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Does the 2008 global financial crisis matter for the determinants of conventional and Islamic banking performances in Indonesia?

M. Shabri Abd. Majid, Sri Ulina

Department of Islamic Economics, Faculty of Economics and Business,
Universitas Syiah Kuala, Banda Aceh, Indonesia

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Corresponding author:
mshabri@unsyiah.ac.id

Author's email:
Sri.ulina2016@gmail.com

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Abstract

Purpose – This study explores comparatively the effects of capital adequacy, non-performing loans/financing, liquidity, and operating expenses on Indonesia's conventional and Islamic banking performances between the pre-and post-2008 Global Financial Crisis (GFC) periods.

Methodology – The study selected the three respective largest conventional and Islamic banks as a sample of the study using a purposive sampling technique. The data for the pre-2008 GFC period (i.e., 2003 – 2008) and the post-2008 GFC period (i.e., 2009 – 2017) were analyzed using a panel multiple regression analysis.

Findings – The study documented different influences of capital adequacy, liquidity, non-performing loans/financing, and operating expenses on conventional and Islamic banking performances between the pre- and post-2008 GFC.

Research limitations – This study only investigated the banks' characteristics as the determinants of banking performances and compared merely the effects the pre- and post-2008 GFC periods.

Practical implications – To maintain and enhance their performances, the Islamic and conventional banks should adopt different financial policies between the normal and turbulent economic periods. The Islamic banks were in a better position amid the crisis, showing an urgent need for the government to further promote Islamic banks, as they could offer better solutions for economic stability.

Originality – The study examined a larger number of conventional and Islamic banks over more extended and updated study periods, namely six years (i.e., 2003-2008) before the 2008 GFC and ten years (i.e., 2009-2018) after the 2018 GFC. The study is among the first attempts to comparatively analyze the determinants of Indonesia's Islamic and conventional banking performances between the pre- and post-2008 GFC periods using the panel multiple regression analysis to arrive at more comprehensive and robust empirical evidence.

Introduction

The 2007-2008 financial crisis, also known as the 2008 Global Financial Crisis (GFC) has been labeled as the worst global recession of the 21st century and the most severe financial crisis since the 1930s' Great Depression (Tong & Wei, 2008; Majid & Kassim, 2009; Kassim & Majid, 2010; Kassim, Majid, & Hamid, 2011). The crisis that began with depreciation in the sub-prime

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mortgage market in the US has caused an international banking crisis and a mere collapse of the world financial system. According to Davies (2002), the 2008 GFC is among the 20 major crises in the world economy during the 21st century. This fact shows that, on average, the major financial crisis has repeatedly occurred once in every five years. The impact of the crisis has not only hit the financial and banking institutions in the developed economies, but also adversely impacted financial and banking institutions in the Asian emerging economies, including Indonesia (Majid & Kassim, 2009; Kassim, Majid, & Yusof, 2009; Kassim et al., 2011; Majid, 2018).

The presence of the 2008 GFC has devastated Indonesia's national economy and its financial and banking institutions, although the country was claimed to have a robust economic fundamental (Sugema, 2012). The Indonesian stock price fell by -48.41% from 2,627.3 points during the year 2008, and the value of market capitalization and trading volume sharply declined (Bank Indonesia, 2009). The crisis also hit the banking industry due to the withdrawals of investment funds in some companies by foreign investors. Consequently, the value of banking assets decreased either in the form of loans or securities. Likewise, the banks' capital adequacy also vividly dropped due to losses from the decline in the value of productive assets and an increase in non-performing loans (Sudarsono, 2009). As a result, three state-owned banks in the country requested liquidity assistance of IDR5 trillion from the government of Indonesia in October 2008 (Bank Indonesia, 2010).

In Indonesian context, Islamic banks operate in tandem with conventional banks in a dual banking system. Unlike conventional interest-based banking system, Islamic banks carry out their intermediary activities of collecting and channeling funds based on the interest-free system following Islamic tenets. Although Islamic banks are relatively new compared to conventional banks that have existed since the last three decades, they have experienced promising development since the launch of the first Islamic bank in the country, namely Bank Muamalat Indonesia in 1991. Since then, the number of Islamic banks has continuously increased. In 2015, there were 12 full-fledged Islamic banks and increased to 14 Islamic banks in 2017 due to the conversion of the Bank of Aceh and the Bank of West Nusa Tenggara (NTB) to full-fledged Islamic banks (Otoritas Jasa Keuangan, 2018).

