

THE DETERMINANT OF CREDIT RISK IN INDONESIAN ISLAMIC COMMERCIAL BANKS

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ABSTRACT - The credit risk in Islamic Banking rises significantly due to the escalation of non-performing financing. On the other hand, the asset growth of Islamic banks also not as explosive as happened in the year 2010 – 2014. This study aims to analyze the influence of bank size, leverage, bank ages, other competitor banks, Capital Adequacy Ratio (CAR) and Non-Performing Financing (NPF) on the level of risk-taking of Islamic banks in Indonesia. Risk-taking is peroxided by Financing Asset Ratio (FAR) which hasn't been researched deeply by other researchers, especially in the Islamic banking industry. To measure the risk-taking, this research took cross-section data of Islamic banks in Indonesia from 2010 to 2017 which obtained from the financial reports of 5 full-fledged Islamic banks namely Bank Muamalat Indonesia, Bank Syariah Mandiri, Bank Syariah Mega Indonesia, Bank Syariah Bukopin, Bank Panin Syariah, Bank Rakyat Indonesia Syariah, Bank Central Asia Syariah, and Bank Negara Indonesia Syariah. This study uses a panel data regression method. The result shows that bank size and bank age have a significant positive effect on risk-taking. Leverage and other competitor banks have a significant negative effect on risk-taking, and CAR and NPF have a negative but insignificant effect. This study recommends that Islamic banks should try to diversify the risk by introducing the new product that is based on the Mudharabah Muqayyadah.

Keywords: FAR, Bank Size, Leverage, Bank Age, competitor banks, CAR, NPF

ABSTRAK – Determinan Risiko Kredit pada Bank Umum Syariah di Indonesia. Risiko kredit dalam Perbankan Syariah meningkat secara signifikan seiring dengan meningkatnya pembiayaan bermasalah. Di sisi lain, pertumbuhan aset bank syariah juga tidak semasif yang terjadi antara tahun 2010 - 2014. Penelitian ini bertujuan untuk menganalisis pengaruh ukuran bank, leverage, umur bank, bank pesaing lainnya, Capital Adequacy Ratio (CAR) dan Non Performing Financing (NPF) terhadap tingkat pengambilan risiko bank syariah di Indonesia. Pengambilan risiko dipengaruhi oleh Financing Asset Ratio (FAR) yang belum diteliti secara mendalam oleh peneliti lain terutama di industri perbankan syariah. Untuk mengukur pengambilan risiko, penelitian ini mengambil data cross-section bank syariah di Indonesia dari 2010 hingga 2017 yang diperoleh dari laporan keuangan lima Bank Umum Syariah yaitu Bank Muamalat Indonesia, Bank Syariah Mandiri, Bank Syariah Mega Indonesia, Bank Syariah Bukopin, Bank Panin Syariah, Bank Rakyat Indonesia Syariah, Bank Central Asia Syariah, dan Bank Negara Indonesia Syariah. Data untuk penelitian ini dianalisis dengan metode regresi. Hasil penelitian menunjukkan bahwa ukuran bank dan usia bank memiliki pengaruh positif yang signifikan terhadap pengambilan risiko, sementara leverage dan bank pesaing lainnya memiliki efek negatif yang signifikan terhadap pengambilan risiko. Dua variabel lain, yaitu CAR dan NPF memiliki pengaruh negatif tetapi tidak signifikan terhadap pengambilan risiko. Penelitian ini merekomendasikan agar bank syariah mencoba untuk mendiversifikasi risiko dengan memperkenalkan produk baru yang didasarkan pada Mudharabah Muqayyadah.

Kata kunci: FAR, ukuran bank, leverage, umur bank, bank pesaing lainnya, CAR, NPF

INTRODUCTION

Banking system has an important role in society. In the activities of a country, banking system functions as one of the development agents (agent of development). According to the Financial Services Authority (OJK), the banking system in Indonesia has two different types of banking operational systems, namely conventional banks and Islamic banks. Islamic banking started operating in Indonesia on May 1, 1992, marked by the establishment of Bank Muamalat Indonesia (Santoso & Suhadi, 2015). Islamic banking is an intermediary institution that has different characteristics compared to the conventional intermediary institutions.

The banking system with sharia principles is more resilient than the conventional banking. This toughness was proven during the monetary crisis of 1997/1998; before the monetary crisis happened, there were 240 banks existed but only 73 of the private banks that remained operating after the monetary crisis and were able to be managed without the government's help; one of those remaining banks is the Bank Muamalat Indonesia (BMI) (Yuliani, 2016). Although it was resilient in the face of the monetary crisis, Islamic bank is still a profit-based institution that will always face risks. Risk in the banking context is a potential event, both anticipated and unanticipated which has negative impact on bank income and capital (Karim in Phase, 2016). Based on POJK number 65 of 2016, Islamic banks have 10 risks that must be faced. There are two additional risks which belong to Islamic bank business activities of being different from conventional banks. Therefore, it can be said that Islamic banks have more risk than conventional banks. One of the main risks faced by Islamic banks is the credit risk or financing risk. The data processed from the Sharia Banking Statistics of 2009 - 2017 shows an increasing financing risk faced by Islamic banks in Indonesia, indicated by the increasing Non Performing Financing (NPF) in recent years.

The Figure 1 shows that the movement of Islamic banks NPF from year to year decreased in 2009 - 2012 but began to increase in 2012. This indicates that from 2012 to 2017 Islamic banks faced an increase in financing risk, marked by increasing in NPF. NPF is caused by the counterparty failure in fulfilling obligations, or a default caused by the financing customers (Mukti, 2013). This leads into potential losses for Islamic banks.





