

DETERMINANTS OF LIQUIDITY RISK IN INDONESIAN ISLAMIC AND CONVENTIONAL BANKS

Raditya Sukmana, Sari Suryaningtyas

Abstract. Determinants of Liquidity Risk in Indonesian Islamic and Conventional Banks. *The purpose of the study is to examine the causes of the liquidity risk in Islamic and conventional banks in Indonesia using panel data regression method. The study found the significant and positive relation of ROA and NPF with the liquidity risk, whereas the negative and significant relation of CAR with the liquidity risk in Indonesian Conventional Banks. Meanwhile in Islamic banks, CAR result significantly positive effect on liquidity risk, while ROA shows negative and significant result. Possible explanation for this is that, given the huge profit by the conventional banks, it has more chance to allocate it as liquidity reserve as well as increasing the facilities (improvement on technology). When the NPL is high, conventional banks will increase the liquid assets as a buffer. Unlike that of conventional banks, the Islamic banks in Indonesia might allocate capital as liquidity reserves and might allocate ROA in fixed assets or financing or technology. The result confirm that the role of capital and bank's performance in indeed important to the banking liquidity.*

Keywords: *liquidity risk management; Islamic bank; conventional bank*

Abstrak. Faktor –Faktor Penentu Resiko Likuiditas Perbankan Islam dan Perbankan Konvensional di Indonesia. *Tujuan dari penelitian adalah untuk memeriksa penyebab risiko likuiditas di Bank Islam dan konvensional di Indonesia menggunakan metode regresi data panel. Penelitian ini menemukan hubungan signifikan dan positif antara ROA dan NPF dengan risiko likuiditas, sedangkan CAR negatif dan signifikan dengan risiko likuiditas di bank-bank konvensional Indonesia. Sementara itu di Bank Islam, CAR ditemukan secara signifikan positif dengan risiko likuiditas, sementara ROA menunjukkan hasil negatif dan signifikan. Penjelasan yang mungkin untuk ini adalah bahwa, mengingat keuntungan besar oleh Bank konvensional, bank konvensional memiliki lebih banyak kesempatan untuk mengalokasikan sebagai cadangan likuiditas serta meningkatkan fasilitas (peningkatan teknologi). Ketika NPL tinggi, bank-bank konvensional akan meningkatkan liquid aset sebagai penyangga. Tidak seperti Bank konvensional, Bank Islam di Indonesia mungkin mengalokasikan modal sebagai cadangan likuiditas dan mengalokasikan ROA sebagai aktiva tetap atau peningkatan pembiayaan atau teknologi. Hasil penelitian mengkonfirmasi bahwa peran modal dan kinerja bank memang penting dalam likuiditas perbankan.*

Kata Kunci: *manajemen risiko likuiditas; bank syariah; bank konvensional*

Introduction

The banking system has an important role in supporting the real sector. Bank act as a financial intermediary where it connects parties, which are in excess of money and other parties, which are in need of money. As a business institution, that financial intermediation process must be run efficiently to ensure more profits for shareholders despite the expansion of the economy. The more profit created by bank would lead to a more improvement for the banking performance. Moreover, the expansion of the economy would also increase demand for banking facilities. Hence a bank failure will deliver a domino effect on the banking system, the crisis of one important bank would have an impact on real economic conditions that will ultimately have an impact on the stability of the economy.

Liquidity is the ability of a bank to fund an increase in assets and meet obligations as they come due, without incurring unacceptable losses. The fundamental role of banks in managing transformation of short-term deposits into long-term loans make banks inherently vulnerable to liquidity risk. Virtually, every financial transaction or commitment has implications for a bank's liquidity. Effective liquidity risk management helps ensuring bank's ability to meet cash flow obligations as they are affected by external events and depositor's behavior. Liquidity risk management is of paramount importance because shortfall at a single institution can have system-wide repercussions (Sulaiman, 2013). Liquidity risk is the outcome from the disparity involving the maturities of the two sides of the balance sheet. This disparity either results from an excess of cash that can be invested or result in a deficiency of cash that need a more liquidity. If the bank has excess liquidity, it means that the bank could not obtain the opportunities to make a profit, whereas, those who have low liquidity would face withdrawal risk. Therefore, the bank will face the risk of failure and bankruptcy if bank losses could not be covered by capital (Hassan et al, 2013),

