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Bank Risks, Shock Event and Profitability in Islamic Banks: Adoption of Panel Data Approach

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Abstract

In the current business environment banks are exposed to many risks while having its operation. These risks are stated to be directly linked to what banks do and why bank fails. The Islamic banks are also unexceptional to be affected by the bank risks. Thus, this study tries to examine the impact of bank risks and shock event in the variation of profitability in Islamic banks. Using 16 Islamic banks spanning from 2009 to 2016 in Malaysia this study has employed panel data analysis to test for the hypotheses. Results illustrated that there are substantial influence of both credit risks and liquidity risks credit risks on profitability in Islamic banks. Both shows the higher risks will lead to the lower profit of the Islamic bank. While, the shock event which is represented by financial crisis is found to be following the expected magnitude but has insignificant influences on the changes of Islamic bank profitability. This result gives a clear indication to Islamic banks that undertaking risks will let to the losses in the profitability of the banks. Finding also supports the claim that the profitability of Islamic banks is unharmed by the shock event.

Keywords: Liquidity risks, Credit risk, Profitability, Islamic banks, financial crisis

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1. Introduction

Banks around the world has a complex operation. In the current business environment banks are exposed to many risks while having its operation activities. Among the major risks are credit risk and liquidity risk. These risks are directly linked to what banks do and why bank fails (Ameni, Hasna & Mohamed Ali, 2017). In fact, in the classic theories of banking the view that liquidity and credit risks are closely linked. For example in Diamond and Dybvig (1983) stated in the financial intermediation, a bank's asset and liability structures are closely connected with regard to fund withdrawals and borrower defaults. Diamond and Dybvig (1983) argued that deposits contracts lead to liquidity demands that can cause bank runs. Consequently, this might lead to real economic damage. While, Holmstrom and Tirole (1998) and Kasyap et. al (2002) added that the

financial intermediation, banks create liquidity in the economy, either from their balance sheets by generally financing risky projects using the deposits of their clients, or from off-balance sheets, by opening credit lines.

In a simple explanation, credit risk arises due to bank borrowers may not be able to fulfill their contractual obligation. Thus, banks must carefully analyzed the loans granted in order for them to get back according to the agreed agreements. The failure of credit risk management will lead banks to face many serious problems as lending is one of the major businesses in banking system. Credit should be prudent in the process of channelling it. This can avoid the problem of credit risk. While liquidity risk happens when raising and channelling the banks' funds experience the mismatch on the amount of funds and time period. There might be cases where the amount of funds raised is smaller than fund distribution. Thus, this will led the bank unable to provide funds at any time to fulfill its obligations. Banks mostly do short term fund collection while the lending could be for a long term. The difference term in collecting and lending will cause a mismatch and banks will have liquidity risk.

Risks may arise during the shock event such as financial crisis. The financial crisis exacerbated the banking conditions. For example the Asian financial crisis 1997-1998 has drawn many attentions on the failure of banking sector. The shortcomings and the risks were exposed during this shock event. While, the global financial crisis (GFC) in 2008-2010, which started in United States has affected banking system outside United States. According to Choon et al., (2012) and Wasiuzzaman and Gunasegavan (2013), 80 percent of banks which have been affected by GFC are struggling and badly affected. While, Saeed and Zahid (2016) claim over the last 10 years, the quality of the loan and its portfolios across many economies worldwide stayed comparatively stable until the emergence of 2007-08 financial crises. The net non performing loans (NPLS) as stated by Bank Negara Malaysia (BNM) were relatively high at 13.2% in 1997-1998 (Ibrahim, 2011). Thus, during the credit crunch, commercial banking throughout the world has suffered a steady decline in profitability, and has created an incentive for banks to take on more risk in their operations and expand into new activities (BIS, 2011). At the same time, there are number of claims that Islamic banks profitability is either less or not affected by the financial crisis (Smolo & Mirakhor, 2010; Kassim & Majid, 2010 and Ahmed, 2010). Most of the studies argue that this is due to the nature of the Islamic bank's product contract. Thus, this paper tries to examine the impact of bank risks and shock event on the profitability of Islamic banks.

