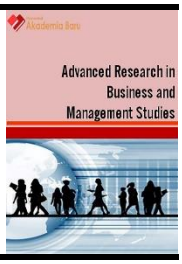
Penerbit Akademia Baru

Journal of Advanced Research in Business and Management Studies

Journal homepage: www.akademiabaru.com/arbms.html
ISSN: 2462-1935



2007-2009 Global Financial Crisis and Malaysian Banks Profitability: An Empirical Analysis

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ARTICLE INFO

Article history:
Received 23 August 2019
Received in revised form 9 September 2019
Accepted 2 October 2019
Available online 8 October 2019

Keywords:
Bank profitability, 2007 global financial crisis, Malaysian banks

ABSTRACT

This study explores the impact of 2007-2009 global financial crisis on Malaysian bank profitability and examines bank-specific and macroeconomic determinants of bank profitability for the period 2006 to 2012. The results reveal that the 2007-2009 global financial crisis does not give an impact on Malaysian bank profitability, suggesting that Malaysia has a sound banking system that insulated them from the crisis. The findings also show that bank capital, credit risk and bank size determine bank profitability in Malaysia. For macroeconomic variable, inflation exhibits a positive and significant relationship with the return on asset (ROAA), indicating that economic condition play a role in influencing bank profitability in Malaysia. The results offer important policy implication; it is evident that bank capital plays important role in banking sector not only to increase profitability, but also acts as a line of defence against risks of failure particularly during the crisis period. Malaysian banks should adhere to international standards (Basel III) in order to remain strong in facing the challenging economic environment nowadays

1. Introduction

The worldwide financial meltdown in mid-2007 had resulted in the collapse of two dominant American banks namely Lehman Brother and IndyMac Bank. Meanwhile in the United Kingdom, BNP Paribas and Northern Rock endured a bank run when depositors and investors withdrew and liquidated their assets to avoid loss. The collapsed in the US house prices kick started the crisis and the subsequent contractionary monetary policy by the Feds worsens the turmoil [14]. In the span of just 2 years, the crisis had cost the global economy USD15 trillion. While the crisis emerged in the US subprime, the effects from weak consumer demand in the United States had spread into the major economies such as the European Union and Japan.

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It is generally accepted that the US financial crisis has marginal impact on developing countries like Asia through the contraction of trade and FDI inflows [24]. For an open economy like Malaysia with exports and imports totaling two times the national GDP, the decline in consumption from the US, EU and Japan had resulted in 5% drop in total manufactured exports between 2007 and 2008. The overall GDP growth rate of Malaysia slowed down to 0.1% in the last quarter of 2008 and contracted by -6.2% in the first quarter of 2009 before falling further by -3.9% in the second quarter of 2009.

The 2007 crisis has also had an impact on the Malaysian financial sector. Given the bleak outlook in the economy and drop in consumer confidence, the credit market has been adversely affected. Consequent upon the weak confidence, loan approval has registered continuous decline. Particularly since September 2008, the growth in loan approval has been negative (-2.9%) and has continued to decline, especially in the months of October 2008 (-14.4%) and November 2008. The decline in loan disbursement during the crisis period may give an impact on the Malaysian bank profitability as interest on loans is the major contributor of bank income.

Research on the impact of financial crisis on bank profitability has typically focused on countries/region such as Indonesia, Switzerland, Pakistan, France, MENA countries, and Gulf Cooperation Council (GCC) region [11, 12, 13, 17, 23, 31]. In this respect, limited studies empirically analyze the impact of the recent financial crisis on the bank profitability in Malaysia. Although there is exist a study by Khoon and Mah-Hui [25], their study however, use descriptive analysis, thus lacking the evidence to extract useful information on factors influencing bank profitability particularly during the crisis period. Utilizing econometric modelling, this paper attempts to examine the impact of the 2007-2009 global financial crisis on bank profitability in Malaysia besides examining the bank-specific and macroeconomic determinants of Malaysian bank profitability.

