Assessing Credit Risk and Bank Performance: The Case of Malaysia

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Abstract—Risk is an uncertain future event that could influence the achievement of objectives, and uncertainty includes events caused by ambiguity or a lack of information. Several risk factors have been identified as critical to ensure banks to remain in intact and amid the intense competition in industry such as credit, liquidity, operational and market risks This paper examines the relationship between credit risk and bank's financial performance of CIMB Islamic bank for the period between 2008 and 2016 quarterly. The measures of bank's performance that have been used in the study is return on assets (ROA) while the credit risk risks is measured through non performing financing, financing loss coverage ratio and debt ratio. This study employs data regression analysis of Ordinary Least Squares (OLS). It was found that credit risk has a significant impact on ROA where each variable represent credit risk is statistically significant with the bank's performance. There is significantly negative effect of non-performing financing. Besides that, financing loss coverage ratio (FLCR) has a significant negative effect on the bank's financial performance. On the other hand, there is significantly positive effect of the debt ratio on the bank's financial performance at 10% significance level which tells that an increase of debt will increase the return on assets by 0.24%.

Keywords—Credit risk, financial performance, ordinary least squares, Islamic banking.

I. INTRODUCTION

Banking is a risky business. The rapid and dynamic changes in the global financial landscape pose various risks to banking institutions. In banking institutions, risk management is important discipline since banks have long played role of intermediaries between borrowers and fund savers. Nevertheless conventional banks or Islamic banks, risk management is essential for both institutions. The survival and success of financial organization depends critically on the efficiency of managing the risks (Khan and Ahmed,2001).

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A good risk management practice is very essential to in order to increase the value of firm to maintain the financial health of the banks. According Fatemi and Fooladi (2006), the adoption of risk management in banks directs them to a better trade-off between risk and return. Therefore, risk management is a useful technique in order to minimize the unfavourable effects of various risks and optimize the returns in uncertain situations In a later study, Drzik (2005) supports this assertion and argues that the expenditure by banks in improving the risk management capabilities of credit, market and interest rate risks after the 1991 recession; made it possible to minimize the volatility of earnings and losses in the recession period of 2001. Besides that, the banks which have adopted more advanced techniques in risk management have greater availability of credit (Cebenoyan and Strahan, 2004). This opportunity allows them to amplify their productive assets as well as profits.

Several studies have been conducted in order to evaluate the relationship between risk management and bank's financial performance. For example, Fernando and Nimal (2014) identify that the adoption of risk management is favorable to improve the efficiency of Sri Lankan banks. Moreover, Ariffin and Kassim (2011) highlight a strong positive relationship between performance and risk management practices of selected banks in Malaysia. Similarly, Oluwafemi et al. (2013) find a significant relationship between performance and risk management in Nigerian banks. Kao et al. (2011) have explored the performance of Taiwan financial holding companies from the perspective of risk management and found a significant direct relationship between study variables.

However, this study only focus on effect of credit risk on Islamic bank's financial performance since credit risk is the most dominant risk for Islamic banks as mentioned by Sundararajan (2007). It is usually argued that IBs faces higher credit risk than their conventional counterparts. Since Islamic banks do not have sufficient Shari'ah compliant tools for dealing with debt-based contracts, in comparison with conventional banks so it face higher credit risk (Elgari, 2003).

Credit risk is the possibility the borrower or counter party will fail to meet its obligations in accordance with agreed terms whereby arises from the bank's dealing with or lending to the their possible clients, corporate and other banks or financial institutions (Gontarek, 1999).

More specifically, the aim of this study are to identify whether credit risk (i.e.: non-performing financing ratio, financing loss coverage ratio and debt ratio) have a significant effect to the bank's performance.

Based on the study problem and its objectives, the hypotheses can be formulated as follows:

Ho: The credit risk management effects on financial performance (expressed by ROA) of the CIMB Islamic Bank.

Subset hypothesis:
Ho$_1$: The non-performing financing significantly effects on bank's financial performance.
Ho$_2$: The financing loss coverage effects on bank's financial performance.
Ho$_3$: The debt ratio significantly effects on bank's financial performance

On the whole, the study is divided into five sections. Section one deals with the introduction of the study; section 2 contains the review of relevant literature; section 3, focuses on variables, model and estimation technique. Section 4 provides the findings and major results and section 5 concludes the research work with useful policy recommendations.