Figure 1. The Non Performing Financing Trend 2009 – 2017
(source: OJK, 2018)

In addition, from the same source, it is known that the growth of Islamic banks in recent years is also not in good condition. Figure 2 shows the asset growth chart of Islamic banks from year to year which has been declining since 2009. The decline in asset growth began in 2011 until 2015 and it started to rise from 2015 ahead. Although the value of Islamic bank assets continues to increase every year, but in reality the growth of Islamic bank assets is weakening.

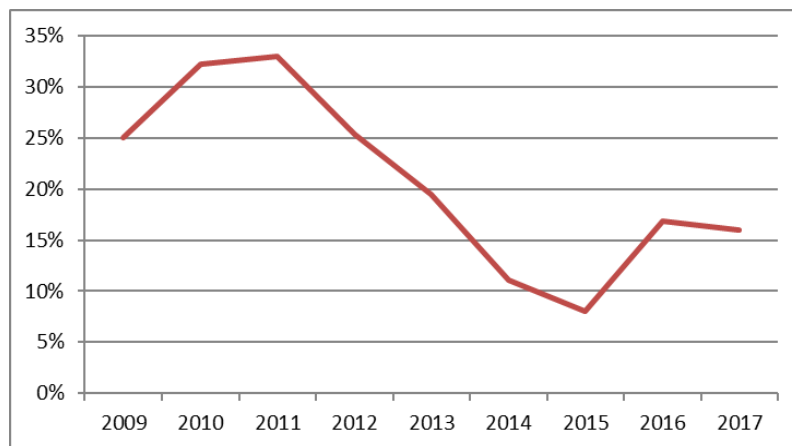


Figure 2. The Islamic Bank Growth 2009 - 2012
(source: OJK, 2018)

Based on the two graphs above, it can be concluded that Islamic banks were experiencing problems simultaneously, namely an increase in NPF and a weakening of asset growth from year to year. These problems occurred



around 2011/2012 and began to improve in 2014/2015. However, the graph shows the problems back in 2016 where the NPF and the asset growth simultaneously moved back down.

One of the factors that create risk in bank activities is risk-taking decision taken by the bank management. The risk taking becomes a general preposition because in non-symmetric condition of information, bank managers and / or shareholders tend to prefer a higher level of risk with an expectation of a higher return rate (Taswan, 2009). The amount of risk taken by banks can be measured through Loan to Asset Ratio (LAR) or in Islamic Bank; it is called as Financing to Asset Ratio (Alam & Tang, 2012). Alam and Tang (2012) states that FAR are the ratio used to show the bank's ability to meet customer credit requests based on the total assets owned by bank. FAR has a positive influence on bank financing. The higher the result of this ratio, the better the level of bank credit performance because the loan component that is being given in the total structure of the assets is getting larger. Thus, the higher this ratio, the greater the distribution of financing by Islamic banks.

Hamidah et. al. (2015) in her research said that large banks will have more incentives in taking risky investments because of the existence of a comprehensive safety net. Large banks tend to be more aggressive in lending after the implementation of deposit guarantee. The results of her research also state that bank size has a positive and significant effect on the Loan to Asset Ratio (LAR). The results of this study support the existing theory that the higher the total assets reflected in the bank size ratio of a bank, the higher the chances of the bank in taking risks. Banks that have successfully carried out the collected fund from the general public in the form of demand deposits, savings, and deposits must be followed up by re-channelling the funds to people who need them in the form of credit. The greater the funds collected from the public, the greater the credit (Murdiyanto, 2012). So that it can be said that the level of risk in the form of credit disbursement taken by the bank is also influenced by on how much third parties' funds it has.

The growth of Islamic banks in Indonesia began in 1992 with the establishment of Bank Muamalat Indonesia which was initiated by the Indonesian Ulema Council (MUI) and support from the Association of Indonesian Muslim Intellectuals (ICMI) from several Muslim entrepreneurs. The competition of Islamic banks in Indonesia began in 1999 with the establishment of Bank Syariah Mandiri. Later competitors increased in 2004



with the inauguration of the Mega Indonesia Syariah Bank establishment through the decision of the Deputy Governor of Bank Indonesia (Elkamiliati & Ibrahim, 2014). Hence, in 2007 there were 3 Islamic banking institutions in Indonesia (Santoso & Suhadi, 2015). According to Boyd & De Nicolo (2005), when the competition in the banking industry increases, the risk of bank failure will decrease, in addition, they also find that there is a positive relationship between banking competition and Loan to Asset Ratio. Moreover, the age of the bank is one of the most important factors that determine the company's growth, the diversity of the company's growth and the possibility of the company liquidation. The company's life is one of the important attributes of the company's performance, because it explains the experience of the company in managing the company. This also influences how a company chooses the risks (Nurwati, 2011). Likewise with banks, the age of the banking sector also has a significant positive relationship to risk taking according to the previous research conducted by Bouwman and Malmendier (2015).

According to research conducted by Ptestyanti (2010) bank capital has a positive influence on lending. Bank capital serves as a support for credit provision, where the higher the level of capital owned, the higher the bank's ability to deal with bad loans. Capital Adequacy Ratio (CAR) is a measure of capital owned by banks. According to Pratama (2010), the higher the CAR, the greater the financial resources that can be used for business development needs and anticipating the potential losses caused by lending. With the such suspicion that the amount of CAR can affect a sharia bank in considering the distribution of its financing to customers, which will affect the bank's LAR value. Meanwhile, according to Murdiyanto (2012), the level of bank credit is also influenced by NPL or NPF in Islamic banking. NPF reflects credit risk, the smaller the NPF, the smaller the credit risk that must be borne by the bank. This means that with a low NPF, it is a positive sign to increase the amount of loans disbursed; it also illustrates the low level of risk taking.

