Credit Risk Management and Islamic Banking Performance
Evidence from Indonesia

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Abstract: The growth of Islamic banking in Indonesia plays an important role for the economic growth, the growth of Islamic banking itself is inseparable from the credit risk that determines the performance of the banking as a whole. This study aims to determine the credit risk and performance of Islamic banking in Indonesia that are listed in Indonesian Stock Exchange in 2007 – 2016. We use the secondary data obtained from the Indonesian Stock Exchange and the annual reports and then we analyses the data by using multiple linear regressions. The result of the study shows that performance of Islamic banks in Indonesia is influenced by Credit Risk, Capital Adequacy Ratio, Company Size and Liquidity Risk. The study finds that credit risk and liquidity risk have a positive effect while Capital Adequacy and firm size have a negative effect. Furthermore, the study finds that inflation has insignificant effect on performance of Islamic banking in Indonesia. Based on the studies, Islamic banks should increase the capital adequacy, and increase the company's assets through the bond, increase the number of shares or other forms of financing. The need for external and internal monitoring of debtor. Internal control is conducted by conducting intensive control over the process of disbursement of credit funds. While the external control is done by monitoring and action the use of credit funds effectively and efficiently by Islamic banking to customers. With the two aspects of control is expected to reduce the credit risk of Islamic banking.

1 INTRODUCTION

Nowadays sharia banking is growing very fast in both Muslim countries and non-Muslim countries (Azmi, 2017), with total assets of US $ 2,293 trillion, consisting of 75% of Sharia Bank assets, 15% *sukuk*, 4% funding, 1% *takaful* and microfinance and 4% other fields (GIFR, 2016). The banking system in Indonesia is largely a conventional one that is not in accordance with the Sharia principles. Indonesia as the largest Muslim country in the world, requires a banking system based on Sharia principles. Islamic banking is an alternative one, where guarantee interests free transactions and in accordance with Islamic laws. Sharia is the origin and basis of Islamic banking, and incorporates Islamic laws and jurisprudence (Saiti et al., 2017). Based on statistical data, the number of Islamic banks in Indonesia until 2016 were 199 banks consisting of 13 Islamic

Commercial Banks, 21 Islamic Business Units and 165 BPR sharia around Indonesia (OJK, 2016).

Competition in the financial industry and banking in Indonesia is very tight, and the level of high complexity, greatly affects the performance of banks and increases the risk. Inadequate management, insufficient lending to customers, and capital that does not cover the risks faced by banks leads to a decrease in bank performance. The decline in bank performance can reduce the trust of society, investors, business and government. The company must perform an improvement. One indicator of Islamic banking performance is profitability, and the higher the level of profitability shows the best performance of the banking.

The proxy used to measure profitability are ROE (return on equity) and ROA (return on asset), these ratios are the right to measure the performance of Islamic banking. The performance of Islamic banking will determine the sustainability of the company,

provide certainty to investors and provide shareholder returns. Banking industry has an important role in economic growth (Imran et al., 2012), both conventional and Islamic banking have the same goal that is seeking profit.

Study on commercial bank performance has been largely done by previous researchers, but the study on Islamic banks is still lack of literature, especially in developing countries such as Indonesia; (Zarrouk et al., 2016) found evidence that the profitability of Islamic banks is largely determined by cost effectiveness, asset quality and capital level, the study also found that non-financial activities increase the profitability of Islamic banks, no difference determinant between conventional and Islamic banks. According to (Ramlan and Sharrizat, 2016) Islamic banks are more profitable than conventional banks, and more efficient in managing credit risk, bank size and customer growth are the most important factors in improving banking performance (Hassan, 2009).

The study (Kayode et al., 2015) found that credit risk negative effects on banking performance, the proxy used is ROA, and increased credit risk reduces profitability and decreases bank performance, (Kodithuwakku, 2015) found that Loan provision to Total Assets (LP/TL), Loan Provision to Non-Performing Loans (LP/NPL), Loan Provision to Total Assets (LP/TA) and Non-Performing Loans to Total Loans (NPL/TL) significant effect on banking performance.

