

# Profitability Determinants and the Impact of Global Financial Crisis: A Panel Data Analysis of Malaysian Islamic Banks

Muhamad Muda Amir Shaharuddin Abdelhakim Embaya\*

Faculty of Economics and Muamalat, University Sains Islam Malaysia (USIM), Bandar Baru Nilai, 71800, Nilai, Negeri Sembilan, Malaysia.

\* E-mail of the corresponding author: [ampya2007@yahoo.com](mailto:ampya2007@yahoo.com)

## Abstract

This paper is conducted to identify the determinants of profitability of Islamic banks operating in Malaysia and examine the effect of the global financial crisis on the profitability of these banks. Panel data estimation is employed with unbalanced data on seventeen Islamic banks, using quarterly data for the period of 2007 to 2010. The random effect model was specifically used to achieve the study objectives. The empirical results indicate that overhead expenses ratio, loans ratio, deposits ratio, technical efficiency and bank size have a positive significant effect in determining banks' profitability. Meanwhile, the inflation rate has a negative significant effect in determining banks' profitability. The findings of study indicate that capital and reserves, liquidity ratio, banks' age, gross domestic product growth rate, Gross domestic product per capita and concentration ratio are not able to explain the variability of profitability of Islamic banks. The study also reveals that the profitability of Islamic banks is negatively affected by the global financial crisis.

**Keywords:** Islamic Banks, Bank profitability, Malaysia, global financial crisis, panel data

## 1. Introduction

The banking system in Malaysia is a dual system, where Islamic banks function in co-existence with conventional banks. The dual financial system has proved to be viable as more competitive and sophisticated Islamic financial products have been introduced into the Islamic banking industry and gained popularity and even preference amongst the customers (Muda & Jalil 2007). The industrial structure of the banking institutions participating in the Islamic banking system has changed with the liberalization of the Islamic banking industry, which leads to the entry of foreign Islamic banks into the Malaysian banking. Meanwhile, the Islamic bank's subsidiaries have emerged to operate alongside full-fledged Islamic banks. Thus, Malaysian Islamic banks have operated in a very competitive industry. In 2010, there were a total of seventeen Islamic banking institutions actively operating in the country (Bank Negara Malaysia, 2011).

The performance of banks is related to changes in their environment and economic conditions (Muda, 1993). In 1998, Malaysia suffered a contraction in the Gross Domestic Product (GDP) growth due to the Asian financial crisis which originated from Thailand. In addition, during the financial crisis in 2008, Malaysia had not been spared from this external shock. The shock was transmitted to the Malaysian economy in the fourth quarter of 2008. With the slowdown of domestic economic activities, overall loan applications in the country showed a declining trend. Loan applications slowed down for both the business and household sectors, thus, Malaysian financial institutions and banks have become affected by this financial crisis (Khoon & Mah-Hui, 2010).

The results of this study might differ from the results of previous studies in a way that objective of this study is to determine the variables that can affect the profitability of Islamic banks in Malaysia after the liberalization of the Islamic banking industry and , during the global financial crisis 2008. Studies of bank profitability are an important tool towards the improvement of bank performance and also towards the determination of management planning to help in increasing the chance for the banks to survive in competitive markets. Studies of bank profitability are important for the improvement of the economy since banks contribute to economic growth.

The rest of this paper is organized as follows: section 2 discusses the existing literature on bank profitability, section 3 presents the data and explains the research methodology, section 4 presents the results and discussion, and section 5 presents the conclusion of the study.

