Capital Buffer, Risk, Profitability, Size, and Macroeconomics: Empirical Study on Islamic Banks

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Abstract. *The development of Islamic economics has led to the growth of Islamic banking, as a financial institution based on sharia principles. This research aims to analyze the relationship of risk, profitability, company size, and macroeconomics with capital buffer of Shariah Commercial Banks Indonesia during the period of 2015-2019. The study used a quantitative approach of the regression panel data with stata13 statistical tools. This study used secondary data with a population of 14 sharia commercial banks and a sample of 12 Islamic commercial banks using purposive sampling method. BOPO, NPM, ROA, and KURS (exchange rate) were found to have significant positive effects on CB. SIZE has a significant negative effect, while NPF has positive insignificant effect on CB. Islamic banks, regulators, and governments may consider risks, profitability, company size, and macroeconomic conditions in determining the size of capital buffers and maintaining the adequacy of capital owned by Islamic Banking.*

Keywords: *Capital Buffer, Islamic Economic Systems, Shariah Banks*

Abstrak. *Ekonomi Islam menjadi paradigma baru yang komprehensif. Bank syariah dalam sistem ekonomi Islam merupakan lembaga keuangan dengan prinsip syariah. Penelitian ini bertujuan untuk menganalisis hubungan risiko, profitabilitas, ukuran perusahaan, dan makroekonomi dengan penyangga modal (CB) Bank umum syariah (BUS) di Indonesia pada tahun 2015-2019. Pendekatan penelitian menggunakan pendekatan data panel kuantitatif regresi dengan alat statistik stata13. Penelitian ini menggunakan data sekunder dengan populasi 14 Bank Islam dan sampel 12 bank umum syariah berdasarkan metode purposive sampling. BOPO, NPM, ROA, dan KURS (nilai tukar) ditemukan memiliki pengaruh positif yang signifikan terhadap CB. SIZE memiliki hubungan negatif signifikan, sedangkan NPF positif tidak signifikan. Bank syariah, regulator, dan pemerintah dapat mempertimbangkan risiko, profitabilitas, ukuran perusahaan, dan kondisi makroekonomi dalam menentukan ukuran penyangga modal dan menjaga kecukupan modal yang dimiliki oleh Perbankan Syariah.*

Kata kunci: *Penyangga Modal, Sistem Ekonomi Syariah, Bank Syariah*

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Introduction

Islamic economics becomes a comprehensive new paradigm. Chapra (2001) argues that Islamic economics is inseparable from conventional economics. Islamic economics deals with economic problems with a comprehensive Islamic approach to gain a new view of a fair economy and pay attention to ethical and spiritual values. Islamic economics enriches the moral viewpoint of Islam to benefit humankind in seeking a more just world order. Thus, the presence of the Islamic economy is the answer to efforts to close the shortcomings and weaknesses of the conventional economy so that the Islamic economy is a further improvement of conventional economic development. The Qur'an as the Scripture For Muslims not only regulates the issues of ritual worship but also provides perfect (comprehensive) and eternal (universal) guidelines for all humankind (Nasution, 2009)

Islam is a universal religion, simple, easy to understand, and reasoned, and has three fundamental principles, namely: 1) tawhid "oneness"; 2) a "representative" caliphate; and 3) '*Adil* (justice). According to Umar Chapra, Islamic economics is the financial parent of Islam, with the title of Divine Economics. An impression of the quality of the "Godhead" of the Islamic economy is not only in the forms of the straight economic person, because the perpetrators must be human, but also in the forms of the law and maxims that economic actors have to comply with. This refers to the faith that all economic activity, along with human nature, mainly belong to Allah, and God (God power) all things are repaid. By accessing divine rules, every human being has moral values and worship. Every human action cannot be separated from value, which vertically reflects good morals, and horizontally benefits humans and other beings. In that context, Islamic finance also relies on these imperative normative values.