According study (Alharthi, 2016), he found that credit and capital risk affect profitability negatively and significantly (ROA and NIM), Bank size positively and significantly affects profitability (ROA and NIM), while loan intensity (negative in case of NIM), deposit ratio (positive), and foreign ownership (negative) have no significant effect on profitability. GDP macroeconomic variables are negatively and significantly correlated with profitability (ROA and NIM), as well as for market capitalization, except NIM.

Based on the previous studies, the main objective of this study was to analyze the impact of credit risk and the factors affecting the performance of Islamic Bank in Indonesia. The study is expected to contribute to the enrichment of the literature to fill Islamic Management, business & philanthropy research gaps and as empirical evidence and reference for further research.

2 METHODOLOGY

The method used in this research is explanatory research. The sample in this research is 13 Islamic Banks listed on Indonesia Stock Exchange (BEI) from 2007-2016.

The sampling technique used is purposive sampling, the criteria for selecting the sample under study are as follows: (a) Firms must be Islamic Banking (b) Firms must be listed in the Indonesia Stock Exchange for the period of 2007- 2016, (c) Firms must issue financial statements continuously during the period of 2007-2016, (d) Firms have went go public (e) Firms must report financial statements with rupiah as a currency unit.

This study uses secondary data taken from quarterly report from Indonesia Stock Exchange and OJK. In this study the variable dependent is Banking Performance measured by ROE *(Return on Equity),* while the independent variable in this study is Credit Risk as measured by Non Performing Financing (NPL), Capital Adequacy (CAR) (Alshatti, 2016), SIZE measure the total assets (Abiola and Olausi, 2014); (Ongore and Kusa, 2013); Liquidity Risk measured by Cash & Cash Equivalent to Total Assets (Almazari, 2014) and inflation (Zarrouk et al., 2016).

This study was adopted from the study (Ramlan and Sharrizat, 2016), (Abiola and Olausi, 2014), (Jara Bertin et al., 2014), (Idris et al., 2011), by using multiple regression analysis technique, this research done by using econometric equation as follows:

$$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 S_3 + \beta_4 L_4 + \beta_5 I_5 + \varepsilon \qquad (1)$$

Where:
Y = Performance (ROE)
CR = Credit Risk (NPF)
CAR = Capital Adequacy Ratio
SIZE = Bank Size
LQR = Liquidity Risk
INF = Inflation
$_0$ = Constanta
$_{1\ldots n}$ = Regression Coefficient
= error

2.1 Conceptual Framework

Conceptual framework is theoretical concepts that will be used as a reference in research, built from the results of previous research. In this study, credit risk (NPL), Capital Adequacy Ratio (CAR), Bank Size, Liquidity Risk and Inflation Index as Independent variable, and Return on Equity (ROE) as Dependent variable.
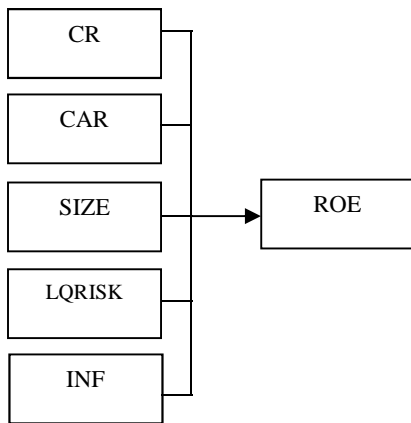
Figure 1. Conceptual Framework.