Albeit Islamic banks have proven to be able to survive during the 1997 East Asian economic crisis, Islamic banks were also hit by the 2008 GFC. However, the effect of 2008 GFC on the Islamic bank was far smaller than their conventional counterparts. Kassim and Majid (2010) documented that although Islamic banks were vulnerable to the financial crises, but they were more stable and resilient during the 2008 GFC. This is contrary to popular belief so far that the Islamic economic system is fully protected from the crisis because of its interest-free nature.

The occurrence of 2008 GFC has positioned the banks in a more difficult situation, considering the fierce competition due to the decline in banking performance. Banks as intermediary financial institutions, which collect and distribute funds from and to the public, their sustainability are highly dependent on their ability to cope with the impacts of the crisis to maintain good performances. The degree of impact of the crisis and kinds of strategy to preserve performances are among the critical factors determining the success of banks' competition.

The competition between Islamic banks and conventional banks depends on the bank's financial performance. The financial performance of a bank reflects the health condition of the bank. By having excellent performance, banks can quickly provide better services and benefits to internal and external parties (Betharino, 2015). For this reason, research on measuring banking financial performance and its determinants during episodes of financial crises become increasingly crucial for the banks to identify the critical factors for enhancing their achievements and, in turn, the banks could fulfill all their functions, roles, and objectives. If the banks can shield themselves from the impact of the crisis, the banks would easily maintain excellent financial performance in the mid of the monetary crisis.

Studies on measuring Islamic banking performance have been conducted by many researchers focusing on many countries, including Indonesia. For example, Rosly and Bakar (2003) and Wasiuzzaman and Nair Gunasegavan (2013) have measured Islamic banking

performances using an average value in Malaysia. Meanwhile, Jaffar and Manarvi (2011) and Khan, Khan, and Tahir (2017) using a CAMEL (Capital, Asset Quality, Management, Earning, and Liquidity) approaches in Pakistan and Erol, Baklaci, Aydoğan, and Tunç (2014) in Turkey. However, all these studies only measured the performances of Islamic banks and failed to compare them with conventional counterparts.

In the context of Indonesia, the comparative financial performance of conventional banks and Islamic banks has been studied by Subaweh (2008), Ardiyana (2011), Setyaningsih and Utami (2013), Nugraha (2014), and Betharino (2015), but their sample selection consisting of only one conventional and Islamic bank over a shorter data periods. Meanwhile, the studies on the analysis of the determination of financial performance have also been conducted by Sukarno and Syaichu (2006), Aryati and Balafif (2007), Dewi (2010), Sabir and Habbe (2012), and Margaretha and Zai (2013), but their studies focused on a smaller number of the banks, using shorter data periods, and generally utilizing time-series multiple linear regression analysis.

Utilizing a smaller number of Islamic banks over a shorter data period and using the time-series regression analysis for panel data, the previous studies failed to provide comprehensive and robust empirical evidence of the determinants of financial performances of the conventional and Islamic banks. This is also the main weakness of the study by Majid, Musnadi, and Putra (2014) that explored the effect of profitability, loan risk, and debt management on the quality level of asset management of Islamic banks and conventional banks in Indonesia that utilized panel data, but in the data analysis instead, they used time series multiple linear regression analysis.

Motivated to fill up the existing gaps in the previous studies, this study aims to empirically and comparatively measure and analyze the effects of financial performances of conventional and Islamic banks between the pre- and post-2008 GFC periods. Thus, this study's major novelty is in terms of its examination of a larger number of conventional and Islamic banks over more extended and updated study periods, namely six years (i.e., 2003-2008) before the 2008 GFC and ten years (i.e., 2009-2018) after the 2018 GFC. Additionally, the novelty of the study is in terms of its comparative analyses between the pre-2008 GFC and post-2008 GFC using the panel multiple regression analysis to arrive at more comprehensive and robust empirical evidence.

The findings of this study are hoped to provide additional useful references for academicians and researchers about the comparative financial performances of Islamic and conventional banks and their determinants over the pre-and post-2008 GFC periods. The study results are also expected to be beneficial to the banks' management as a reference for policy-making to improve financial performance amid increasing competition in the banking industry under uncertain economic conditions.

Research Methods

Data

This population of this study comprises 115 conventional commercial banks and 13 full-fledged Islamic commercial banks in Indonesia. Of these banks, the three largest state-owned banks from each group were selected as the study sample using the purposive sampling technique. Only the banks that met the criterion of publishing monthly financial statements from 2003 to 2017 were investigated. Besides, the selected banks were the top-three largest state-owned commercial banks from each category based on their total assets. Thus, the three conventional banks investigated in the study include Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Mandiri (BM). In comparison, the three Islamic banks explored in the study comprise Bank Muamalat Indonesia (BMI), Bank Syariah Mandiri (BSM), and Bank Mega Syariah (BMS).

