# Determinants of Capital Adequacy Ratio (CAR) in Indonesian Islamic Commercial Banks

Mohammed T. Abusharba*, Iwan Triyuwono**,
Munawar Ismail*** and Aulia F. Rahman****

*This study analyzes the determinants of the capital adequacy ratio in the Indonesian Islamic banking industry. Secondary data were obtained from Islamic banks annual reports and Islamic banking statistics that derived from Bank Indonesia covering the period of 2009 until the end of 2011. Multiple linear regression analysis and pair-wise correlation matrix are used to explain the effect of explanatory variables; profitability (ROA), assets earning quality (NPF), deposits structure (DEP), liquidity (FDR) and operational efficiency (OEOI) on a proxy variable which is the capital adequacy ratio (CAR). The study found that profitability and liquidity are positively related to the capital adequacy requirements. Meanwhile, uncollectable funds measured by non-performing financing (NPF) is significant but negatively related to the capital adequacy ratio. On the other hand, depositor's funds and operational efficiency have no significant effect on capital adequacy of Indonesian Islamic banks. Moreover, this study revealed that all selected Islamic commercial banks in Indonesia are committed over than 8 percent the minimum of capital requirements during the period of financial global crises. Finally, it was found that Indonesian Islamic banks have an excessive fund to meet their obligations and protect the owners of capital.*

**Keyword**: Capital adequacy ratio, Islamic commercial banks, Liquidity

**Field Research**: Islamic Finance

## 1. Introduction

### 1.1 Research Background

The Islamic banking industry has significantly been growing fast and emerging over the last three decades. Recently, its total assets were estimated around $1.2 trillion with annual growth rate over 20 percent However, the global financial crisis has generally impacted on the financial position of the global banking industry and is increasingly expensive to deal with as well as Islamic banking industry (GIFR, 2011). As a result, many banks became bankrupt and failed to fulfill their capital standards and unable to absorb possible future losses on assets. This failure of managing capital standards has received a great deal of attention from regulators and researchers to maintain the capital adequacy requirements.

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*Mr. Mohammed Tawfiq Abusharba, Faculty of Economic and Business, University of Brawijaya, Malang, Indonesia. Email: abu_sharbeh@yahoo.com.
**Prof. Iwan Triyuwono, Faculty of Economic and Business, University of Brawijaya, Malang, Indonesia. Email: iwant@ub.ac.id
***Prof. Munawar Ismail, Faculty of Economic and Business, University of Brawijaya, Malang. Indonesia. Email: munawar_sml@yahoo.com
****Dr. Aulia F. Rahman, Faculty of Economic and Business, University of Brawijaya, Malang, Indonesia. Email: fuadrahman@yahoo.com

In fact, The Basel Accord (1988) and Islamic financial standard board (IFSB) (2005) were partially in response to banking crises, especially in the case of Islamic banking capital requirements. In order to prevent bank failures and protect the rate of return on depositor's fund, it is legally required for active banks to hold minimum capital adequacy ratio equal to 8 percent of their risk weighted assets. Because of its importance, Basel committees on bank supervision have established internationally recognized capital regulations and credit risk measurements. While, IFSB (2005) released that Islamic banking capital standards must be somewhat higher than the Basel committee's minimum level of 8%, because of operational risks and the nature of investment deposits in Islamic bank are more risky than conventional ones. Errico and Farahbak (1998) argued that the capital minimum requirement needed for risks coverage should be higher in Islamic banks than in conventional banks because their profit and loss sharing assets are un-collateralized.

In practice, capital adequacy ratios are involved by financial transactions of the bank such as profit and loss sharing financing and that made it unequal capital standards from time to time or from bank to other, banks must keep capital adequacy at specific minimum level to avoid risks and bankruptcy. The regulators of capital requirements seek to ensure that risk exposures on Islamic financial institutions are backed by an adequate amount of high quality capital which absorbs ongoing concerns. This ensures Islamic banks further promote their cushion of assets that can be used to meet claims in liquidation.

