



CAPITAL STRUCTURE: CAPITAL BUFFER, RETURN ON EQUITY, CAPITAL ADEQUACY RATIO IN GO-PUBLIC BANKING IN INDONESIA

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ABSTRACT:

Banking companies may face adjustment costs (cost of capital adjustment) to obtain optimal capital ratios. These costs arise when banks increase or get new external capital, so capital adjustments can lead to excess or shortage of money, which can have a negative impact and cause banks to be reluctant to react quickly when capital shocks occur. This research This study uses a qualitative method explores the most significant factors influencing bank capital policy choices in Indonesia. This study examines the financing choices of 8 banks for the 2013-2022 period using panel data regression analysis techniques with STATA.17. The results of the Random Effect Model Estimation research where bank companies in Indonesia have high leverage support the fact that the nature of bank business is different from non-banking companies. The significant negative relationship of the capital buffer is in line with the too big fail theory, packing order theory and agency theory, as well as the Return On Equity and Capital Adequacy Ratio variables, which have a significant positive relationship at an accuracy level of 85.01%, so in other words banking companies can use debt to finance the company based on agency or managerial policies and strategies, thereby proposing pecking order theory with the assumption.

Keywords: Capital Buffer, Return On Equity, Capital Adequacy Ratio, Pecking Order Theory, Too Big Fall, Agency Theory.

INTRODUCTION

Corporate finance literature defines the financing mix between long-term debt and equity as a capital structure. The debate regarding the optimal capital structure for financial and non-financial companies still needs to be more conclusive in the literature. Some empirical studies on capital structure do not include financial companies, mainly banks; examples are (Rinaldi, 2023);(Mwangi et al., 2014);(SAKANKO, 2023). The bank exclusion is based on the argument that banks, as suppliers and demanders of capital, have different business traits, and these traits depend on other regulatory frameworks, such as capital adequacy ratios. In addition, as

deposit recipients, banks have higher leverage than non-financial companies. Therefore, excluding the corporate financial sector (especially banks) from the analysis is based on the argument that their decisions are a by-product of some regulatory frameworks, especially those established by national central banks. Despite the differences in business and regulatory constraints, banks play an essential role in a country's economic system. Despite separating financial and non-financial sectors and differences in capital and liability classifications, (Mahyudin & Rosman, 2022) argue that "the similarities between the capital structure of banks and non-financial companies may be larger than previously thought." They also conclude that differences in capital buffers and regulations may only be of secondary importance when analyzing bank capital structures. Based on these arguments, capital structure theories related to non-financial companies are relevant for banking companies. Therefore, this research explores the factors that influence commercial banks' capital structure in Indonesia. Banking companies act as financial intermediaries that channel funds from households (in the form of savings) and distribute funds to the public or borrowers and investors. Every company will try to create stability for its company from bankruptcy by ensuring that it does not buffer the capital it has. (Omete, 2023) argues that banks increase profitability in an efficient financial system while increasing the supply of funds from depositors to borrowers. This role becomes more significant in countries that have diversified and developing economies, such as banking companies in Indonesia.

Researchers have proposed several capital structure theories in the theoretical literature by considering various relevant costs and benefits of financing options. Each approach emphasizes appropriate assumptions about the optimal debt and equity mix. Modigliani and Miller stated the "debt irrelevance proposition" in their seminal work. However, later, they proposed a preference for debt over equity because of the benefits of tax protection (Nusantara, 2019), which was then supported by (Jensen & Meckling, 2019) using agency theory assumptions explaining the agency relationship as a contract, where one or more principals. (Myers & Majluf, 1984) proposed pecking order theory assuming information asymmetry and relevant agency costs. Then, (Jensen & Meckling, 2019) proposed the free cash flow hypothesis, followed by Baker and Wurgler, who proposed market timing theory to create. Based on different theoretical assumptions, researchers have put forward empirical evidence about various aspects of capital structure, such as the determinants of capital structure in developed countries (Jensen, 1986) but in contrast to the situation of non-financial companies, there are very few empirical studies that explore the factors that influence bank capital structure. Relationship between Capital Structure and Profitability a study by Nathania Lucky, et al., from Binus Business School, Jakarta, Indonesia, investigated how the capital structure of banks in Indonesia relates to levels of profitability. The study found that banks in Indonesia prefer zero-risk government bonds over lending to creditors, particularly during economic crises like the Covid-19 pandemic. It also highlighted the importance of risk-averse investments

for ensuring long-term sustainability. Several studies, such as (Prihadi, 2019), examine bank capital management and regulation in developing countries with strict rules, making faster adjustments to their capital structure and assessing the Capital Adequacy Ratio (CAR), which is an indicator of the bank's ability to cover or cover the decline in its assets as a result of bank losses caused by risky productive investments. The Capital Adequacy Ratio that Bank Indonesia requires for banks operating in Indonesia is at least 8%. The size of the Capital Adequacy Ratio owned by a bank will be influenced by the performance of other financial aspects, namely liquidity, asset quality, profitability, and financing. Banks play an essential role in the economy as providers of capital, as shown by (Liu, 2016): "Banks play an important role in allocating capital among all productive real sectors." This role becomes more pen.