The findings conclude that the 2007-2009 global financial crisis does not give an impact on Malaysian bank profitability. This confirms a report by Bank Negara Malaysia [6], where Malaysian financial sector was well insulated throughout the period of global financial crisis due to limited exposure to subprime-related assets, having a sound banking system, high bank capitalization, and ample liquidity in the market. The findings also suggest that bank capital, credit risk, bank size, and inflation determine the profitability of Malaysian commercial banks in the period studied. The results offer important policy implication; it is evident that bank capital plays important role in banking sector not only to increase profitability, but also acts as a line of defense against risks of failure particularly during the crisis period. Malaysian banks should adhere to international standards (Basel III) in order to remain strong in facing the challenging economic environment nowadays.

2. Literature review

2.1 Global financial crisis and bank profitability

There are several studies examine the impact of recessions on bank profitability such as Sufian and Habibullah [31], Dietrich and Wanzenried [17], Bolt *et al*., [10], Caporale *et al*., [12], Chaudhary and Abbas [13], Bouzgarrou *et al*., [11] and Hussien *et al*., [23]. Sufian and Habibullah [31] examined the impact of Asian financial crisis on Indonesian bank profitability during the period 1990-2005. The results show that Asian financial crisis has a negative and significant impact on the profitability of Indonesian banks. In this respect, Indonesian banks are more profitable during the pre-crisis compared to the post-crisis and crisis periods. Dietrich and Wanzenried [17] examined the determinants of Switzerland bank profitability before and during financial crisis. The findings suggest that the 2007-2009 global financial crisis has a significant impact on Swiss banking profitability.

Bolt *et al*., [10] examined the impact of 2008 banking crisis on the pro-cyclicality of banks profit of 17 countries. The results show that bank profit behaves strong pro-cyclical during the recession and the contraction in GDP has reduced the return on assets (ROA) of the selected sample. Caporale *et al*., [12] investigated the effects of global financial crisis on the performance of domestic and foreign banks in the MENA region and find that the crisis negatively affects foreign banks than that of domestic banks. On the contrary, Chaudhary and Abbas [13] did not find any significant impact of the global financial crisis on the efficiency and performance of commercial banks in Pakistan.

Bouzgarrou *et al*., [11] examined the profitability of domestic and foreign banks in France before and during the recent financial crisis. Using a sample of 170 commercial banks for over the period 2000-2012, the findings suggest that foreign banks are more profitable than domestic banks, especially during the financial crisis.

Hussien *et al*., [23] investigated the profitability of Islamic banks (IBs) of the Gulf Cooperation Council (GCC) region during 2008 global financial crisis and conclude that the performance of GCC IBs was significantly influenced by capital adequacy, credit risk, financial risk, operational efficiency, liquidity, bank size, gross domestic product, growth rate of money supply, bank sector development and inflation rate.

In summary, existing studies conclude that the financial crisis has reduced the bank profitability of the affected countries. In this regard, there are relatively little researches that empirically examine the effects of 2007-2009 global financial crisis on Malaysian bank profitability, thus, this study attempts to fill the gap.

2.2 Literature on determinants of bank profitability

The existing literature on bank profitability is quite enormous and provides a comprehensive examination of the effects of bank-specific, industry-specific, and macroeconomic determinants on bank profitability. Most of the studies investigate this topic within a single-country setup or a small group of countries from either developed or developing countries. The findings are relatively mixed due the differences in datasets used, time period, and economic environment.

Employing a sample of group of countries, Demirguc-Kunt and Huizinga [15] and Pasiouras and Kosmidou [27] found that loans, credit quality, and size have a positive and significant impact on bank profitability. In contrast, Sufian and Chong [29] who examined the single-country sample suggest that size and credit quality has a negative relationship with the bank profitability of Philippines banks. Athanasoglou *et al*., [5] who examined the effects of bank-specific determinants on bank profitability in Greek for over the period 1985–2001, find that the credit quality has a negative relationship with the bank profitability. Contrary to Athanasoglou *et al*., [5], Alexiou and Sofoklis [3] who also investigate bank-specific determinants on Greek banks profitability suggest that credit quality has a negative relationship with the bank profitability for the period 2000-2007 while size has a positive relationship with the bank profitability.