The remaining of the paper is organized as follows. Section 2 discusses the literature review. The methodology under consideration will be highlighted in section 3. Section 4 discusses result and discussion. Lastly, section 5 offer conclusions.

2. Literature Review

Earlier works on bank risks on profitability have been studied by many researchers. Ariffin and Tafri (2014) for example examine the study on the impact of credit risk and liquidity risk on ROA using Islamic bank data around the world. Between the two risks Ariffin and Tafri (2014) find that credit risk has significant negative impact on Islamic bank profitability. This indicates the greater exposure of banks to high financing, the more financing loss will be recorded. Consequently Islamic bank's profitability will be depleted. It is supported by Abusharbeh (2014) who reveals an expected negative magnitude but find that the credit risk is insignificant with Islamic bank's profitability in Indonesia. Other studies such as Qudah and Jaradat (2013), Obeidat, Khasawneh and Altal (2017), Purbaningsih (2014), and Mohd Ariffin (2012) also reveal similar relationship between credit risk and bank profitability.

Negative result is found in testing the relationship between liquidity risk and Islamic bank profitability in other countries for example Qudah and Jaradat (2013) and Obeidat, Khasawneh and Altal (2017) in Jordan, Purbaningsih (2014) and Abusharbeh (2014) in Indonesia and Mohd Ariffin (2012) in Malaysia. Some of the banks are found to preserve liquidity and do not look for tools to employ the excess liquidity to keep a suitable and balanced combination of obligations and asset to deal with any urgent liquidity risk. As in Indonesia, Purbaningsih (2014) and Abusharbeh (2014) argued that the amount of liquid asset held by Islamic banks is too much. The statistic shows that the highest ratio of liquidity in 2012 is 0.93 that occurs in Maybank Shariah Indonesia. It is because liquid asset used frequently by Islamic banks at any time if they want to withdraw their deposits. As a result, the profitability will decline.

As revealed in Malaysia by Mohd Ariffin (2012), liquidity risk also has negative significant relationship with ROA which indicates liquidity risk may lower the profitability. This is due to the most Islamic banks use liquid assets or external funding to meet the demand of fund and of course it will increase bank's cost of funding. Consequently, the banks' profitability will decrease.

Most of the studies recorded that a negative relationship is found between financial crisis and Islamic bank profitability. It shows that when financial crisis occur, the bank profitability will decrease. Most of the studies used a dummy variable for financial crisis.

Nonetheless in terms of the significance of global financial crisis mixed results are found. Smolo and Mirakhor (2010) Kassim and Majid (2010), Ahmed (2010), Hidayat and Abduh (2012) and Almanaseer (2014) for instances found the financial crisis has insignificant impact on Islamic banking profitability. While, significant impacts of global financial crisis on profitability are found by Abdul Mongid (2016), Ferhi (2017) and Mohamed Yusuf and Salina (2012). Thus, these findings indicate Islamic banks are not immune to the crisis and affect the profitability of the bank.

3. Methodology

Return of the asset (ROA) is used to represent the profitability of the bank. ROA can indicates that banks can generate their profit by using management's ability to utilize bank's real and financial investment (Bashir, 2003). Furthermore, Rivard and Thomas (1997) stated ROA is a good measure of profitability which is not much affected by high equity multipliers and firm can earn the maximum return on their asset portfolio. In order to show the more realistic model the controlling variables are also included comprising the macroeconomics variables. This is due to many other significant variables may affect the bank profitability. Since this study focusing only on bank risks and shock event therefore the impacts of these variables need to be controlled. The effect of aforementioned bank risk factors and shock event could be isolated. Thus, the paper structure of the model as follows:

$$\text{ROA}_{it} = \alpha - \beta_1\text{LIQ}_{it} - \beta_2\text{CRE}_{it} + \beta_3\text{GDP}_{it} + \beta_4\text{INF}_{it} - \beta_5\text{FC}_{it} + \epsilon_{it} \tag{1}$$

Where ROA is represented for profitability and it is calculated based on return on asset (ROA) of the bank, α is constant, β represents the coefficient of the variables LIQ indicates the liquidity risk represent by the liquidity of the bank, CRE is credit risk represents by non performing financing. For the macroeconomic variables GDP represents the economic condition of the country, INF indicates the inflation. Lastly, FC shows the financial crisis represented by dummy variable. ϵ shows the idiosyncratic error. i indicates sample and t is time.