Specifically, this study empirically compares the determinants of conventional and Islamic banking performances between the pre-2008 GFC period (i.e., 2003 – 2008) and the post-2008 GFC period (i.e., 2009 – 2017). The data from the banks' financial statements in the form of financial ratios were gathered and utilized for the analysis. These secondary data were collected

from several sources, namely the reports from the *Otoritas Jasa Keuangan* (Financial Services Authority – FSA) and the websites of each sampled bank.

Measurement of the Variables

In this study, four determinants of financial performances of conventional and Islamic banks are investigated, namely capital adequacy, liquidity, non-performing loans or financing, and operating expenses. All the variables are measured in the ratio scale. For more details, variables, operationalized definitions, and their measurements are delineated in Table 1.

Table 1. Definitions and measurements of the variables

Variable	Definition	Measurement
Dependent: Financial Performance	An ability of a bank to produce net profit using its available assets (Rose & Hudgins, 2005).	$\text{ROA} = \frac{\text{Profit after Tax}}{\text{Total Assets}} \text{ x } 100\%$
Independent: Capital Adequacy	A comparison of the amount of capital owned by banks with risk-weighted assets (Kusumo, 2008).	$\text{CAR} = \frac{\text{Own Capital}}{\text{Risk Weigted Assets}} \text{x } 100\%$
Liquidity	An ability of a bank to meet its obligations, repay all of its depositors and provide loans or financing proposed by customers without delay (Hazzi & Kilani, 2013).	$\text{LDR} = \frac{\text{Total Loans}}{\text{Total Third Party Funds}} x100\%$ $\text{LDF} = \frac{\text{Total Financing}}{\text{Total Third Party Funds}} x100\%$
Non-Performing Loans (Financing)	An inability of customers to repay loans received from banks by a predetermined period (Aryati & Balafif, 2007).	$\text{NPL} = \frac{\text{Non} - \text{Performing Loans}}{\text{Total Loans}} x100\%$ $\text{NPF} = \frac{\text{Non} - \text{Performing Financing}}{\text{Total Loans}} x100\%$
Operating Expenses	A comparison of operating expenses with operating income aims to measure the efficiency of bank operations (Ongore & Kusa, 2013).	$\text{CIR} = \frac{\text{Operating Expenses}}{\text{Operating Income}} \text{x} 100\%$

Note: ROA is the Return on Assets, CAR is the Capital Adequacy Ratio, LDR is the Loan to Deposit Ratio, FDR is the Financing to Deposit Ratio, NPL is the Non-Performing Loan, NPF is the Non-Performing Financing, and CIR is the Cost to Income Ratio. The term "loan" is used for conventional banks, while the word "financing" is used for an Islamic bank.

Estimated Research Model

A comparative analysis of determinants of conventional and Islamic financial performances between the pre-2008 GFC and post-2008 GFC periods are estimated by regressing the conventional and Islamic financial performances as the dependent variables on the capital adequacy, liquidity, non-performing loans (financing), and operating expenses as the independent variables. In analyzing the panel data, three estimated models, namely the common effect model, the fixed effects model, and the random-effects model are usually used (Hamid, Majid, & Khairunnisah, 2017; Majid & Maulana, 2012; Arfan et al., 2017; Yani, Arfan, & Majid, 2020).

The general forms of panel multiple regression equations for the respected conventional banks (Equation 1) and Islamic banks (Equation 2) could be written as follows.

$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 LDR + \beta_3 NPL + \beta_4 CIR_{it} + \varepsilon_{it} \quad (1.1)$$

$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 FDR + \beta_3 NPF + \beta_4 CIR_{it} + \varepsilon_{it} \quad (1.2)$$

where *ROA* is the ratio of return on assets to measure financial performance, α_0 is an intercept, $\beta_1 - \beta_4$ are the estimated coefficient, *CAR* is the capital adequacy ratio to measure capital adequacy, *LDR* is the loan to deposit ratio to measure liquidity for the conventional bank, *FDR* is the financing to deposit ratio to measure liquidity for the Islamic bank, *NPL* is the non-performing loans to measure the credit risk management for the conventional bank, *NPF* is the

non-performing financing to measure the financing risk management for the Islamic bank, *CIR* is the costs to income ratio to estimate the operating expenses, *i* and *t* indicate a particular bank at a specific year, and *ε* is an error term.