In this study, we examine whether specific bank performance factors have an impact on capital adequacy requirements among Indonesian Islamic banks, especially concerning profitability, asset quality, depositors' funds, liquidity and operational efficiency. Therefore, this study contributes to Islamic banking literature by providing new evidence on the effect of Islamic bank financing risks and performance on capital adequacy. We attempt to highlight the effect of some risks such as credit, liquidity and withdrawal risks on the owners of capital in Islamic bank. Most of the literature focuses on some economic risks such as inflation, exchange rate and money supply (Williams, 2011) and profitability, deposits, size of banks and liquidity (Büyüksalvarc and Abdioğlu 2012; and Alsbbagh 2004). Accordingly, this study contributes to the banking literature by adding new vital factors on capital adequacy requirements such as non-performing financing and operational efficiency.

The aim of this paper is to provide an empirical evidence to study some internal factors that impact on the capital adequacy ratio in Indonesian Islamic banks. Therefore, the capital adequacy ratio is analyzed based on monthly data from period 2009 until 2011 affected by the current global financial crisis. Further, this paper attempts to raise risks exposure of Islamic banks that may result from the different uses of Islamic financing modes.

## 1.2 Brief Overview of Islamic Banks in Indonesia

Since the early 1990s, Islamic banking in Indonesia has evolved considerably, beginning with the first Islamic commercial bank, Bank Muamalat Indonesia (BMI), after coordinating with Majelis Ulama Indonesia (MUI) – an Indonesian Muslim institution which has Fatwa and proposed Al-Tajdid. Presently, eleven Islamic

commercial banks make up the Islamic banking industry and financial structure in Indonesia (Viverita, 2010). Besides, some business units of conventional banks have also turned into *Shariah* banking (Ismal, 2011).

In Indonesia, the Islamic banking industry carried out its funding and financial activities through *Wadiah* demand deposits and investment deposits; these funds are invested in the business community as Islamic modes of financing (profit-loss sharing and sales-based financing), the profit of bank transaction is shared with funding partners. This industry had a progressive development which relied on performance of the real sector. Meanwhile, the Islamic banking industry had impressive growth trend on total assets that reached to Rp 145.5 trillion in 2012 which grew by 45 percent compared to end of 2010. Furthermore, the growth of depositors fund in 2011 reach to Rp101.8 trillion which grew by 25.3 percent compared to the year before (Bank Indonesia, 2012). All Islamic banks in Indonesia are subject to Bank Indonesia Act that regulates all financial transactions. The Council of Indonesian *Shariah* Scholars (MUI) released a Fatwa to prohibit interest in 2003. It has also approved the Islamic Banking Act law No.21/2008 which provided more solid legal foundation to the operations of Islamic banks in order to protect depositors' funds and capital of investors (Bank Indonesia, 2008). As a result, in 2011 there were a total of 11 fully fledged Islamic banks and 23 Islamic business units operating in Indonesia under *Shariah* principles.

This paper is broken into five main parts: Section I represents introductory part such as theoretical background of research and review of Islamic banks in Indonesia. Section II discusses the literature review. Section III explains the conceptual framework, research model and hypothesis development. Section IV analyzes the data variables and discussion. The final section concludes the paper.

## 2. Literature Review

The study provides insight into contemporary literature of capital requirements as well as the studies that discussed the real factors of capital adequacy ratio. Ebhodaghe (1991) has defined capital adequacy as a situation where the adjusted capital is sufficient to absorb all losses and cover fixed assets of the bank leaving a comfortable surplus for the current operation and future expansion. In fact, adequate capital is regarded as the amount of capital that can effectively protect bank operations from failure by absorbing losses. Moreover, the level of capital must be adjusted at the time when the total operational expenses and withdrawal needs are expected to increase (Onuh, 2002). According to Umoh (1991) adequate capitalization is an important variable in business and it is more so in the business of using other people's money such as banking. It is further stated that insured banks must have enough capital to provide a cushion for absorbing possible losses or provide funds for its internal needs and for expansion, as well as ensure security for depositors and the depositor insurance system.

On the other hand, Morrison and White (2001) stated that capital adequacy requirements are useful in restricting bank size to be small enough to avoid moral hazard problems. They also suggested that capital regulation can be looser in economies where accounting procedures are more transparent.