Liquidity risks can be due to the inadequate market depth, market disruption or the inability of the bank to access markets. It relates also with solvency issue where the bank may not be able to meet the funding requirements to finance its assets. It also includes the obligation of the bank to make payments to third parties (Iqbal, 2012). The liquidity problem might arise in the banks either due to funds mismanagement or can be from unexpected withdrawals of funds by the depositor especially during the time of unfavorable economic conditions. The global financial crisis of 2008 - 2009 had an impact on the ability of banks in facing the liquidity risk. Therefore, these situations would carry a greater challenge for banks in managing liquidity (Siddiqi, 2008).

Study on the liquidity risk on banking in general measures the relationship of a micro economic variable within banking such as capital, efficiency and other variable of the bank, and the performance of the financing (Nimsith et al, 2015), (Anam et al, 2012), (Akhtar et al, 2011), (Anjum Iqbal, 2012), (Ramzan and Zafar 2014), (Ahmed et al, 2011). The relationship between macro-economic variables with banking can also be found in (Ghenimi et al, 2015), (Solomon et al, 2013). Various result are revealed on the relationship among the variables whether it is significant or not significant.

In Indonesia, the conventional banking was established over 100 years, whereas Islamic banking established in early 1990. The market share of Islamic bank in Indonesia currently amounted to five percent, the rest is still owned by the conventional banking. However, the growth of Islamic banking in Indonesia has persistently high. Islamic capital market and Islamic money market began to be developed, as a proponent of Islamic bank in obtaining short-term and long-term funding and investment needs. Similar to conventional banks, Islamic banks also face the liquidity risk.

In essence, the conventional banks rely more on debt instruments while the Islamic banking relies on instrument that comes from real business transactions. Because the Islamic banks deals with the real sector therefore it deals also with the business cycles, cooperation among the business partners and good conduct of the stakeholders and this is the core of all the Islamic banking operations. FDR Islamic banking in Indonesia in December 2014 reach 86.65 percent, whereas FDR conventional banking in Indonesia in December 2014 reach 79.79 percent (Statistics Bank Indonesia, December 2014).

This current study focuses to investigate the firm level determinants of liquidity risk of Islamic bank and conventional banks. To our knowledge, this topic has yet to be explored, and in this regard, the study hopes to contribute towards enriching the literature in the area of Islamic banking. The next section of this paper will provide information on liquidity risk and previous research. It follows with a discussion on the data and empirical method employed in this study. Subsequently, the empirical findings and analysis of the results are presented. Finally, conclusions and recommendations of the research studies are given.

Literature Review

Banks could overcome the liquidity risk management in a number of ways, such holding liquidity reserves in terms of assets (cash, placements with other banks, placements with the central bank), securities issued to suppress the

