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Does Financial Performance of Islamic Banking is better? Panel Data Estimation

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Abstract:

The global financial crisis has had a negative impact on the banking sector, especially the banking sector in Indonesia. Many studies suggest that Islamic banking is not affected by the global crisis, due to differences in the business nature.

The purpose of this study was to analyze the internal and external factors affecting the performance of Islamic banking in Indonesia. This study will also analyze the effect of the global crisis on the financial performance of Islamic banks.

This research resulted in the finding that the performance of Islamic banks is significantly affected by non-performing finance and inflation. In addition, the performance of Islamic banks have relatively better after crisis.

Keywords *: financial performance, Islamic banking, global crisis, business, Indonesia*

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Introduction

The credit crisis experienced by the United States (US), known as the subprime mortgage crisis is one indicator of the financial crisis that wreaked havoc and extreme volatility in world financial markets. The credit crisis generally caused severe lack of funds or credit in the economy (Farook, 2009). This crisis began with the bankruptcy of several major financial institutions in the United States, then quickly turned into a global financial crisis and led to the bankruptcy of several financial institutions and banks in the United States and Europe. Across the world, there was a sharp decline in the values of stocks and commodities (Hassan, 2010).

Indonesia is a country that is affected by the global financial crisis, and affect the economic condition. One of the effects of the global financial crisis is slowing economic growth. In 2008, the overall Indonesian economy grew at 6.1% or slightly lower compared with 2007, of 6.3% (Abduh and Omar, 2012). The other causes, there was a very sharp decline in the rupiah against the US dollar, which resulted in a decrease in the capital adequacy ratio for leading banks. Although Bank Indonesia (the central bank in Indonesia) has conducted a policy by raising interest rates on deposits, but the bank's revenue to be negative, because negative interest rate spreads (Sufian and Habibullah, 2010).

The banking sector is the backbone of the economy and have an important role as a financial intermediary, therefore the soundness of banks is very important (Thalassinos *et al.*, 2015). The performance of a bank is very important in the national or global economy, surveillance over time is needed. Bank has a very important role in stability and economic growth through the contribution in improving the efficiency of the allocation and utilization of funds and the last resource in the economy (Al-Omar and Al-Mutairi, 2008, Suryanto, T, 2016).

Islamic banks able to withstand the economic crisis, because so far the Islamic bank has a strong commitment to the micro, small and medium enterprises (SMEs). In real terms this sector sustains the economy, Islamic financial institution positioning itself as a partner for the real sector. With this principle, the trust of customers grew (Ahmad and Haron, 2002). With the ability to withstand the global financial crisis and remains relatively positive in the midst of the crisis makes Islamic banks emerged as a system that is more fair and efficient. That condition has raised the profile of Islamic finance and bring stability in the global financial system (Abduh and Omar, 2012; Thalassinos and Liapis 2014).

The purpose of this study was to analyze the internal and external factors affecting the performance of Islamic banking in Indonesia. This study will also analyze the effect of the global crisis on the financial performance of Islamic banks. The global financial crisis affect the financial performance of conventional banks (Erkens, Hung and Matos, 2012; Nersisyan and Wray, 2010; Ramlall, 2009; Sufian and Habibullah, 2010; Thalassinos *et al.*, 2014), but the Islamic banking and finance is

not affected by the global crisis (Abdul-Razak and Hanudin, 2013; Adel, 2010; Ahmed, 2009; Md. and Mia, 2012; Rarick, 2008; Thalassinos and Dafnos, 2015).

The global crisis that afflicts conventional banks, shows how the financial sector is evolving towards fragility, where there was an increase in credit in the banking sector, a derivative transaction that exceeds the bank's assets. The basic cause of the crisis has not been fully resolved, because of the system used today is worse than it was before the crisis, this system even more fragile. This fact suggests that a healthy banking sector is a prerequisite for the economic (Nersisyan and Wray, 2010; Ramlall, 2009). But in Islamic finance, interest-based transactions are prohibited. Islam encourages business and trade transactions and activities that generate a fair and legitimate profit. Therefore, there is a close relationship between the flow of money and productivity. It is the concept of Islamic finance, which contributes to the isolation of the potential risks resulting from excess debt and speculative financial activities, which are part of the root causes of the financial crisis (Adel, 2010). Islamic financial operations based on two main objectives, namely the fulfillment of social welfare and benefits, where two objectives are important and can be achieved simultaneously with promoting Islamic values and social responsibility to the community (Abdul-Razak and Hanudin, 2013).