Concerning on determinants of capital adequacy requirements, Büyüksalvarc and Abdioğlu (2012) analyzed the real factors of capital adequacy of the Turkish banking sector. They found that LOA, return on equity and LEV have a negative effect on CAR, while LLR and return on assets positively influence CAR. On the other hand, SIZE, DEP, LIQ and NIM have no significant effect on CAR. Comparatively, Alsbbagh (2004) analyzed the determinants of the capital adequacy ratio in Jordanian commercial banks. He found that most Jordanian banks are committed to a minimum 8% capital adequacy ratio. It also revealed that CAR was positively affected by ROA, loan to assets ratio (LAR), risky assets ratio (RAR) and dividends payout ratio while negatively influenced by deposits assets ratio (DAR), size of bank and loan provision ratio (LPR). Gropp and Heider (2007) found that profitable banks tend to have relatively more equity. This finding is consistent with the prediction of the pecking order theory. Similarly, Kleff and Weber (2008) stressed that the capital level is positively correlated with the profit of the bank. Therefore, the accumulation of the profits provides a higher level of capital growth. However, the findings of Ahmad et al. (2009) are inconsistent with others. They argued that earnings affect negatively the capital ratio in the Malaysian banking sector. Comparatively, Bokhari and Ali (2009) analyzed the determinants of capital adequacy ratio in banking sectors of Pakistan. They used deposits, GDP growth rate, portfolio risks and profitability as bank characteristics affecting capital ratio. They found that profitability measured by return on equity has negative significant effect on capital ratio. It also concluded that the variables, deposits, portfolio risks and GDP have negative significant impact on capital adequacy ratio.

Williams (2011) examined the impact of the macro-economic variables on bank capital base in the Nigerian banking industry during the period 1980–2008. He revealed that macro-economic variables such as inflation, real exchange rate, money supply and political instability and return on investment are most robust predictors of the determinants of capital adequacy in Nigeria. It also found that inflation was negatively related to bank capital. Moreover, political stability may reduce financial distress and bankruptcy in Nigeria.

Ariss and Sarieddine (2007) highlighted the recent guidelines for risk management and capital adequacy in Islamic banking in order to study the implications of applying Pillar 1 to a major Islamic bank. They specifically raised serious issues related to the nature of risks arising from the uses of funds of Islamic financial institutions and their implication on the banking book of the Islamic financial institution. They stressed that other challenges lie ahead of international regulatory bodies in order to cater to other types of risks that are unique to Islamic financial institutions.

The limitations of previous studies are that most of them were focusing on the determinants of capital adequacy in conventional banking. Actually, there were no previous studies primarily focused on the relationship between Islamic bank performance and capital requirements, specifically concerning the effect of non-performing financing and operational efficiency to capital adequacy ratio. Therefore, capital adequacy modeling has not been primarily discussed to fill the gap between regulators who are seeking to save bank failure and bankers who are looking to utilize the funds. As a result, this study intends to analyze the effect of bank characteristics on capital adequacy, especially since few studies have focused on area of Islamic banking industry.

## 3. Data and Research Method

This study attempts to examine specific factors of capital adequacy in Islamic commercial banks. It used secondary data that were taken from Bank Indonesia database and 11 Islamic commercial banks annual reports as sample of study. The study also covers the period of January 2009 until December 2011 based on monthly data in order to test its hypotheses. Regression data methodology is used in this study and explains the influence of bank specific variables {Profitability (ROA), assets earning quality (NPF), deposits structure (DEP), Liquidity (FDR), and operational efficiency (OEOI)} on the proxy variable of capital adequacy ratio (CAR).

In Indonesia, no previous studies have investigated the issue of capital adequacy and bank specific factors performance specifically in the Islamic banking case. However, many of them in other countries, such as Malaysia (Ahmad et al. 2009), Jordan (Al-Sbaagh 2004), Turkey (Büyüksalvarc and Abdioğlu 2012) and Pakistan (Bokhari and Ali 2009). We extend the methodology of previous studies by adding non-performing financing and operational efficiency as new explanatory variables affecting capital adequacy of Islamic banks. Moreover, these variables were not primarily examined in the context of Islamic banking case.