This research aims to answer 2 major questions which are (1) whether the bank size, leverage, bank's competitor, CAR, and NPF affect the behavior of bank to take the credit risk partially, and (2) whether the bank size, leverage, bank's competitor, CAR, and NPF affect the behavior of bank to take the credit risk simultaneously. This paper consist 5 sections, the first section discusses the phenomenon that happened in Islamic banking including the research questions. The second section deepens the literature review plus



hypotheses development. The third section scrutinizes the methodology of data panel that is used in this paper. The fourth section explains the finding and analyses the problem so that the research questions answered. The last section will conclude the paper and make some recommendation for the stakeholders.

LITERATURE REVIEW

IFSB Guideline on Risk Management

Islamic Financial Service Board (IFSB) Malaysia has made the standard regarding the risk management framework for Islamic financial institutions including Bank. Among the standards, two standards will be used for the purpose of this paper which are IFSB Guidelines No. 1 – 2005 regarding the Principles of Risk Management for Institutions other than Insurance (later stated as IFSB 1) as well as the IFSB Guiding Principles on Liquidity Risk Management No. 12 – 2012 (later stated IFSB 12). The IFSB 1 is the first global risk management principle that has been made by IFSB. It discusses the risk management process as well as the risk that might be faced by Islamic Financial Institutions which one of them is Islamic bank. IFSB has stressed the importance of the sound risk management for IBs. As written in IFSB 1 in principle 1, the sound risk management means that to have a robust risk management process and begin with the risk identification.

Table 1. IBs Risk Identification based on Financial Position

Asset Side	Liability Side
Types of Cash Flow	Types of Fund
- Known Cash Flow Maturities and the amount known in advance	- Current Account Holder The amount is guaranteed and should be repaid at any time
- Conditional and Predictable Cash flow The inward cash flow is depend on the financing terms and the amount is predictable both the amount as well as the periods	- Investment Account Holder Including but not limited to UIAHs and RIAHs Share profit and bear losses from Investment on their behalf
- Conditional and Unpredictable Cash flow Occurs in the equity partnership contract	

Source: (IFSB, 2012; IFSB, 2005)

Here Islamic Bank should identify the type of risk that might burden the business. Furthermore, risk measurement is the next step to determine the severity of the risk to IBs. At the end, the higher severity, the higher mitigation is needed and it should be stated in the risk mitigation process.



That process is important step to be taken by IBs, however, since the IBs are sustainable business and to have sound risk management process, they need risk monitoring to monitor what has been made in previous step. Thus the importance of risk monitoring exists since it should be reported to the Board of Director of Islamic Bank inform of risk reporting of control. IFSB also stressed out the importance of BoD involvement in the risk management process by ensuring procedures and policies as well as management information system according to the business scope, complexity, and the business nature of IBs (IFSB, 2005). IFSB also classified the Islamic Financial Position as shown in Table 1.

Herewith, IFSB 12 identifies the nature of balance sheet of IBs both in asset side and in liability side. In the asset side, IBs has three types of cash flow based on the nature of financing contract below which represent the credit risk:

- a. Known Cash Flow from the financing activities that based on the Murabaha, Ijarah, as well as the Diminishing Musharakah (Musharakah Mutanaqisah). These aqd can be predicted since the monthly instalment amount (principal + margin) is fixed and the period has been agreed in front (IFSB, 2012; IFSB, 2005).
- b. Conditional and predictable cash flow, it arises whenever IBs do Salam and Isthina Financing. In one side, IBs can predict the amount of principal and margin upfront. However, in Salam Financing, the liquidity risk is increased since IBs pay the supplier of goods upfront on behalf of its customer. Furthermore in Isthina, the payment to the supplier is conditional to the progress based on the agreed contract (IFSB, 2012; IFSB, 2005).
- c. Conditional and unpredictable cash flow. IBs have to reconsider their cash flow before doing the equity partnership contract like Mudhorobah and Musharakah. That transaction is conditional yet unpredictable since the payment cannot be fixed and based on the business performance (IFSB, 2012; IFSB, 2005).

Besides the explanation of asset side, the IFSB 12 also scrutinizes the liability side which also represents the nature of liquidity risk below:

- a. Islamic demand deposit or the current account holder or on the other hand those who hold current account and/or saving account. Islamic bank



should guarantee the amount and should repay the fund to depositor at any time.

- b. IAHs which are served by Mudhorobah, is divided into two types which are:
 - i. Unrestricted Investment Account Holders (UIAHs), are those who poses the investment account. The salient different of this type of account is the UIAHs might bare the risk of capital loss from if in this case the investment is underperform. However, IBs are doing “fund pooling” with comingling the entire UIAHs fund to various halal financing to give return to them.
 - ii. Restricted Investment Account Holders (RIAHs). This type of account is operated under the Mudharabah Muqayyadah Principle whereas IBs only act as the brokers to match the need of surplus unit and deficit unit. Consequently, IBs only take a small portion of underwriting fee. In this context, The Shahibul Maal (Surplus Unit) is the ones who are in charge to control the Mudharib (Deficit Unit) by stating certain business. Once the Mudharib breach it, they considered as default.

According to IFSB 1 there are 9 risks associated to IBs which are Credit Risk, Equity Investment Risk, Market Risk, Rate of Return Risk, Operational Risk, Displaced Commercial Risk, Shariah Non Compliance Risk, Fiduciary Risk and Liquidity Risk. Credit Risk is a risk that faced by bank when the financing that given by bank to the customer cannot be paid accordingly (IFSB, 2012; IFSB, 2005). In this research the proxy of credit risk used is Financing to Asset Ratio that has been used by Alam and Tang (2012) who introduced FAR to measure the risk taking behaviour that Islamic bank have taken during the observe period.