## 2. Literature Review

Profit is an important factor for the survival of a firm and one of the crucial indicators of its performance. Banks are specific types of firms and therefore, the rate of profit is very critical to bank performance. Work on identifying the banks profitability determinants has received much attention from researchers. Short (1979) and Bourke (1989) were among the first who examined the determinants of bank profitability. Following them, a lot of studies have been done to examine the profitability determinants, for example, Hassan & Bashir (2003), Naceur (2003), Sanusi & Ismail (2005), Wasiuzzaman & Tarmizi (2010), Dietrich & Wanzenrie (2010), Idris et al., (2011), Khrawish et al., (2011) and Rahman et al., (2012). Most of these studies find that bank specifics,

financial structure and macroeconomic determinants are able to explain the changes in bank profitability. Sanusi & Ismail (2005) examine the determinants of Islamic banks' profitability in Malaysia. Using fifteen samples of full-fledged Islamic banks and Islamic windows during the period of 1995 - 2004, this study suggests that, high profitability tends to be associated with banks that hold a relatively high ratio of total loans over total assets and growth of total assets. The results also show that, the GDP growth rate has no impact on bank profitability. Also, Wasiuzzaman & Tarmizi (2010) have examined the determinants of the profitability of sixteen Islamic banks in Malaysia during the period of 2005- 2008. The study has found out that capital and asset quality have an inverse relationship with bank profitability, while liquidity and operational efficiency have a positive influence. The GDP and inflation have a positive relationship with bank profitability. Later, Idris et al., (2011) find that the bank size is the most important factor in explaining the variation of profitability for Islamic banking institutions in Malaysia by using nine Islamic banks for the period of 2007- 2009. In line with this study, Hasan & Dridi (2010) examine the performance of Islamic banks and conventional banks during the recent global crisis in 2008 by looking at the impact of the crisis on profitability, credit and asset growth. The results suggest that the Islamic banks of these countries have been affected differently during the crisis.

Sufian & Habibullah (2010) examine the determinants of Indonesian banks' profitability during the period of 1990–2005 using return on the asset as a proxy for profitability. The findings indicate that size and overhead costs are negatively related to bank profitability. The impact of economic growth and banking sector concentration are positive during the pre-crisis and crisis periods. Moreover, the Asian financial crisis exerts a negative and significant impact on the profitability of Indonesian banks.

Javaid et al., (2011) examines the determinants of bank profitability in Pakistan. The panel data during the period from 2004 to 2008 is used. The results show that bank size has a negative and significant impact on profitability. Also, the impact of loans is not significant towards profitability. Equity and deposits have a positive and significant impact on profitability. In the same context, Ali et al., (2011) also, examine the profitability indicators of Pakistani commercial banks during 2006-2009. The findings suggest that the profitability seems to have been positively affected by size, operating efficiency and asset management, and negatively by capital. The GDP is found to positively affect on profitability, but, the Inflation rate is found to have a negative effect on profitability. Khrawish et al., (2011) look into the factors that might affect the Jordanian Islamic banks' profitability during the period of 2005 to 2009. The analysis reveals that there is a significant and negative relationship between return on assets and the bank size, total liabilities, GDP growth rate and Inflation rate. In case of Arabic Islamic banks also, Smaoui and Ben Salah (2011) use panel data of 44 Islamic Banks in the Gulf Cooperation Council over the period of 1995-2009 to examine the determinants of profitability. The results find that capital strength is positively related to the profitability of Islamic Banks, but the impact of liquidity on bank profitability is insignificantly related. The results also show that overhead and efficiency are negatively and significantly related to profitability, whereas the results of GDP growth, inflation and size are found positively and significantly related to bank profitability.

### 3. Data and Methodology

The data of bank-specific variables are collected from quarterly balance sheet and income statements obtained from Malaysian Islamic banks. Regarding the macroeconomic variables, the data is collected from the Department of Statistics, Malaysia (various issues). This study uses an unbalanced panel for the period from the first quarter of 2007 to the fourth quarter of 2010.

In order to examine the determinants of Islamic banks' profitability, panel data multiple regression has been applied to analyze the cross-section and time series data to find out the relationship between dependent variable and independent variables, therefore the panel data estimation technique is utilized. Pooled Ordinary Least Squares (POLS), Fixed Effects Models (FEM), and Random Effects Models (REM) are types of panel analytic models. Various tests have been performed using Econometrics program E-Views 7.1 software for analyzing the data and producing the regression results.