In fact, Indonesian Islamic banks must maintain a minimum level of capital adequacy requirements of 8 percent as released by Basel Accords I and II. So, CAR is calculated by this study according to the formula 1. This formula is used by Sarker (2006) and Hasbi and Haruman (2011), as follows:

**CAR** = *(Equity capital) / (Risk Weighted total assets)*     (1)

In this equation, capital is reflected by reserves, paid in capital, retained earnings and current earnings divided by risk weighted assets.

Five bank specific variables are selected to influence CAR. These variables are ROA, NPF, DEP, FDR, and OEOI which are components of the CAMEL rating system and are used in this study based on previous studies such as Hasbi and Haruman (2011) and Bashir (2001).

### 3.1 Variables and Hypotheses Development

**a. Profitability (ROA)**
This study uses return on asset as a proxy for profitability. In fact, Islamic banks in Indonesia need more effort to improve their profitability in order to increase capital. Büyüksalvarcı and Abdioğlu (2011) argued that profitability tends to increase capital relative to assets in the Turkish banking sector. Therefore, this study expects a positive relationship between profitability and capital adequacy.

$H_1$: Return on assets (ROA) has a statistically significant effect on capital adequacy of Islamic banks in Indonesia

**b. Non-performing Financing (NPF)**
It measures the assets quality of bank and it also described the capacity of bank in spreading risks and recovering default loans (Sundarajan and Errico, 2002). This study expects that high NPF will reduce assets quality and expects a significant

effect on capital adequacy of Islamic bank. Therefore, this logic statement is formulated, as follows:

**H$_2$:** Non-performing financing has statistically significant effect on capital adequacy of Islamic banks in Indonesia

### c. Deposits Structure
Deposits in Islamic banks are generally classified into three categories which are: *Wadiah* Demand deposits, *Mudarabah* saving deposits and *Mudarabah* time deposits (Ismal, 2011). However, most depositors prefer placing their money in *Mudarabah* time deposits in order to receive high returns on deposits. This study uses total deposits as a percentage of Islamic banks total assets to examine the effect of deposits on capital adequacy of Islamic banks.

**H$_3$:** Deposits have a statistically significant effect on capital adequacy of Islamic banks in Indonesia

### d. Liquidity
The level of liquidity indicates the ability of a bank to meet short-term obligations and occasional withdrawals (Sundarajan and Errico, 2002). It is measured by total financing to total deposits (FDR) ratio. The high liquidity reduces liquidity risks and increases capital. Therefore, this study expects that liquidity may have a positive effect on capital adequacy.

**H$_4$:** liquidity has a statistically significant effect on capital adequacy of Islamic banks in Indonesia

### e. Operational Efficiency
Operating efficiency is used to gauge management soundness and that occurred by using operating expenses to operating income ratio (OEOI) as stated in the studies by Sahajwala and Bergh (2000) and Sarker (2006). They argued that OEOI could be used as an indicator to evaluate management quality of banks. Therefore, the current research expects that operating efficiency has a significant influence on capital adequacy ratio.

**H$_5$:** Operational efficiency has statistically significant effect on capital adequacy of Islamic banks in Indonesia

**Table 1: Explanatory Variables and predicted Signs**

| Explanatory Variables | Predicted Sign |
|---|---|
| Profitability (ROA) | + |
| Assets Quality (NPF) | - |
| Deposit structure (DEP) | + |
| Liquidity (FDR) | + |
| Operational efficiency (OEOI) | ? |

### 3.2 Research Model

This study examines the effect of Islamic banks performance on the capital adequacy ratio by using multiple regressions. The study uses regression because it is useful to explain the inter-relationship between capital adequacy ratio and bank

specific variables as argued Büyüksalvarcı and Abdioğlu (2011). Accordingly, this study conceptualizes the model between CAR and five bank specific variables (ROA, NPF, DEP, FDR, and OEOI) through the following hypothesized model:

CAR= $f$ (ROA, NPF, DEP, FDR, and OEOI)                              (2)

Based on the above formula the study seeks to see whether the capital adequacy ratio could be explained by bank specific variables. Therefore, the panel data regression is formulated as follows:

$$CAR_{it} = \beta_0 + \beta_1 (ROA_{it}) + \beta_2 (NPF_{it}) + \beta_3 (DEP_{it}) + \beta_4 (FDR_{it}) + \beta_5 (OEO_{it}) + \varepsilon i_{it}$$

In the above equation $\beta_0$ is constant and $\beta$ is the correlation coefficient of explanatory variables while $\varepsilon_{it}$ is residual error of regression model.