Within the framework of the fixed-effect model, referring to Equations (1.1) and (1.2), the panel regression models could be re-rewritten as follows:

$$ROA_{it} = \alpha_i + \beta_1 CAR + \beta_2 LDR + \beta_3 NPL + \beta_4 CIR_{it} + \varepsilon_{it} \quad (2.1)$$
$$ROA_{it} = \alpha_i + \beta_1 CAR + \beta_2 FDR + \beta_3 NPF + \beta_4 CIR_{it} + \varepsilon_{it} \quad (2.2)$$

The subscript *i* in the Equations (2.1) and (2.2) in the intercept (*a*) shows the likelihood of the data to have varying values due to distinctive features of different investigated banks, such as management styles and philosophy (Majid and Maulana, 2012). Commonly, the dummy variables were introduced to confine the divergent intercepts. In this case, the fixed-effect model should be the most appropriate model to be adopted to anticipate the correlation between the individual definite intercept and regressors.

Nevertheless, the fixed-effect model tends to reduce the number of degrees of freedom, and consequently lower the efficient parameter. To overcome this problem, the random-effect model introduces an error term that is timely and individually interdependences and assumes a stochastic intercept in its estimated panel regression model. If the data is found to random, the random effect model is the most appropriate to be assessed. Thus, referring to Equations (2.1) and (2.2), the random effect panel regression models could be re-rewritten as follows:

$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 LDR + \beta_3 NPL + \beta_4 CIR_{it} + \varepsilon_{it} + u_{it} \quad (3.1)$$
$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 LDR + \beta_3 NPL + \beta_4 CIR_{it} + w_{it} \quad (3.1.1)$$
$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 FDR + \beta_3 NPF + \beta_4 CIR_{it} + \varepsilon_{it} + u_{it} \quad (3.2)$$
$$ROA_{it} = \alpha_0 + \beta_1 CAR + \beta_2 FDR + \beta_3 NPF + \beta_4 CIR_{it} + w_{it} \quad (3.2.1)$$

This study will select the best-suited models out of the above-mentioned panel regression models for data analysis using the following tests, namely: 1) The Chow test is conducted to choose between the common- and fixed-effect models. 2) The Lagrange Multiplier test is conducted to select between the common- and the random-effect models. 3) The Hausman test is performed to choose between the fixed- and random-effects models.

From the results of the tests, an appropriate model will be selected to estimate the determinants of financial performances both for Islamic and conventional banks. The above-proposed panel regression models would be estimated four times; twice is conducted to measure and analyze the determination of the performance of conventional banks for the pre- and post-2008 GFC periods, and twice to measure and analyze the determinants of the performance of Islamic banks for the pre- and post-GFC periods.

Results and Discussion

This section reports and discusses the findings of the study, comprising descriptive statistics, correlation coefficients, the estimated determinations of banks' financial performances, and their implications.

Descriptive Statistics

Descriptive statistics that are reported in Table 2 describes the maximum, minimum, mean, and standard deviation values of each variable. As reported in Table 2, on average, the financial performances of conventional banks have declined by -39.75% from 5.56 points in the pre-2008 GFC to 3.35 points in the post-2008 GFC, as shown by the ratio of Return on Assets (ROA). Similarly, the financial performances of Islamic banks have also declined by -39.67% from 2.42 points in the pre-2008 GFC to 1.46 points in the post-2008 GFC. These findings show that the 2008 GFC has deteriorated the performances of both conventional and Islamic banks. However, the decline in the financial performances of conventional banks was higher than in Islamic

banking performances. These findings imply that, to some extent, the Islamic banks were more stable and resilient to the 2008 GFC. The practices of Islamic banks, which are interest-free and assets-based, are believed to contribute to the smaller changes in their performances in the post-2008 GFC. These findings are in line with previous studies by Kassim and Majid (2010). They documented evidence of the superiority of Islamic banks over their conventional counterparts during the 1997 East Asian economic crisis and the 2008 GFC.

Table 2. Descriptive statistics

Variable	Pre-2008 GFC: 2003-2008				Post-2008 GFC: 2009-2017			
	Min	Max	Mean	Std. Dev	Min	Max	Mean	Std. Dev
Conventional Bank								
ROA	2.53	11.84	5.56	2.78	1.11	5.15	3.35	0.87
CAR	25.52	46.17	35.94	3.37	12.02	22.96	17.27	2.55
LDR	77.09	163.31	113.42	24.16	59.15	94.00	81.56	8.79
NPL	8.25	32.10	14.52	5.65	0.32	6.35	2.18	1.38
CIR	22.06	179.76	158.29	22.47	57.46	88.36	70.35	6.47
Islamic Bank								
ROA	-0.89	5.97	2.42	1.33	-1.21	4.86	1.46	1.09
CAR	8.30	37.67	14.32	5.38	10.03	25.76	14.10	3.05
FDR	22.40	132.91	70.89	27.22	22.80	106.50	78.63	24.14
NPF	0.15	6.26	2.68	1.49	0.66	7.32	2.62	1.27
CIR	60.06	106.76	83.66	7.86	69.24	104.80	87.50	8.71

