Analysis of Influential Factors on Capital Buffer in Indonesian Banks

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ABSTRACT

This study aimed at revealing the influence of Lag of Capital Buffer, Return on Equity, Non Performing Loans, Loans to Total Assets Ratio, and GDP Growth on Capital Buffer. 31 commercial banks registered in Indonesia Stock Exchange was chosen as the samples using purposive sampling technique. This study used quantitative research approach with causality research design. The data were in a form of documentation of financial statements and then were analyzed using variable calculation, classic assumption test, and multiple regression. Results showed that Lag of Capital Buffer influences Capital Buffer through continuous optimization of bank capital to optimal levels. Another finding was Loan to Total Assets Ratio affected Capital Buffer by transferring capital reserves to loans so that the capital reserves could decrease. This study suggested that banks, customers, and investors are expected to consider Lag of Capital Buffer and Loan to Total Assets Ratio in coining good decision making over banking problems.

Keywords: Capital Buffer, Lag of Capital Buffer, Loan to Total Assets Ratio

1. INTRODUCTION

A good bank performance is defined as the bank's ability to carry out its normal operations, ably fulfill all its obligations, and successfully cope with banking risks [1]. To maintain that performance, banks must have sufficient capital reserves or known as Capital Buffer. Capital Buffer is used as a cushion in dealing with possible risks that are likely to be experienced by banks [2]. The amount of the Capital Buffer is determined by the agio between the total bank capital reserves and the bank's mandatory minimum reserves. The Basel Committee on Banking Supervision (BCBS) in the Basel Accord sets a minimum bank buffer of 0-2.5% of the main capital reserves and a minimum required bank reserve of 8% [3].
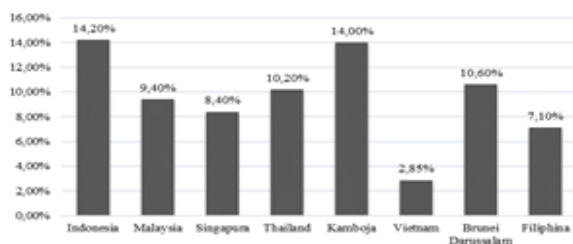

**Figure 1** Capital Buffer Ratio had by Southeast Asian Countries [4]

Indonesia, as one of those who apply Basel policy, has the largest average capital reserves in Southeast Asia. Such condition implies that Indonesian banks are safer from financial risks than other banks in Southeast Asia region. Figure 1 depicts the fact that Indonesian banks have an average capital buffer of 14.20% of the total capital (Financial Services Authority, 2018).

Source: Financial Services Authority (2018)

Figure 2 Capital Buffer Growth in Indonesia during 2013-2017

Indonesian banks' capital buffer ratio has increased every year during 2013-2017 periods. In connection with the data issued by Financial Services Authority (OJK), the ratio of Indonesian bank's capital buffer has been increased by 1% per year [5].
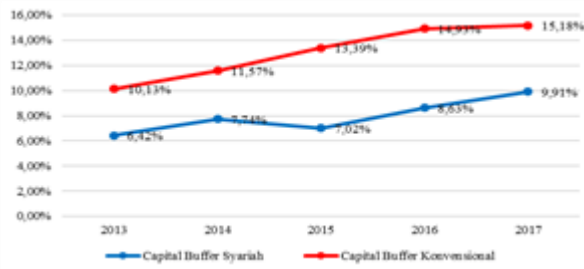
Source: Financial Services Authority (2018)

Figure 3 Capital Buffer Ratio between Commercial and Islamic Banks in Indonesia

The increase of the bank's buffer ratio is affected by the ratio of the dominating commercial and Islamic banks, of which the ratio has moved up every year (Financial Services Authority, 2018). Figure 3 conveys the capital buffer ratio between commercial and Islamic banks in Indonesia from 2013 to 2017.