Sufian and Habibullah [32] investigated the influence of bank specific determinant on the profitability of the Chinese banking sector. The empirical findings suggest that credit quality has a significant and positive relationship with bank profitability levels. Lee and Hsieh [26] examined the impact of bank capital on profitability in Asian countries for over the period 1994 to 2008. The results suggest that credit quality and loan intensity have a significant and positive relationship with the Asian banks profitability.

In Pakistan, Ali and Puah [4] examined the internal determinants of bank profitability and stability of Pakistan banking sector using a sample of 24 commercial banks for the period 2007-2015. The

findings conclude that bank size, credit risk, funding risk, and stability have statistically significant impacts on bank profitability.

Adelopo *et al*., [1] explored the relationship between bank-specific, macroeconomic factors and bank profitability before (1999-2006), during (2007-2009), and after (2010-2013) the financial crisis in West African States. Results show that there is a significant relationship between bank-specific determinants (size, cost management, and liquidity) and bank profitability (ROA) before, during, and after the financial crisis.

Examining the determinants of bank profitability in Vietnam, Batten and Vo (2019) find that bank size, capital adequacy, risk, expense, and productivity have strong impacts on Vietnamese banks profitability.

Previous studies also include macroeconomics factors as determinants for bank profitability such as inflation, GDP, and interest rate. Most studies conclude that there is a positive relationship between inflation, GDP and bank profitability (e.g.; Athanasoglou *et al*., [5]; Alexiou and Sofoklis [3]; Dietrich and Wanzenried [17]; and Sufian and Habibullah [32]). In contrast, Goddard *et al*., [20] found that GDP is negatively related to the bank profitability and Demirguc-Kunt and Huizinga [15] suggest that inflation has a negative relationship with bank profitability.

From the review of the existing literature, there are two broad sets of variables affecting bank profitability in the majority of countries around the world; bank specific and macroeconomics factors. The bank specific variables generally employed are total loans, credit quality, and size while macroeconomics factors usually included are GDP, inflation, employment rate, and interest rate.

3. Methodology

3.1 Sample and data

Commercial banks are selected as sample compared to the other types of banks because they are the main players in the financial system; the largest and the most significant providers of funds [30]. There are 27 commercial banks operating in Malaysia over the period 2006-2012. However, only 20 banks are employed because 7 banks have to be dropped out from the sample due to unavailability of their data. Out of 20 banks, 8 are local banks and 12 are foreign banks. The bank specific data are extracted mainly from balance sheet and income statement of the respective bank, which are obtained primarily from annual reports. The macroeconomics data are taken from the DataStream database and the World Development Indicators (WDI). The dataset is an unbalanced panel spanning from 2006 until 2012. The period of analysis covers global financial crisis in 2007-2009. Table 1 exhibits the final list of banks in the sample, where foreign banks encompass 60% of the sample.

3.1 Model and Variable

With some modifications, this study follows the model developed by Dietrich and Wanzenried [17] and Athanasoglou *et al*., [5] who also investigate the relationship between global financial crisis and bank profitability, as well as bank specific and macroeconomics determinants of bank profitability in Switzerland and Greece, respectively. The model is shown in Equation (1):

$$ROAA_{it} = \beta_0 + \beta_1 GFC_t + \beta_2 CAP_{it} + \beta_3 SIZE_{it} + \beta_4 LLP_{it} + \beta_5 LOAN_{it} + \beta_6 INF_t + \beta_7 GDP_t + \beta_8 FOREIGN_{it} + u_{it} \quad (1)$$

where:

$ROAA_{it}$ = Net income of bank i at year t / average total assets

GFC_{it} = 1 for 2007-2009, 0 otherwise.

CAP_{it} = Equity of bank i at year t / average total assets
$SIZE_{it}$ = Logarithm of total assets of bank i at year t
LLP_{it} = Loan loss provisions of bank i at year t / total loans
$LOAN_{it}$ = Total loans of bank i at year t / total assets
INF_t = Inflation rate at year t.
GDP_t = Growth of domestic product rate at year t.
$FOREIGN_{it}$ = 1 for foreign bank, 0 for local bank.
u_{it} = the error term of the regression

$ROAA_{it}$ = Net income of bank i at year t / average total assets. In this study, ROAA is used as a dependent variable to measure bank profitability. ROAA is chosen over ROE because asset size has been well accepted as a basis in establishing internal ranking of financial institutions worldwide. In addition, assets figure also incorporates the equity figure, since assets acquisition is financed by a combination of equity and debts. In other words, ROAA is primarily an indicator of managerial efficiency as it shows how well bank management uses the capital to acquire assets and utilize them to generate earnings. As suggested by Dietrich and Wanzenried [17], the ROAA reflects the ability of bank management to generate profit from the bank's assets.