#### 3.1 Estimation Model

In the study, estimations for two models are made and the study adopts a step-wise regression model to build the models and avoid severe multicollinearity problems. The regression models can be written as follows:

Model 1

$$ROA = \alpha_0 + \beta_1 OHTA + \beta_2 LOTA + \beta_3 DTA + \beta_4 GDPGR + \beta_5 GDPPC + \beta_6 CONC + \beta_7 DDF + \varepsilon$$

Where:

ROA = Return on Assets as the dependent variable. And the Independent variables are:

OHTA = Overhead Expenses over Total Assets

LOTA = Loans (financing) over Total Assets

DTA = Deposits over Total Assets

GDPGR = Gross Domestic Product Growth Rate

GDPPC = Gross Domestic Product Per Capita

CONC = Concentration Ratio

DDF = Different between Domestic and Foreign Banks

$\alpha$  is intercept,  $\beta$  is regression coefficient and,  $\epsilon$  is an error term.

Model 2

$$ROA = \alpha_0 + \beta_1 CRTA + \beta_2 LATA + \beta_3 TE + \beta_4 INF + \beta_5 LOGTA + \beta_6 LOGAGE + B_7 GFC + \epsilon$$

Where:

ROA = Return on Assets as the dependent variable. And the Independent variables are:

CRTA = Capital and Reserves over Total Assets

LATA = Liquid over Total Assets

TE = Technical Efficiency

INF = Annual Inflation Rate

LOGTA = Bank Size

LOGAGE = Bank Age

GFC = Global Financial Crisis

$\alpha$  is intercept,  $\beta$  is regression coefficient and,  $\epsilon$  is an error term.

### 3.2 Measures of Profitability

In the literature, there are several ratios used to measure the profitability of banks. This study uses return on assets (ROA) as the dependent variable, regarded to be measurable for Islamic banks and also it shows the profit earned per unit of assets. In addition, it reflects the management's ability to utilize the banks' financial and real investment resources to generate profits. ROA is a better proxy for bank profitability as opposed of ROE because ROE disregards financial leverage (Flamini et al, 2009). For these reasons ROA is considered for this study and it is calculated as net income after the tax divided by total assets.

### 3.3 Determinants of bank's profitability

The literature on banks' profitability explains profitability through internal and external determinants. Internal determinants or bank specific factors are under the control of bank management. External determinants are governed by the effect of the macroeconomic environment on banks' performance.

Capital and reserves (CRTA) are one of the important sources of funds for the bank. Capital and reserves to total assets is included in this study because it identifies bank capitalization and the ability of a bank to handle losses with shareholders.

Overhead expenses ratio (OHTA) refers to an ongoing expenses of operating a business. The overhead expense is usually used to group expenses that are necessary to the continued functioning of the business. The overhead is obtained by dividing personnel and overhead expenses by total assets. Most of the literature on banks profitability argues that reduced expenses improve the performance and hence, raise the profitability of banks, implying a negative relationship between operating expenses ratio and profitability (Bourke 1989).

Loans ratio (LOAT) is used to estimate the component of the income that is attributable to management quality. It is computed by total loans over total assets. Loans of bank are expected to generate profit and to be the main source of income, hence are expected to have a positive impact on bank profitability.

Deposits ratio (DTA) is total deposits from customers and deposits from banks and other financial institutions (all deposits including Non-Mudharabah Fund and Mudharabah Fund) as a percentage of total assets. Deposits of the banks are considered the main source of bank funding and hence, it has an impact on the profitability of the banks.