The Islamic-based economy has been introduced since the time of the Prophet and his Companion. The prohibition of the imposition of *usury, gambling, gharar, dzolim* (malicious)*,* and *haram* become the primary conditions of the implementation of the Islamic economy so that Muslims are obliged to learn, understand and apply it. The law of Islamic-based economic practice is mandatory for Muslims as a form of human obedience in a comprehensive way (*kaffah*) to Allah SWT. Based on that basis, then the Islamic economy is present in the middle of society. Although its development is not as popular as the conventional economy, the Islamic-based economy has been widely applied by Muslims and non-Muslim communities. This is because the Islamic economy itself is intended to provide prosperity for all human beings. The development of the Islamic economy as a system of science and economics has received many positive responses at the global level (Hamid, 2008).

One of the financial institutions that operate under Islamic principles is Islamic Banking. Law No. 21 of 2008 on Islamic Banking describes Islamic banks as banks that comply with sharia values. The main task is to collect funds from surplus people in the form of deposits or savings and distribute them to the deficit people. Based on the Global Islamic Financial Report (2019), the position of Indonesia is first out of the 48 countries with the most Islamic financial institutions, so the Islamic economic system has developed well. Banks can be called trust institutions. The right tool to support trust is the bank capital (capital buffer). Capital should be used to mitigate the possibility of losing investment in assets, especially the one funded by the depositors' funds (Muhammad, 2005: 248). According to Johnson and Johnson (1985: 331), capital functions, among others, as a buffer to absorb operational losses and other losses.

Law No. 21 of 2008 article 38 requires sharia banks to apply risk management, the principle of knowing customers, and customer protection. Therefore, effective risk management is required for sharia banking, a trust and intermediation institution. In this case, banks can provide Capital Buffer (CB), which is measured by the variation between CAR and government regulation on minimum capital that must be owned by banking institutions, namely 8% (POJK, 2014).

Capital banking is faced with many aspects of micro-prudential issues, including financing risk, market risk, operational risk, and third-party funds. These micro-prudential aspects can be measured by financial ratios such as Non-Performing Financing (NPF) to measure financing or credit risk (Jokipii and Milne, 2007; Atici and Gursoy, 2013; Bayuseno and Chabahib, 2014; Daher, 2015; Noreen et al., 2016; Ghosh, 2017; Sutrisno, 2018), Return on Assets (ROA) and Operating Expenses operating income (BOPO) to measure operational risk (Agustuty D and Ruslan, 2019; Sutrisno, 2018), Size and Net Interest (NI) to measure market risk (Prasetyoko and Seodarmono, 2015; Sutrisno, 2018), and third-party funds or deposits (Xu et al., 2012; Zu and Chen, 2016).

In addition to the micro prudential aspects, macro prudential aspects also influence capital buffers. Gross Domestic Product Growth is used to see the influence of business rhythm or procyclicality on the CB (Ayuso et al., 2004; Jokipii and Milne, 2007; Noreen et al., 2016). In addition, Williams (2011), who examined the influence of macroeconomic variables on capital in Nigeria years 1980-2008, found that the amount of money in circulation, real exchange rates, domestic interest rates, inflation, and political instability had a relation to the adequacy of capital in Nigeria. Awajobi (2011) also stated that bank-specific components and macroeconomic conditions influence capital

adequacy in banking in Nigeria. Thus, the problem formulation of the research is:

1. Do NPF, BOPO, NPM, ROA, SIZE, and KURS partially affect sharia commercial banking's *capital buffer?*

2. Do NPF, BOPO, NPM, ROA, SIZE, and KURS simultaneously affect sharia commercial banking's *capital buffers?*

Literature Review

Capital (*capital)* of the bank can be defined as funds invested by the owner to establish a business entity to finance the bank's business operations and comply with the regulations set by the monetary authority (Taswan, 2013:139). Quoting from Greuning and Iqbal (2011:211-212) the main purpose of the capital is to provide stability and absorb losses, to protect customers and depositors in case of liquidation. Capital Adequacy serves as a protective net against risks that may occur and be faced by banks.

The function of capital is to reduce risk (Koch and MacDonald, 2003:481). This is based on three points: a cushion for banks in absorbing losses and staying *solvent,* opening access to financial markets, and limiting growth and *risk-taking.* According to Johnson and Johnson (1985: 331), one of the functions of capital is as a buffer to absorb operational losses and other losses. Standards related to the capital adequacy of financial institutions, especially banks, are regulated in Basel standards.