GFC_{it} = 1 for 2007-2009, 0 otherwise. Empirical findings by Sufian and Habibullah [31], Dietrich and Wanzenried [17], and Caporale *et al*., [12] suggested that financial crisis has a negative impact on bank profitability. Following their studies, this study expects that the GFC dummy will have a negative relationship with the ROAA.

CAP_{it} = Equity of bank i at year t / average total assets. Bank capital is measured by equity over total assets. Existing studies such as Pasiouras and Kosmidou [27], Athanasoglou *et al*., [5], Alexiou and Sofoklis [3], Sufian [30], Sufian and Habibullah [32], and Lee and Hsieh [26] employed a ratio of equity to total assets to measure bank capital. Most studies conclude that banks with higher capital tend to have higher earnings. Thus, this study expects that CAP will have a positive relationship with ROAA.

$SIZE_{it}$ it = Logarithm of total assets of bank i at year t. Bank size is measured by logarithm of total assets. This study expects a positive relationship between SIZE and ROAA based on the arguments that larger banks tend to have higher earnings due to economies of scale (Demirguc-Kunt and Huizinga [15]; Alexiou and Sofoklis [3]; and Dietrich and Wanzenried [17]).

LLP_{it} = Loan loss provision of bank i at year t / total loans. Credit risk is measured by the ratio of loan loss provision to total loans. High credit risk will lead to the low profitability because high credit risk will signify more resources need to be allocated for credit underwriting and loan monitoring and this will tend to increase the bank cost. Consequently, bank profitability will decrease. Previous studies show that credit risk has an inverse relationship with bank profitability [3, 5]. Thus, this study expects that LLP has a negative relationship with ROAA.

$LOAN_{it}$ = Total loans of bank i at year t / total assets. Loan is measured by total loans to total assets. Lee and Hsieh [26] suggested that higher level of loans will generate more profits. Thus, this study predicts that LOAN will have a positive relationship with ROAA.

INF_t = measured by annual percentage change of consumer price index at year t. Athanasoglou *et al*., [5] found that inflation rate positively affecting the profitability of banks. They conclude that the extent to which inflation impacts bank profitability depends on whether the extent of inflation is fully anticipated. If the inflation rate is fully anticipated by the bank managers, the bank can adjust interest rates appropriately to increase revenues faster than costs, which should have a positive impact on profitability. However, Demirguc-Kunt and Huizinga [15] suggested that banks in developing countries tend to be less profitable during the inflationary environments. Several studies such Alexiou

and Sofoklis [3], Pasiouras and Kosmidou [27], and García-Herreto *et al*., [19] recommended that inflation rate has a positive relationship with bank profitability. Following this, this study anticipates that INF will have a positive relationship with ROAA.

GDP_t = Growth domestic product at year t. Gross domestic product (GDP) is measured by an annual percentage change of Malaysian GDP by industrial origin. GDP growth is used as a control for cyclical output effects; where it is expected to have a positive influence on bank profitability. If GDP growth slows down, and, in particular, during recessions, credit quality deteriorates, defaults increase, thus bank returns will reduce. Demirguç-Kunt and Huizinga [15] found a positive correlation between bank profitability and business cycle. Thus, this study expects that GDP has a positive relationship with the ROAA.

$FOREIGN_{it}$ = 1 for foreign bank, 0 for local bank. This study also controls for the type of bank ownership, which is foreign and local bank since the sample comprises both local and foreign banks. Basically, foreign-owned banks have larger capital than the local banks, therefore it would be interesting to examine whether foreign banks in Malaysia are more profitable than the local banks during the period studied. Demirguç-Kunt and Huizinga [15] suggested that foreign banks have a positive relationship with bank profits compared to domestic banks in developing countries. Detragiache and Gupta [16] also found that foreign banks have a positive relationship with bank profitability during the Asian crisis. Thus, this study expects the FOREIGN dummy will have a positive relationship with the ROAA.