The increase of the commercial bank's stable buffer ratio is influenced by several factors. Many previous studies revealed different results on investigating some factors influencing the increase of bank's buffer ration encompassing the variables of Lag of Capital Buffer (BUFFt-1), Return On Equity (ROE), Non Performing Loans (NPLs), Loans to Total Assets (LAR), and GDP Growth (GDPG) [2]; [3]; [4]; [5]; [6]; [7]; [8]; [9]; [10]; [11]; [12]; [13]; [14]; [15]; [16]; [17]. Therefore, this study aims to determine the factors or variables that mostly influence capital buffer of Indonesian banks registered on the Indonesia Stock Exchange from 2013 to 2017.

The different results of many previous studies that investigate the Lag of Capital Buffer (BUFF), Return On Equity (ROE), Non Performing Loans (NPL), Loans to Total Assets (LAR), and GDP Growth (GDPG) are mostly due to condition and circumstance dissimilarities. The following subchapters portray the basis of understanding towards the five important variables in influencing bank's capital buffer.

1.1. Capital Buffer (BUFF)

Capital Buffer is defined as the amount of capital owned by banks that excesses of what is required by national regulators [21]. According to Bank Indonesia Regulation Number 15/12/PBI/2013, countercyclical buffer is an additional capital that serves as a buffer to anticipate losses in the event of excessive credit growth or bank financing that might potentially disrupt financial stability. The objective of the Countercyclical Capital Buffer (CCB) policy is to prevent the emergence or increase of systemic risks arising from the excessive credit growth. Such objective is closely related to the procyclicality behavior of bank lending, which is

increased during the economic expansion period (boom) and slowed down during the economic contraction period (bust).

1.2. Lag of Capital Buffer (BUFFt-1)

Lag of Capital Buffer (BUFFt-1) refers to a coefficient that interprets the measurement of adjustment costs in capital buffer that is used to create an optimal bank's capital [22]. Moreover, it has a positive influence on bank's capital buffer [6]; [9]; [11]; [10]. Similarly, [7] stated that Brazilian banks had significant capital adjustments with not too large capital differences in each period. On the contrary, [17] conveyed that the Lag of Capital Buffer had a negative influence on bank's capital buffer. Their study resulted on the bank's behavior that tent to maintain or reduce its capital buffer once reaching the optimum number. As a supporting study to them, [14] also showed that lag of capital buffer had no significance on capital buffer because its proxy was too weak in influencing the capital buffer.

1.3. Return On Equity (ROE)

Return On Equity (ROE) is defined as a ratio to measure net income after tax with own capital, which also shows the efficient use of the own capital [23]. Ref [24] and [20] explain the implications of corporate funding behavior in which the corporate prefers the internal bank's funding from retained earnings rather than the issuance of shares or bonds. The higher ROE indicates an increase in the amount of profit the bank will get that is further used as a buffer during a crisis [21]; [2]; [25]. Other studies portray that ROE is considered to have a negative effect on capital buffers due to the fact that getting and holding profits in recession periods is too difficult so that banks prefer to increase their capital through debt [16]. Whereas [17] explain that companies prefer their profits to be distributed as dividends rather than used as retained earnings so that the capital buffer does not change in values.

1.4. Non Performing Loan (NPL)

In accordance with Bank Indonesia Regulation Number 17/11/PBI /2015, Non Performing Loan (NPL) is the ratio between total loans from the substandard, doubtful, and loss categories and the total loans extended. Bank's capital reserves must be able to adjust to its NPL level [16]. High capital reserves mean that the CAR owned by banks is also high adjusted to the its NPL ratio, so that capital buffer also increases up to the level of its NPL [25]. Hence, NPL is considered to have a positive influence on capital buffer [2]; [14]. Ref [12] considers that in-optimal credit management will erode bank's capital. Another study found that NPL was stated to have no influence on capital buffer because the NPL proxy is too weak to affect the capital buffer [7]. In other words,

the bank's NPL has been maintained and does not become a risk or a major threat to it because its management is good to diminish bad loans [7].