RESEARCH METHODS

This study examines the financing choices of banks in Indonesia and explores the most significant factors of these banks' capital structure. A total of 8 banks are listed on the Indonesia Stock Exchange (BEI) stock market. This research uses data from these eight banks based on the complete data availability for 2013-2022. This sample covers most of the banking sector. Variables This research adopts variable definitions from existing literature to obtain a meaningful comparison of the results of this research with previous studies. Like (Fauziah & Wulandari, 2020); (Kartika et al., 2022); (Effendi, 2018), leverage is used as a dependent variable and proxy for bank capital structure. They suggest using book leverage because most bank regulations are based on financial statements. The explanatory variables used in this research are capital buffer, return on assets, and capital adequacy ratio.

A unit root panel with STATA V.17 was used to test data stationarity. The sample data is panel data, which covers banks occasionally. Therefore, the Generalized Least Squares (GLS) panel data technique, Random Effect Model (REM), is used to estimate the relationship between book leverage as a proxy for capital structure and explanatory variables. Generalized Least Squares (GLS) are suitable for the most straightforward cases with no bank and time-specific effects. Fixed effects estimation allows the intercept for each bank to be different but constrains the slope parameter to be constant for all banks and periods.

Table 1. List of companies in the research sample

No	Issuer Code	Issuer Name
1	BBR	Bank Rakyat Indonesia,Tbk
2	BMRI	Bank Mandiri, Tbk
3	BBNI	Bank Negara Indonesia Tbk.
4	BBTN	Bank Tabungan Negara Tbk
5	BBCA	BBCA Bank Central Asia Tbk
6	BNGA	PT. Bank CIMB Niaga Tbk
7	MEGA	PT. Bank Mega Tbk
8	NISP	PT. Bank OCBC NISP Tbk

Source: Data processed by researchers from the Indonesian Stock Exchange (2023).

RESULTS AND DISCUSSION

To check whether the data series is stationary at a level, we use a summary unit root test as given by (Leary & Roberts, 2010). The results are presented in Table 2. The three explanatory variables and one dependent variable are stationary at their level at the 1% significance level. These variables do not have unit roots. Thus, all dependent and independent variables are stationary. To be more in-depth regarding the panel data of 8 cross-section banking companies and 10-year periods, the researcher carried out the Westerlund Cointegration test. Cointegration test to ensure there is no data integration and the data must be stationary in Table 2

Table 2. Unit Root Test Panel

Variable	Method	Hypothesis	Probabilitas pada level
Debt Equity Ratio	Levin-Lin-Chu	Akar unit umum	0.0000***
Capital Buffer	Levin-Lin-Chu	Akar unit umum	0.0000***
Return On Asset	Levin-Lin-Chu	Akar unit umum	0.0000***
Capital Adequacy Ratio	Levin-Lin-Chu	Akar unit umum	0.0000***

Source: Appendix stata.18, secondary data processed (2023).

Note: 1***, 5**, 10* Determination of significance at error tolerance levels (alpha) of 1%, 5%, and 10% respectively

Table2. Cointegration Test

Westerland Cointegration		
Cross-sectional means removed	Statistic	p-value
Variance ratio	3.9980	0.0000
Pedroni Cointegration		
Modified Phillips-Perron t	2.7631	0.0029
Phillips-Perron t	-3.6797	0.0001
Augmented Dickey-Fuller t	-3.4165	0.0003

Source: Appendix stata.18, secondary data processed (2023).

With the Westerlund Cointegration Test for data from 8 banking companies and 10 years. With a p-value of $0.0000 < 0.05$, it explains that the null hypothesis is accepted and the alternative hypothesis is rejected. This shows that in the panel data, no cointegration effect will disrupt the coefficient estimator figures later. Thus, panel data is suitable for processing in this research so that the coefficient parameters reach BLUE. From the results of integration testing using the Pedroni test approach, it was found that the Modified Phillips-Perron (0.0029), Phillips-Perron (0.0001), and Augmented Dickey-Fuller (0.0003) models all showed a p-value < 0.05 so it can be interpreted as research. This is cointegration or the existence of a long-term relationship. In this research, descriptive analysis is used to obtain an overview of all research variables of the sample companies during the research period. Descriptive statistical results are presented in Table 3 below:

Table3. Descriptive Statistics

Variable	Obs	Mean	Std. Dev	Min	Max
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<i>DER</i>	80	6.483969	.2760003	6.070142	7.382658
<i>Buffer</i>	80	2.527546	.4139333	.8641704	3.70885
<i>ROA</i>	80	2.528952	.6171468	-.1301985	4.441595
<i>CAR</i>	80	3.033428	.2790517	1.72757	3.887871

Source: Appendix stata.18, secondary data processed (2023).