II.LITERATURE REVIEW

The rapid and dynamic changes in the global financial landscape pose various risks to banking institutions such as credit, liquidity, operational and market risks. The survival and success of financial organization depends critically on the efficiency of managing these risks (Khan and Ahmed,2001). Risk is inherent in all aspects of commercial operation and financial especially for banks and financial institutions.

Credit risk is an essential factor that needs to be managed by banks or financial institutions since the performance of a bank is depends on how well it manages the risks. This is because the weak credit risk management practiced and poor credit quality continue to be a dominant cause of bank failures and banking crises worldwide (Mohd Ariffin et al, 2007). Normally, a bank fails when its cash inflows from repayments of credits, sale of assets in place and mobilization of additional funds fall short of its mandatory cash outflows, deposit withdrawals, operating expenses and meeting its debt obligations (Khan and Ahmad, 2001).

According to Elgari (2003), conventional banks face credit risk in almost all of their operations, because the relationship between the banks and those who transact with them is that of a debtor with a creditor in all cases. Islamic banks also face this form of risk in most of the modes of financing that they use such as *murabahah*, where the fundamental form of risk in all these contracts is credit risk (Elgari, 2003).

There are various ways to measure the bank performance. Financial ratios are found to be the most generally used methods. Financial ratios allow us to analyze and interpret the banks financial data and accounting information which provide us a deeper understanding on a bank financial situation and help us to evaluate the bank performance. There are many financial ratios that can be used to assess bank profitability performance. The previous studies suggested financial ratios such as returns on assets (ROA), returns on equity (ROE), and net interest margins (NIM) are the common used indicator.

The process of assessing the quality of bank credit and its impact on the bank's financial condition is critical since most banking assets are loans and advances. In fact, extensive empirical research has been carried out to analyze the relationship between credit risk and bank's performance. Athanasoglou et al. (2008) found that credit risk negatively affects the performance of conventional banks for a panel of Greek banks covering the period from 1985 to 2001. Similarly, Tafri et al. (2009), in their examination of the impact of financial risks on the profitability of Malaysian commercial banks for the period of 1996-2005, using panel data regression analysis of generalized least squares, showed that credit risk has a negative and significant impact on ROA and ROE for both conventional banks and Islamic banks.

In addition, Felix and Claudine (2008) also suggested that bank profitability is inversely related to the ratio of non-performing loan to total loan on their study on the influence of credit risk management on bank performance. According to Said and Tumin (2011) credit risk and operating expenses have respectively a negative impact on Malaysian and Chinese banks performance. They analyzed the relationship between performance and financial ratios of commercial banks in Malaysia and China by using some internal factors, their results suggest that credit risk and operating expenses affect negatively the performance of banks in both countries in the case of ROA however, this is different in the case of return on equity ROE.

A study by T. Fauziah Hanim (2009) aimed to analyse the relationship between financial risks and profitability of conventional and Islamic banks in Malaysia. They used panel data from 1996 to 2005. Meanwhile, the proxies for bank profitability in the study are return on equity (ROE), return on assets (ROA), and net interest/income margin (NIM). Whereas the independent variables are liquidity risk, credit risk, interest rate risk, interaction between credit risk and interest rate risk, off balance sheet activities, bank size, bank capital, lagged of ROA or ROE, and GDP growth. The study concluded that credit risk has significantly effect on return on asset and return on equity of the banks. They believed the outcome might be due to the more that banks are exposed to high risk loan, the higher the non performing loan and this eventually results in the decrease of conventional banks' earnings

Alper and Anbar (2011) examined the determinants of banks profitability in Turkey over the time period from 2002 to 2010 where the bank profitability is measured by return on assets (ROA) and return on equity ROE), while credit risk is measured by loans to total assets and loans under follow-up to

total loans. They found that the ratios of loans/assets and loans under follow-up/total loans are found to have negative and significant impact on profitability.

Meanwhile, Imad Z. R. (2011) investigated the bank-specific determinants of Jordanian Islamic banks' profitability by employing unbalanced panel data linear regression model. The study used profit margin and return on assets (ROA) to express the profitability of banks. The result from this study is credit risk has positive impact on Islamic banks' profitability. In other words, if Islamic banks increase its exposure to credit risk, the higher is its profit.

Kayode, O. F et. all (2015) investigates the impact of credit risk on bank's performance in Nigeria through a panel estimation of six banks from 2000 to 2016 by using the random effect model framework. They found that credit risk is negatively and significantly related to bank performance that measured by return on assets.