The Factors Affecting the Banking Credit Risk

In Hamidah et al. 's research (2015), it shows that there is a positive influence of bank size on risk taking by banks. The results of this study support the existing theory that the higher the total assets reflected in the bank size ratio of a bank, the higher the chances of the bank taking risks. The higher the assets owned by the bank, the higher the bank's tendency to take risks. Thus, based on previous research, the researcher proposed the first hypothesis as follows:



H1: "There is a positive and significant influence of Bank size on Risk Taking"

Previous research states that the higher TPF collected by banks will encourage an increase in the amount of loans disbursed, and vice versa (Pratama, 2010). Thus, based on previous research, the researcher proposed the second hypothesis as follows:

H2: "There is a positive and significant influence of Leverage on Risk Taking"

In research of Bouwman & Malmendier (2015), it is stated that there is a positive influence between bank age and bank risk taking; this means that if the age of the bank increases, Islamic banking tends to be more courageous in risk taking preferences. Thus, based on previous research, the researcher proposed the third hypothesis as follows:

H3: "There is a positive and significant influence of Bank Age on Risk Taking"

The policy on Islamic banks in taking risks will be even higher which in this case Islamic banks are increasingly brave to take greater risks due to the level of competition. This is in line with previous research by Stan & Lipov (2012) that the level of bank competition has a positive effect on the risk-taking of the banking industry. Thus, based on previous research, the researcher proposes the fourth hypothesis as follows:

H4: "There is a positive and significant influence of the Competitor Bank on Risk Taking"

According to Cetorelli & Peretto (2012), CAR is an indicator of the ability of banks in closing the decline in assets as a result of losses suffered by the bank. Studies of Suwarsi (2007) and Sudarto (2004) show that CAR affects the distribution of financing in Islamic banks. Thus, based on previous research, the researcher proposed the fifth hypothesis as follows:

H5: "There is a positive and significant influence of CAR on Risk Taking"

According to Pratama (2010) in his research, NPL reflects credit risk. The higher the level of NPL, the greater the credit risk borne by the bank. Due to



the high NPL, banks will be more careful (selective) in channeling credit. This is due to the potential of uncollectible loans (Ibrahim & Rahmati, 2017). Thus, based on previous research, the researcher proposes the sixth hypothesis as follows:

H6: "There is a negative and significant influence of NPF on risk taking"

Based on previous studies, there are several factors influencing risk taking in Islamic banking. These factors including bank size, leverage, age bank, competitor bank, CAR and NPF. Thus the researcher proposes the seventh hypothesis as follows:

H7: "There is a positive and significant influence of bank size, leverage, age bank, competitor bank, and CAR on risk taking and there is a negative and significant influence of NPF on risk taking."

RESEARCH METHOD

This study deploys the quantitative method and was done in 2018 using secondary data in the form of a complete and audited Islamic bank financial annual report in 2010-2017. The data are analysed with panel data regression analysis.

The population of the study is 13 full-fledged Islamic banks in Indonesia. However, among the population, there are eight Islamic banks that meet the criteria as the objects of this research, namely Bank Muamalat Indonesia (BMI), Bank Syariah Mandiri (BSM), Bank Syariah Mega Indonesia (BSMI), Bank Syariah Bukopin (BSB), Bank Panin Dubai Syariah (BPDS), Bank Rakyat Indonesia Syariah (BRIS), Bank Central Asia Syariah (BCAs), and Bank Negara Indonesia Syariah (BNIS).

Operational Variables

Below is the definition of variables used in this research:

Table 2. Operational Variables

Variables	Indicators	References
Risk Taking (Y1)	$\frac{\text{Financing}}{\text{Total Asset}} \times 100\%$	Hamidah et al (2015), Syamlan (2019)
Bank Size (X1)	Ln (Total Asset of IB)	Hamidah et al (2015), Syamlan & Azinuddin



		(2019)
Leverage (X2)	Ln (Third Party Fund)	Hamidah et al (2015), Syamlan & Azinuddin (2019)
Bank Age (X3)	The Bank Age from commencing operation to the cut off study period 2017	Bouwman & Malmendier (2015), Syamlan & Azinuddin (2019)
Bank's competitor (X4)	$\frac{\text{Total Asset of Bank}}{\text{Total Asset of Islamic Bank in Indonesia}}$	Stan & Lipov (2012)
Capital Adequacy Ratio (X5)	$\frac{\text{RWCR}}{\text{Capital}} \times 100\%$	Rivai (2007)
Non Performing Financing (X6)	$\frac{\text{Bad Debt}}{\text{Total Financing}} \times 100\%$	Pratama (2010)

Regarding the financing to asset ratio (FAR), In Islamic Banking, the term loan is changed to financing, so the research variable becomes Financing to Asset Ratio (FAR). The risky asset for Islamic banks according to the Codification of Bank Indonesia Regulations, which are also based on the calculation of the Minimum Capital Requirement (KPMM), which is 8% of the Risk Weighted Assets (RWA), are as follows:

Table 3. Detail of Risky Asset

1	Vostro Account
2	Nostro Account
3	Marketable Securities
4	Financing

Source: Bank Indonesia

The Classical Assumption

Before conducting data analysis, the data is tested according to classical assumptions. This is done to ensure the regression model is free from multicollinearity, autocorrelation and heteroscedasticity and the resulting data must be normally distributed. The method used to test deviations from classical assumptions is as follows (Indra, 2017):

Heteroscedasticity Test

This test aims to test whether in the regression model there is a variance between the residuals in one observation to another. A good regression model is that the test is homoscedasticity or heteroscedasticity does not occur. Symptoms of heteroscedasticity are more common in cross section data. To test heteroscedasticity on the observed data, it can be done through the



Breusch-Pagan / Cook-Weisberg test, which is a hypothesis test where the probability that the chi² value is smaller than alpha 0.05 indicates the presence of heteroscedasticity or reject H₀.