Liquidity Ratio (LATA) is defined as the extent to which the bank has funds available to meet the withdrawal demand of depositors. Cash, short term funds and deposits and placements with banks and financial institutions divided by total assets is used to measure the liquidity ratios. Banks need amounts of liquidity depending on their growth rate, variability in financing, deposit activities and the regulations of the Central Bank. These instruments carry low incomes; hence a high liquidity ratio indicates excess liquidity and is potentially indicative of low profits.

Technical Efficiency (TE) refers to the ability of a bank to minimize input (or maximize output) use given a target output (or specific inputs). The efficiency ratio gives a measure of how effectively a bank is operating. Previous studies have confirmed that efficiency is one of the most important factors in explaining differences in profitability across the banks. Technical efficiency is measured using the Data Envelopment Analysis (DEA) method (Sufian et al., 2012).

Inflation rate (INF) is defined as a sustained general rise in prices in an economy whereby a high inflation rate is associated with higher costs as well as higher income. In the case of Islamic banks, Bashir (2003) reports that inflation may impact performance positively if a larger portion of Islamic banks' profits accrues from direct investment, shareholding and/or other trade activities (Murabahah). Inflation may have a negative effect on bank

profitability if wages and other costs are growing faster than the rate of inflation.

Gross domestic product growth rate (GDPGR) measures the national output of an economy. Real GDP measures the actual increase in goods and services and excludes the impact of rising prices. The GDPGR reflects the conditions of the economy in the way that a growing economy will provide a growing demand for banking services and lower risk as opposed to the shrinking economy. GDP is among the most commonly used macroeconomic indicators to measure the total economic activity within an economy. GDPGR is expected to be in a positive relation with profitability.

Gross domestic product per capita (GDPPC) measures the total output of a country that takes the GDP and divides it by population. In other words, GDPPC takes into account the average GDP per person in the economy and seem to reflect the propensity to spend. The bigger the expenditure will lead to economic growth. Thus, GDP per capita is used to check the impact of the level of profitability of banks.

Bank size (LOGTA) is considered an important determinant of its performance. Industrial economic theory postulates that if an industry is subject to economies of scale, large institutions will be more efficient, and thus are able to produce services at a lower cost. Larger size is expected to have a positive effect on bank profitability. The natural logarithm of the bank's total assets is used as a measure of bank size.

Bank age (AGE) is the number of working years for each bank. Newly established banks are not particularly profitable in their first year of operation, as they place greater emphasis on increasing their market share, rather than on improving profitability (Athanasoglou et al., 2008). Despite this, a study by Dietrich & Wanzenrie (2010) observed that newer banks seem to be marginally more profitable than older banks. This indicates that newer banks are able to pursue successfully new profit opportunities. In this study, we include the age variable in order to see the effect because there is a significant difference in the age of Malaysian Islamic banks.

Concentration ratio (CONC) is measured by the proportion of total assets held by the largest bank in the banking sector. Studies related to determinants of bank profitability are based on the structure-conduct-performance theory (SCP), which proposes that market concentration lowers the cost of collusion between firms and thus, resulting in higher profits. The idea that the profits of firms are determined by the concentration level of the market is proposed by Bain (1951). Following him, a lot of studies have modelled the SCP theory to explain the profitability of banks.

The Global financial crisis (GFC) is a dummy variable and it is included to examine the effect of the event on the profitability of the domestic Islamic banks and foreign Islamic banks in Malaysia. It is indicated by "1" for the period of the crisis (that is, q4 2008, q1 2009, q2 2009 and q3 2009) and "0" for the other periods.

The difference between Domestic and Foreign Banks (DDF) is a dummy variable included to investigate whether there is a difference in the profitability between domestic and Foreign Islamic banks. It is indicated by "1" for domestic Islamic banks and "0" for Foreign Islamic banks.

## 4. Results and discussion

### 4.1 Model 1

Table 1 (See appendix) reports the descriptive statistics of the variables used in the regression analyses. The results indicate that, on average, the Malaysian Islamic banks have an ROA of 0.17% over the entire period from q1 2007 to q4 2010. The values of skewness and kurtosis for the variables included in the table indicate that the data are normal distribution or very close to normal distribution.