This paper can contribute to prove that the Islamic banking and finance can be an alternative compare with the conventional banking system, because the principles of justice, equality, honesty, piety and profit sharing mechanism is implemented in Islamic banking and finance in conducting its operational activities. At this time, it is very important to have a banking and financial system that is universal, fair, equitable, free of interest, free of fraud, ethical and feasible for the financial markets. Islamic banking and finance will have a bright future if conducted continuous research and development to meet the needs and welfare of the community, because it has it all.

Theory and Hypothesis

In general, the performance of Islamic banks is determined by internal and external factors. Internal determinants may include factors that affect the performance of banks, such as bank size, capital adequacy, asset quality, liability portfolio diversification, overhead costs, liquidity ratio, and ownership (Ramlall, 2009). Internal determinants of bank performance can be used to control the bank's management, and are divided into two categories, based on the financial statements and not based on financial statements. Based on the financial statements related to the decision-making directly to the posts on the balance sheet and income statement, while by no financial statements, including factors that are not directly related to the financial statements. Examples of the variables are not derived from the financial statements is the number of bank branches, branch status and location (Haron, Ahmad and Planisek, 1994).

Whereas the external/macroeconomic determinants affect the bank's financial performance, including stability of macroeconomic policy factor, Gross Domestic Product (GDP), inflation, interest rates and political instability and other macroeconomic variables (Ongore and Kusa, 2013; Shen, Chen, Kao and Yeh, 2009; Sufian and Habibullah, 2010).

Performance Measurement

In the many literature, bank's profitability measured by return on assets (ROA) or return on equity (ROE), usually expressed as a function of the internal and external determinants.

In this study, ROA used as dependent variables, which show a profit per dollar of assets owned by the bank. ROA is very important to demonstrate the ability of the bank's management in the use of financial resources and investment to generate profit (Hassan and Bashir, 2003). For some banks, ROA depends on the policy of the bank's management in decision-making, as well as factors that can not be controlled, such as economic growth and government regulations. ROA is an indicator that is most flattering to assess the profitability of banks (Rivard and Thomas, 1997), because regulators believe that ROA is a measure that is appropriate to calculate the efficiency of the bank and is an indicator that is not distorted by the high equity multiplier. ROA as a measure that is appropriate for determine the company's ability to generate profits from the portfolio of assets. On the other hand, return on equity (ROE) indicating how the effectiveness of the bank's management in the use of shareholder funds. ROE of banks affected by ROA, as well as the level of financial leverage of banks (equity/assets). For financial intermediaries, ROA has values tend to be lower than the ROE, so most banks use more financial leverage to increase ROE to be more competitive (Sufian, 2011).

Internal Determinants

Internal determinants used as independent variable is non-performing financing (NPF) and the capital strength (CS). NPF is the ratio between the total financing problems with financing provided by Islamic banks. Based on Bank Indonesia criteria, a category that included the financing problems is financing substandard, doubtful and loss. NPF is usually used as a proxy for credit risk. Usually, credit risk is high, due to the accumulation of the inability of the debtor to make payments, resulting in low profitability of banks (Hidayat and Abduh, 2012). NPF indicates the quality of bank assets and signals for the performance of the bank in the future (Demirguc-Kunt and Huizinga, 1999). The failure of the bank, usually comes from how banks can recognize the weaknesses of financing and creating a backup for written off (Sufian, 2011; Sufian and Royfaizal Razali Chong, 2008).

CS used as variables to examine the relationship between profitability and capitalization of the banking system. Although leverage (capitalization) is important in explaining the performance of financial institutions, but the impact on bank profitability is contradictory. The low ratio of bank's capital position caused to be

relatively risky, so CS can have a negative coefficient (Berger, Herring, & Szego, 1995). However, high levels of capital will reduce the level of capital costs, thus leading to a positive impact on the profitability of banks (Molyneux & Thornton, 1992). Moreover, the capital increase may increase the expected profit, due to the expected reduction in costs, so as to reduce the financial difficulties, including bankruptcy (Berger *et al.*, 1995).