The dependent variable ROA is financial ratio that shows the percentage of a profit a company earns in relation to its overall resources. It is calculated by dividing the amount of net profit towards total asset.

$$\text{ROA} = \frac{\text{Net Profit}}{\text{Total Asset}}$$

The total liquid asset per total deposit acts as a proxy for liquidity risk. If a bank has a proper liquidity level, they will likely meet the obligations. From this perspective, a

"comfortable' ratio decreases the risks of failure may reduce the financing costs and enhance profitability (Alexiou and Sofokolis, 2009).

$$\text{Liquidity risk} = \frac{\text{Total Liquid Asset}}{\text{Total Deposit}}$$

The credit risk is one of the main variables that affect the profitability of the bank. The failure of debtor to fulfill its obligations will affect the bank performance. A negative sign is expected on the potential losses from bad quality of loans.

$$\text{Credit risk} = \frac{\text{Non-performing Loans}}{\text{Total Asset}}$$

While, financial crisis (FC) is broadly defined as disruptions in financial markets causing constraint to the flow of credit to families and businesses and consequently having adverse effect on the real economy of goods and services (Hassan & Kayed, 2010). It is represented by dummy variable. If the FC happens in that year 1 will be indicated. If there is no FC on the particular year of the study, it indicates by 0.

For the controlling variable, GDP represents the economic conditions of the country. During the time of upward sentiments, demand of Islamic banking services will increase. Therefore there will be an increase in aggregate demand. This will create opportunities of profitability for Islamic banking if a high GDP occurs.

While another controlling variable inflation is the common controlling variable used in many studies. If the inflation happens, it will affect particularly towards Islamic banking profitability. Tan and Cristos (2012) and Isfaq and Khan (2015) indicate that inflation is positively related with Islamic banking profitability as it gives bank an opportunity to adjust the interest rates to achieve a bigger profitability.

The study employs panel data estimation technique. This is due to the characteristics of the data under observation itself. With the use of 16 Islamic banks spanning from 2009 to 2016, panel data estimation technique is more appropriate to be applied. Besides that, panel data model are able to handle data limitation and control heterogeneity among variables. Data for the bank risks and macroeconomics variables are collected from the annual reports of the Islamic banks and World Bank.

4. Findings

The model specified in equation (1) serves to test the impact of bank risks and global financial crisis on profitability of Islamic banks. The models are estimated in three different approaches. First, the model is estimated using panel least square method and test for the pooled least square regression (POLS) model. POLS considered to

denying heterogeneity or individuality among banks. Thus, the model is assumed to be a constant intercept without explicitly contain an unobserved effect. However, not controlling for this unobserved individual specific effect leads to bias in resulting estimates. Since individual effects are treated included in the model the study should have treated them to Random effect model (REM) and Fixed Effect Model (FEM).

Series of diagnostic tests such as multicollinearity and heterocedasticity are conducted to ensure the robustness of the result. Thus, in order to confirm the existence of multicollinearity problem variance inflation factor (VIF) is carried out. Table 1 shows the calculation of Variance Inflation Factor (VIF) and tolerance level.

TABLE 1: The Vector Inflation (VIF).

Variables	VIF	1/VIF
Liquidity Risk	2.57	0.3891
Credit Risk	2.21	0.4525
Gross Domestic Product	1.33	0.7519
Inflation	1.03	0.9709
Financial Crisis	1.02	0.9804
Mean VIF	**1.63**	

As suggested by Gujarati (2007) the VIF value should be under 5 and the 1/VIF value should be nearer to zero. If these conditions are met then the regression analysis is considered to be validated. As shown in Table 1 that VIFs of variables is lower than permissible level and 1/VIF values are also nearer to zero. The result shows the mean of VIF is 1.63 less than 5 threshold. This shows the absence of serious multicollinearity problem in regression analysis.