To ascertain whether there is a multicollinearity problem in the models, this study uses the variance inflation factor (VIF). Table 2 and Table 3 (See appendix) present the variance inflation factor (VIF) between the independent variables in the mode 1 and the model 2 respectively to test the multicollinearity problem. The results of the variance inflation factors (VIF) for the variables included in the two models are between (1.12 and 2.79). This indicates that the models do not suffer from any multicollinearity problems because all VIF values are less than 5.0 (Snee, 1973).

Table 4 (See appendix) displays three estimation methods in the panel data statistics, using the Pooled Ordinary Least Squares (POLS), the Fixed Effects (FEM) and the Random Effects method (REM). To identify which model is appropriate, the POLS model or the REM, The Breusch-Pagan Lagrange multiplier (LM) test is used. With the high chi-squared statistics, the study rejected the null hypothesis in favour of the REM model. The result presented in the appendix, table 5 shows that the panel random effects regression model is appropriate.

The Hausman test is used by calculating the p-value ( $\text{Prob} > \chi^2$ ) to determine the use of FEM or REM. The result of the Hausman test statistics in the table 6 (See appendix) reports that Random Effects Model is the appropriate panel data estimator.

The White test is used in this study to detect the presence of heteroskedasticity, that White heteroskedasticity test being one of the most widely used. The result of the heteroskedasticity White test in the table 7 (See appendix) finds evidence of heteroskedasticity. The problem of heteroskedasticity is corrected using the White procedure automatically.



Table 8 (See appendix) represents the results of the random effect model regression. Also, the results provide the value of Durbin-Watson and are shown that there is no evidence of serial correlation in the model 1.

The first bank characteristics variable overhead to total assets (OHTA) has a positive and significant impact on the ROA. The result suggests that high profits earned by Islamic banks may be appropriated in terms of higher overhead (wages and salaries) which is in line with the Expense-Preference behaviour theory. This result also works consistently with the findings of some other related studies, i.e., Naceur (2003); Al Manaseer (2007); Bennaceur & Goaid (2008).

Loans to total assets (LOTA) have positive and statistically highly significant effect on the ROA. This result is consistent with what is expected, that Islamic banks play the intermediary role between the lenders and borrowers, which reflects more deposits are transformed into loans. Hence, higher lending generates higher income.

Deposits to total assets (DTA) have a positive and significant impact on the ROA. This result is in line with similar studies that have focused on banks' profitability such as Al-Jarrah & El-Rimawi (2010); Javaid et al., (2011) and Rahman et al., (2012). In summarizing the results of LOTA and DTA support the view that more deposits will enhance the lending capacity and once they have been transformed into loans will lead to higher profits.

For the macroeconomic variables, the result reveals that GDPGR has an insignificant impact on the ROA. Similar results for the insignificant impact for the GDPGR in banks' profitability can be found in the other studies for examples, Sanusi & Ismail (2005); Al Manaseer (2007); Li. Yuqi (2008) and Sufian (2011).

The estimate also shows that Gross domestic product per capita (GDPPC) has an insignificant impact on the ROA. Earlier studies by Al Manaseer (2007); Bennaceur & Goaid (2008) and Flamini et al., (2009) have also found a similar result.

For the impact of the structural variables, the results indicate that the concentration ratio (CONC) has a positive impact on the ROA. However, the relationship is not significant; hence it is not confirmed whether this finding can support the structure - conduct - performance theory. However, other studies such as Al Manaseer (2007), Bennaceur & Goaid (2008), Flamini et al., (2009) and Sufian (2010) also found similar findings.

A dummy variable (DDF) has a positive and highly statistically significant on the ROA. This result suggests that domestic and foreign Islamic banks have different profitability, and the domestic Islamic banks tend to be associated with high profits.