Multicollinearity Test

This test aims to test whether the regression model found a correlation between independent variables. A good model is that there should be no correlation between independent variables. If the coefficient of determination R² is very high, but individually many independent variables that do not significantly affect the dependent variable, then it indicates the presence of multicollinearity symptoms. Multicollinearity in this study was tested using STATA software, by looking at the value of VIF (Variance Inflation Factor) and tolerance. In determining the absence of multicollinearity symptoms in the observed data, the VIF value must be below 10 and the value of 1 / VIF (tolerance) is more than 0.1.

The Panel Data

Data analysis method used in this study is panel data which is a combination of cross section data with time series data, where cross section units are measured differently, panel data regression is used to know and measure variables of credit risk taking through a set of variables such as bank size, third party fund, bank age, bank's competitor, CAR and NPF. The data processing is carried out using STATA statistics software. In the panel data regression estimation model according to Indra (2017) can be done with 3 approaches, namely as follows:

Common Effect or Pooled Least Square (PLS)

It is the simplest panel data model approach because it only combines time series data and cross sections. In this model do not pay attention to the dimensions of time or individuals so it is assumed that is the behavior of Islamic bank data in various time periods. Ordinary Least Square (OLS) approach or small squares technique to estimate panel data (Rosadi, 2012).

Fixed Effect Model (FEM)

This model assumes that differences between individuals can be accommodated from their intercept differences. The fixed effect model is a



technique for estimating panel data using dummy variables to capture intercept differences. Intercept between banks, intercept differences can occur due to differences in work culture, managerial, and incentives. Besides, this model also assumes that the regression coefficient is fixed between banks and time. This approach with dummy variables is known as least square dummy variables (LSDV) (Rosadi 2012).

Random Effect Model (REM)

This model estimates panel data where interruption variables may be interconnected between time and between individuals. In the random effect model, the intercept difference model is accommodated by the error terms of each bank. The advantage of using random effects is that it eliminates heteroscedasticity. This model is also called the generalized least square (GLS) technique (Indra 2017).

And the next step to analyse the panel data model are:

1) Chow Test

Chow test is a test to determine what model will be chosen between the Common Effect model or Fixed Effect model. The chow test hypotheses are:

H0: common effect model (pooled OLS)

H1: fixed effect model (LSDV)

The null hypothesis in this test is that the intercept is the same or in other words the right model for panel data regression is the common effect model and the alternative hypothesis is the intercept is not the same or the right model for panel data regression is the fixed effect model.

2) Hausman Test

Hausman test is a test used to choose the best model between fixed effect model and random effect model. This test is based on the idea that least squares dummy variables (LSDV) in the fixed effect and generalized least (OLS) methods in the common effect method are inefficient. Namely by testing the hypothesis form:

H0: $E(C_i | X) = E(u) = 0$ or there is a random effect model



H1: fixed effect model

Hausman test statistics follow the Chi-Square distribution with degrees of freedom (df) equal to the number of independent variables. The null hypothesis is that the right model for panel data regression is the random effect model and the alternative hypothesis is the right model for panel data regression which is the fixed effect model.

RESULT AND DISCUSSION

Before calculating the data panel regression, this section will present the classical assumption test which is the multicollinearity test & heteroscedasticity test. The multicollinearity test aims to examine whether the regression model found a correlation among the independent variables. In determining whether there is multicollinearity or not, it can be seen through the VIF (Variance Inflation Factor) and tolerance values. To be free from multicollinearity the VIF value must be below 10 and the value $1 / \text{VIF}$ (tolerance) must be more than 0.1. Based on the result that presented in the table, the VIF values of all variables are below 10 and the value of $1 / \text{VIF}$ is above 0.1. So it can be concluded that there is no multicollinearity relationship among the independent variables in this study.

Table 4. The Multicollinearity Test & Heteroscedasticity Test

Multicollinearity Test			Heteroscedasticity Test	
Variable	VIF	1/VIF	Chi Square	0.99
Size	5,97	0,167573	Prob>Chisquare	0.3198
Leverage	6,75	0,148131		
Age	1,40	0,716221		
Competitor	1,42	0,704796		
CAR	1,61	0,622943		
NPF	1,07	0,932641		
Mean VIF	3,04			

Heteroscedasticity test aims to test whether there is a variance in the residual inequality in one observation to another observation in the regression model. The existence of heteroscedasticity in the observed data can be known through the Breusch-Pagan / Cook-Weisberg test, which is a hypothesis test where if the value of $\text{prob} > \chi^2$ is smaller than 0.05 then it indicates the presence of heteroscedasticity or reject H_0 . Based on the above table, it can be seen that the heteroscedasticity test results in the form of a value of $\text{prob} >$



chi2 is greater than 0.05. This indicates that there are no symptoms of heteroscedasticity in the regression data studied.

Model Selection

To begin the Panel Regression, as per Indra (2017), it should follow the procedure of best model selection below:

Test	F result vs table	Hypothesis Testing	Results
Chow test	0.4312 > 0.05	H0 accepted	PLS
Hausman Test	0.4238 > 0.05	H0 accepted	REM
LM Tests	1,000 > 0.05	H0 accepted	PLS
Model selected			PLS

Based on the best model selection test through Chow test, Hausmann test, and LM test by looking the probability value of each test, the test results show that the best model for this research is PLS.