III. MODEL AND DATA

a. Data and Variables

This research aims at investigating the effect of bank's risk management on financial performance of the CIMB Islamic bank. Secondary data were collected from Fitch-connect. Additionally, for which data that are not available in Fitch-connect, the quarterly and annual reports of the CIMB Islamic bank were used to analyze for the study period of Q12008 - Q22016. The ordinary least square regression model was employed to estimate the effect of credit risk. on the bank's financial performance.

The dependent variable used in this study is ROA. Theoretically, ROA is used to represent the bank's financial performance since ROA is the most comprehensive accounting measure of a banks' overall performance. ROA is defined as the net income over total asset whereby ROA measures the bank profits earned per dollar of assets. Therefore, in order to determine the impact of the CIMB Islamic Bank's risk management practices on the bank's performance, a simple linear regression is used and will be discussed in the next section

Credit risk refers to the probability of loss due to a borrower's failure to make payments on any type of debt. Based on previous researches, three independent variables were selected as the credit risk indicators. One of the main indicators that can measure a bank's credit risk has always been the NPF ratio as the loan ceases to generate income for the bank (Choudhury & Adhikary, 2002 and Woo, 2000). And thus, the expected sign for the NPF to bank's performance is negative, since the lower the NPF the better the performance for bank as the lower the NPF ratio, the more income the bank will generate from giving financing. Secondly, as NPF measures the financing portfolio quality, FLCR is used as a signal of the bank's financial strength (Ahmed et al., 1999; Kanagaretnam et al., 2005) which means, the higher FLCR ratio, the better will be the bank's performance. Hence,

positive sign is expected from this variable. Thirdly, the DEBT ratio measures the total loans as percentage of total assets. The higher the DEBT ratio indicates the bank is loaned up and its liquidity is low where the higher the ratio, the more risky a bank to be higher defaults (Chakraborty, 2010). Therefore, negative sign is expected from this variable.

b. Model and Estimation

To empirically estimate the relationship between the impacts of risk management practices on the financial performance of CIMB Islamic Bank, an ordinary least square (OLS) regression is opted. The banking performance function can be expressed as: Bank Performance = f (credit risk) which can be modelled into:

$$ROA = \beta_1 + \beta_2 NPF + \beta_3 FLCR + \beta_4 DEBT + Dummy + \varepsilon ….$$

where

ROA	=	Return on asset
NPF	=	Non performing financing
FLCR	=	Financing loss coverage ratio
DEBT	=	Debt ratio
Dummy	=	Present of outliers
β_i (i =1,…,4)	=	Coefficients of the variables
ε	=	Error term

IV. ESTIMATION RESULTS

a. Model Evaluation

This research applies the econometrics analysis approaches in determining the effect of credit risk management on the bank's financial performance during the time period Q1 2008 – Q3 2016. The statistical program E-Views is applied in order for the results to be computed. Table I below show the Ordinary Least Square (OLS) Result for the effect of CIMB Islamic bank's credit risk on its return on asset (ROA).

TABLE I:
OLS ESTIMATION RESULT ON CIMB ISLAMIC BANK'S CREDIT RISK ON ITS ROA

Variable	Model 1
Constant	-6.908920
	(0.0000)
LNPF	-0.418461
	(0.0068)**
LFLCR	-0.125358
	(0.0007)**
LDEBT	0.236387
	(0.0657)*
Dummy	0.41198
	(0.0000)**
Number of observations	34
F statistics	17.19295
Prob (F statistic)	0.000000
R squared	0.703391

Note: *, ** indicates 10% and 5% significant levels

Various diagnostic tests were done to ascertain the proposed model does not violate the assumptions of the OLS regression as discussed innext section.

V. DIANOGSTIC TESTING

a. Error Term Normality

Jarque Bera test is conducted to inspect the normality of error term of residuals. This test examines the potential existence of non-normality of error term of the regression. The null hypothesis is that the error term is normally distributed. Therefore, if the result indicates that the null hypothesis is rejected, it means that there is a problem of normality with error term. Results of Jarque-Bera test for proposed model indicate the value of Jarque Bera is 2.370649 and its associated p-value is 0.305647. This implies that the null hypothesis cannot be rejected at any significance level. Therefore, one may not infer that the error term has normality problem. Hence, assume results of regression analysis for Model 1 are free from normality error

b. Model Mis-Specification

Ramsey RESET test was run in order to determine any of mis-specification in Model Table IIindicates the result of the Ramsey RESET test.