Basel standard is a standard issued by the Basel Committee on Banking Supervision (BCBS) to regulate banking institutions in the international sphere. BCBS is part of the Bank for International Settlement (BIS) as a committee that sets banking regulatory standards and is a cooperation forum related to banking supervision with 45 Central Banks and 29 bank supervisory authorities from various countries (OJK, 2019)

As for the Basel III framework, the global regulation for banks and a more robust banking system strengthens the quality and quantity of capital. Quoted from the Financial Services Authority (OJK), since 2010, Basel III is the latest regulation in response to the financial crisis in 2008 caused by a lack of capital adequacy, high variations in interbank RWA, high debt, and liquidity crunch. The strengthening of banking capital is carried out by: (1) Correctly classifying financial instruments classifying as capital, namely Common Equity Tier (CET) 1, Additional Tier (AT) 1, and Tier 2; (2) Addition of buffer obligations consisting of Countercyclical Capital Buffer, Capital Charge G-SIB, Conservation Buffer, and D-SIB; (3) added the Point of Non-Viability (PONV) Capital Loss Absorption feature.

Referring to Basel's approach, the AAOIFI makes basic rules on capital adequacy for Islamic financial institutions. The IFSB further developed this standard. In December 2006, the IFSB issued capital adequacy standards for company contributing Sharia financial services (except insurance) for the first time. Similar to conventional financial institutions, the minimum capital adequacy requirement of Sharia financial institutions is 8%.

Credit risk arises because the party applying for financing fails to pay their bills (Umam, 2013:135). Credit/financing risk could be represented by non-performing financing (NPF) in sharia banks. Non-Performing Financing (NPF) in Atici and Gursoy (2013); Daher (2015); Fauzia and Idris (2016); Zhu and Chen (2016); Ghosh (2017); Agustuty D and Ruslan (2019) showed a significant negative relationship with BUFF. Contrary to these results, Jokipii and Milne (2007); Noreen et al. (2016); Sutrisno (2018) said a significant positive relationship between NPF and BUFF. This study uses NPF Nett, which considers the allowance for eliminating productive assets (PPAP) in its calculations. Sharia bank NPF ratio can be calculated by the formula (SEOJK, 2015):

$$NPF = \frac{Non-Performing\ Financing - Non-Performing\ PPAP}{Total\ Financing}\ x\ 100\%$$

Greuning and Iqbal (2011: 165) define operational risk as to the loss that arises from limitations or failures of internal processes related to systems, technology, humans, analytical models, and external risks. Operating Expenses to Operating Income (BOPO) in Agustuty D and Ruslan research (2019), which examined the determinant of *capital buffer* in the banking industry in Indonesia, found a significant positive influence between BOPO and BUFF. In this study, operational risk was measured using the ratio of Operational Cost to Operating Income (BOPO), with the calculation formula based on SEOJK (2015) as follows:

$$BOPO = \frac{Total\ Operating\ Expenses}{Total\ Operating\ Income}\ x\ 100\%$$

Market risk can be defined as a risk where a bank experiences possible losses caused by volatile movements in market prices (Greuning and Iqbal, 2011: 148). A similar understanding was also expressed by Umam (2011:135), which defines market risk as a risk that occurs due to portfolio fluctuations related to market variables to cause losses. If there is a Net Interest Margin (NIM) ratio in conventional banks, then sharia banks have a Net Profit Margin ratio (NPM) that also reflects market risk with the same level of health. NIM found to have a significant positive influence on BUFF in Sutrisno (2018). On the other hand, NIM

was a construct that has a negative and significant influence on the Capital Buffer (Prasetyoko and Seodarmono 2015). Based on SEOJK (2015), Net Profit Margin (NPM) sharia banks can be calculated by the formula:

$$NPM = \frac{Earning\ after\ profit-sharing\ (reward\ and\ bonus)}{Average\ Earning\ assets}\ x\ 100\%$$