Furthermore, on average, the determinants of conventional banking performances, namely the capital adequacy (CAR), liquidity (FDR), non-performing loans (NPF), and operating expenses (CIR) of the conventional banks have also declined more than 50% from the pre- 2008 GFC to the post-2008 GFC periods. On the other hand, on average, capital adequacy and non-performing financing of Islamic banks have only declined about 2% from the pre-2008 GFC to the post-2008 GFC periods. Surprisingly, on average, the Islamic banking liquidity and operating expenses have increased by about 10% and 5%, respectively, from the pre-2008 GFC to the post-2008 GFC periods. These findings provide further pieces of evidence of the superiority of Islamic banks to their conventional banks. During the period 2009-2017 (post-2008 GFC), the Islamic banks have provided more financing to their customers, and consequently expediting the economic recovery. Islamic banks' ability to channel more financing to the real economic sector using equity-based contracts such as *mudharabah* and *musharakah* could further help the economy to exit from the financial crisis.

In terms of financing risk management, Islamic banks are found to be superior compared to conventional banks. This is reflected by the lower average value of the non-performing financing of Islamic banks compared to the conventional banks. This finding shows that Islamic banks have implemented a better financing risk management by selectively channeling their financing based on the profit-loss sharing principles, thereby minimizing their financing default (Hassan Al-Tamimi, Miniaoui, & Elkelish, 2015).

Finally, comparing to the conventional banks, Islamic banks have recorded higher operating expenses as compared to their conventional counterparts, as shown by the higher value of cost to income ratio. Thus, this indicates that Islamic banks have been less efficient in their operational activities. This finding could be partially due to the banks' smaller size, causing the banks to experience diseconomies of scale. Thus, this finding suggests the importance of Islamic banks to expand their capacities. For this purpose, the support from the government to invest more in Islamic banks is highly needed.

Correlation Coefficients

Table 2 reports the findings of the Pearson's correlation coefficients. The coefficient shows the strength of the association between investigated variables. As shown in Table 2, except for capital

adequacy (CAR), the performances of conventional banks (ROA) were recorded to have a significant correlation with liquidity (FDR), non-performing loans (NPL), and operating expenses (CIR) both in the pre- and post-2008 GFC periods at least at the 5% level of significance. However, the liquidity showed a positive correlation, while non-performing loans and operating expenses showed a negative correlation. These findings indicate that liquidity might contribute positively to the enhancement of conventional banking performances, while non-performing loans and operating expenses did not.

Similarly, the performances of Islamic banks were also documented to have a significant correlation with liquidity, non-performing loans, and operating expenses, at least at the 5% level of significance. However, their associations were found to be negative. These findings provide preliminary signals that these determinants adversely affected the performances of Islamic banks in both pre- and post-2008 GFC periods. Nonetheless, to ensure the direction of each determinant's effects on the banking performances, we should refer to the findings of estimated panel multiple regression, which will be reported and discussed in the next sub-section.

Table 3. Pearson's coefficients of correlation

	Pre-2008 GFC: 2003-2008					Post-2008 GFC: 2009-2017				
Variable	ROA	CAR	LDR/FDR[1]	NPL/NPF[2]	CIR	ROA	CAR	LDR/FDR[1]	NPL/NPF[2]	CIR
				Conventional Bank						
ROA	1.000					1.000				
CAR	-0.138 (0.294)	1.000				-0.057 (0.558)	1.000			
LDR	0.683*** (0.000)	-0.429*** (0.001)	1.000			0.275*** (0.004)	0.542*** (0.000)	1.000		
NPL	-0.532*** (0.000)	0.281** (0.030)	-0.483*** (0.000)	1.000		-0.260*** (0.007)	-0.205** (0.034)	-0.047 (0.632)	1.000	
CIR	-0.633*** (0.000)	0.004 (0.976)	-0.427*** (0.001)	0.375*** (0.003)	1.000	-0.752*** (0.000)	-0.027 (0.778)	-0.146 (0.133)	0.570*** (0.000)	1.000
				Islamic Bank						
ROA	1.000					1.000				
CAR	-0.117 (0.372)	1.000				0.050 (0.610)	1.000			
FDR	-0.018 (0.894)	0.099 (0.454)	1.000			-0.122 (0.209)	0.362*** (0.000)	1.000		
NPF	-0.206 (0.115	0.195 (0.136)	-0.044 (0.738)	1.000		-0.408*** (0.000)	0.002 (0.982)	-0.054 (0.582)	1.000	
CIR	-0.878*** (0.000)	0.178 (0.172)	0.023 (0.860)	0.061 (0.646)	1.000	-0.723*** (0.000)	0.204** (0.034)	0.254*** (0.008)	0.551*** (0.000)	1.000

Note: *** and ** indicate significance at the 1% and 5% levels, respectively.