Hypothesis Testing & Coefficient of Determination

From the Table 5, it can be seen that the value of the coefficient of determination is 0.3920. This shows that only 39.20% of the variables of age, size, leverage, competitor banks, NPF and CAR can affect the FAR variable. The remaining 60.80% is influenced by other variables outside the research.

Table 5. F Test & T Test Result

Variable	Coef	Std. Error	T Statistic	Probability	Hypothesis Testing
Bank Size	0.2306788	0.516	2.83	0.007***	Accepted
Leverage	-0.1562747	0.744	-2.10	0.041**	Accepted
Bank Age	0.1306305	0.462	2.83	0.007***	Accepted
Bank Competition	-1.408023	0.649	-2.17	0.035**	Accepted
CAR	-0.1994621	0.112	-1.76	0.085*	Accepted
NPF	-0.224904	0.336	-0.67	0.507	Rejected
Constanta	-0.0435246	0.013	-3.31	0.002***	
F – Test Result			5.26		
F – Test Prob			0.0003		
R-Square			0.3920		
Adj – R Square			0.3175		

Moreover, Based on the results of the F test, the F count is 5.26 > F table 2.26 and the significance value is prob > f 0.0005 < 0.05. It indicates the rejection of H0 which means that the independent variables in the form of age banks, bank size, leverage, competitor banks, NPF and CAR are significant in influencing



the dependent variable credit risk taking. From the table above, it can be seen that the independent variables are size, leverage, age and competitor banks have a significant effect on the dependent variable in the form of risk taking. Where the size variable has a significant positive effect with a probability value of $0.007 < 0.05$.

Descriptive Statistics

This study uses secondary data in the form of Islamic banking financial statements registered at Bank Indonesia (BI) and the Financial Services Authority (OJK). The banking that arrived at this research was chosen based on the criteria set by the researcher. These criteria are in the form of Sharia Commercial Banks (BUS) registered with OJK and have audited financial statements from 2010 to 2017. There are 13 Sharia Commercial Banks registered with OJK that attach financial reports annually. Of the 13 BUSs listed, there are 8 Islamic banks that report their financial statements from 2010 to 2017 on the respective websites of the respective banks. The 8 banks are PT. Bank Muamalat Indonesia Tbk, PT. Bank Syariah Mandiri, Bank Syariah Mega Indonesia, PT. Bank Syariah Bukopin, Bank Panin Syariah, Bank Rakyat Indonesia Syariah, Bank Central Asia Syariah and Bank Negara Indonesia Syariah. Thus, the number of final observations in this study amounted to 64.

Table 6. Descriptive Analysis

Variabel	Mean	Min	Max	N
FAR	0,711	0,466	0,825	64
Age	8,5	0	25	64
Size	30,005	26,852	32,108	64
Leverage	29,773	26,459	31,986	64
Competitor	0,086	0,005	0,335	64
NPF	0,032	0	0,125	64
CAR	0,203	0,106	0,764	64

From Table 6, it can be seen the value of the level of risk taking Financing to Asset Ratio has the lowest value (minimum) of 0.466 which is the value owned by Panin Syariah Bank and the highest value (maximum) of 0.825 which is the value of Bank Syariah Mandiri. With this range of values this variable has an average value of 0.7109688 and a standard deviation value of 0.0763985. Bank age or the age of the bank that is obtained from the bank age



data collection in the study year 2010 to 2017 has the lowest value (minimum) of 0 owned by BCA Syariah and BNI Syariah. The highest value (maximum) on this variable is 25 owned by Muamalat Bank. In this range of values this variable has an average value of 8.5 and a standard deviation value of 6.492975. Bank size is proxied by the natural logarithm of the total assets owned by the sharia banks studied which has the lowest value (minimum) of 26,852 owned by Panin Syariah Bank and the highest value (maximum) of 32,108 owned by Muamalat Bank. In this range of values this variable has an average value of 30,005 and a standard deviation value of 1.262. A mean greater than the standard deviation indicates a reasonably good result, where the data distribution is normal.

Leverage which is proxied by the total natural logarithm of Third Party Funds (DPK) owned by the Islamic banks studied. This variable has the lowest value (minimum) of 26,459 owned by Bank Panin Syariah and the highest value (maximum) of 31,986 owned by Bank Syariah Mandiri. In this range of values this variable has an average value of 29.77347 and a standard deviation value of 1.330339. Competitor banks that are proxied by the size of the market share owned by the sharia banks studied have the lowest value (minimum) of 0.005 owned by Bank Panin Syariah and the highest value (maximum) of 0.335 owned by Bank Syariah Mandiri. In this range of values this variable has an average value of 0.086 and a standard deviation value of 0.092. Non Performing Financing or NPF value is obtained from the NPF amount in each of the studied banks that has the lowest value (minimum) of 0 owned by Panin Syariah Bank and the highest value (maximum) of 0.125 which is also owned by Panin Syariah Bank. In this range of values this variable has an average value of 0.0322188 and a standard deviation value of 0.0223695. Capital Adequacy Ratio or CAR is obtained from the amount of CAR in each bank studied each year, has the lowest value (minimum) of 0.106, which is owned by Bank Syariah Mandiri and the highest value (maximum) of 0.764 belonging to BCA Syariah. In this range of values this variable has an average value of 0.2028281 and a standard deviation value of 0.1225712.

Analysis

H1: There is a positive influence of bank size on risk taking

The results show that the bank size has a significant positive effect on the level of risk taking in the form of FAR, with a probability value of $0.07 < 0.05$.



It's also known that the regression coefficient is 0.2306, meaning that a 1% increase in bank size will increase the level of risk taking by Islamic banks by 23.06% if other the independent variables remain constant. By this, the research has answered the first hypothesis.