$$NPM = \frac{Net\ revenue\ sharing}{Average\ Earning\ assets}\ x\ 100\%$$

Return On Assets (ROA) is a ratio of profitability that refers to the nominal money to earn divided into the number of assets used (Cashmere, 26 2014:201). Brigham and Houston (2010:148) said that *Return on Asset* (ROA) is a ratio of net income to total assets to measure returns on total assets". The higher ROA of a company, the higher profit that the company can achieve, and the better the company in terms of asset use. Return on Assets (ROA) is a profitability ratio used to determine the company's performance in achieving profits by utilizing company assets. ROA can be formulated as follows:

$$ROA = \frac{Earning\ after\ tax}{Total\ Assets}\ x\ 100\%$$

Retained earnings are one of the sources to gain the CB. So, the change in profit has a positive effect on changes in the optimal CB. Profit can also negatively affect Capital Buffer because high profit can reflect high rental value. The capability to generate lastingly high profits and gain CB through retained earnings becomes decreased. Thus, high-profit banks tend to have decreased CB because they will not violate minimum capital regulations (Milne and Whalley 2001), so that profit negatively influences changes in the CB. Variation in asset risk has both positive and negative impacts on capital buffer changes. The bank will react to the implementation of the 1993 Basel policy by increasing the risk of its assets. So, high profitability is compensated for having higher capital (Koehn and Santomero 1980).

Bank size is defined as the size of a bank. Bank scope can be indicated in terms of capitalization, total assets, and sales. According to Ardi and Lana (2006), company size can be gauged by the total assets owned. The ratio of the bank size is obtained from the natural logarithm of the total assets owned by Islamic banks in a certain period. Stolz and Wedow (2005), the size of banks affecting capital buffers, banks can balance costs and profits through capital buffer management, (1) large banks must have relatively more minor capital and do more monitoring and filtering. (2) Larger banks have more significant potential in obtaining investment

and diversification. Thus, banks are less likely to experience large adverse shocks to their capital and thus have a lower CB as collateral contra these shocks. (3) Large banks tend to be rescued by the government first when a crisis occurs due to systemic risk ("too big to fail"). The calculation of size can be formulated (Ranjan and Dahl, 2003) as follows:

$Bank\ Size = Ln\ (Total\ Assets).$

There are transactions with international parties in the economic system, which require money as a means of transaction. The free exchange rate system is an exchange rate created separately from the supply and demand of foreign currency. The government does not have the power to interfere in determining the exchange rate. This system is based on a market mechanism, where the high and low value of a currency is earnest by the demand and supply of the currency itself. A floating exchange rate is a system where governments and markets have freedom in determining currency exchange rates. Therefore, the exchange rate can move up or down freely. In this case, the role of the government is to prevent sharp fluctuations in the exchange rate.

Financial institutions in particular banks have a role and function to maintain the continuity of fiscal balance of payments, practical application of exchange rate policies through the formulation of a second-tier foreign exchange market, minimization of composite administrative supervision and encourage dependence on market strength, deregulation, justification, commercialization, and revitalization of community district companies, etc. (Okongwu CSP 1987). In the study results, Masood and Javaar (2019) mentioned that the condition of foreign exchange movements has a significant influence on a capital buffer.
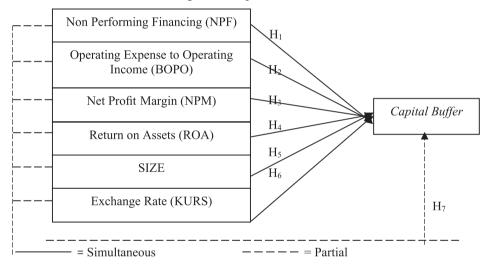
Ayuso et al. (2004); Jokipii and Milne (2007); Prasetyoko and Seodarmono (2015); Daher (2015); Fauzia and Idris (2016), who used macroeconomic variables in their study, found similar results, with results having a significant adverse effect on BUFF. Saadaou (2015); Zhu and Chen (2016); Noreen et al. (2016); Kolade and Mwamba (2018) found a significant positive influence on the capital buffer. Williams (2011), who examine the effect of macroeconomic variables on capital adequacy in Nigeria years 1980-2008, found that the amount of money in circulation, real exchange rates, domestic interest rates, inflation, and political instability had a relationship to capital adequacy in Nigeria. Awajobi (2011) also stated that the efficiency of capital adequacy in banking in Nigeria is influenced by bank-specific aspects and influenced by macroeconomic factors.