External Determinants

In this study, used Gross Domestic Product (GDP) and inflation rate to measure the relationship between economic conditions to bank profitability. GDP is one of the most commonly used macroeconomic indicators to measure total economic activity in an economy. GDP is expected to affect various factors related to supply and demand for loans and deposits. Favorable economic conditions will affect the demand and supply of banking services, thus affecting either positively or negatively on profitability (Abduh and Omar, 2012; Al-Omar and Al-Mutairi, 2008; Alper and Anbar, 2011; Athanasoglou *et al.*, 2005; Guru *et al.*, 2002; Hassan and Bashir, 2003; Jiang *et al.*, 2003; Olweny, 2011; Sapuan and Roly, 2015; Shen *et al.*, 2009; Sufian and Royfaizal Razali Chong, 2008).

Inflation is a common price condition, both goods and services are increasing. Inflation affects the real value of cost and income, although it can have a positive or negative effect on profitability, depending on whether the inflation is anticipated or not anticipated. In the first case (inflation is anticipated), the bank can sometimes adjust the interest rate, which consequently generates an income that rises faster than the cost, with a positive impact on profitability. In the second case (unanticipated inflation), the bank may be slow in adjusting the interest rate resulting in a faster cost increase than the bank's income. This will consequently have a negative impact on bank profitability (Alper and Anbar, 2011; Guru *et al.*, 2002; Kosmidou and Zopounidis, 2008; Sufian, 2011; Sufian and Habibullah, 2010; Sufian and Royfaizal Razali Chong, 2008; Vong and Chan, 2009).

To assess the financial performance of Islamic banks to profitability, used a dummy variable interaction, namely DVBC to the period pre-crisis, given the number 0 and DVAC for the period post-crisis, given the number 1. Some researchers using dummy variables in research (Sufian and Habibullah, 2010). Dummy variables used to assess whether there is a change in the intercept, slope, or both, in two or more different situations, such as the condition before and after the crisis (Gujarati aand Porter, 2010).

Hypothesis

The hypothesis of this research is:

H1: The performance of Indonesian Islamic banking is relatively better during the pre-crisis compared to the post-crisis period, after controlling the internal and external determinants.

H2: The performance of Indonesian Islamic banking is relatively better after post-crisis compared to the pre-crisis period, after controlling the internal and external determinants.

Data and Methodology

Data on internal determinants taken from the publication of quarterly reports eleven Islamic bank in Indonesia, period 2004 - 2012. Source of data derived from the Bank Indonesia's and or Financial Services Authority's website. While data on external determinants, obtained from the Central Bureau of Statistics. The software used in this study was Stata Ver 11.

Econometric Specification

In making estimation, used panel data model, because research data have both a coss-section and time-series dimension (Wooldridge, 2009). To examine the relationship between bank performance and internal and external determinants, multiple regression equations are used, because it allows explicitly controlling many other factors that simultaneously affect the dependent variable (Gujarati and Porter, 2010; Wooldridge, 2009), such as the following model :

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_{it} \quad (1)$$

The addition of dummy variables is used to analyze the differences of two conditions (the performance of Islamic banks), pre-crisis and post-crisis. Therefore, in this study using interactive dummy variable (multiplying D with X), so it is possible to distinguish between the coefficient of slope of two groups (Gujarati and Porter, 2010). Table 1 shows the variables used as a proxy of the Islamic bank's performance and the variables that affect it. In the table there is a notation and the expected effects of each determinant as reflected in the literature.