probability of illiquidity. Other alternative is on the liability side by utilizing the inter-bank lending or supporting liquidity from the central bank, which has the function of lender of the resort, aimed to provide liquidity support for illiquid banks. Islamic and conventional banking have the different instruments and ways in overcoming liquidity problems. It is because some substantial differences in the contract in which the Islamic banking liquidity instrument-based on capital, whereas conventional banking based on debt (Hassan et al, 2013). The liquidity risks faced by Islamic banking are more important for the bank sustainability, rather than the operational risk and the risk rate of return (Khan and Ahmad, 2001). According to Amr El Tiby (2010) in Sulaiman (2013) liquidity risks facing Islamic banking happens because of these factors: first, limited Sharia-compliant interbank money market instruments. Sharia prohibition on interest-based loan and the absence of an adequate and active interbank market restricted the Islamic banking options in managing liquidity efficiently. In addition, shallow secondary market also contributed to the problem. Second, Islamic financial instruments listed on the secondary market are also very limited and Sharia has set certain preconditions for transactions involving financial obligation, except for claims involving real assets. Therefore, there is a need for institutions and authorities to develop asset-based securities to be traded, such as Sukuk (Rifki Ismal, 2008). Although these instruments are available, yet market participants were inadequate and limited compared to the conventional system. Third, although the conventional liquidity management instruments such as the interbank market, secondary market for debt instruments have been long established, but all instruments are based on interest rate (usury) that is strictly prohibited by Islam. At the same time, conventional banking are having the access to extensive short-term loans from overnight to twelve months or a year through a complete, advanced and efficient interbank market. This access is important for banks in meeting its institutional needs for short-term cash flow. Fourth, the numbers of Islamic financial instruments is limited. Because of this, Islamic banks do not enjoy the choice of funds similar to that found in conventional banks, which can be adapted to the period of loan and deposit's maturity through money and capital market instruments. The absence of an adequate market for Islamic financial instruments create problem especially for asset liability managements.

Regulatory policies could assist banks in maintaining liquidity; one of them is the obligatory minimum reserve requirement (MRR). According Sukmana (2012), there are three perspectives of sharia in relation to the increase in MRR in Indonesia; the Indonesian Central Bank plays a central role as a monetary authority to control the money supply. Central bank policy in raising the MRR

is in accordance with Islamic principles, the remuneration is bestowed to Islamic banking should be in accordance with the sharia which is not contained the elements of usury (riba).

Non Performing Finance is a comparison between the defaulted financing to the total financing provided by bank. The higher the ratio, the greater loss to the bank (Anjum, 2012). According to Sukmana (2015) regulators should keep the economy works to maintain the NPF at the lowest position. The government's policy in the restructuring of default financing can help suppress the NPF, such the regulation of Bank Indonesia Number 13/9 / PBI / 2013 which govern the restructuring of financing to maintain the quality of financing that could be done from the current status of financing. Up on the restructure of the NPF, the ability of bank to create profit (as indicated by ROA) increases.

Return On Assets (ROA) is a profitability ratio that indicates the ratio between profit before tax and zakat of total assets. This ratio indicates the efficiency of asset management conducted by the bank. Capital is used as an instrument in managing risks that may be encountered by the bank and as an instrument in carrying out operational activities to the sustainability of the bank. Capital Adequacy Ratio is the minimum capital adequacy ratio, which must be owned by the bank to consider the risks that may arise. CAR is used to protect depositors and demonstrate the stability and efficiency of the bank. Below are some of the previous studies related to banking institutions' liquidity management?

Anjum Iqbal (2012) examined the liquidity risk management through the comparative analysis of conventional banking and Islamic banking in Pakistan covering 2007-2010. The samples included are 5 Islamic and 5 conventional banks of Pakistan. The independent variables utilized are the size of the bank, NPLs ratio, ROE, CAR, and ROA. The liquidity risk is taken as the dependent variable. The study found that liquidity position of the Islamic banks is better as compared to the conventional banks. The NPL ratio of the Islamic banks showed a decreasing trend which means less of the non-performing loans of the Islamic banks and hence the less losses. It also predicts the better operations of the Islamic banks as compared to the conventional banks. The capital adequacy ratio of the Islamic banks was far ahead of the conventional banks. Islamic banks seem to have stronger cushion against the balance sheet shocks such as payment of liabilities and the cover up their losses to protect their depositors and lenders. NPL ratio had the significant positive relationship with the liquidity risk. This means higher NPL ratio leads to the greater liquidity problems. The ROA along with CAR showed the significant positive relationship with the liquidity risk.

Another study on this issue is done by Akhtar (2011). He took the case of both conventional and Islamic banking in Pakistan; it is found that CAR is not significantly affecting the liquidity risk in Islamic banking. However, ROA is positive and significant to the liquidity risk in this bank. The study shows that conventional banks is more profitability and better manage the liquidity risk than that of Islamic banks.