Table 1
List of banks in the sample

No	Bank	Ownership
1	Affin Bank Berhad	Local
2	Alliance Malaysia Berhad	Local
3	AmbankBerhad	Local
4	CIMB Bank Berhad	Local
5	Hong Leong Bank Berhad	Local
6	Malayan Banking Berhad	Local
7	Public Bank Berhad	Local
8	RHB Bank Berhad	Local
9	Bangkok Bank Berhad	Foreign
10	Bank of America Malaysia Berhad	Foreign
11	Bank of China (Malaysia) Berhad	Foreign
12	Citibank Berhad	Foreign
13	Deutsche Bank (Malaysia) Berhad	Foreign
14	HSBC Bank Malaysia Berhad	Foreign
15	J.P Morgan Chase Bank Berhad	Foreign
16	OCBC Bank (Malaysia) Berhad	Foreign
17	Standard Chartered Bank Malaysia Berhad	Foreign
18	Nova Scotia Malaysia Berhad	Foreign
19	Royal Bank of Scotland	Foreign
20	UOB Malaysia Berhad	Foreign

Source: Bank Negara Malaysia (2013)

All analyses are estimated using OLS, fixed effects, and random effects estimation, taking ROAA of each bank as the dependent variable. The fixed effect is used to control for unobservable behaviors of bank's specific characteristics such as management qualities, and bank policies that may affect bank profitability. Table 2 summarizes the variables used in this study.

Table 2
Variables list

No.	Variables	Definition	Expected sign
1	Return on asset (ROAA)	Net income divided by average total assets	
2	Global financial crisis (GFC)	1 for years 2007-2009, 0 otherwise	-
3	Bank capital (CAP)	Equity over total assets to measure capital adequacy ratio	+
4	Bank size (SIZE)	Logarithm of the total assets of each bank	+
5	Credit risk (LLP)	Ratio of loan loss provisions over total loans	-
6	Total loans (LOAN)	Total loans over total assets	+
7	Inflation rate (INF)	Annual percentage change of consumer price index	+
8	Gross domestic product (GDP)	Annual percentage change of Malaysian GDP	+
9	Bank ownership (FOREIGN)	1 for foreign bank, 0 otherwise	+

4. Results

Table 3 presents the descriptive statistics of the variables used in this study for overall period, 2006-2012 and global financial crisis period, 2007-2009. On average, the ROAA is approximately 3.2% for both periods. For bank specific determinants, the mean of bank capital (CAP) is 8.1% for overall period, and 7.9% for the crisis period. Bank size which is measured by logarithm of total assets is 17 on average. The average credit risk in the sample (LLP) is approximately 0.5% for 2006-2012 periods and increased to 0.6% in crisis period. This indicates that banks in the sample set aside more provisions during the crisis period to cover more expected loan losses. Total loans (LOAN) are 48% on average, indicating that 48% of total assets of Malaysian commercial banks are allocated to loans. The mean of inflation rate is approximately 2.6% for both periods, while, the average growth rate of real GDP has shown significant differences, where the average is 4.77% for 2006-2012 periods, but has dropped to 3.21% in crisis years. As shown in the Table 3, the lowest GDP rate is – 1.5% and the highest is 7.4 %.

Table 3
Descriptive statistics

Variable	2006-2012				2007-2009			
	Mean	Min	Max	Std dev	Mean	Min	Max	Std dev
ROAA	0.0321	0.0056	0.0785	0.0112	0.0316	0.0056	0.0530	0.0103
GFC	0.4285	0	1	0.4966	NA	NA	NA	NA
CAP	0.0816	0.0065	0.1954	0.0323	0.0789	0.0259	0.1662	0.0287
SIZE	17.18	13.94	19.65	1.59	17.12	14.06	19.55	1.57
LLP	0.0047	-0.0162	0.0441	0.0069	0.0059	-0.0101	0.0318	0.0068
LOAN	0.4835	0.0043	0.7500	0.2185	0.4725	0.0265	0.7324	0.2118
INF	2.6037	0.5833	5.4408	1.4947	2.6838	0.5833	5.4408	2.0538
GDP	4.7706	-1.5137	7.4250	2.6935	3.2056	-1.5137	6.2984	3.4189
FOREIGN	0.6	0	1	0.4917	0.6	0	1	0.4940