Table 1. *Overview Variables Used in Regression Model*

VARIABLE	Overview of the ROA	HYPOTHESES WITH ROA
DEPENDENT VARIABLE		
RETURN ON ASSET (ROA)	The ratio used to measure a company's ability to generate profits derived from investment activities.	NA
INDEPENDENT VARIABLE		
INTERNAL DETERMINANT		
NON-PERFORMING FINANCE (NPF)	The level of non-performing financing measured by comparing the amount of non-performing financing divided by the total financing extended to the debtor	-

CAPITAL STRENGTH (CS)	The measure of capital strength, obtained by dividing capital by total assets. This ratio is used as an indicator that the company has low leverage, so the risk is lower	+/-
EXTERNAL DETERMINANT		
LOG GROSS DOMESTIC PRODUCT (GDP)	The value of goods and services produced by the public within a year, including those produced by foreign nationals in the country	+/-
INFLATION (INF)	Overall price increase	+/-
DUMMY VARIABLE	Dummy variable that take value 0 for pre-crisis (DVBC) and the dummy variable that take value 1 for post-crisis (DVAC)	+/-

Multiple regression equation with interactive dummy variable as follows:

$$ROA_{it} = \beta_0 + \beta_1 NPF_{it} + \beta_2 CS_{it} + \beta_3 LnGDP_{it} + \beta_4 INF_{it} + \beta_5 DUMNPF_{it} + \beta_6 DUMCS_{it} + \varepsilon_{it} \quad (2)$$

Regression model with dummy interaction variable, as shown in equation (2), using least square fixed effect approach, the test of ordinary least square (OLS), such as multicollinearity, heteroscedasticity, and autocorrelation are still performed. Fixed effect preferred over random effect, after the Hausman test. In addition, the amount of research time (T) is greater than the number of individuals (N), so the use of fixed panel model panels is more appropriate (Greene, 2004; Kenward and Roger, 1997; White, 1980). By using the fixed effect panel model, it will show the individual effects of each Islamic bank. Table 2, 3 and 4 show the OLS test, which consists a test of multicollinearity, heteroscedasticity, and autocorrelation.

For multicollinearity test, indicated by the correlation coefficient between independent variables. If the value of the partial correlation between independent variables is greater than 0.8, it means that there is multicollinearity between independent variables (Gujarati and Porter, 2010). Table 2 shows the value of partial correlation between independent variables, smaller than 0.8, meaning there is no multicollinearity. Heteroscedasticity test was performed using Bruesch-Pagan Lagrange Multiplier (BP-LM test) and Likelihood Ratio (LR test) test (Gujarati and Porter, 2010). Table 3 shows that p-value is less than 0.05, meaning that the model variance structure is no heteroscedastic. While for autocorrelation test used Wooldridge test, in table 4 it shows that the value of p-value is less than 0.05, indicating no autocorrelation.

Table 2. *Correlation Coefficient between Variables*

	ROA	NPF	CS	LNGDP	INF	DUMNPF	DUMCS
ROA	1.0000						

NPF	0.0976 0.0318	1.0000					
CS	0.1254 0.0057	0.1790 0.0001	1.0000				
LNGDP	0.0707 0.1203	0.6113 0.0000	0.4732 0.0000	1.0000			
INF	0.1156 0.0109	0.5916 0.0000	0.5215 0.0000	0.7265 0.0000	1.0000		
DUMNPF	0.0718 0.1146	0.6443 0.0000	0.1586 0.0000	0.6314 0.0000	0.6088 0.0000	1.0000	
DUMCS	0.0939 0.0388	0.1923 0.0000	0.6395 0.0000	0.5246 0.0000	0.5450 0.0000	0.2445 0.0000	1.0000

Table 3. *Heteroscedasticity Test*

Breusch-Pagan Lagrange Multiplier Panel Heteroscedasticity Test
Ho: Panel Homoscedasticity - Ha: Panel Heteroscedasticity Lagrange Multiplier LM Test = 1820.64646 Degrees of Freedom = 10.0 P-Value > Chi2(10) = 0.00000
Greene Likelihood Ratio Panel Heteroscedasticity Test
Ho: Panel Homoscedasticity - Ha: Panel Heteroscedasticity Likelihood Ratio LR Test = 922.83602 Degrees of Freedom = 10.0 P-Value > Chi2(10) = 0.00000

Table 4. *Autocorrelation Test*

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
F(1, 10) = 26.284 Prob > F = 0.0004

Analysis

Emprical Result

In the F test statistic (global test), it is stated that the model is significant because the p-value < 0.05, so the model is acceptable in describing the dependent variable. With the R2 of 86%, meaning that the variation of ROA can be explained by variations of NPF, CS, LnGDP, INF, DumNPF, DumCS, while 14% explained by the variation

of other variables, which are not included in the model. Table 5 shows a summary of the dependent variable and its explanatory variables.