Methods
Research Approach

The quantitative method was chosen to be used in this study. According to Sugiyono (2011:8), a quantitative method is an approach stationed on the philosophy of positivism, for research on a particular population or sample, with quantitative/statistical data collection and analysis instruments, to test the hypothesis that has been established.

Empirical Model

Figure 1. Empirical Model

We don't use Interest in Islamic Banks
Types and Data Sources

Secondary data is used in this research collected from the official website of the BPS, OJK, BI, and the annual report of Shariah Commercial Banks (BUS). The population in this study was 14 Islamic Commercial Banks in Indonesia enrolled and supervised by Financial Services Authority. A purposive sampling technique was used, further research samples were obtained from 12 BUS in Indonesia.

Analytical Techniques
Regression Data Panel

Hsiao (2003:7) states that panel data elaborate by two dimensions, cross-section (N) and time series (T). Although it looks more complex compared to analysis that only uses cross-section data (N=1) or time series (T=1), the panel data can be simpler in its calculation and conclusion in some instances. The panel data can provide data on a more significant number of points, increase the degree of freedom, and reduce co-linearity amidst independent variables, thus improving observations and estimates (2003:3). If the number of cross-section units and time series units is the same, then the data can be called a balanced panel. Whereas if different, it is called an unbalanced panel. In this study, the panel data used was balanced with 60 observations consisting of 12 BUS (N) and the 2015-2019 (T) period.

The use of panel data with microeconomic and macroeconomic variables in a country was conducted by Ayuso et al. (2003); Boyer and Filion (2007); Awojobi et al. (2011); William (2011); Louzis et al. (2012); Noreen et al. (2016); Wilara and Basuki (2016) though with several different methods such as multiple regressions, Generalized Method of Moment (GMM), Error Correction Model (ECM), and multifactor analysis. Deaton (1985), in his research entitled Panel Data from Time Series of Cross Section, suggests that the interesting development of any economic relationship is that the relationship is linear in parameters but not necessarily in variables. In this study, the parameters used are data in the form of annual even though macroeconomic variables are not found cross-section.

Deaton further argued that cross-sections could give birth to time series through the use of cohorts, groups with a fixed membership of individuals that can be identified when appearing in surveys. A multi-part survey of cohorts will produce consecutive random samples of individuals into each group. The same assumption can be made on time-series data through successive repetitions until it becomes panel data.

Regression Model

The regression model to define the determinants of a capital buffer of Islamic commercial banks is as follows:

$$Yit = \beta i + \beta 1 NPFit + \beta 2 BOPOit + \beta 3 NMit + \beta 4 ROAit + \beta 5 SIZEit + \beta 6 KURSit + e$$

i is the symbol for cross-section, t for time series, Y_{it} as a capital buffer of the i-bank and t-time, β_i as a coefficient of constants, NPF or Non-Performing Financing as financing risk, BOPO (Operating Expense to Operating Income) as

operational risk, NPM (Net Profit Margin) as market risk, ROA as a measure of profitability, SIZE is a measure of the company, KURS as a condition of macroeconomic stability, β1-β6 as a coefficient of regression and symbol e for variable error.

Determination of Estimated Models

There are three models in estimating panel data regression, the Common Effect Model, Fixed Effect Model, and Random Effect Model (Widarjono, 2013: 353-359).

1. Common Effect Model (CEM), also called Ordinary Least Square (OLS), is the simplest method among the three models of data panel regression estimation. It only combines cross-section and time-series data without seeing the difference between time and time individuals.

2. Fixed Effect Model (FEM) is a panel data estimation model that inserts dummy variables to solve intercession problems, assuming similar intercession differences in an observation related to time and research subjects (time-invariant).

3. Random Effect Model (REM), the third model in panel data estimation, assumes that variables interfere with the relationship between time and research subjects. In addition, each research subject is considered to have a different intercept.