Conventional and Islamic Banking Performances between the Pre- and Post-2008 GFC Periods

A panel multiple regression analysis is estimated to measure and analyze the effects of capital adequacy, liquidity, non-performing loan/financing, and operating expenses on the conventional and Islamic banking performances between the pre- and post-2008 GFC. The estimation of the panel regression model is conducted four times; twice is undertaken to measure and analyze the determination of the performance of conventional banks for the pre- and post-2008 GFC periods, and twice to measure and analyze the determinants of the performance of Islamic banks for the pre- and post-GFC periods.

Of the three types of panel estimation models, only the common- and the fixed- effect models were found to be likely suitable for estimating the data in this study. In contrast, the random effect model could not be estimated at a smaller number of cross-sections than the number of researched variables. Therefore, the selection of the best model between the common-effect model and the fixed effect model is tested using a Chow test. The test showed that the fixed effect model is the most suitable model for further data analyses. Table 4 reports the findings of the estimated fixed-effect model.

As observed from Table 4, the study found significant simultaneous effects of capital adequacy, liquidity, non-performing loan/financing, and operating expenses on the performances of both conventional banks and Islamic banks at the 1% level of significance during the pre- and post-2008 GFC periods. The estimated coefficients of determination (Adjusted-R^2) of 0.7789 and 0.6449 for the conventional banks in the pre- and post-2008 GFC periods, respectively, signify that the variations in the conventional banking performances were explained 77.89% and 64.49% by the investigated determinants during the pre- and post-2008 GFC periods, respectively. Meanwhile, the rest 22.11% and 35.51% of the changes in the conventional banking performances during the pre- and post-2008 GFC periods were explained by other variables beyond our estimated model, such as other banks' characteristics and macroeconomic variables (Chowdhury, Haque, & Masih, 2017).

Table 4. Determinants of conventional and Islamic banks' performances: Pre-2008 GFC versus post-2008 GFC periods

Variable	Pre-2008 GFC: 2003-2008			Post-2008 GFC: 2009-2017		
	Coefficient	t-stats	Prob.	Coefficient	t-stats	Prob.
Conventional Bank						
Constant	-0.508	-1.067	0.291	12.094***	20.568	0.000
CAR	1.262***	3.677	0.000	-1.189***	-5.346	0.000
LDR	-0.005**	-2.476	0.016	0.003	0.892	0.374
NPL	-0.010	-1.581	0.119	-0.096**	-2.094	0.039
CIR	-0.005***	-2.956	0.004	-0.077***	-13.499	0.000
Diagnostic Tests	F-stats = 35.650 Prob. = 0.000 D-W = 1.25 Adj-R^2 = 0.7789			F-stats = 181.420 Prob. = 0.000 D-W = 1.600 Adj-R^2 = 0.6449		
Islamic Bank						
Constant	12.113***	20.005	0.000	10.700***	10.256	0.000
CAR	1.296***	2.785	0.007	0.047	0.127	0.899
FDR	1.305***	4.583	0.000	0.003	1.258	0.211
NPF	-0.082	-0.787	0.434	0.166***	2.757	0.007
CIR	-0.075***	-4.866	0.000	-0.115***	-12.835	0.000
Diagnostic Tests	F-stats = 85.310*** Prob. = 0.000 D-W = 0.640 Adj-R^2 = 0.2493			F-stats = 43.190*** Prob. = 0.000 D-W = 0.540 Adj-R^2 = 0.7029		

Note: *** and ** indicate significance at the 1% and 5% levels, respectively.

Meanwhile, the estimated coefficients of determination for Islamic banks of 0.2493 and 0.7029 indicate that the variations in the Islamic banking performances were explained by 24.93% and 70.29% of the investigated determinants during the pre- and post-GFC periods, respectively. In comparison, the rest of 70.07% and 29.71% were explained by other internal and external factors affecting the banking performance that were not included in our estimated models. These findings further show that the estimated value of Adjusted-R^2 for Islamic banks during the post-2008 GFC period is found to be higher than their conventional counterparts, implying a more remarkable ability of determinants to predicts the changes in Islamic banking performances than those in the conventional banking performances.