Table 5. *Summary of the dependent and explanatory variables*

VARIABLE	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
ROA	.217	2.661	-35.949	19.994
NPF	3.322	4.126	-13.355	16.793
CS	9.313	12.8153	0	82.622
LNGDP	13.212	.183	12.906	13.521
INF	2.907	2.732	.028	8.6
DUMNPF	2.810	4.228	-13.355	16.793
DUMCS	7.581	12.912	0	82.622

Determinants of Profitability: Multivariate Analysis

Estimation results of the research model, as follows:

$$ROA_{it} = -28.201 - .0498\ NPF_{it} + .036\ CS_{it} + 2.182\ LnGDP_{it} - .042\ INF_{it}$$

$$+ .099\ DUMNPF_{it} - .020\ DUMCS_{it}$$

The complete estimation results are presented in Table 6.

Table 6. *Estimation Result*

Equation								R2
ROA =	-28.201	- .0498 NPF*	+.036 CS**	+2.182 LnGDP	-.042 INF***	.099 DumNPF	-.020 DumCS	.96
	(0,69)	(.126)	(.038)	(1.68)	(.255)	(.124)	(.040)	

,,*** indicates significant at the 1 per cent, 5 per cent, and 10 per cent levels respectively*

The effect of NPF on ROA is negative. The regression coefficient marked as negative indicates the smaller of bad financing, and the greater tendency of the bank to make a profit. In some studies in the banking industry, non-performing loans (NPL) as credit risk proxies have a negative effect (Hidayat and Abduh, 2012; Misman, 2012; Setyawati, 2016; Sufian, 2011; Sufian and Habibullah, 2010; Sufian and Royfaizal Razali Chong, 2008; Wasiuzzaman and Gunasegavan, 2013; Wasiuzzaman and Tarmizi, 2009). The results of empirical tests, statistically show that credit risk resulted in low profitability, both in conventional and syariah banks (Hidayat and Abduh, 2012; Misman, 2012; Sapuan and Roly, 2015; Setyawati, 2016; Sufian, 2011; Sufian and Habibullah, 2010; Wasiuzzaman and Tarmizi, 2009). Bank management's concern about credit risk, can reduce future problems, because the biggest bank failures stem from the way banks recognize the weakness of assets

and create reserves to remove the write off of these assets (Sufian and Habibullah, 2010).

The capitalization rate (CS) has a positive effect to the profitability of Islamic banks in Indonesia. These empirical findings, provide support to the argument that a bank with good capitalization will reduce the cost of bankruptcy, thus reducing the cost of funding. Strong capital structure is also important for banks in developing countries, as it provides additional strength to avoid crises and enhance security for depositors during unstable macroeconomic conditions (Demirguc-Kunt and Huizinga, 1999; Goddard *et al.*, 2004; Kosmidou, Pasiouras and Tsaklanganos, 2007; Kosmidou and Zopounidis, 2008; Smith, Staikouras and Wood, 2003).

The effect of GDP on ROA is positive, consistent with previous research (Hassan and Bashir, 2003; Kosmidou et al., 2007; Kosmidou and Zopounidis, 2008), and lends support to the argument that economic growth and performance of the banking sector are positively. INF has a negative effect on ROA, consistent with previous research (Kosmidou and Zopounidis, 2008). But many studies have found a positive effect between inflation and bank profitability. The effect between inflation and performance is ambiguous, because it depends on whether the bank fully anticipates the level inflation in the future. If the inflation rate is fully anticipated by the bank's management, then the bank can appropriately adjust the interest rate to increase income faster than the cost, it will gain higher economic returns. If the inflation rate is not expected, banks may be slow in adjusting interest rates. As a result, the cost increases faster than the bank's earnings, which consequently has a negative effect on bank profitability (Athanasoglou *et al.*, 2005; Bourke, 1989; Kosmidou *et al.*, 2007; Kosmidou and Zopounidis, 2008; Molyneux and Thornton, 1992).