## 4. Findings and Discussion

The research findings are based on descriptive statistics and panel data regression in order to explain the basic characteristics of research variables. The model is estimated using panel data of 36 observations obtained from Bank Indonesia (BI) as monthly basis derived from 11 Islamic commercial banks.

### 4.1 Descriptive Statistics of Data Variables

Descriptive statistics of secondary data including sample means, maximum, minimum, standard deviation, skewness and kurtosis. We can conclude from Table 2 that all explanatory variables are more preciously distributed. The variables of DEP, FDR and OEOI have negative skewness which indicates the fat tail on the left-hand side of the distribution. Moreover, ROA and NPF have positive skewness which indicates the fat tail on the right-hand side of the distribution. Meanwhile, the kurtosis value of all variables deviates from 3 and then the secondary data do not follow normal distribution.

As shown in Table 2, the capital adequacy ratio in the sample has a mean value of 13.3% with minimum value of 8.6% and maximum value of 20.2%. It provides evidence that Indonesian Islamic banks maintain their minimum level of capital requirements and they have an opportunity to take revenue minimum 5.3% (13.6% - 8%) of existing capital to invest more to the public. While the profitability index (ROA) has a mean value of 1.8% with minimum value of 1.3% and maximum value of 2.9%. it indicates that Islamic banks have slow growth in their profitability but still satisfactory. Meanwhile, non-performing financing has a mean value of 4.2% which is still under the standards of Bank Indonesia. This means that bad debts that generate credit risk from Islamic modes of financing are well controlled by management of Islamic banks.

On the other hand, leverage measured by deposits to total assets has a mean value of 54.7% with minimum value of 44.1% and maximum value of 60.4%. While liquidity (FDR) and operational efficiency (OEOI) respectively have mean values of 89.9% and 79.5%.

## Table 2: Descriptive Statistics for Dependent and Independent Variables

| Variable | CAR | ROA | NPF | DEP | FDR | OEOI |
|---|---|---|---|---|---|---|
| Mean | 0.133 | .0180 | 0.04197 | 0.547 | 0.899 | 0.795 |
| Maximum | 0.202 | .0290 | 0.0572 | 0.604 | 0.967 | 0.843 |
| Minimum | 0.086 | .0138 | 0.0252 | 0.441 | 0.827 | 0.676 |
| Std. Dev. | 0.031 | .0032 | 0.0081 | 0.0351 | 0.044 | 0.039 |
| Skewness | -0.092 | 1.478 | 0.070 | -0.881 | -0.477 | -1.357 |
| Kurtosis | -1.045 | 2.851 | -0.512 | 1.121 | -1.382 | 1.618 |
| Observation | 36 | 36 | 36 | 36 | 36 | 36 |

## 4.2 Correlation Analysis

Table 3 exhibits simple correlation matrix among research variables in order to determine the existence of any multi-co-linearity problem before the regression analysis could be implemented. Cooper and Schindler (2003) argued that a multi-co-linearity problem exists when correlation scores are 0.8 or greater. Therefore, it can be concluded that none of bank specific variables have high correlation or multi-co-linearity except the correlation coefficient among return on assets (ROA) and operating expenses to operating income (OEOI) which is over the rule of thumb 80%.

The results from correlation analysis indicate that non-performing financing is negatively correlated with the capital adequacy ratio and is significant at 1% level. This means that the higher level of uncollectable will reduce the level of capital in Islamic banks. On the other hand, it shows that deposits structure and liquidity (FDR) are positively correlated with capital adequacy ratio and are significant at 1% levels. This indicates that Islamic banks in Indonesia have enough funds to satisfy depositors fund withdrawals and that will result to protect their owned capital from any potential losses.