Correlation matrix of variables is presented in Table 4. The correlation coefficient is obtained by examining the null hypothesis of no correlation between explanatory variables. Baltagi [7] considered 0.8 as the limit value of the correlation coefficient to confirm the null hypothesis. If correlations between two variables are above 0.8, this study has to reject the null hypothesis; as it is not probable

to put the two variables in same model. As shown in the Table 4, all correlation coefficients of all variables are smaller than 0.8. These low correlation coefficients show that there is no problem of multicollinearity present.

Table 4
Cross-correlation matrix of variables

VARIABLE	ROAA	GFC	CAP	SIZE	LOAN	LLP	INF	GDP	FOREIGN
ROAA	1.0000								
GFC	-0.0182	1.0000							
CAP	0.1657	-0.0746	1.0000						
SIZE	0.2848	-0.0155	-0.0162	1.0000					
LOAN	0.2069	-0.0289	-0.2621	0.4797	1.0000				
LLP	0.2924	0.1489	-0.2755	0.1640	0.3145	1.0000			
INF	0.1241	0.0749	-0.0578	-0.0367	-0.0407	0.0137	1.0000		
GDP	0.0344	-0.5130	-0.0077	0.0076	-0.0355	-0.0607	0.3401	1.0000	
FOREIGN	-0.1906	-0.0108	0.0535	-0.6855	-0.3765	-0.2355	0.0048	0.0037	1.0000

Table 5
Regression results (2006-2012)

Independent variable	Predicted sign	Dependent variable: Return on assets (ROAA)			
		2006-2012			
		Model I (OLS)	Model II (OLS)	Model III (Fixed effects)	Model IV (Random effects)[1]
Constant		-0.0132 (-1.25)	-0.028* (-1.87)	0.2343*** (3.65)	0.0011 (0.04)
GFC	-	-0.0015 (-0.69)		-0.0017 (-0.95)	
CAP	+	0.1082*** (3.90)	0.1142*** (4.11)	0.0951* (1.77)	0.1466*** (4.03)
SIZE	+	0.0018*** (2.92)	0.0024*** (3.06)	-0.0130*** -3.67	0.0005 (0.37)
LOAN	+	0.0036 (0.76)	0.0042 (0.91)	0.0225 (1.65)	0.0120* (1.70)
LLP	-	0.5123*** (3.85)	0.5300*** (3.97)	0.2580** (1.96)	0.4466*** (3.64)
INF	+	0.0012** (1.94)	0.0011* (1.87)	0.0008 (1.53)	0.0011** (2.23)
GDP	+	-0.0001 (-0.34)	0.0000 (0.06)	0.0001 (0.16)	0.0000 (0.14)
FOREIGN	+		0.0030 (1.26)		-0.0000 (-0.02)
Adjusted R^2		0.2137	0.2205		
R-squared				0.0298	0.2136
F-statistic		6.20***	6.42***	7.96***	
Wald Chi^2					33.38***
No. of Observations		135	135	135	135

*Notes: Values in parentheses are t-statistics. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.*

[1] Random effects estimation was run because dummy foreign was omitted under fixed effects estimation.

Table 5 reports the regression results using OLS, fixed effects (controlling for firm effects), and random effects estimations for 2006-2012 periods.

Results in Table 5 show that GFC dummy is not statistically significant. This concludes that 2007-2009 global financial crisis does not give an impact on the Malaysian banks profitability. CAP is statistically significant and positively related to ROAA. This result similar with the findings by Pasiouras and Kosmidou [27], Athanasoglou *et al*., [5], Alexiou and Sofoklis [3], Sufian [30], Garcia-Herrero *et al*., [19], Goddard *et al*., [20], Sufian and Habibullah [32], Lee and Hsieh [26] and Batten and Vo [8]. This indicates that bank capital significantly influences bank profitability in Malaysia where the higher the bank capital the higher the profitability would be. As for the bank size, results in Model I and II shows that SIZE is highly and positively significant with the ROAA but turn out to be negatively related in Model III, after controlling for unobservable behaviours of bank's specific characteristics.

