was then followed by the **National Deliberative Council IV of the Indonesian Moslems Scholars Council (Majelis Ulama Indonesia or MUI)**. With the support of the Government and the community, the first Islamic bank was formed under the name Bank Muamalat Indonesia (BMI) on November 1st, 1991 and officially operated on November 5th, 1991. However, the establishment of BMI was not necessarily followed by the establishment of other Islamic banks, so the development of it stagnated until 1998 [1]. The established of Islamic banking in 1998 which allowed banks to operate on the principle of profit sharing and allowed conventional banks to open sharia business unit [2].

In 1999, the Government issued as amended which regulates money market instruments between Islamic banks and monetary policies based on sharia principles [3,4]. Subsequently, in 2008, the Government issued [5]. This law affirms that Islamic banking operates under different principles compared to conventional banking. Though both types of banks work based on different principles, the performance measures set by the Government for both are the same. The following table summarizes the performance indicators and market share of Islamic banks.

TABLE I. ISLAMIC BANKING PERFORMANCE INDICATORS AND MARKET SHARE 2010-2016 (IN %)

Indicator	2010	2011	2012	2013	2014	2015	2016
Liquidity	89.67	127.71	100	100.32	91.50	92.14	88.87
Capital adequacy	16.25	13.49	14.13	14.44	16.10	15.02	16.16
Assets quality	3.02	6.11	1.34	1.75	2.94	2.77	2.06
Growth of third-party funds	8.74	16.36	28.03	24.43	18.53	6.37	20.84
Profitability	2.08	2.43	2.64	2.29	2.26	2.20	2.07
Market share	4.04	4.11	4.58	4.89	4.85	4.88	5.50

Source: Financial Service Authority (FSA), various years

Until 2017, there were already 13 Islamic banks, 21 Islamic business units (special units in the conventional banks which serve the public based on sharia principles), and 168 Islamic rural financing banks. However, the market share of Islamic banks in Indonesia is still very small. It is only 5.50 percent of the total banking market, or, with a total asset of IDR 365.6 trillion in 2016. Though there was an increase in market share, there was a decreasing in banks profit. It is an interesting phenomenon since the decrease of banks profit parallels with the decreasing in liquidity risk and assets quality as well as increases in capital adequacy and the third-party funds.

Liquidity risk issue is not only important for bank sustainability but also for survival due to it is one of the crucial risks to financial institutions since it possibly will result in major problems if not accounted for and managed well. The importance of liquidity risk (both funding and market) is accentuated by the fact that it has been potential to cause severe liquidity swirls [6]. This risk is particularly obvious in crisis times since illiquid financial markets make it difficult for financial intermediaries to find alternative sources of finance, to rollover liabilities at reasonable rates and to reduce their maturity mismatches. That condition affects a bank's soundness and its reputation.

By definition, liquidity is the ability of the bank to fund increasing assets and meet its obligation on time, without experiencing unacceptable losses [7]. Many have argued that liquidity is as a major risk facing the Islamic banks [8]. Apart from the financing nature of the Islamic banks which rely on long-term equity contracts such as *mudharabah* and *musyarakah*, another reason for the potential liquidity problem

in Islamic banks is due to the limited number of financial instruments that are admbased on the characteristic ited by *Shari'ah scholars*. Though Government as the lender of the last resort provides emergency liquidity facility for Islamic banks, the financing is interest based within a form of bill discounting and in the same window as for liquidity facility for conventional banks. Therefore, Islamic banks cannot benefit from these. When an adequate money market or a secondary capital market for Islamic financial instruments absents, it complicates the problem of mismath maturities. Liquidity problems have also been purported to be the major obstacle to the growth of Islamic banking [9]. Both a developed and developing country, a liquidity crisis has now become a serious issue. Because of that, it is important to investigate factors affecting the Islamic bank liquidity risk.

Many researchers have analyzed the effect of bank-specific factors on the liquidity risk of the Islamic banks but the results are still indecisive. The majority of these studies were descriptive in nature and identified the different sources of Islamic banks liquidity including liquidity risk. Some studies indicated that there is a negative correlation between liquidity risk and bank profitability [10,11]. Contrary, other studies documented a positive correlation between liquidity and bank profitability [12,13]. This happened by reason when a bank gains a higher profit, it simultaneously reducing the liquid asset of the bank such as short-term loans.

Further, some studies revealed that there is a negative correlation between capital adequacy and bank liquidity [14-16]. The authors claim that financial fragility is characterized by lower capital; hence, it favors the liquidity creation. Moreover, higher capital squeezes out deposits reduce the liquidity creation of the bank. In contrast, some literatures documented a positive correlation between capital adequacy and bank liquidity risk [11,17,18]. The scholars stated that high profitability may derive from the cost of lower liquidity. When banks alter their asset portfolios towards more profitable assets, they reduce their investment in low-profit highly liquid assets. When an Islamic bank finances its clients, it turns into partners in a definite project which is not easy to liquidate. This scheme is different from a scheme of conventional banks that offer their clients with direct loans; hence it is possible for banks to sell them to third parties to generate their liquidity if necessary.