Based on the conceptual framework, the hypothesis of this research is:

H_1 = There is a positive impact between Credit Risk on Islamic Bank Profitability

H_2 = There is a positive impact between Capital Adequacy Ratio on Islamic Bank Profitability

H_3 = There is a positive impact between SIZES on Islamic Bank Profitability

H_4 = There is a positive impact between Liquidity Risk on Islamic Bank Profitability

H_5 = There is a negative impact between Inflation on Islamic Bank Profitability

3 RESULTS AND DISCUSSION

The assumption classic test is used to determine whether the research model is feasible or not, which is includes the test of normality, multicollinearity test, and autocorrelation test. Normality test result in Figure 2. The graph confirms that the regression model obtained is normally distributed, where the data distribution is around the diagonal line. The results of multicollinearity test in Table 1. shows that Credit Risk, CAR, Bank Size, Liquidity Risk and Inflation variables have a tolerance value between 0.299 to 0.809 for all observation data, the value is greater than 0.10 so it can be concluded that there is no multicollinearity among independent variables, this is reinforced by the value of VIF (variant inflation factors) between 1.237 to 3.343, where the value is less than 10, it can be stated that there is no multicollinearity problem in the prediction model. Autocorrelation test results in Table 6, Durbin Watson value is 1.209, from the analysis results show that the Durbin-Watson value is greater than the value of dL is 1.235, thus there is no problem

autocorrelation. This study meets the classic assumption, so it can be concluded that the research free of multicollinearity and autocorrelation.

Table 1. Collinearity Statistics

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
CR	.809	1.237
CAR	.450	2.221
SIZE	.299	3.343
INF	.741	1.350
LQR	.620	1.613
a. Dependent Variable: ROE		

Descriptive statistical test is used to provide general overview of each research variable as describes in Table 2.
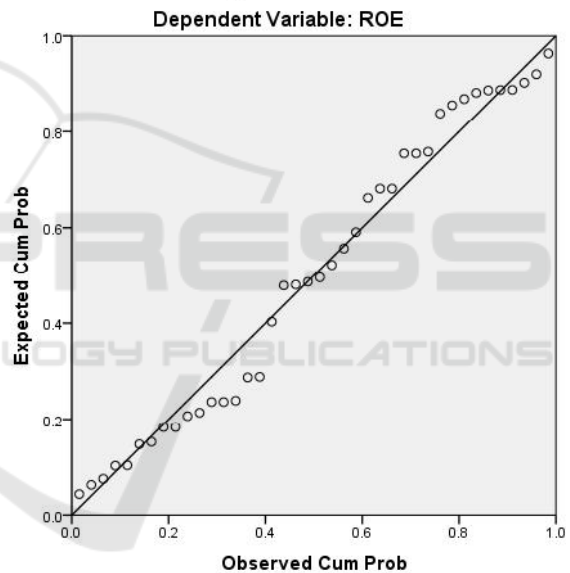

Figure 2. Normal P-P Plot.

Table 2 shows Descriptive statistic results. The profitability of Islamic banks in Indonesia has a minimum value of 0.05 and a maximum value of 0.54, the average profitability of Islamic banks is 0.196 or 19.6%, shows that the performance of Islamic banks in Indonesia only 19.6% has not shown maximum results, it effects on the performance of the bank itself and for stakeholders. The average value of liquidity risk of 0.15% means that Islamic banks in Indonesia have low liquidity risk, liquid and very healthy, thus Islamic banks in Indonesia have a very good performance.

Table 2. Descriptive Statistic.

	Minimum	Maximum	Mean	Std. Deviation
CR	4.230	439.060	48.248	103.909
CAR	.110	.170	.144	.017
SIZE	117.000	169.000	153.550	13.739
INF	.03	.12	.059	.023
LQR	.000	.030	.015	.008
ROE	.050	.540	.196	.123

Inflation is a macroeconomic indicator that often affects the economic performance, the result of the study shows that the average inflation rate is 0.59%, the condition of Indonesian economy with the inflation rate in this study period does not affect the performance of Islamic banks in Indonesia. The average value of the bank size is 153.5%, which means that Islamic banks in Indonesia have excellent asset quality. The average value of CAR is 0.14%, indicating that in order to maintain stability, Islamic banks should be able to maintain capital adequacy of 0.14%, and otherwise it will affect overall banking performance. The average value of credit risk shown in the descriptive statistical analysis is 48.248%, meaning that Islamic banks in Indonesia have a high risk, but with high risk is directly proportional to the level of banking performance, high risk high profitability.