Determination of the Estimation Method
Chow test

The Chow test functions to select the suitability of the panel data regression estimation model within the Common Effect Model or Fixed Effect Model, which uses the F-statistic test with the following hypotheses (Widarjono, 2009: 361):

H_0 = Common Fixed Model

H_1 = Fixed Effect Model

If the F-statistic value is less than 0.05 or <5%, then H_0 is rejected. Meanwhile, if it is more than 0.05 or> 5%, then H_0 is accepted.

Hausman test

Baltagi (2015: 18) states that in determining the panel data regression estimation model, it is enough to use one method, namely the Hausman test. The Hausman test serves to choose a more appropriate approach within the fixed effect model or the random effect model. The Hausman test hypothesis is:

H_0 = Random effect model

H_1 = Fixed effect model

If the p-value in the Hausman test is less than 0.05 or <5%, then H_0 is rejected. Meanwhile, if it is more than 0.05 or> 5%, then H_0 is accepted.

Hypothesis testing

T-test

The T statistical test tends to know how well the influence of an independent variable is individually or respectively on the dependent variable (Ghozali, 2011: 98). H_0 is rejected if the probability (t-stat) <α or a significance level of 0.01 0.05, 0.10 (Mankiw, 2014: 379), which indicates that partially the independent variable has a significant effect on the dependent variable and vice versa.

F-test

The F-test determines that all independent variables will significantly impact the dependent variable at the level of 0.05 (Nachrowi, 2006: 16). The F-test is carried out with the assumptions, if the probability> α 5%, later the independent variable is not significant or does not influence the dependent variable and vice versa.

Test the coefficient of determination

The coefficient of determination (R^2) test aims to determine how well the model's competence can explain the variance of the independent variable on the dependent variable (Nachrowi, 2002: 21). The value of the coefficient of determination is between zero and one, where the R2 value approaches one. The model used concerning the correlation among the independent variables and the dependent variable can be adequately explained.

Results and Discussions
Descriptive Variable Statistics

Descriptive statistical variables include an explanation of the average value (mean), minimum or lowest value (min), maximum or highest value (max), and standard deviation in observations on each independent and dependent variable. Table 1 appearance the detailed statistical results of each variable used in this study.

Table 1. Detailed Statistical Results of each Variable

Variabel	Mean	Std dev	Obs
CB	16,6425	21,32031	N = 60
NPF	4,0573	11,84554	N = 12
BOPO	98,7625	31,02643	T = 5
NPM	7,42167	8,511885	
ROA	0,6622	5,260424	
SIZE	16,1316	1,365595	
KURS	9,5400	0,0278007	

Source: Stata13, data processed

Selection of Estimation Model

Table 2. Chow Test Results

Effects Test	Prob	Results
Cross-section F	0,00	H_0 rejected

Source: Stata13, data processed

The chow test results show a probability of 0.00, which means that the Fixed Effect Model (FEM) is chosen as the fitting estimation model compared to Ordinary Least Square (OLS).

Table 3. Hausman Test Results

Effects Test	Prob	Results
Cross-section F	0,0000	H_0 rejected

Source: Stata13, data processed

After doing the chow test, the next step is to do the Hausman test. The probability value in the Hausman test is 0.0000. These results indicate that H_0 is rejected, and the Fixed Effect Model (FEM) is chosen as the most appropriate model to use.

Results of Panel Data Regression Analysis

Table 4. Results of Panel Data Regression Analysis– Fixed Effect Model

	Dependent Variabel: BUFF			
	Coefficient	t-statistik	Prob.	Result
C	-1007,49	-2,30	0,027	-
NPF	0,124767	0,91	0,367	H_0 accepted
BOPO	0,4099605	3,12	0,003**	H_0 rejected
NPM	4,558061	5,26	0,000*	H_0 rejected
ROA	3,068876	3,73	0,001*	H_0 rejected
SIZE	-4,393164	-1,74	0,089***	H_0 rejected
KURS	106,7239	2,32	0,025**	H_0 rejected
R^2	0,7038			
Obs			Prob>F	0,0000

Level of Significance ***, **, *: 10%, 5%, 1%

Source: Stata13, data processed

Furthermore, the panel data regression model equation can be rewritten as follows:

$Yit = -1007,49 + 0,124767NPFit + 0,4099605BOPOit + 4,558061NPMit + 3,068876ROAit - 4,393164SIZEit - 106,7239KURSit + e$

T-test

Based on the table of panel data regression results above, there is only one variable that shows insignificant results, namely the NPF variable, which has a significant level above α 10%, 5%, and 1%. Meanwhile, the other six variables, namely BOPO, NPM, ROA, SIZE, and KURS, were found to have a significant reaction on the capital buffer of Islamic commercial banks.