In terms of assets quality, some studies found a negative correlation between asset quality and the liquidity risk of banks [19-21]. The scholars confirmed that the quality of assets goes a long way in determining how assets are managed. As assets quality goes up, benefits include more liquidity, greater risk capacity, and a lower cost of funds. On the other hand, a study documented that liquidity risk positively affected by the amount of provisioning for loan loss reserve [22].

In terms of liquidity, Islamic banks face higher liquidity risk than conventional banks. Further, the **negative** correlation of third-party funds with bank liquidity has been highlighted by [23-25]. The scholars affirmed that a bank has an intermediary function, which is affected by its liquidity. From the perspective of banks, lending is a type of funds placement with long tenors, while the third party funds they receive are a type of funding for banks with short maturities. Base on the

characteristics of the maturities of a bank's loans and its third-party funding, banks will require more liquidity to conduct their business activities. Accordingly, the liquidity risk of a bank decreases. In contrast, Kaeim et al. confirmed a **positive** effect of third-party fund towards liquidity risk [26]. This was mainly due to third-party funds managed in *wadi'ah* scheme and investment principle. The *wadi'ah* and investment method is clearly different from deposits in conventional banks. The scheme of *wadi'ah* means that when customers withdraw their funds so that Islamic bank must satisfy it. Consequently, deposit funds in Islamic banks are vastly liquid. This high liquidity makes deposit less eligible for an investment that requires fund accumulation. Further, the customers of both are also different in purpose. The conventional banks' customers are in an effort to raise their money but not with the Islamic banks'; hence the risk of liquidity of Islamic banks is higher than conventional banks.

Based on the existing literature, studies focusing on the relationship between liquidity risk and banks capital adequacy, assets quality, third-party funds, and profitability have been very limited if compared to the case of conventional banks. In this regards, the primary objective of this study is to identify the determinants of liquidity risk in the Indonesia Islamic banking with a special focus on the various bank-specific factors namely capital adequacy, asset quality, third-party funds, and profitability in a period of 2010-2016. The study also aims to enrich the literature on the liquidity risks issue purposely in Islamic banking.

Such study on Islamic banking in Indonesia, specifically on liquidity risk, is important to do for the following reasons: (1) Indonesia is a country with the largest Muslim population in the world where they are increasingly aware of the obligation to avoid usury; (2) as a country with a bank-based system, banking plays an important role in Indonesia's economic activities. Therefore, the safety and soundness of the bank are important factors; (3) the liquidity has not been emphasized as an important aspect by Islamic banks and also conventional banks. In certainty, liquidity is one of the main banking performance indicators that shows the bank's ability to guarantee the rights of consumers to withdraw funds at any time; (4) Islamic banks face higher liquidity risk than conventional banks. The constraints placed on Islamic banks make liquidity management a more difficult task. Islamic banks cannot invest in short-term financial instruments such as treasury bills, as they carry interest income which is prevented in Islam. They also cannot borrow from other banks or financial institutions, because that option requires paying interest on the loans which is also prohibited for Islamic banks. In the meantime, the option of taking loans from central banks is problematical since it will require paying interest on these loans. This situation might induce Islamic banks to rely more on their internal sources of liquidity by holding higher levels of cash assets and discarding many profitable investment opportunities so as to reduce their liquidity risk; (5) liquidity determine reputation. Low levels of liquidity will decrease the level of public trust as well as got the punishment from the Government; (6) the level of public trust to Islamic banking is still continuing in an increase (seen from the increase in market

share of Islamic banking since 2014). So that Islamic banks need to amplify their capacity and ability.

II. METHOD

Using balanced panel data, the study exercised 13 of Islamic banks in Indonesia. There are 455 of observations made over a seven-year period from 2010 to 2016. The researcher treated liquidity risk as the dependent variable, while third-party funds, asset quality, capital adequacy, and profitability are treated as independent variables. In order to investigate the effects of independent variables to the dependent variable, the researcher utilizes the following basic panel data equation.

$$LIQ_{it} = a + b1.TPF + b2.AQ_{it} + b3.CAD_{it} + b4.PROFIT_{it} + \varepsilon_{it} \quad (1)$$

LIQ_{it} is liquidity risk of bank i in period t ; TPF_{it} is third-party funds of bank i in period t ; AQ_{it} is assets quality of bank i in period t ; CAD_{it} is capital adequacy of bank i in period t ; $PROFIT_{it}$ is profit of bank i in period t .

All data were obtained from officially bank website database. Table 2 provides the list of variables with their proxy and measurement.

TABLE II. LIST OF VARIABLES

Variables	Notation	Proxies
Liquidity risk	LIQ	Liquid assets to deposits and short term funding
Third-party funds	TPF	Growth of third-party funds
Asset quality	AQ	Non performing financing
Capital adequacy	CAD	Capital adequacy ratio
Profitability	PROFIT	Return on total assets

This study implemented the random effects model due to the probability of chi2 of Breusch-Pagan Lagrange Multiplier test confirmed significant. The VIF and Tolerance tests were conducted to test the multicollinearity problems. Table 3 below presents the results of multicollinearity test.