Table 3. Correlation Analysis.

	CR	CAR	SIZE	INF	LQR	ROE
CR	1	.135	.126	-.224	.192	.093
CAR	.135	1	.706**	.289	-.153	-.686**
SIZE	.126	.706**	1	.421**	-.493**	-.921**
INF	-.224	.289	.421**	1	-.224	-.422**
LQR	.192	-.153	-.493**	-.224	1	.608**
ROE	.093	-.686**	-.921**	-.422**	.608**	1
**. Correlation is significant at the 0.01 level (2-tailed).						

Table 3 shows the results of the correlation analysis, finding two significant positive variables, are Credit Risk and Liquidity, meaning that every 1% increase in credit risk and liquidity risk will increase Return on Equity by 0.093 (0.1%) and 0.608 (6.1%), thus higher credit risk and liquidity risk will increase the profitability of Islamic banks in Indonesia. CAR, SIZE and Inflation show a significant negative relationship, meaning that every 1% increase in CAR will reduce profitability by 6.9%, as well as the bank size each time the company expansion will reduce the level of profitability because expansion requires a large cost, for variable inflation as variables macro economy also shows a negative relationship so that every 1% inflation increase reduce the profitability of Islamic banks by 4.2%, inflation reduces purchasing power directly reduces the profitability of Islamic

Banks because customer more selective in fulfil its needs only for most important needs.

Table 4. Regression Analysis.

Coefficients[a]					
Model	Unstandardized Coefficients		Standard Coefficients		
	B	Std.Er	Beta	t	sig
(Cont)	1.331	.092		14.513	.000
CR	.000	.000	.177	3.243	.003
CAR	-1.159	.533	-.159	-2.174	**.037**
SIZE	-.007	.001	-.747	**-8.330**	**.000**
INF	.107	.306	.020	.348	.730
LQR	3.049	1.024	.186	2.979	.005
a. Dependent Variable: ROE					

The results of a study of 12 Islamic banks in Indonesia within the period of research from 2007 to 2016, found that credit risk significant positive effect on profitability, the study support the previous study conducted by (Abiola and Olausi, 2014),(Li and Zou, 2014), (MS and N, 2016), credit risk is the most important factor to maintain the survival, growth and bank performance. However, this study is in contrast to research conducted by (Kayode et al., 2015); (Kodithuwakku, 2015), (Alharthi, 2016) The results of this study show that Islamic banking in Indonesia has a high level of credit risk, therefore Islamic banking needs to increase prudence in giving credit to creditors, with five ways: Pricing the loan, Credit Limits, Collateral or Security, Diversification, Credit Credentials and Asset Securitization, by using 5C approach are: Character, Capacity, Capital, Condition, Collateral. (Heffernan, 2005). The high credit risk is proportional to the magnitude of profitability (MS and N, 2016).

Table 4 shows the capital strength and efficiency of Islamic banks, found that CAR as an internal factor affecting the profitability of Islamic banks in Indonesia, the ROE is negatively influenced by the CAR, this finding indicates that the level of capital adequacy of banks is inadequate, thus negatively affecting profitability, in other words banks with low CAR are less profitable, these findings are in line with previous studies by (Zarrouk et al., 2016).

Firm size describes company strength, and firm size tends to generate high profitability (Hall and Weiss, 1967). the study found that bank size had a negative effect on profitability, this study contradicts the study conducted by, (Hassan and Bashir, 2005), (Alharthi, 2016), (Ben et al., 2017). This negative influence indicates that large (small) banks tend to earn large (small) profits, the study found that Islamic banks in Indonesia are small banks, this finding may also be caused by factors: bureaucracy, economic conditions, politics and regulations in Indonesia

which is less support the development of Islamic banks. The study support previous studies conducted by (Sufian and Habibullah, 2009).