Furthermore, Table 4 also illustrates that capital adequacy has a significant positive effect on conventional banks' performance during the pre-2008 GFC period, but the effect turned to become negative after the post-2008 GFC period at a significant level of 1%, respectively. This estimated value signifies that for every 100% increase in capital adequacy, it has contributed to the rise in the conventional banking performances by 126.2% in the pre-2008 GFC period, but caused a decline in their performances by -118.9% in the post-2008 GFC period, *ceteris paribus*. The decline in capital adequacy of the conventional banks from the pre-2008 GFC period to the post-2008 GFC period contributed to changes in the direction of the effect of capital on banking performance from positive to become negative. These findings show that the 2008 GFC's presence has reduced the adequacy of banking capital, which in turn caused the conventional banking performances to decline. This finding is in line with the previous studies conducted by

Sukarno and Syaichu (2006) and Ongore and Kusa (2013), who found a significant effect of capital adequacy on banking performance.

On the other hand, capital adequacy was found to have a significant positive influence on Islamic banking performances during the pre-2008 GFC period at the 1% level, but the effect turned to become insignificant in the post-2008 GFC period. This finding indicates that the capital adequacy of Islamic banks was able to make a real contribution to the enhancement of their performance by 1.296 units during the pre-2008 GFC period, but a small decline in the capital adequacy of the Islamic banks during the post-2008 GFC has caused insignificant changes in their performances. These findings show a better ability of Islamic banks to manage capital adequacy compared to their conventional counterparts during the 2008 GFC. In other words, a relatively smaller decline in capital adequacy could not change the Islamic banking performances. This finding is in harmony with previous studies conducted by Dewi (2010) and Sabir and Habbe (2012), who documented a positive contribution of prudent capital management on the Islamic banks' performance.

Moreover, the study recorded a significant negative influence of liquidity on the conventional banks' performance at the 1% significance level during the pre-2008 GFC period, but the effect turned to become insignificant after the 2008 GFC period. When the banks could accumulate more funds from the third party (depositors) but failed to channel them to the creditors, their accumulated profits from loan interest would, finally, decline too. However, in the post-2008 GFC period, the conventional banks have reduced their credits to the customers have prevented their performances from further weakening.

Meanwhile, the study found a significant effect of financing on the Islamic banking performance in the pre-2008 GFC period with an estimated value of 1.305. This finding shows that an increase in financing by 100% has caused the banking performance to increase by 130.5%. In comparison to the conventional banks, this finding indicates a better ability of Islamic banks to channel their funds collected the depositors to the creditors have caused their performances to increase in the pre-2008 GFC period. Thus, the higher the profits generated by the banks, the better their financial performances. However, a small increase in their financing in the post-2008 GFC period has an insignificant contribution to promote their performances. These findings also show that the presence of the crisis has changed the landscape of the banking industry in Indonesia. This finding is consistent with the previous studies conducted by Hassan Al-Tamimi (2010), Sabir and Habbe (2012), and Margaretha and Zai (2013), who found the importance of liquidity in improving banking performance.

The study also documented the insignificant effects of non-performing loans or non-performing financing on the performances of conventional and Islamic banks, respectively, during the pre-2008 GFC period. This finding shows that banks' credit or financing risk management has been neutral, thereby caused an insignificant impact on banking performances (Chamberlain, Hidayat, & Khokhar, 2020). This finding is consistent with previous studies that found a negligible non-performing loan or non-performing financing on banking performance (Sukarno & Syaichu, 2006; Banik & Das, 2013).

In the post-2008 GFC, the non-performing loans have significantly caused a decline in conventional banks' performances with an estimated value of -0.096. This finding shows that an increase in non-performing loans by 100% has caused the performances of conventional banks to decline by 9.6%. This further indicates that the higher level of conventional non-performing loans has worsened their performances. The inability of conventional banks to impose prudent credit risk management is believed to partially cause a decline in banking performances.

On the other hand, non-performing financing is surprisingly found to have a significant positive effect on the performance of Islamic banks with an estimated value of 0.166 at a significance level of 1%. This finding shows that an increase in non-performing financing by 100% has contributed to the rise in Islamic banking performance by 16.6%. This is mainly due to a manageable amount of non-performing financing provided by the Islamic banks to their customers in the post-2008 GFC period. Thus finding shows that although the non-financing performances of Islamic banks have slightly increased from the pre-2008 GFC period to the

post-2008 GFC period (Table 2), but it still could contribute to the improvement of the banking performance. This could happen simply because Islamic banking products are based on profit-loss sharing principles and prudent financing risk management adopted by Islamic banks. Our finding of the positive effect of the non-performing financing to the Islamic banking performance in the post-2008 GFC period is in harmony with the discovery of the previous study by Sabir and Habbe (2012).