Ghenimi (2015) examined the factors that affect the liquidity risk for Islamic and conventional banks in the Gulf countries, using the panel data for 11 Islamic Banks and 33 Conventional Banks between 2006 and 2013. The study found that return on equity, Net Interest Margin, Capital Adequacy Ratio and inflation rate have a positive impact on liquidity risk for Islamic banks. Meanwhile returns on assets, Non Performing Loan, size and GDP growth have a negative relationship. On the other hand, in conventional banks, size, Return on Equity, Net Interest Margin, Capital Adequacy Ratio, GDP growth and inflation rate have a positive impact, whereas the Return on Assets, Non Performing Loan shows otherwise. Therefore, Islamic banks are more sensitive by those factors than their conventional counterparts

Nimsith (2015) observed the liquidity risk management by taking comparative study between Islamic and Conventional Banks in Sri Lanka. The relationship of CAR with liquidity management is negative and not significant on both Banks. The relationship of ROA with liquidity risk management is negative and not significant in Islamic banks, while it shows positive and significant in the other bank. He recommends that banks should diversify their funding sources or increase the contingent liquidity sources. Further, in their daily operations, banks need to provide and maintain liquidity for withdrawals. Furthermore, He proposes three techniques to mitigate the regular demand for liquidity. The first one is to invest more funds in liquid loans and/or keep more cash in hand. The second one is to diversify sources of funding from various depositors. The final one is to use the central bank as the last resort to provide emergency liquidity to fulfill the regular demand for liquidity from depositors. To manage the predictable irregular demand for liquidity, banks should learn from their past experiences which accommodate factor such as seasonality, cyclical, and trend. Therefore, unless there is an unexpected shock, it should be possible to predict demand for liquidity. In order to increase the accuracy of their estimation, the banks should find out from their clients details on the schedule of their intended deposit withdrawals.

Anam (2012) tried to investigate the significance of firm's size, net working capital, return on equity, capital adequacy and return on assets on liquidity risk

management in case of Conventional and Islamic banks of Bangladesh. Using the data covering from 2006-2010, it is found that Net working capital, capital adequacy ratio and return on assets influence positively on the liquidity risk.

Ramzan (2014) tried to gauge the institution's level elements in affecting the liquidity risk of Islamic banks in Pakistan through balancing assets and liabilities. It shows positive significant relationship of bank size with liquidity risk in the estimated hypothetical model, whereas rest of the independent variables depicts statistically insignificant relationship with liquidity risk. Therefore, it suggest that strong asset base of Islamic bank contributes towards strengthening the liquidity control.

Methods

Data

Data utilized in this study comprises from 13 banks of which consists of eight full fledged Islamic and the five largest Conventional Bank in Indonesia. These numbers of banks are expected to significantly cover almost all national banking assets. Data from annual report covering from 2010-2014 is used to calculate the ratio used as a proxy for liquidity risk in conventional banking as well as Islamic banking in Indonesia. There are two models namely conventional banks and Islamic Banks in Indonesia. Liquidity risk is represented by liquid assets to total assets; meanwhile the independent variable used is Return on Assets (ROA), Non Performing Finance (NPF), and Capital Adequate Ratio (CAR). These proxies are also used by other researchers, for example Nimsith and Shibly (2015), Ghenumi and Omri (2015). The equation of model regression applied will be as follows:

$$LTA_{it} = \alpha + \beta_1 ROA_{it} + \beta_2 CAR_{it} + \beta_3 NPF_{it} + e_{it}$$

The method utilized in this model is panel regression advantage in which the advantage is that it produces a greater degree of freedom. In order to adopt panel regression, Chow Test, Hausmann Test or LM Test have to be taken to find which model suitable to the characteristics of the data. Basically these three methods can be selected based on the circumstances of the study

Chow Test

Chow test is a test to determine whether to use Fixed Effects or Common Effect that is most appropriate for the data panel. Hypothesis testing in chow test is H_0 : Common or pooled OLS Effects Model, H_1 : Fixed Effect Model. The basis of the rejection of the hypothesis above is by comparing the value of

the probability of cross section F with significant level. When the results of the value of the probability of cross-section F greater than significant level then H_0 is accepted which means the most appropriate model used is the Common Effect Model. Conversely, if the value of the probability of cross section F less than significant level then H_0 is rejected, which means the most appropriate model used is the Fixed Effect Model.