#### 4.2 Model 2

Table 9 (See appendix) shows three estimation methods in the panel data statistics, using POLS, FEM and REM. To identify which model is appropriate, the Breusch-Pagan Lagrange multiplier (LM) test and the Hausman test are shown in table 10 and table 11 respectively (See appendix). The results of both tests suggest that REM is the appropriate panel data estimator.

The evidence of heteroscedasticity is found after applying White's heteroscedasticity test. The result of the test is shown in the table 12 (See appendix) and it is corrected using the White procedure automatically.

Table 13 (See appendix) represents the results of the random effect model regression. The estimation of the random effect model provides the value of Durbin-Watson and indicates that there is no evidence of the presence of a serial correlation in the model 2.

Capital and reserves to total assets (CRTA) have insignificant impact on the ROA. This result is consistent with other similar studies; for examples, Sanusi & Ismail (2005) and Said & Tumin (2011). The study by Sanusi & Ismail (2005) has found that the ratio of total equity capital to total assets of Malaysia Islamic banks during the period of 1995-2004 has a negative and insignificant impact on ROA. Said & Tumin (2011) also suggest that the capital to total assets is not significant in influencing the ROA in Malaysian banks.

Liquidity to total assets (LATA) has an insignificant impact on the ROA, which is also in tandem with the findings of some other related studies. For example, Idris et al., (2011) examine the determinants of profitability for nine Islamic banks in Malaysia for the period of 2007-2009. The study finds that liquidity to total assets is insignificant in determining profitability.

For the impact of the Technical Efficiency (TE), the result indicates that the TE has the expected positive and significant impact on the ROA. The result suggests that high profits of Islamic banks are consistent with higher efficiency.

Next, the macroeconomic variable inflation rate (INF) has a negative and statistically significant impact on ROA. As pointed out by Bashir (2003) this may due to the fact that, in the case of Islamic banks, the inflation may have a negative effect on bank profitability if wages and other costs grow faster than the rate of inflation. Accordingly, this may suggest that during the period of study, Islamic banks could not accurately predict the levels of inflation, and the costs of banks had demonstrated a faster increase than the banks' revenues. In relation to this, this finding is supported by the results of Khrawish et al., (2011) and Ali et al., (2011). However, it can be postulated that the Islamic banks were not able to adjust its lending rate to the rising cost of the deposit. This

is because Islamic banks used fixed rate of financing.

Bank size (LOGTA) has a positive and statistically significant impact on the ROA. This indicates that large banks tend to be provided with the opportunity to have greater ability to diversify and utilize the economies of scale. Many empirical studies find similar result as evidenced in Al Manaseer (2007) and Athanasoglou et al., (2008).

Further, bank age (LOGAGE) has an insignificant impact on the ROA. This result is supported by Dietrich & Wanzenrie (2010) who analyze the profitability of commercial banks in Switzerland. The result finds out that newer banks seem to be slightly more profitable than older banks.

The global financial crisis (GFC) has a negative and statistically significant impact on ROA. This result means that Islamic banks in Malaysia are affected by the global financial crisis in terms of profitability.

## 5. Conclusion

In light of the liberalization of the Islamic banking industry and the global financial crisis, studying and analyzing the determinants of the profitability of Malaysian Islamic banks has become one of the hottest topics in terms of research. In this context, this study has sought to determine the variables that can affect the profitability of Islamic banks in Malaysia and to examine the effect of the global financial crisis 2008 on the profitability of these banks. Panel data estimation has been applied to all Islamic banks in Malaysia, using quarterly data for the period of 2007 to 2010 to analyze the cross-section and time series data. The random effect model is specifically used to achieve the study objectives. The findings in this study indicate that, the overhead expenses ratio, loans ratio, deposits ratio, technical efficiency and bank size have a positive significant effect in determining banks' profitability. Meanwhile, capital and reserves, liquidity ratio, banks' age, gross domestic product growth rate, gross domestic product per capita and concentration ratio are not able to explain the variability of Islamic bank's profitability. The study also reveals that domestic and foreign Islamic banks have different profitability and efficiency. Other findings of the study suggest that the profitability of Islamic banks is negatively affected by the global financial crisis.