There are studies that have similar results, where the results show that the size of a bank affects banks in taking risks. One of them is a research done by Hamidah et al., (2015) which states that large sized banks tend to be easier in providing capital and if not controlled properly, a moral hazard will arise because the bank functions as a business partner, by increasing profits. In addition there are also studies done by Iqbal (2012), Azinuddin (2017), and Ibrahim and Kamri (2017) which also have similar results. So then it can be said that this study can meet the first hypothesis (H1), there is a positive and significant influence of bank size on risk taking on Islamic banking in Indonesia. H2: There is a positive influence of leverage on risk taking.

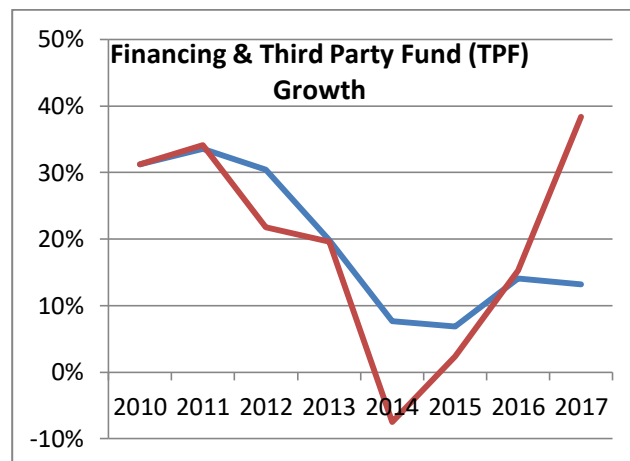


Figure 3. Financing & TPF Growth

*Blue Line : Financing; Red line: TPF

Source: OJK (2018)

This study has a different result from the previous studies done by Pratama (2010), (Ptstyanti, 2010), Murdiyanto (2012), and Selvie, et al (2017) which stated that the greater the third party funds owned by banks, means more credit to be channeled. These studies took conventional banks as objects, so differences in results may occur.

The results showed that leverage has a significant negative effect on the level of risk taking in the form of FAR, with a probability value of 0.041 <0.05. It



is also known that the regression coefficient is -0.1562, meaning that an increase in leverage of 1% will reduce the level of risk taking by Islamic banks by 15.62% if the value of other independent variables remain constant. Then this study cannot answer the second hypothesis.

The results of this study are in line with the results of other research conducted by Azinuddin (2017) and Wardiah and Ibrahim (2013) that states leverage has a significant negative influence on the risk taking of Islamic banks. Where the increase in leverage or third party funds causes a decrease in the level of risk taking of Islamic banks as measured in the form of FAR. This illustrates the conditions that are currently happening to Islamic banks in Indonesia in recent years, where the growth of Islamic bank deposits is much higher than the national financing growth (Figure 3).

This condition indicates that the increase in deposits from the TPF (Third Party Fund) in Islamic banks is not accompanied by an increase in financing distribution or risk taking. The placement of hajj funds to Islamic banks is one of the factors causing the increase in deposits. This is based on Act (UU) No. 34 of 2014 which states that hajj finance must be managed in Islamic Commercial Banks and / or Sharia Business Units, where this law has been ratified and has been enacted in the year of promulgation in 2014. While on the financing side of Islamic banks, the NPF has been recorded that in recent years, especially in 2014 approached a maximum of 5%. This caused the expansion of Islamic bank financing to be carried out more carefully and to focus more on improving the quality of financing. So that the distribution of financing by Islamic banks did not grow significantly as the TPF (Third Party Fund) did.

H3: There is a positive influence of bank age on risk taking

The results showed that bank age had a significant positive effect on the level of risk taking in the form of FAR, with a probability value of $0.007 < 0.05$. It is also known that the regression coefficient of 0.1306 means that the increase in bank age by 1% will increase the level of risk taking by Islamic banks by 13.06% if the value of other independent variables remain constant. Then this research has answered the third hypothesis.

These results are in line with the results of research done by Bouwman & Malmendier (2015). In their research, they said that the age of conventional banks has a significant positive effect on risk taking. So based on this research



it also applies to Islamic banking. In addition, a study done by Ahmed & Ahmed (2011) also stated that the older the age of a bank, the more risks that has been faced. This indicates that when the bank gets older, its business experience will cause the bank to be more daring in taking risks.

The increasing age of banks is usually accompanied by additional capital. With capital increase banks can make greater reserves to meet their liquidity needs, more investment to increase profits and more funding distribution to meet customer needs and improve the function of banks as financial intermediaries. With the increasing number of opportunities the bank has in increasing its business, it will also increase the risk faced by the bank itself.

H4: There is a positive influence of competitors' banks on risk taking

The results showed that the competitor bank had a significant negative effect on the level of risk taking in the form of FAR, with a probability value of $0.035 < 0.05$. It is also known that the regression coefficient value of -1.408 , meaning that the increase in competitor banks by 1% will reduce the level of risk taking by Islamic banks by 140.8% if the value of other independent variables remain constant. Then this study cannot answer the fourth hypothesis.

This result is contrary to the previous results of studies by Boyd & De Nicolo (2005), Stan & Lipov (2012) which stated that competition in banks has a significant positive relationship to risk taking. The higher the level of competition, the banks will be bolder in taking risks such as by channeling credit / financing to customers.

The difference in the results of the study occurred because of the differences in the method of data retrieval. In the previous research, the data of the competitor bank variables were seen through the Concentration Ratio (CR) of the bank under study. Whereas, in this study, competitor bank variables were seen based on the market share of the bank under study. When the market share value increases while the financing remains, it will make it appear as if bank financing has declined. This happened because the market share increases due to an increase in assets. When assets increases, it will make the financing to asset ratio (FAR) decrease or the value becomes smaller. So that it causes a negative relationship between the competition that occurs in banks and the value of risk taking by banks.