## Table 3: The Pairwise Correlation Matrix for Explanatory Variables

| Variables | ROA | NPF | DEP | FDR | OEOI |
|---|---|---|---|---|---|
| ROA | 1 | | | | |
| NPF | 0.281 | 1 | | | |
| DEP | -0.528** | -0.626** | 1 | | |
| FDR | -0.517** | -0.591** | 0.590** | 1 | |
| OEOI | -0.931** | -0. 294 | 0.460** | 0.56** | 1 |
| CAR | -0.242 | -0.825** | 0.616** | 0.748** | 0.307 |

(**) indicate correlation significance at level 1%.

## 4.3 Regression Analysis

Table 4 represents the effect of bank specific variables on the capital adequacy ratio. Multiple regressions are used to predict values of the dependent variable (CAR). Coefficient effect (β) is a predictor of each variable related to CAR. The analysis of regression results reveal; *firstly*, the value of R square ($R^2$) indicates that 82.1% variability in the capital adequacy can be explained by ROA, NPF, DEP, FDR, and OEOI. *Secondly*, diagnostics of regression partially Durbin Watson (D/W) is less than rule of thumb 2 and that there is no serial correlation because of D/W value of 1.692 less than two. *Thirdly*, F–test value is 27.6 and p-value is less than 5% for the data variables. In other words, all null coefficients are rejected and

overall regression coefficients are accepted. This result indicates that the research model is very well fit. Finally, regression results conclude deposits structure (DEP) and operational efficiency (OEOI) has no significant effects on the capital adequacy ratio respectively at 5% and 10% significant levels. The findings reveal that profitability (ROA) has a positive and significant effect on capital adequacy at 5% as expected. This explains that banks profitability has ability in raising their capital ratio. Meanwhile, liquidity measured by FDR Has a consistent and positive significant effect on CAR at significance of 5%. This means the higher the liquidity of Islamic bank, the higher the capital adequacy ratio. However, the results suggest that non-performing financing (NPF) is significant but negatively related to capital adequacy ratios at significance of 5% level. This indicates one unit decrease in NPF leads to increase bank capital adequacy by 52.4% of unit. This mean Islamic bank can raise its capital by reduce provision financing losses. Last but not least, our output summarized that ROA, NPF and FDR seem to affect CAR but DEP and OEOI do not have any statistically significant effect on capital adequacy ratios.

**Table 4: Multiple Regression Results (Dependant variable: CAR)**

| Explanatory variables | Constant | ROA | NPF | DEP | FDR | OEOI |
|---|---|---|---|---|---|---|
| β | -0.363 | 0.437** | -0.524* | 0.146 | 0.440* | -0.244 |
| | (0.081) | (0.045) | (0.000) | (0.22) | (0.001) | (0.288) |
| t-value | -1.803 | 1.981 | -4.847 | 1.246 | 3.857 | 1.082 |
| $R^2$ | 0.821 | | Adj. $R^2$ | 0.791 | | |
| F-test | 27.56 | | Durbin Watson | 1.692 | | |

*(\*) and (\*\*) denote significance level at 5% and 10%, respectively.*

As shown in Table 4, we can also reveal the results of regression analysis that explain the influence of bank performance on capital adequacy based on standardized regression weights. So, the model can be applied as follows:

CAR = -0.63 + 0.437 ROA – 0.524 NPF + 0.146 DEP + 0.440 FDR + 0.244 OEOI

Based on the above equation, the regression analysis can be shown the standardized coefficient weights of each variable as follows.

1. Return on Assets (ROA) has positive and significant influence on capital adequacy (CAR), coefficient correlation (β1) is 43.7%, t–value is 1.981 greater than 1.96 and p value less than level of significance 5%. Thus, H1 is accepted.
2. Non-performing financing (NPF) has negative and significant influence, coefficient correlation (β2) is 52.4%, t-value is 4.847 greater than 1.69, and p value less than 5%. Thus, H2 is accepted.
3. Deposit structure has no significant influence on capital adequacy, coefficient correlation (β3) is 14.6%, t–value is 1.246 less than 1.69 and p value greater than 5%, then H3 is rejected.
4. Financing to Deposit ratio (FDR) has positive and significant influence on adequacy ratio, coefficient correlation (β4) is 44%, t–value is 3.857 greater than 1.69, p-value less than 5%, and then H2 is accepted.