The results of the study suggest that, policy makers in Islamic banks should focus more on bank specifics to increase the profitability of Islamic banks, while they should formulate appropriate policies to enable the Islamic banks to benefit from economic growth. For future studies, it is recommended to have a wider scope that, this study is confined to Islamic banks of Malaysia. It might be interesting to carry out the same research over traditional and Islamic banks in Malaysia. Another possible extension could include more variables such as exchange rates as well as the quality of the offered services.

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## Appendix

**Table 1. Descriptive statistics**

Variables	Mean	Median	Std. Dev.	Skewness	Kurtosis	Obs.
ROA	0.0017	0.0018	0.0019	-1.5733	4.0390	236
CRTA	0.0879	0.0790	0.0356	0.9375	3.2154	236
OHTA	0.0037	0.0037	0.0014	0.2928	2.6793	236
LOTA	0.5408	0.5623	0.1644	-0.5077	2.6147	236
DTA	0.8605	0.8674	0.0487	-0.6564	2.8218	236
LATA	0.3066	0.2792	0.1440	0.8874	3.3485	236
TE	0.8123	0.8383	0.1674	-0.8277	3.0232	236
INF	0.0235	0.0180	0.0264	0.6734	3.3738	236
GDPGR	0.0385	0.0530	0.0469	-0.8243	2.5815	236
GDPPC	0.0251	0.0400	0.0462	0.8305	2.5853	236
LOGTA	9.0488	8.9960	0.8177	-0.3739	3.5184	236
CONC	0.1884	0.1795	0.0239	0.1681	4.1869	236
LOGAGE	1.1768	1.0986	0.8284	0.6229	3.8675	236

**Table 2. The Variance Inflation Factor (VIF), Model 1**

<u>Variables</u>	<u>Centered VIF</u>
<u>OHTA</u>	1.306748
<u>LOTA</u>	1.181971
<u>DTA</u>	1.563521
<u>GDPGR</u>	1.833233
<u>GDPPC</u>	2.113169
<u>CONC</u>	1.702562
<u>DDF</u>	1.808516

**Table 3. The Variance Inflation Factor (VIF), Model 2**

<u>Variables</u>	<u>Centered VIF</u>
CRTA	1.654788
LATA	1.955404
TE	2.649355
INF	1.145437
LOGTA	2.797357
LOGAGE	1.547260
GFC	1.121475

**Table 4. Results of Pooled Ordinary Least Squares, Fixed Effects Model and Random Effects Model with Dependent Variable ROA, Model 1**

<u>Independent Variables</u>	<u>POLS</u>	<u>FEM</u>	<u>REM</u>
C	-0.011987*** (0.0041)	-0.011778*** (0.0052)	-0.012863*** (0.0010)
OHTA	0.240730*** (0.0027)	0.402381*** (0.0001)	0.317098*** (0.0003)
LOTA	0.004052*** (0.0000)	0.002690** (0.0126)	0.003658*** (0.0000)
DTA	0.008492*** (0.0016)	0.009446*** (0.0098)	0.009641*** (0.0016)
GDPGR	-0.001313 (0.6616)	-0.001073 (0.6806)	-0.001082 (0.6774)
GDPPC	0.000341 (0.6685)	0.000538 (0.4397)	0.000423 (0.5407)
CONC	0.003256 (0.4083)	0.001223 (0.7300)	0.000215 (0.9510)
DDF	0.001818*** (0.0000)	0.001766*** (0.0000)	0.001737*** (0.0001)
R <sup>2</sup>	0.385071	0.570625	0.254123
F	20.39638*** (0.0000)	12.86680*** (0.0000)	11.09723*** (0.0000)
DW	1.552864	2.151026	1.931185