LOAN is insignificant across all models, while the credit risk variable (LLP) is highly significant and has a positive relation with the ROAA. This implies that banks with higher credit risk tend to have higher profitability. The coefficient on the credit risk however, contradicts with the earlier prediction of negative sign. This might explain that banks set aside more loan loss provisions due to higher loan growth, which has resulted in high profitability because banks gain more earnings via lending activity. For macroeconomic variables, only inflation (INF) exhibits a positive and statistically significant with the ROAA in Model I, II, and IV whereas GDP is not statistically significant at any levels. The positive coefficient of INF implies that the better the economic condition, the higher the profitability would be. Foreign bank (FOREIGN) dummy are not statistically significant at any levels. The insignificant coefficient indicates that foreign banks do not appear relatively more profitable, possibly because foreign banks operating in Malaysia are also subject to strict and similar regulations imposed by the Malaysian authorities to the local banks.

Table 6 reports the OLS, fixed effects, and random effects estimation of Model I, II, and III for the crisis years, 2007-2009. The findings show that bank capital (CAP) is statistically significant and positively related with the ROAA. Confirming the earlier analyses, the high capitalization of Malaysian banks has resulted in higher profitability although during the crisis years. The positive and significant coefficient of SIZE in Model I and III confirms that the larger size banks tend to have higher ROAA.

5. Conclusions

This study has analysed whether bank profitability was impacted during the crisis period (2007-2009) and examines the bank specific and macroeconomic determinants of banks profitability in Malaysia for the period 2006-2012. Employing a sample of 20 commercial banks operating in Malaysia, the findings suggest that the 2007-2009 global financial crisis does not give an impact on Malaysian bank profitability. This confirms a report by Bank Negara Malaysia (2009), where Malaysian financial sector was well insulated throughout the period of global financial crisis due to limited exposure to subprime-related assets, having a sound banking system, high capitalization of Malaysian banking sector, and ample liquidity in the financial system. Furthermore, Malaysian domestic banks have strengthened and built significant buffers during the decade after the Asian Financial Crisis in 1997 (AFC 1997).

In addition, the findings recommend that bank capital, credit risk, bank size, and inflation determine the profitability of Malaysian commercial banks in the period studied. This implies that banks with higher capital, higher credit risk, larger size tend to have higher profitability. The significant coefficient of bank capital is in line with the Basel III requirements that was developed in response to 2007-2009 global financial crisis, where banks should maintain higher capital to remain

resilient, in which Malaysian banks are highly capitalized and able to withstand economic storm. This study contributes to an emerging body of research that attempts to identify how severely Malaysian banking institutions were impacted by the 2007–2008 financial crisis.

Table 6
Regression results (2007-2009: Crisis period)

Independent variable	Predicted sign	Dependent variable: Return on assets (ROAA)		
		2007-2009		
		Model I (OLS)	Model II (Fixed effects)	Model III (Random effects)
Constant		-0.0398* (-1.84)	-0.0434 (-0.33)	-0.0379 (-1.40)
CAP	+	0.0823* (1.83)	0.2240** (2.72)	0.1204** (2.41)
SIZE	+	0.0036*** (3.14)	0.0032 (0.44)	0.0032** (2.19)
LOAN	+	0.0005 (0.07)	0.0015 (0.07)	0.0047 (0.55)
LLP	-	0.1669 (0.82)	0.041 (0.27)	0.0928 (0.62)
INF	+	0.0007 (0.97)	0.0003 (0.70)	0.0005 (1.02)
GDP	+	-0.0001 (-0.20)	0.0003 (0.99)	0.0001 (0.47)
FOREIGN	+	0.0023 (0.69)		0.0022 (0.48)
Adjusted R2		0.1693		
R-squared			0.2843	0.2567
F-statistic		2.63**	2.05*	
Wald Chi^2				15.37**
No. of Observations		57	57	57

*Notes: Values in parentheses are t-statistics. ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.*

Acknowledgments

We are grateful to all the participants at the 11th Asian Academy of Management International Conference 2015 held in Penang from 2nd to 4th October, 2015, for their comments and suggestions.

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