Finally, as illustrated in Table 4, a similar significant negative effect of operating expenses on the conventional and Islamic banking performances were found for both pre-and post-2008 GFC periods at a significance level of 1%. These findings show that a more substantial amount of operating expenses has harmed banking performances and vice versa. When the operational costs to be borne by the banks are high, then these costs would reduce the net profits and, consequently, lower the banking performances. Conversely, if the banks operated efficiently, the banks would gain a higher advantage since the banks worked at the lowest level of expenses. The inability of the management of both conventional and Islamic banks to optimize their operational activities with a practical level has deteriorated performances of the banks both in the pre-and post-2008 GFC periods. These findings are in accordance with the previous studies that documented a negative effect of operating expenses on the performance of conventional banks (Sukarno & Syaichu, 2006; Margaretha & Zai, 2013) and performance of the Islamic banks (Wibowo & Syaichu, 2013).

Overall, our findings showed that Islamic banks were more stable and resilient in responding to the 2008 GFC. Our results also showed the importance of banking management to oversee capital adequacy, liquidity, non-performance loan or financing, and operating expenses if they intend to manage and improve their financial performances as these factors are documented to affect the performances of both conventional and Islamic banks simultaneously. Meanwhile, each determinant has a different effect on conventional and Islamic banking performances between the pre- and post-2008 GFC. These findings show that the 2008 GFC occurrence has changed the landscape of the banking industry (Rachdi & Mokni, 2014). The conventional and Islamic banks have responded differently to the crisis to maintain as well as improve their performances due to the changing effects of the determinants of banking performance from the pre-2008 GFC period to the post-2008 GFC period. Ensuring an adequate amount of capital and funds' liquidity would promote banking performance. Having a prudent credit for financing risk management by selectively channel their funds to the creditors would also ensure the improvement of banking performances. Finally, to improve their performances, the banks should impose efficient measures for their operational activities.

Conclusion

This study measured and comparatively analyzed the determination of performances of conventional and Islamic banks in Indonesia between periods of the pre- and post-2008 GFC. The study documented that capital adequacy has positively affected both conventional and Islamic banking performances in the pre-2008 GFC period. However, in the post-2008 GFC period, the capital adequacy has negatively affected conventional banking performances and insignificantly affected conventional banking performances. As for the liquidity, the study documented the negative and positive effects on performances of conventional and Islamic banks, respectively. Meanwhile, in the pre-2008 GFC period, liquidity has an insignificant impact on both conventional and Islamic banking performances.

Furthermore, the study recorded the significant adverse effects of non-performing loans on conventional banking performances in both pre- and post-2008 GFC periods. On the other hand, non-performing financing is found to have a significant adverse effect on Islamic banking performances in the pre-2008 GFC period, but the result turned to become significantly positive in the post-2008 GFC period. Finally, the operating expenses have similar negative effects on the conventional and Islamic banking performances during the pre- and post-2008 GFC periods.

Overall, our findings show that the occurrence of the 2008 GFC has changed the direction of effects of capital adequacy, liquidity, and non-performing loans/financing on the

performances of conventional and Islamic banks in Indonesia. In other words, the crisis has, to some extent, changed the landscape of the banking industry in Indonesia. However, the Islamic banks were documented to be in a better position when they were hit by the financial crisis, implying more stability and resilience of Islamic banks over their conventional counterpart during the financial crisis.

Our findings suggest the importance of expanding the interest-free Islamic banking industry to create more stability of the national economy due to the just and fair practices of the Islamic banking system operated based on Islamic tenets. This could be done by ensuring the banking institutions abide stipulated regulation provided by the government to maintain the stability of their performances. The government is advised to support Islamic banks by placing more funds in the Islamic banks to ensure their capital adequacy.

Future studies are suggested to add more banks and consider incorporating both internal and external factors determining banking performances in their analysis to enrich findings on this topic. Comparing the effects of more episodes of economic crises in the study would also provide a better picture of the impacts of crises on banking performances, both conventional and Islamic.

Author Contributions

Conceptualization: M. Shabri Abd. Majid
Data curation: Sri Ulina
Formal analysis: M. Shabri Abd. Majid
Investigation: Sri Ulina
Methodology: M. Shabri Abd. Majid
Project administration: M. Shabri Abd. Majid
Supervision: M. Shabri Abd. Majid
Validation: Sri Ulina
Visualization: Sri Ulina
Writing – original draft: Sri Ulina
Writing – review & editing: Sri Ulina and M. Shabri Abd. Majid

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