Heterocedasticity is another major problems in panel data especially when error term is large. Thus, to ensure there is no problem of heterocedasticity Breusch Pagan/Cook Weisberg Test is conducted. The results obtained shows the probability of Chi^2 is 0.0000 which is lower than significance level of 0.01. Therefore, it is concluded heterocedasticity does not exist in the model.

Table 2 compares the results from three models. In order to choose, which model is estimated the best, series of test are conducted. Breusch Pagan test is widely used to test whether POLS and REM is appropriate model. The Breusch Pagan Lagrangian test has shown the p value of Chi^2 is significant indicates that REM is better. It is therefore study can proceed to REM.

On the other hand, Hausman fixed test is conducted to compare either REM or FEM is appropriate. In this test, if the null hypothesis is rejected where the bank effects

Table 2: Result of POLS, REM and FEM.

	POLS	REM	FEM
C	1.0618	**0.9369**	0.8448
	(2.16)	**(2.08)**	(1.86)
Liquidity risk	-0.2016	**-0.0185*****	-0.0169
	(4.43)	**(3.76)**	(2.96)
Credit risk	-0.1203	**-0.1295*****	-0.1445
	(5.30)	**(4.83)**	(4.14)
Gross Domestic Product	0.1634	**0.1863****	0.2
	(1.72)	**(2.16)**	(2.3)
Inflation	-0.0916	**-0.1077**	-0.115
	(0.88)	**(1.15)**	(1.23)
Financial crisis	-0.1578 (0.06)	**-0.0935 (0.42)**	-0.131 (0.58)
R squared	0.3079	**0.3054**	0.2975
F statistics	9.43	**38.5**	5.75
	0.0000	**0.0000**	0.0000

are not correlated with the regressor, thus FEM is more appropriate. Nonetheless, this study unable to proceed to FEM as Hausman Test shows insignificant p value of Chi^2. Therefore panel data analysis of REM is accepted to be final analysis.

Judging from the result obtained in Table 2, the R squared of regression model is 0.3054 which indicates that 30.54% of the variation in profitability can be explained financial crisis and controlling variables used. The finding shows bank risks (Liquidity Risk and Credit Risk) are in the expected magnitude and highly significant. The p-value shows both variables are significant at 1% significance level. Liquidity risk has negative effect towards Islamic banking profitability. It is due to lack of marketability of portfolio of investment that cannot be sold immediately to reduce the loss. It will affect adversely in distant and near future. Besides that, liquidity is very important section behind the success of Islamic banks, but if it too much the banks will not operate efficiently that will lead to declining in profitability. Banks are not allowed to provide loans exceeding the total deposit. It is too risky to use deposit for lending purpose despite they need cash for short-term commitments. Al-Tamimi, Miniaoui and Elkelish (2015), reveal liquidity risk will give significant impact toward Islamic banking profitability. Whenever the liquidity gap increases, bank's earnings will slightly decrease for a period. If it happens, the banks need to borrow from repo market and the cost will increase. Under certain circumstances, it may cause the collapse for some banks. It can be

avoided by maintaining cash reserves and can help to stop fire sale risk. The result obtains also in parallel with Arif and Anees (2012) Purbaningsih (2014) and Obeidat, Khasawneh and Altal (2017). The ROA will decrease if the liquidity crisis increases. It shows that investment in current assets is a different with investment in fixed asset whereby it will judge the needs and wants from Islamic bank itself. Therefore, the policy used by the banks will bring the performance beyond the expectations.