5. Operating Expense to Operating Income (OEOI) has no significant influence on capital adequacy, coefficient correlation ($\beta 5$) is 24.4%, t–value is 1.082 less than 1.69 and p value greater than 5%. Thus, H4 is rejected.
6. Explanatory power R square reveals that 82.1% of variability in the capital adequacy ratio is explained by profitability (ROA), assets quality (NPF) and Liquidity (FDR).

The results of multiple regressions on relationships between Islamic banks performance and capital adequacy ratio are presented in Table 4. This study found that there is a significant positive relationship between profitability and capital ratio. This is consistent with previous studies in conventional banks case by Büyüksalvarcı and Abdioğlu (2011), Gropp and Heider (2007), Kleff and Weber (2008). These researchers found that earnings will result in a higher capital ratio. However, this result is contradicted by the findings of Ahmad et al. (2009) and Bokhari and Ali (2009). They argued that earnings are negatively affecting the capital ratios in banks.

The result also shows that the liquidity (FDR) coefficient is positive but it is statistically significant. This result is contrary to some conventional banking studies such as Büyüksalvarcı and Abdioğlu (2011). They mentioned that banks with high levels of liquidity are less likely to maintain high level of capital adequacy.

The finding of this research indicates that the NPF coefficient is negative but it is statistically significant with capital ratio. However, no such relationship is observed in the context of Islamic and banking literatures. Thus, our results reveal that Islamic banks with high levels of uncollectable funds effectively reduce the minimum levels of capital adequacy ratio.

Finally, the result of the regression analysis indicates that deposits structure and operational efficiency are not significant with capital adequacy ratio. This is contrary to previous studies by Al-Sabbagh (2004) and Büyüksalvarcı and Abdioğlu (2011). They argued that banks with high levels of depositors' funds will result to depreciate the value of capital. On the other hand, Sahajwala and Bergh (2000) argued that operational efficiency has a positive effect on the capital ratio and that is inconsistent with the result of this study. Furthermore, Table 5 summarizes the hypotheses testing results a follows;

**Table 5: Capital Hypotheses testing results**

| Hypothesis | Directional relation | Rejected null hypothesis | Significant level |
|:---:|:---:|:---:|:---:|
| ROA | + | Yes | 5% |
| NPF | - | Yes | 5% |
| DEP | + | No | 5% |
| FDR | + | Yes | 5% |
| OEOI | - | No | 5% |

## 5. Conclusion

This paper attempts to examine whether bank characteristics have an impact on capital adequacy requirements among Indonesian Islamic banks. In particular, this study focuses on profitability, earning assets quality, liquidity, leverage and

operational efficiency as the bank characteristics, while bank characteristics reflect some anticipated risks such as credit risks, liquidity risks and default risks and attempts to assess whether the these factors affect the variability of capital adequacy. The paper reveals that profitability (ROA) has a positive significant relationship with CAR which indicates that as earned profits increase, the Islamic banks may have higher incentive to protect their owner's capital. Similarly, liquidity (FDR) is found to have a significant positive effect on CAR which shows that banks with good liquidity performance tend to improve capital of Islamic banks. However, the result of the paper concludes that non-performing financing (NPF) is found to have a significant negative relationship with CAR which means that the higher bad debts will depreciate the value of capital and banks may be exposed to credit risks. On the other hand, this study reveals that deposits structure and operational efficiency do not influence capital adequacy of Islamic banks.

Finally, the estimated model identified that profitability (ROA), earning assets quality (NPF) and liquidity (FDR) have the ability to explain why Islamic banks hold minimum capital beyond the amount required by the regulation. Therefore, the study accepted alternative hypotheses 1, 2 and 4 and rejected the rest. Moreover, this paper added that credit risks generated from Islamic modes of financing (*Mudarabah, Musharakah and Murabahah*) will depreciate value of capital in Islamic banks.

One of the primary limitations of this study is that the data variables are limited to construct the comprehensive and rigorous research model. In one sense, it relates to the limited quantitative method applicable to be used. Secondly, this study excluded the economic factors in conducting the research. Future research could incorporate other variables such as inflation, exchange rate and money supply in Indonesian Islamic banks case.

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