1.5. *Loan to Total Assets Ratio (LAR)*

Loan to Total Asset Ratio (LAR) is used to measure the ability of bank's capital in providing credits to debtors. The given loans generally have uncollectible risk or called as a bad credit. Consequently, banks must prepare an allowance for impairment losses to anticipate the possibly occurring risk of bad credit [26]. The higher the loan compared to the available cash, it will trigger a larger capital reserve. Therefore, banks tend to increase their capital buffer to confront with greater credit risks [2]. Another study portray that an increase of LAR ratio could reduce the bank's capital buffer ratio as its reserves are converted into current assets that are channeled as credits [9]. Ref [6] also state that banks only issue short-term loans so that the cash changes are not too large and the capital reserves do not change.

1.6. *GDP Growth (GDPG)*

GDP is a national income that illustrates the level of a State's production achieved in a particular period and changes by years [27]. Its growth becomes an indicator used to measure the level of economic growth in Indonesia. Ref [9] convey that when a State's economic conditions show a positive trend along with the larger GDP growth than the previous year, meaning that the banks have a tendency to hold or reduce the level of capital buffers. Ref [25] states that banks increase their capital buffer during economic recession to avoid limiting the number of loans disbursed that can vitiate the recession. Thus, capital buffer has an opposite effect to GDP Growth (GDPG) [8]; [18]; [20]. On the contrary, [25] has different results regarding the effect of GDPG on capital buffer. Her study revealed that economic growth was still considered vital and had not motivated banks to do expansion so that banks still rely on the existing capital reserves. Moreover, [16] state that banks continue to add capital reserves as long as economic conditions still improve, of which the reserves will be only used when economic conditions begin to decline.

2. METHOD

This study used quantitative research approach with causality research design. The data were in a form of parametric data that were obtained from the publication of the annual financial statements of the banks on their official and Indonesia Stock Exchange websites, as well as the data on Indonesia's economic growth from Bank Indonesia reports during 2013 to 2017 periods. The data were collected using purposive sampling technique. There were 31 out of 116 banks registered in Indonesian banks directory in 2013-2017 used as the samples as they

met the sample qualification namely categorized in commercial bank, officially registered in Indonesia Stock Exchange, and included in Bank Indonesia reports from 2013 to 2017. The obtained data were analyzed using variable calculation, classic assumption test, and multiple regression. Variable calculation was undertaken to determine the ratio of each dependent and independent variables using a predetermined formula before being analyzed in the regression analysis test. There were six variables calculated in this study namely Capital Buffer (BUFF), Lag of Capital Buffer (BUFFt-1), Return On Equity (ROE), Non Performing Loans (NPL), Loans to Total Assets Ratio (LAR), and GDP Growth (GDPG). Moreover, the use of multiple regression aimed to determine the effect of independents variables (BUFFt-1, ROE, NPL, LAR, and GDPG) on a dependent variable (BUFF) using interval, scale, or ratio data.

Table 1. Operational Definitions Of Variables

Variable	Definition	Formula
Capital Buffer (BUFF)	The difference between the capital adequacy ratio (CAR) of banks and the minimum capital requirements imposed by the regulator [9]	BUFF = CAR – Capital Requirement
Lag of Capital Buffer (BUFFt-1)	Reflection on adjustment cost to create an optimal level of capital performed by banks [21]	Lag of Capital = BUFF $_{t-1}$
Return On Equity (ROE)	Measurement of the level of income obtained based on capital owned [28]	ROE = Earning After Tax / Total Equity
Non Performing Loan (NPL)	The sum of all loans borrowed by debtors who have not made scheduled payments for at least 90 days [29]	NPL = Non performing loan / Total loan
Loans to Total Assets (LAR)	Factors that show the relationship between cash and current assets of the company (e.g. banks) with current liabilities [28]	LAR = Total loans / Total assets
GDP Growth (GDP-G)	Growth in the overall values of all goods and services produced in the region over a period of time [27]	GDPG = real GDP (t)- real GDP (t-1) / real GDP (t-1)

The classic assumption test was carried out to determine whether the regression model used was good or not [30]. The test was expected to produce BLUE (Best, Linear, Unbiased, and Estimator) results, of which Table 2 depicts the results of classical assumption test of this present study.