Similar result is obtained for credit risk which shows significant negative relationship is found. The coefficient of variation in this study stated that every 1% increase in credit risk, then the return on asset will decrease by 0.1295%. This result supports the finding by Ariffin and Tafri (2014) and Ramadan (2011). Financing is not only considered as the biggest revenues but also a largest source of credit risk. The rule of high risk, high return is applied to indicate the utmost situation. It is the capability of Islamic bank to spreads the risk and recovers all default loans to individual especially to entrepreneur. Abusharbeh (2014) also indicates that higher level of financing does not motivate the probability of Islamic banks. The banks will have low participation in profit or loss financing to cover the risk of non-performing financing. Banks are preferred to invest in debt financing and short-term project, not for giving a huge amount of loans on individuals.

In the macroeconomic variable GDP shows a significant effect on bank profitability however it is not in the case of inflation. The changes in GDP by 1% will increase return on asset by 0.1863%. A positive magnitude is revealed in the results. The finding indicates that Islamic banks in developing countries like Malaysia operate in less competitive environment and expected to generate higher profit margin. This will approve that economic development seem to have good contribution in Islamic banking profitability. A higher GDP growth can produce a higher disposable income and reduce default on consumer loans number including lower the unemployment. This finding however is in parallel with Combey and Togbenou (2017) as they believe the banking capacities to manage loans originate in GDP expansion period and loans losses.

In addition, high GDP will create a chance and option for banking industry to make other investment in institutions. The situation makes them free to contribute the funds by investing to generate a higher profit. The expansion in economic will bring fortune to Islamic banks because they can provide more financing to customer using profit loss sharing (PLS) and gain profit. However, it is vice versa when the economic slowdown period happens whereby uncertain global economic conditions are reflected in lower investments and export growth, which could have seriously hampered the recovery process.

The relationship between financial crisis and profitability of Islamic bank is found to follow the expected sign of negative relationship. The crisis actually can reduce the funding of Islamic banks from lower personal savings and declining corporate profit. It will also affect the investments and financing activity of financial institutions including exposure to another type of risk. Some instruments like options and bonds are not particularly available and become limited during the time. Thus, it will adversely affect the profitability. Nonetheless as found by previous researchers Hidayat and Abduh (2012) and Almanaseer (2014) financial crisis does not affect the profitability. Thus it supports the claims that Islamic banks are unharmed by shock event of financial crisis. Nonetheless, it is wise to advice of the banks to further overcome and absorb the financial shocks.

5. Conclusion

This paper tries to examine the impact of bank risks and shock event on the profitability of Islamic banks. Two major bank risks are credit and liquidity risk with a shock event of global financial crisis are used to test whether they can significantly variates the profitability in Islamic banks. It is found that both risks are significant influence on the depletion of profitability in Islamic banks. Whereas as claimed by many researchers Islamic banks are immune to shock event, reveals a similar outcome which Islamic banks profitability is unharmed by the financial crisis. There is a clear indication to Islamic banks that undertaking risks will let to the losses in the profitability of the banks.

References

[1] Abusharbeh, M. T. 2014. Credit Risks and Profitability of Islamic Banks; Evidence from Indonesia. *World Review of Business Research*, 136-147.

[2] Ahmed, A. 2010. Global financial crisis: an Islamic finance perspective. *International Journal of Islamic and Middle Eastern Finance and Management*, Vol 3(4), 306-320.

[3] Alharbi, A. T. 2017. Determinants of Islamic bank's profitability; international evidence. *International Journal of Islamic and Middle Eastern Finance and Management*, 331-350.

[4] Almanaseer, M. 2014. The Impact of the Financial Crisis on the Islamic Banks Profitability - Evidence from GCC. *International Journal of Financial Research*, 176-187.

[5] Al-Tamimi, H. A., Miniaoui, H., & Elkelish, W. W. 2015. Financial Risk and Islamic Bank's Performance in the Gulf Cooperation Council Countries. *The International Journal of Business and Finance Research*, 9(5), 103-112.

[6] Amba, M. S., & Almukharreq, F. 2013. Impact of the Financial Crisis on Profitability of the Islamic Banks vs Conventional Banks-Evidence from GCC. *International Journal of Financial Research*, 4(3), 83-93.

[7] Ameni G, Hasna C and Mohamed Ali B. O.. 2017. The effects of liquidity risk and credit risk on bank stability. Evidence from Mena Region. *Borsa Istanbul Review*, 17(4), 238-245.