\* , \*\* and \*\*\* indicate the levels of significance of 10, 5, 1 percent respectively

**Table 5. The Summary of Breusch Pagan Lagrangian Multiplier Test, Model 1**

<u>Chi- chi-square(1)</u>	<u>Prob&gt;chi2</u>
69.304	0.000

**Table 6. The Summary of Hausman Test, Model 1**

<u>Chi-Sq. Statistic</u>	<u>Prob&gt;chi2</u>
10.133	0.119



**Table 7. White Heteroskedasticity Test, Model 1**

Chi-Sq- Statistic	Prob>chi2
113.721	0.000

**Table 8. Results of Random Effects Estimate for ROA as Dependent Variable**

Independent Variables	Model ( 1 )
C	-0.012863*** (0.0023)
OHTA	0.317098** (0.0118)
LOTA	0.003658*** (0.0003)
DTA	0.009641*** (0.0091)
GDPGR	-0.001082 (0.5797)
GDPPC	0.000423 (0.4061)
CONC	0.000215 (0.9321)
DDF	0.001737*** (0.0000)
R <sup>2</sup>	0.254123
F	11.09723*** (0.0000)
DW	1.93118

\* , \*\* and \*\*\* indicate the significance levels of 10, 5, 1 percent respectively.

**Table 9. Results of Pooled Ordinary Least Squares, Fixed Effects Model and Random Effects Model with Dependent Variable ROA, Model 2**

Independent Variables	POLS	FEM	REM
C	-0.004179** (0.0337)	-0.012181** (0.0112)	-0.007740** (0.0119)
CRTA	-0.014827*** (0.0001)	0.003421 (0.6536)	-0.006036 (0.2790)
LATA	0.000199 (0.8449)	0.002981* (0.0938)	0.001443 (0.3080)
TE	0.004467*** (0.0000)	0.004366*** (0.0071)	0.004352*** (0.0014)
INF	-0.008537** (0.0448)	-0.006433 (0.1173)	-0.008084** (0.0390)
LOGTA	0.000437** (0.0424)	0.001050* (0.0535)	0.000724** (0.0312)
LOGAGE	-0.000166 (0.2922)	-0.000121 (0.7462)	-0.000200 (0.4026)
GFC	-0.000206 (0.3989)	-0.000284 (0.2011)	-0.000271 (0.2154)
R <sup>2</sup>	0.374582	0.546712	0.192369
F	19.50803*** (0.0000)	11.11710*** (0.0000)	7.758178*** (0.0000)
DW	1.686008	2.178023	2.049559

\* , \*\* and \*\*\* indicate the significance levels of 10, 5, 1 percent respectively.

**Table 10. The Summary of Breusch Pagan Lagrangian Multiplier Test, Model 2**

Chi- chi-square(1)	Prob>chi2
46.114	0.000

**Table 11. The Summary of the Hausman Test, Model 1**

Chi-Sq. Statistic	Prob>chi2
9.123	0.243

**Table 12. White Heteroskedasticity Test, Model 1**

Chi-Sq- Statistic	Prob>chi2
94.226	0.000

**Table 13. Results of Random Effects Estimate for ROA as Dependent Variable**

Independent Variables	Model ( 2 )
C	-0.007740* (0.0683)
CRTA	-0.006036 (0.2487)
LATA	0.001443 (0.4960)
TE	0.004352** (0.0480)
INF	-0.008084*** (0.0000)
LOGTA	0.000724* (0.0535)
LOGAGE	-0.000200 (0.1950)
GFC	-0.000271*** (0.0058)
R <sup>2</sup>	0.192369
F	7.758178*** (0.0000)
DW	2.049559

\* \*, \*\* and \*\*\* indicate the significance levels of 10, 5, 1 percent respectively.