H5: There is a positive influence of CAR on risk taking

The results show that the Capital Adequacy Ratio (CAR) does not affect the level of risk taking in the form of FAR, with a probability value of $0.085 > 0.05$, and a regression coefficient of -0.199 . So it can be concluded that the amount of increase or decrease in CAR value does not affect the level of risk taking by Islamic banks if other variables remain. Then this study cannot answer the fifth hypothesis.

The results of the research are in line with research conducted by Ramadhan (2013) and research by Supianto, Satriawan, & Desmiawati (2011) which stated that CAR does not affect the distribution of credit by banks in Indonesia. However, these results are contrary to the results of research by Suwarsi (2007), Pratama (2010), and Murdiyanto (2012) which stated that CAR has a significant positive influence on credit distribution by banks. Or it can be said that the higher the CAR, the greater the amount of credit disbursed by the bank.

In the Islamic banks that we studied, the average value of CAR was found to be 20.3% with the smallest value being 10.6% and the largest value was 76.4%. This shows that the Islamic bank CAR is in a safe position in the period of 2010-2017, where the value is above 8%. With these figures we can say that bank capital was in good a condition. In addition, this also shows the resilience of Islamic banks maintained by indicators performance above the provisions, so risk is not a major problem for Islamic banks in relation to the capital owned. So the amount of financing provided by banks is not affected by the CAR value. Based on this, it can be said that the amount of CAR does not affect the risk taking by sharia banks.

H6: There is a negative influence of NPF on risk taking

The results show that Non Performing Financing (NPF) does not affect the level of risk taking in the form of FAR, with a probability value of $0.507 > 0.05$ with a regression coefficient of -0.224 . So it can be concluded that the magnitude of the increase in the NPF value does not affect the level of risk taking by Islamic banks if other variables remain constant. Then this study cannot answer the sixth hypothesis.

This study has the same results as a research done by Annur (2017) which states that in the short term the NPF does not affect the liquidity risk of



Islamic banks in Indonesia. However, different results were obtained by Pratama (2010) and Murdiyanto (2012) where the ratio of non-performing financing had a significant negative effect on credit disbursement by conventional banks. Where the higher the NPF, the bank will be more selective in channeling credit to minimize the risk.

This research studies Islamic banks that have different characteristics from conventional banks. One of them is the financing of Islamic banks is closely related to the real sector, while in Indonesia the last few years the growth in the real sector recorded to be somewhat stagnant. So it caused NPF to increase, but not accompanied by a positive performance (Suryowati, 2017). But just like CAR, NPF is still in a safe position. In Figure 4.3 it is shown that the movement of Islamic banks NPF in the period of observation, namely in 2010-2017, where the NPF number of Islamic banks is still in a safe position which is below the maximum 5%. Although in one period, in 2014 the NPF was in an insecure position which was close to 5%, the overall NPF value was still below the applicable provisions. This shows that the condition of the Islamic bank NPF in this observation period is not a major problem for the financing distribution because the number is still below the maximum applicable provisions. So there is no significant correlation between the two.

CONCLUSIONS

This study aims to analyze the factors that influence the level of risk taking in Islamic banking in Indonesia. This study has independent variables such as bank size, leverage, bank age, competitor banks, Capital Adequacy Ratio (CAR), and Non Performing Financing (NPF), with the dependent variable in the form of risk taking as measured by Financing to Asset Ratio (FAR). This study was conducted on 8 Islamic banks with observation time from 2010 to 2017. The results of the research are as follows:

1. Bank size has a positive and significant effect on risk taking by Islamic banks. This indicates that the size of a bank measured using the number of assets affects the risk taking by the bank. So it can be said that the bigger the size of a bank, the more courageous the bank is to take risks.
2. Leverage has a significant negative effect on risk taking by Islamic banks. Leverage is measured based on Third Party Funds (TPF) owned by banks influences risk taking in the opposite way. That is, when



bank deposits increases banks tend to reduce the level of risk taking. This is because Islamic banks carry out their financing functions based on halal and thayyib principles, so that the customer selection process is carried out more strictly and carefully, where it does not apply to conventional banks.

3. Bank age has a significant positive effect on risk taking by Islamic banks. This indicates that the age of the bank influences risk taking, where the older the age of a bank, the more of its business experience and causes the bank to be more courageous in taking risks.
4. Bank's competitors have a significant negative effect on risk taking by Islamic banks. These results occur because of the relationship between market share ratio and Financing to Asset Ratio which both use assets in their calculations. When an asset rises, it will increase the market share value but decrease the value of FAR.
5. Capital Adequacy Ratio (CAR) has a negative but not significant effect on risk taking by Islamic banks. This indicates the amount of CAR does not affect banks in taking risks. Determination of the minimum CAR value of 8% makes the bank try to fulfill these conditions without regard to changes in its lending.
6. Non Performing Financing (NPF) has a negative but insignificant effect on risk taking by Islamic banks. These results indicate that the NPF does not affect the risk taking by the bank. This is due to the other factors that cause an increase or decrease in the NPF value when there is no change in the financing disbursed. Such as the weakening of the real sector as the main sector in financing Islamic banks, or the decline in assets of Islamic banks. This makes the NPF value unable to describe the risk taking decision taken by Islamic banks.
7. Bank size, leverage, age bank, and competitor banks have a significant effect on risk taking by Islamic banks, where the bank age and bank size have a significant positive effect and leverage and competitor banks have a significant negative effect. While the results of the study also shows that CAR and NPF have no effect on risk taking.



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