Hausman Test

Hausmann test is based on the idea that the Least Squares Dummy Variables (LSDV) in Fixed Effect and Generalized Least Squares (GLS) in Random Effects are efficient while Ordinary Least Squares (OLS) in Common Effect is not efficient. Hausmann test statistic follows distribution statistics Chi-Squares with degrees of freedom (df) of the number of free variables. The null hypothesis is Random Effect and the alternative hypothesis is Fixed Effects. If the value of the probability of cross section Random is greater than significant level then a null hypothesis is accepted. The chosen model for panel data regression is Random Effects. Conversely, if the value of probability of cross section Random is less than significant level then hypothesis is rejected, which means the most appropriate model used is fixed effect model.

Lagrange Multiplier Test

The Lagrange Multiplier (LM) used to determine whether the model of the Random Effects model is better than the Common Effect. Test of the significance of Random Effects was developed by Breusch-Pagan. The test is based on the residual value method of Common Effect. LM test is based on the distribution of Chi-Squares with degrees of freedom (df) of the number of independent variables. The null hypothesis is a Common Effect, and the alternative hypothesis is a Random Effect. If the value of LM is greater than the critical value of Chi-Squares or the value of the probability of breusch-pagan is less than significant level then a null hypothesis is rejected then the chosen model for panel data regression is a Random Effect. Conversely, if the value of LM is less than the critical value of Chi-Squares then a null hypothesis is accepted. The right model for panel data regression is a Common Effect.

Result and Discussion

Chow Test Result

Based on chow test to compare the best model from common effect and fixed effects, obtained the value of the probability of cross section F on the Model

I with a significant level of 5 percent is 0.0272, whereas Probability values on the model II cross section F is 0.082. Chow test results commons effect is better than fixed effect in Model II, whereas fixed effect is better than common effect in Model I.

Hausman Test Result

Based on Haussmann test to obtained the value of the probability of cross section random on the Model I with a significant level of 5 percent is 0.0396, whereas Probability values on the model II cross section F is 0,0891. Haussmann test results random effect is better than fixed effect in Model II, whereas fixed Effect is better than random effect in Model I.

Lagrange Multiplier (LM) Test Result

Based on LM test to obtained the value of the probability of breusch-pagan on the Model I with a significant level of 5 percent is 0,7369, whereas Probability values on the model II cross section F is 0,8299, those values more than 0.05. LM test results common effect is better than fixed effect in both models.

Classical Assumption Test Results

Classical assumptions have been conduct by researchers, including heteroskedastisity, multicolleration, and autocorrelation test and the results have met the requirements.

Intrepetation

Based on chow test, Haussmann test and LM test, the best model is Common Effect on both models. On Model I, CAR, ROA and NPL have probability value of 0,0462, 0,0001 and 0,0205. The coefficient of CAR, NPL and ROA are -1,130458, 2.615374, and 4,160821, respectively. Based on these results, on the model I, ROA and NPL significantly positive effecting LTA, while CAR significantly negative effecting LTA in 5% degree of freedom. While on the model II, CAR and ROA are all significant with probability value is less than 5%. NPL probability value is more than 5%. Based on these results, on the model II, CAR significantly positive effecting LTA, while ROA significantly negative effecting LTA, and NPF do not affects LTA in 5% degree of freedom.