Profitability is very sensitive to macroeconomic conditions, in general high economic growth, tend to improve bank performance. An indicator of macroeconomic conditions that has the possibility of increasing profitability is inflation. High inflation raises interest rates, with rising interest rates increasing bank profitability, the study finds that inflation does not significantly affect the profitability of Islamic banks in Indonesia, these findings are in line with research by (Sufian and Habibullah, 2009); (Khediri and Khedhiri, 2009); (Zarrouk et al., 2016).

The results of the study found a significant positive liquidity risk to profitability, these findings show that Islamic banks in Indonesia have a good liquidity risk that can improve profitability, these findings are in line with the study (Bassey and Moses, 2015); (Almazari, 2014).

Table 5. ANOVA Test.

ANOVA[a]					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.544	5	.109	76.246	.000[b]
Residual	.049	34	.001		
Total	.593	39			
a. Dependent Variable: ROE					
b. Predictors: (Constant), LIQRisk, CAR, CRISK, INF, SIZE					

Anova test is used to test the influence model of Liquidity Risk, CAR, CRISK, INF, SIZE variable to ROE. Table 5 shows F value 75.246 with significance level 0.05 obtained significant value 0.000, hence H_0 rejected and H_1 accepted. It can be concluded that the performance of Islamic Bank in Indonesia is influenced by Credit Risk, Capital Adequacy Ratio, Company Size, Liquidity and Inflation Rate.

Table 6. Determination Coefficient

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	D-W
1	.958[a]	.918	.906	.03780	1.209
a. Predictors: (Constant), LIQRisk, CAR, CRISK, INF, SIZE					
b. Dependent Variable: ROE					

The coefficient of determinant is used to explain the control variable to the dependent variable. The greater the coefficient of determinant the better the ability of the independent variable to explain the variable Return on Equity. The determinant coefficient value (R Square) shown in table 6, is 0.918

or 91.80%, the result of analysis shows that control variable Credit Risk, CAR, Size, Liquidity Risk and Inflation Rate can explain as a factor affecting profitability of Islamic Bank in Indonesia equal to 91.80% and 9.20% influenced by other factors.

4 CONCLUSIONS

Research on the profitability of Islamic banks has become one of the topics of concern for researchers in the world, especially after the global financial crisis. This study aims to highlight the profitability and factors affecting the performance of Islamic Bank in Indonesia. The empirical findings show that the profitability of Islamic banks in Indonesia is significantly influenced by credit risk, capital adequacy ratio, firm size and liquidity risk, but inflation does not significantly affect the profitability of Islamic banks in Indonesia. We found that credit risk has a positive effect on the performance of Islamic banks in Indonesia, therefore Islamic banking needs to increase prudence in lending.

The results of the study found that CAR was significantly negative to profitability, therefore Islamic banks in Indonesia need to increase capital adequacy in order to increase profitability, as well as company size, the study found that firm size significantly negative to profitability. Indonesia Islamic banks has a very good liquidity risk level which is indicated by the result of study, where liquidity risk is significant positive to profitability.

Based on the studies, Islamic banks should increase the capital adequacy, and increase the company's assets through the bond, increase the number of shares or other forms of financing. The need for external and internal monitoring of debtor. Internal control is conducted by conducting intensive control over the process of disbursement of credit funds. While the external control is done by monitoring and action the use of credit funds effectively and efficiently by Islamic banking to customers. With the two aspects of control is expected to reduce the credit risk of Islamic banking.

This study has limitations, for further research it is recommended to include Islamic Rural Development Banks (BPD) as the unit of analysis, increasing the number of variables such as GDP, government regulation or other relevant variables as well as measuring the performance of Islamic banks with ROA and NIM proxies to obtain comprehensive results.

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