Table 2. Results of Classic Assumption Test

Classic Assumption Test		BUFF t-1	ROE	NPL	LAR	GDPG
Normality	Kolmogorov Smirnov	0,200*				
Multicollinearity	VIF;tolerance	1.1;0.84**	1.7;0.57**	1.7;0.57**	1;0.94**	1;0.96**
Heteroscedasticity	Rank Spearman	0.271***	0.592***	0.994***	0.332***	0.874**
Autocorrelation	Durbin Watson	Nilai D = 1,870, dengan persamaan (dU<D<4-dU) maka 1.8032<1.870<2.1968****				
Linearity	Lengrange Multiplier	c2 hitung = 0.76 ; c2 tabel = 175.198 0.76<175.198*****				
* passed Normality test if sig>0.05 ** passed Multicollinearity test if VIF<10 and tolerance >0.1 *** passed Heteroscedasticity test if sig>0.05 **** passed Autocorrelation test if sig>0.05 ***** passed Linearity test if c2 count<c2 table						

In accordance with Table 2, the data have passed all the classic assumption tests (Normality, Multicolliniarity, Heteroscedasticity, Autocorrelation, and Linearity). Afterwards, descriptive statistics was performed to reveal the profiles of Lag of Capital Buffer, Return On Equity, Non Performing Loans, Loans to Total Assets Ratio, and GDP Growth (see Table 3).

Table 3. Statistic Descriptive

Variables	N	Minimum	Maximum	Mean	Std
BUFF	152	0.0002	0.1991	0.100140	0.0385036
BUFF T-1	152	0.0002	0.1991	0.094165	0.0372380
ROE	152	1.0660	0.2692	0.051271	0.1853923
NPL	152	0.0021	0.1228	0.029490	0.0206740
LAR	152	0.4012	0.8087	0.657368	0.0724908
GDPG	152	0.0488	0.0556	0.051111	0.0023678
Valid N	152				

2.1. Multiple Regression Analysis

Multiple regression analysis was used to examine the effect of the independent variables encompassing Lag of Capital Buffer, Return On Equity, Non Performing Loans, Loans to Total Assets Ratio, and GDP Growth on Capital Buffer as the dependent variable. The following equation refers to the regression formula used in the present study.

$$BUFF = \alpha + \beta_1 BUFF_{(t-1)} + \beta_2 ROE + \beta_3 NPL + \beta_4 LAR + \beta_5 GDPG + e \qquad (1)$$

The regression model was considered passed the hypothesis test as it passed the F and t tests. If the F test resulted on 0.000 (sig. <0.05), then all independent variables had a significant influence on the dependent variable. Moreover, the t-test had a variety of significance as described in Table 4.

In accordance with Table 4, all independent variables do not increase when the capital buffer was equal to 0.152 ($\alpha = 0.152$). The most influential factors on capital buffer were Lag of Capital Buffer (BUFFt-1) (p = 0.000) and Loan to Total Assets Ratio (LAR) (p = 0.021). The others factors did not signify capital buffer (p > 0.05).

Moreover, all the factors had an effect 49.2% on capital buffer (Adjusted R2 = 0.492).

3. RESULT AND DISCUSSION

3.1. The Influence of Lag of Capital Buffer on Capital Buffer

This study reveals that Lag of Capital Buffer as one of two factors has a positive influence on capital buffer. In other words, Indonesian banks choose to advent and adjust their capital buffer to reach an optimal capital for eliciting banking crisis. Ref [22] state that Lag of Capital Buffer is used by most banks to do capital adjustment up to the maximum level. Ref [11] and [7] also argue that there is a positive influence between Lag of Capital Buffer and capital buffer. Bank Rakyat Indonesia (BBRI) is known as the bank that experiences an increase of capital buffer caused by Lag of Capital Buffer amounted of 1.2% per year. Similarly, CIMB Niaga Bank (BNGA) also experiences an increase of its capital buffer for 0.62% per year from 2013 to 2017.