Table 1. Empirical Result on Model I and Model II

	Coefficients	Prob
Model I: Conventional Banks		
CAR	-1.130458	0.0462
ROA	4.160821	0.0001
NPL	2.615374	0.0205
R-Squared	0.525370	
Model II: Islamic Banks		
CAR	0.378327	0.0000
ROA	-1.150648	0.0056
NPF	-1.170627	0.7644
R-Squared	0.553435	

*Significant at 5%

Discussion

CAR is found affect positively towards LTA in model II, Islamic banks in Indonesia. It means, when banks increase capital, the bank will have additional reserves that could be used as liquid assets. Bigger LTA in a bank means that the bank is more liquid or in another word it is much more capable in meeting its short-term requirements, so the liquidity management risk is smaller. This result is supported by Ghenimi and Omri (2015); Akhtar et al (2011); Anjum (2012); and Anam, et al (2012).

On the model I, conventional banking in Indonesia, CAR found in significant negative effect against the LTA. This means, when the bank raise capital, the value of the LTA or liquid assets to the total assets will decrease. A possible explanation for this is, when conventional bank adds capital, capital is not used as a reserve on the liquid assets but allocated for other things, such as allocated on channeling credit or fixed assets and technological development. This result is supported by Sulaiman (2013).

NPL is found significantly positive effecting LTA in model I (Conventional Banks), it means that the greater value of the NPL, the value of the LTA will increase. When NPL is high, conventional banks will perform additional liquid assets as a buffer to guard against the shortage of liquidity. NPF in model II (Islamic Bank in Indonesia) do not affect LTA significantly.

ROA significantly affect the LTA on both models. ROA has positive effect with the LTA in conventional banking. This means in conventional banks, when the ROA is high, bank will have enough funds to be allocated as reserves. This result is supported by Anjum (2012), Anam et al (2012). ROA on Islamic banking in significant negative effect against the LTA. This means that in Islamic banking, when ROA increase, the bank does not allocate those profit as reserves in liquid assets. Possible explanations for this are that Islamic banks allocate it for other things, for example to increase financing or to allocate on fixed assets and technology. This result is supported by Ghemini (2015).

Conclusions

This study examines the liquidity risk through a comparative study between conventional banks and Islamic banks in Indonesia. CAR, NPF, and ROA are used as the independent variables and the dependent variable is the LTA using panel regression. The data for the period 2010-2014 is collected from the official websites of banks. The result shows various impacts of those variables to liquidity on both banks.

The result shows that increase in CAR in conventional banks, it does not influence the liquid asset. Possible explanations for this are the bank might allocate funds on improving credit, fixed assets or an increase in technology. With regard to the result of ROA, it has a positive and significant result with liquid asset. It suggests that conventional bank would allocate the funds as reserves in liquid assets. NPF on conventional banking is significantly positively influence the LTA which means that when NPF high, banks will put more liquid assets as a buffer to keep maintaining the liquidity position.

Unlike that of conventional banks, when Islamic banks increase its capital, bank will allocate these funds as reserves in liquid assets, this is indicated by a positive relationship. With regard to the ROA of Islamic banks, it shows negative relationship with liquid asset. It means when banks is able to create more profit, it did not allocate the funds as reserves in liquid assets. It is possible that banks prefer to provide more financing or improvement of fixed assets and technology rather than to increase liquid asset.

The greater value of the LTA means the greater ability of banks to meet its short-term obligations. Thus, the risk of liquidity management is getting smaller. This study suggests that the bank should provide more capital for bank operations and perform efficiently in order to maintain its performance. The reinforcement of bank capital can be done with the addition of new capital from either the old or new investor shareholder, The merger with a bank (or banks) to reach a new minimum

capital requirements, The issuance of new stocks or secondary offering in capital markets, and Issuance of subordinated loan.

Implementing the Good Corporate Governance (GCG) in accordance with the regulations issued by Bank Indonesia can do bank Efficiency. This was done because in GCG principles of fairness, transparency, accountability, professional and responsibility are applied. Corporate governance mechanisms do influence the bank performance, banks have to try to implement the right corporate governance system and policies until they can reduce probability of failure and bankruptcy and can also increase reliability for investors and investments (Bahreini, 2013), (Al-Sahafi, 2015). Lastly, The result confirm that the role of capital and bank's performance in indeed important to the banking liquidity

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