TABLE III. MULTICOLLINEARITY DIAGNOSTIC TEST

Variables	TOL	VIF
Third-party funds (TPF)	0.069	1.897
Assets quality (AQ)	0.067	1.447
Capital adequacy (CAD)	0.053	1.475
Profitability (PROFIT)	0.072	1.765

The results revealed that there was no multicollinearity issue for the chosen variables since the VIF value of each variable less than 10.00 as well as the value of Tolerance smaller than 0.10.

III. RESULTS AND DISCUSSION

Table 4 below shows the random effects estimation results with liquidity risk as the dependent variable.

TABLE IV. RANDOM EFFECTS REGRESSION RESULT

Variables	Coefficients
Constant	4.220***
Third-party funds (TPF)	0.053**
Asset quality (AQ)	-0.960***
Capital adequacy (CAD)	-0.593**
Profitability (PROFIT)	1.520
Wald chi2(4)	205.96
Prob > chi2	0.0000
R-squared (overall)	0.3212

*=significant at 10%; **=significant at 5%; ***=significant at 1%

The empirical findings confirmed that a 1 percent increase in third-party funds increases the liquidity risk by 0.053 percent as other variables remain constant. Due to the third-party funds were managed on *wadi'ah* and investment principles, a greater deposit mobilization takes along with greater liabilities for a bank. The scheme of *wadi'ah* means that when customers withdraw their funds, that Islamic bank must satisfy it. Consequently, deposit funds in Islamic banks are very liquid and it imposes the liquidity risk of banks. This result aligned with the reference [25].

Subsequently, asset quality proofed negatively (-0.960) affects the liquidity risk and significant at 1 percent level. It implies that a 1 percent decrease in quality of asset increases the liquidity risk by 0.960 percent as other variables remain constant. If so, then the Islamic banks must hold greater liquid assets to absorb the financing losses. Additionally, low quality of assets causes banks to lose their returns, and, in some cases, their original capital. The result is consistent with the references [18-20].

Thereafter, capital adequacy negatively (-0.593) affects the liquidity risk at 1 percent significant level. It suggests that reducing the capital adequacy of Islamic banks by 1 percent would result in increasing of liquidity risk by 0.593 percent, while other variables remain constant. As Islamic banking literature conjecture that the existing assets of Islamic banks are not as liquid as conventional banks. It was caused by the long-winded development of financial instruments hence Islamic banks unable to quickly raise funds from the markets. It has been exacerbating liquidity risk surely. Furthermore, since the existing lender of last resort (LLR) facilities are based on interest, Islamic banks cannot utilize LLR facilities and most of the Islamic banks do not have formal liquidity management systems in place. Hence, illiquidity and liquidity risk are major problems for Islamic banking, which also requires banks to hold more regulatory capital. It is aligned with the references [12-14].

A substantial difference between conventional and Islamic bank lies in the contract, for example, conventional banking liquidity instrument based on the debt, while Islamic banking liquidity instrument based on the equity. There are several

aspects that possibly will lead to the liquidity risk in Islamic banks, such as the limited of money market instrument in between Islamic banks, limited Islamic financial instruments in the secondary market as well as the extensively available of the conventional financial based on interest into a prohibited on the Islamic system. It triggers off Islamic banks have become more limited in terms of obtaining funding liquidity. On the other hand, conventional banks have no problem with those three aspects. Islamic banks have many restraints placed on them related to their special nature. Islamic banks are prohibited to utilize or stipulate interest, which means they cannot provide or receive interest. In addition, Islamic banks can only invest in “*Sharia*” compliant instruments. Therefore, Islamic banks confront higher liquidity risk with lower capital adequacy.

Further, profitability has a positive coefficient (1.523) but not significant. So, this study fails to reject the null hypothesis which is claiming that there is no positive effect of profitability on to liquidity risk.

We also found that our model has R-squared value equals to 0.3212 which means 32.12 percent of the variance of the dependent variable explained by the variation in the independent variables. The remaining of 67.88 percent explained by other factors exclude from the model.

IV. CONCLUSION

With regards to the regression result, it concluded that the aims of the study to investigate the relationship between capital adequacy, asset quality, third-party funds, and liquidity risk are achievable. It is beneficial to investigate Islamic banks liquidity risk since it will encourage those finance and banking players to focus on the factors influencing banks liquidity risk. Moreover, this study would also benefit them to identify on which variables to focus more in order to manage the liquidity risk of the banks. This is because the results would assist market players such as bankers and economists in their decision making as regards to liquidity position, in controlling the liquidity risk of the bank. Islamic banks should be balancing in liquidity risk tolerance and its profitability so as to determine its optimal level of capital adequacy by considering capital adequacy ratio line up with the legal requirement.

The weakness of this study is that it does not distinguish the size of the bank in its liquidity risk management. In fact, bank size influences the level and risk of bank liquidity. The study can be extended to explore the impact of internal factor on liquidity risk of banks as separately (such as the impact on liquidity risk of small, medium and large banks). We also recommend investigating the effect of other types of risk on Islamic banks, as well as comparing the effect of these types of risk on conventional banks.

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