3.2. The Influence of Return On Equity on Capital Buffer

This study reveals that Return On Equity (ROE) has no influence on capital buffer. Thus, bank's profitability is not used as retained earnings, but is distributed as dividends to stakeholders that make capital buffer experience significant changes. The finding revealed in this study has similarity to some previous research conducted by [17], [7], and [11], whose results confirm that the increase of ROE does not guarantee better capital buffer. However, there is also a study conveying that ROE is able to enhance bank's capital buffer [31]. In connection with the present study result, Bank Bumi Arta (BNBA) has an increase of its capital buffer ratio effected by ROE, whereas, Bank Mandiri also experiences an increase of ROE but followed by the increase of its dividends. However, both banks' capital buffers do not show a significant change.

3.3. The Influence of Non Performing Loans on Capital Buffer

According to the current study, Non Performing Loans has no influence on capital buffer. Meaning that, the banks have sufficient and optimal capital reserves or achieve greater buffers than the safe limit issued by Bank Indonesia. As a result, the banks are ready to face any kinds of banking risks. Ref [9] and [7] shhow a similar result where NPL is the weak proxy in affecting capital buffer. However, [2] state that a bank must provide big capital to face big risks. There are five banks which NPL ratio does not influence capital buffer namely Bank MNC International (BABP), Bank QNB Indonesia (BKSW), Bank JTrust (BCIC), Bank Bumi Artha (BNBA), and Bank Victoria (BVIC).

3.4. The Influence of Loan to Total Assets Ratio on Capital Buffer

Loan to Total Assets Ratio (LAR) has a negative influence on Capital Buffer. LAR negative value on Capital Buffer indicates an inverse effect. When there is an increase of LAR value, the capital buffer will decrease and vice versa. This indicates that the bank chooses to reduce its capital reserves to be channeled into credits. This explanation is evidenced by an increase of capital buffer ratio during the study period with an average of 0.81% per year, but followed by an average decrease of LAR ratio of -1.018% per year. For instance, West Java Regional Development Bank (BJBR) and OCBC NISP (NISP) experience the negative relationship between LAR and capital buffer. Similarly, [17], [9], and [10] reveal that there was no influence of LAR on capital buffer experienced in 70 countries in 1992 to 2002. Such findings are due to the fact that banks distribute large loans and tend to reserve less capital with collateral owned assets.

3.5. The Influence of Gross Domestic Product Growth on Capital Buffer

This study found that Gross Domestic Product Growth (GDPG) has no effect on capital buffer. This indicates that the economic situation only experiences either less increase or decrease during 2013-2017 periods, which were 5.56%, 5.01%, 4.88%, 5.03%, and 5.07% respectively. Henceforth, all bank samples will adjust their capital reserves without looking at GDPG. Such banks' behavior happens because the economic growth has not affected the banks as lenders so that they tend to be carefully increase or decrease the amount of credits given. This finding is similar to those research conducted by some previous scholars [11]; [25]; [19].

4. CONCLUSION

This study concluded that Lag of Capital Buffer has an influence on capital buffer because banks continue to make capital arrangements until they have an optimal capital. Loan to Total Assets Ratio (LAR) also has an influence on capital buffer, which indicates that banks use capital reserves as channeled into credits so that the buffer decreases. Whereas, Return On Equity (ROE), Non Performing Loan (NPL), and GDP Growth (GDPG) have no effect on Capital Buffer. In accordance to the most influential factors, banks must consider the Lag of Capital Buffer and Loans to Total Assets. Lag of capital buffer is expected to be used in providing optimal capital buffer. Moreover, as LAR has a negative influence on capital buffer, banks are suggested to be careful in channeling large-scale loans because it promotes banking risks. Bank Indonesia is also advised to monitor its banks' capital buffer ratio in order to still continue to operate. This study also

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