Islamic Bank Performance in Indonesia : Pre and Post Crisis

To examine the differences in Islamic banking performance in Indonesia during the pre- and post-crisis, using parametric (t-test) and nonparametric tests (Mann-Whitney [Wilcoxon] and Kruskall-Wallis). The results are presented in Table 7.

***Table 7**. Summary Parametric and Non-Parametric Tests*

	PARAMETRIC TEST		*NON-PARAMETRIC TEST*		
INDIVIDUAL TESTS	T – test		*Mann-Whitney [Wilcoxon Rank-Sum]test*		*Kruskall-Wallis Equality of Populations test*
ROA Pre-crisis Post-crisis	.083 .329	- 1.0116***	188,68 307,08	-9,558***	165.463***
NPF Pre-crisis Post-crisis	.804 5.421	- 14.754***	154,76 347,78	- 15,664***	118.244***

CS Pre-crisis Post-crisis	2.541 14.957	- 12.107***	153,71 349,04	- 15,768***	22.963**
LNGDP Pre-crisis Post-crisis	13.037 13.357	- 39.059***	132,96 373,95	- 18,881***	-0.000
INF Pre-crisis Post-crisis	.752 4.704	- 22.853***	152,39 350,64	- 15,530***	0.000

,,*** indicates significant at the 1 per cent, 5 per cent, and 10 per cent levels respectively*

Table 7 shows that the performance of Indonesian Islamic banks is better during post-crisis than pre-crisis. ROA, NPF, CS, were tested by parametric (t-test) and non-parametric (Mann-Whitney [Wilcoxon] and Kruskall-Wallis Test), obtained higher post-crisis than pre-crisis (statistically significant at 1 percent level). The same study was conducted on conventional banks in Indonesia. The findings showed that the profitability of conventional banks in Indonesia decreased during post-crisis and losses resulting from credit risk, but the capital strength post-crisis relatively better (Sufian and Habibullah, 2010).

But in table 6 shows when added dummy coefficient of NPF obtained 0.0492. That is suggest that NPF pre-crisis is higher by 0.0492 than post-crisis. This is not consistent with the skimping hypothesis, that banks goal at maximizing long-term profits, may decide rationally to set lower costs in the short term by skimping on resources devoted to underwriting loans and monitoring, but has consequences of a larger credit risk (Mamonov, 2013). In the case of the Islamic banking in Indonesia, the empirical findings did not show such a thing, because the first Islamic bank in Indonesia was established in 1992 and its existence until 2008 only five Islamic banks, so that is done by Indonesian Islamic bank is how to educate the public about its existence by increasing financing to the public.

Dummy coefficients of CS obtained 0.34. That is suggest that CS post-crisis is higher by 0.34 than pre-crisis. The empirical findings show that the assets of Islamic bank in Indonesia showed increased annually, making it the capital strength of Islamic banks to be better. This is supported by the increasing market share, although the increase is not significant (Setyawati *et al.*, 2015).

Conclusion

The Asian financial crisis has had a very negative impact on the banking sector. The crisis caused a sharp decline in the domestic currency and a negative effect on the bank's leading balance sheets. In addition, bank revenues are reduced because banks can not charge higher interest rates to corporate borrowers, resulting in a negative spread of interest rates, reduced net bank income, and reduced capital adequacy.

The findings in this study that Indonesian Islamic banks have relatively better performance after the crisis. The reason is the exposure of Islamic banking financing is still more directed to the domestic economic activities, so it does not have a high level of integration with the global financial system and not yet have high transaction sophistication level. But it should be noted that the increasing competition in the banking sector due to the success of the Indonesian banking market depends on its competitiveness. Therefore, the management of banks and other stakeholders must find ways to obtain optimal capacity utilization while utilizing their resources as well as possible. These resources are not wasted during the production of banking products and services. Future research may include some variables, such as taxes, currency rates. Besides, it can also be done research on the determinants of bank profitability, differentiated banks that have big and small profits.

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