F-test

Table 4.7 shows that the F-stat value is 0.0000, which is lesser than α = 0.05, so that H0 is rejected, which means that NPF, BOPO, NPM, ROA, SIZE, and KURS simultaneously have a significant reaction on CB.

Coefficient of determination (r-square/ R^2)

Table 4 shows that the value of the coefficient of determination or r-square is 0.7038 or 70%. The independent variables subsist of Non-Performing Financing, Operating Costs of Operational Income, Net Profit Margin, Return on Assets, Company Size, and Exchange Rate. This explains their effect on The capital buffer for Islamic commercial banks in Indonesia from 2015 to 2019 is 70%. Meanwhile, the remaining 30% is interpreted by other variables outside the model.

Discussion

Islamic banks, in their activities, provide financial services using an Islamic economic system that is free of interest (Khan, 2011). Chapra (2006) describes interest as the additional amount of debtors' actual amount to lenders. Therefore, Islamic banks have financial ratios that do not involve interests in them and replace them with an Islamic economic system based on sharia principles. Some of the financial ratios referred to and used in this study include Non-Performing Financing and Net Profit Margin. In addition to the interest that is equated with usury, Islamic banks in the Islamic economic system must also avoid the practice of *gharar*, *maisir* (gambling), dzolim (malicious), and *haram*. Another aspect that distinguishes Islamic banks in the Islamic economic system from conventional banks is the existence of a Sharia Supervisory Board (DPS), which oversees whether the activities of Islamic banks are following sharia principles (Iqbal, 1997).

Non-Performing Financing (NPF) in this study was found to have a positive and insignificant effect. Similar results were found by Bayuseno and Chabahib (2014), who also construct that NPL had no significant effect on the CB. Bayuseno and Chabahib argue that these results show that the public banks going public in Indonesia during the 2010-2013 period applied various policies. Some banks may increase their capital buffer prudently. In contrast, others may experience a decrease in retained earnings due to an increase in NPL. The bank has difficulty increasing its capital buffer or even using the capital buffer for operational activities. Daher et al. (2015) also stated the same result. In his research, Daher argues that Islamic banks are insensitive to changes in the risk level of assets, or in this case, the capital buffer. The high level of capital for Islamic banks that follow conventional banks can also explain this insignificant effect. Although not significant, these results are in the research of Jokipii and Milne (2007); Noreen et al. (2016); Sutrisno (2018), who construct a positive relationship between NPF and BUFF.

Although not significant, the findings of this research confirm the theory

that NPF has a positive relationship with the capital buffer. The higher the risk of financing requires Islamic banks increase their capital buffer. The financing risk faced by Islamic banks is more complicated than conventional banks due to additional externalities. Externalities that arise can be caused by risks that occur in each financing contract. As with financing with partner contracts (*mudharabah* and/or *musyarakah*), Islamic banks are not allowed to impose fines if the customer's installment payments are late, or the customer does not make payments in an accidental case. During the delay, the bank's capital is in unproductive activities that can even be eroded. Islamic bank financing is more exposed to additional risk because the contract used requires banks to provide additional capital buffers to deal with risks that arise due to the financing provided. In addition, financing must be proactive (anticipative), not reactive, including a part and all functional activities (IBI, 2015: 78).