TABLE II:
RESULT OF THE RAMSEY RESET TEST FOR MODEL

	Value	Probability
t-staistic	0.065478	0.9483
F-statistic	0.004287	0.9483

c. Auto Correlation

The error term at one date can be correlated with the error terms in the previous periods that can cause autocorrelation that will violates the OLS assumptions. Therefore, Breusch-Godfrey Test for Serial Correlation is conducted.

TABLE III:
RESULT OF THE BREUSCH-GODFREY TEST FOR SERIAL CORRELATION

Variable	Obs R^2	Prob. Chi-Square
Model 1 (ROAA)	4.730137	0.0939

Table III indicates the result from the test for serial correlation. The null hypothesis which states that there is no evidence of the presence of serial correlation cannot be rejected due to the fact that the probability value of the chi-square calculated is not significant at 5% level.

d. Heteroskedasticity

Heteroskedasticity occurs when the variance of error term is not constant. Presence of heteroskedasticity violates the assumptions of OLS. Therefore, Breusch Pagan Test is conducted to investigate the potential of heteroskedacity in estimation model. The null hypothesis is the error term is homoscedastic and the alternative hypothesis is the error term is heteroskedastic. The empirical result indicates that there is no heteroscedasticity within the model since the probability value of the Chi-square statistic is not statistically significant at any level as in Table IV.

TABLE IV
RESULT OF THE BREUSCH-PAGAN TEST FOR HETEROSCEDASTICITY

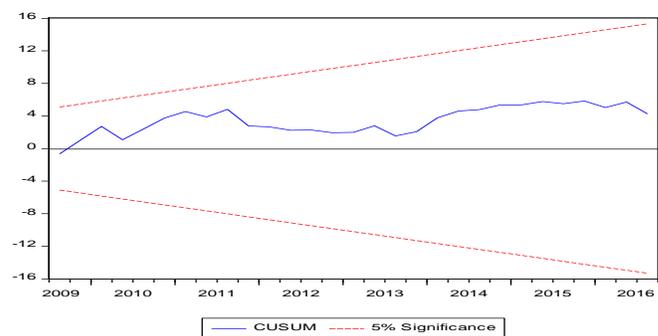| Variable	Scaled Explained	Prob. Chi-Square
Model 1 (ROA)	1.727447	0.7857

e. Structural Stability

Fig. 1: Structural Stability of Proposed Model

Based on Figure 1, graphically the blue line is in between the confidence interval. Thus, the hypothesis null is the model is stable cannot be rejected. Hence, it can be concluded that the parameters in proposed model are stable.

VI. RESULTS AND DISCUSSION

In this section, the regression result of Model where ROA as dependent will be discussed thoroughly in reference to Table I. Based on the coefficients values in the Table IV, the regression equation of the financial performance measured by return on assets will be written as follows:

$$ROA = -6.908920 - 0.4182NPF - 0.1253 \, LFCR + 0.2364DEBT + 0.4111DUMMY$$

When the financial performance measured by ROA, the hypotheses test shows the following results:
1. There is significantly negative effect of non-performing financing/Gross financing ratio on the bank's financial performance as expected since p-value is less than 1%. This means, if the non performing financing increased by 1%, it will decrease ROA by 0.42%
2. Besides that, financing loss coverage ratio, (LFCR) has a significant negative effect on the bank's financial performance. This means, if the financing

loss coverage ratio increased by 1%, it will decrease ROA by 0.13% since p-value is less than 1%.

On the other hand, there is significantly positive effect of the debt ratio on the bank's financial performance at 10% significance level which tells that an increase of debt will increase the return on assets by 0.24%.

VII. CONCLUSIONS

This study investigates the effect of credit risk that was measured through non performing financing, financing loss coverage ratio and debt ratio on CIMB Islamic Bank return on asset. It is hypothesized that these variables have influential relationship. Using the statistical method of multiple regression analysis, these hypothetical relations were examined. Results indicate that the model is statistically fit. In other words, change in these variables can cause change in the return on asset of the bank. Results support statistically significant relationship between credit risk indicators and return on asset of CIMB Islamic Bank. Dummy variable is added to omit the presence of outliers in the proposed model. Based on the empirical result, Based on the results of the empirical analysis, financial risk and performance have a significant influence on each other.

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