[8] A-Qudah, A. M., & Jaradat, M. A. 2013. The Impact of Macroeconomic Variables and Banks Characteristics on Jordanian Islamic Banks Profitability; Empirical Evidence. *International Business Research*, 6(10) 153-162.

[9] Arif, A., & Anees, A. N. 2012. Liquidity risk and performance of the banking system. *Journal of Financial Regulation and Compliance*, 20(2)182-195.

[10] Ariffin, A. F., & Tafri, F. H. 2014. The Impact of Financial Risks on Islamic Bank's Profitability. *International Conference on Business, Sociology and Applied Sciences*, Kuala Lumpur.

[11] Bashir, A.H. 2003. Determinants of profitability and rate of return margins in Islamic banks: Some evidence from the Middle East," *Islamic Economic Studies*, Vol 11(1), 31-57.

[12] Combey, A., & Togbenou, A. 2017. The Bank Sector Performance and Macroeconomics Environment; Empirical Evidence in Togo. *International Journal of economics and Finance*, 10(8), 180-188.

[13] Diamond D.W and Dybvig, P.H. 1983. Bank runs, deposit insurance and liquidity. The *Journal of Political Economy*. 91(3), 401-419.

[14] Ferhi, A. 2017. Economic and Financial Profitability; A Comparative Study between Islamic and Conventional Banks during the Current Crisis. *OMICS International*, 1-6.of of the UAE Banking Sector. *Accounting and Finance Research*, 5(2), 77-88.

[15] Hidayat, S.E & Abduh, M. 2012. Does financial crisis give impacts on Bahrin Islamic banking performance? A panel regression analysis. *International Journal of Economics and Finance*, Vol 4, 79-87.

[16] Holmstrom, B., Tirole, J. 1998. Private and public supply of liquidity. The Journal of Political Economy, 106 (1), 1-40

[17] Kassim, S.H & Majid, M.S. 2010. Impact of financial shocks on Islamic banks: Malaysian evidence during 1997 and 2007 financial crises. *International Journal of Islam and Middle East Finance and Management*, 3(4).

[18] Mohd Ariffin, N. 2012. Liquidity Risk Management and Financial Performance in Malaysia; Empirical Evidence from Islamic Banks. *Aceb International Journal of Social Sciences*, 1(2), 77-84.

[19] Mohamed Yusof, A, Salina, K. 2012. Impact of global financial crisis of Islamic and conventional banks: Empirical evidence from Malaysia. *Journal of Islamic Economics, Banking and Finance,* 8 (4): 8-20.

[20] Obeidat, Z. M., Khasawneh, A. S., & Altal, A. F. (2017). Impact of Liquidity Risk on the Profitability of Jordanian Islamic Banks. *European Journal of Business and Management*, 9(21), 64-74.

[21] Purbaningsih, R. Y. (2014). The Effect of Liquidity Risk and Non Performing Financing (NPF) Ratio to Commercial Sharia Bank Profitability in Indonesia. 57-61. DOI: 10.7763/IPE

[22] Ramadan, I. Z. (2011). Bank-Specific Determinants of Islamic Banks Profitability; An Empirical Study of the Jordanian Market. *International Journal of Academic research*, 3(6),73-80..

[23] Saeed, M.S. and Zahid, N. 2016. The impact of credit risk on profitability of commercial banks, *Journal of Business and Financial Affair*, 5(2), 1-7.

[24] Smolo, E & Mirakhor, A. 2010. The global financial criss and its implications for Islamic financial industries. *International Journal of Islamic and Middle Eastern Finance and Management*, Vol 3(4), 372-385.

[25] Tan, A. Y & Christos, F. 2014. Risk, profitability and competition: Evidence from the Chinese banking industry. *Journal of Developing Areas*, Vol. 48(3), 303-319.

[26] Wasiuzzaman, S, & Gunasegavan, U. N. 2013. Comparative study of the performance of Islamic and conventional banks. *Humanomics*, 29(1): 43-60.