Operational Expenses on Operating Income (BOPO) were found to positively and significantly affect the capital buffer. This finding supports the study of Agustuty and Ruslan (2019). They examined the encouragement of CB in the banking industry in Indonesia, which found a positive effect and significant between BOPO on CB. Agustuty and Ruslan stated that the increase in BOPO would increase the CB. The results of this study are following the theory, where BOPO has a positive effect on the capital buffer. The higher the operational risk, the banks need to have more capital buffers as a cushion in facing this risk

A high BOPO indicates that the level of operational risk faced by a bank is also high. This is because the operating expenses borne are more significant than the operating income generated. Therefore, Islamic banks need to use their capital to cover operating expenses that are not covered by operating income. Conversely, the smaller the BOPO indicates, the lower the level of operational risk for Islamic banks and indicates a better condition for the bank so that Islamic banks will tend to hold fewer capital buffers. Therefore, Islamic banks must use the principle of prudence in managing their operational risks to reduce the limited capital of the economy to manage their resources so that they are not exposed to large amounts of operational risk while providing convenience for stakeholders (Greuning and Iqbal, 2011: 217).

Net Profit Margin has the same size level as Net Interest Margin and was a construct that positively and significantly affected the CB (Sutrisno 2018). Sutrisno (2018) states that the greater the NPM will upturn the CB because the higher the NPM shows that more banks can increase their profits efficiently, which will upturn the CB. Many Islamic banks are faced with market risks that arise from the contracts used. With the many possible risks that can arise due to market

movements, Islamic banks need to increase their capital buffer. This explains the positive relationship between market risk and BUS capital buffer. According to Mili et al. (2016), the determinants of CAR in branch banks owned by foreign banks also positively affect NPM and capital adequacy. This indicates that the performance of the parent bank does not affect branch banks because branch banks have separate market activities. An increase in NPM is also will increase the capital adequacy of the parent bank and branch bank.

Return on Assets in this study was found to affect the capital buffer of Islamic banks positively. These findings support the research of Sutrsino (2018) and Agustuty and Ruslan (2019), which also construct a positive relationship of ROA on the CB. The greater the profit generated by a bank, the higher the percentage or amount of retained earnings. Where retained earnings can be used to increase the capital buffer, the changes in earnings have a positive effect on changes in the optimal CB. If a bank wants to increase its capital buffer, the bank can increase its profit. In addition, banks may react to the adoption of Basel 1993 by gaining asset risk so that high profitability is compensated for having higher capital (Koehn and Santomero 1980).

Company size (SIZE) was found to harm capital buffer. The same result is stated by Stolz and Wedow (2005), where the size of the bank harms the capital buffer. Stolz and Wedow argue that banks can balance costs and benefits through capital buffer management. Large banks tend to hold relatively small amounts so that they can perform better monitoring and screening. Big banks have better power to invest and diversify. Therefore, large banks tend to have lower capital buffers because large banks experience a negative shock to their capital (Stolz and Wedow, 2005). In addition, the concept of "too big to fail" can also explain the negative relationship between company size and the capital buffer of Islamic commercial banks where the big banks have more "power" and tend to be more difficult to fail.

The exchange rate, or the rupiah exchange rate against foreign currencies, in this study using the rupiah exchange rate against the United States dollar, was found to positively and significantly affect the capital buffer of Islamic banks. This relationship is also found in the results of research by Masood and Javaar (2019), which states that conditions of foreign currency exchange rate movements have a significant effect on Capital Buffer. In general, if the rupiah strengthens and is supported by stable global economic conditions, the national economy will also increase (Pinem, 2009), which can be realized through the favorable condition of a banking sector capital. This is due to the encouragement of investors interested in investing in the domestic financial market, which has a positive effect on increasing profits, which can gain the CB.

Conclusions

This study intends to determine the relationship, risk, profitability, company size, and macroeconomics to the Capital Buffer in Indonesian Islamic commercial banks. Operational risk (BOPO), market risk (NPM), profitability (ROA), and macroeconomic (KURS) have a positive and significant effect on the capital buffer of shari'a commercial banks during the 2015-2019 period. Then the size of the company (SIZE) was found to have a significant negative effect. At the same time, the risk of financing (NPF) had a positive and insignificant relationship with the capital buffer. Islamic banks, regulators, and the government can consider risks, profitability, company size, and macroeconomic conditions in determining and deciding on the amount of capital buffer and managing the capital buffer. Future studies can compare subjects and add research variables to obtain more comprehensive results.

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