In the descriptive statistical analysis, it can be seen in Table 3 that the debt equity ratio (DER) is an assessment of debt versus equity. This ratio is found by comparing all debt, including current debt, with all equity. It is helpful in knowing the amount of funds provided by the borrower and the company owner. Based on the table above, the DAR value of the sample company during the 10-year observation period has the highest value of 7.3%, the maximum Buffer value is 3.7%, while for ROE, it is 4.4%, and CAR is 3.8%. The descriptive statistics table also shows the size of the standard deviation, where all variables have different values, and this can also be interpreted as the difference in mean values, where the standard deviation value has a smaller value than the mean value, meaning that it shows the distribution of the data variables is small, or There is no significant gap between the lowest and highest Buffer, ROE and CAR variable ratios.

Table 4. Model Selection Results

<i>Variable</i>	<i>Common Effect</i>	<i>Fixed Effect</i>	<i>Random Effect</i>
<i>DER (c)</i>	-1.9267241 [0.001]***	-1.1136148 [0.000]***	4.954348 [0.000]***
<i>Buffer</i>	.02329369 [0.604]	.07470689 [0.000]**	-1.113615 [0.000]**
	2.4220685 [0.003]**	1.380874 [0.005]**	.0747069 [0.004]***
<i>CAR</i>	3.9477734 [0.001]***	4.9209696 [0.002]***	1.380874 [0.001]***
<i>n</i>	80	80	80
<i>r2</i>	.28865716	.40302578	.249110
<i>r2_a</i>	.26057784	.31650777	.402711
<i>F</i>	10.280061	15.527627	-
<i>Chi2</i>	-	-	47.384637

Legend: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Source: Appendix stata.18, secondary data processed (2023).

Regression results To explore the effect of explanatory variables on leverage on the debt and capital ratio, this study uses pooled OLS, fixed effect and random effect regression. Table 4 presents the results of these three estimates. The relationship of all explanatory variables with the dependent variable shows consistency in the three regression models. Based on the results of the Hausman (1978) test (Chi-square: 3.33, p-value: 0.3435) and the Breusch and Pagan Lagrangian multiplier test (chipboard; 180.95, p-value: 0.000), the random-effects estimate was found to be suitable for discussion. The results show that the Buffer has a significant and positive relationship with the debt-equity ratio in the panel data regression estimation. Apart from that, the return on assets and capital adequacy ratio have a positive and significant relationship with the debt-equity ratio.

Empirical Discussion

The choice of the best model was the Random Effect Model, where the Buffer variable has a probability of $0.000 < 0.005$ with a coefficient of -1.113, which means that the Buffer has a negative significant influence on the Debt Equity Ratio. Still, the company's performance is set

at a minimum limit of no less than 8%. This means that capital is able to minimize and help the company's financing of debt. This can be seen in the negative coefficient. The results of this hypothesis accept H1 and reject H0. According to (Sangadah, 2022), the debt-to-equity ratio can describe the sources of funds used by the company and the risks faced by the company. The more outstanding the debt to equity ratio means, the greater the company's assets or funding that comes from debt, so the role of capital will act to overcome this problem. Therefore, the Buffer is negative.

(Dana, 2018) explains that bank capital is the difference between the value of its assets and the value of its debt obligations (including deposits). In other words, it is the part of the bank's assets that belongs to its shareholders. Bank creditors and depositors are better protected from bank pressure when the ratio of capital to total assets is high; this falls into the agency and trade-off theory (Režňáková et al., 2010). There are several reasons for this. First, because shareholders are the most junior stakeholders in a bank, capital functions as a buffer that can absorb possible bank losses. Second, because shareholders indirectly control bank behavior, banks will be more careful in investing when they have more shares at stake. (Brasliņš & Arefjevs, 2014) Banks tend to maintain buffers above minimum capital requirements and utilize these buffers during periods of stress. In the tier 1 capital buffer theory, it is explained that bank supervisors in each country have the right to assess the adequacy of instruments added to Tier 1 bank capital to increase the total loss absorption capacity—such as subordinated debt and convertible debt. If they consider that these additional instruments cannot provide strong loss absorption in times of crisis, they may have to emphasize higher levels of bank capital (Ayuso et al., 2004).

In this analysis, it is also found that Return On Assets has a probability value of $0.004 < 0.05$ with a coefficient of 0.07, which indicates that ROE has a significant favorable influence on DER and net profit on capital owned, able to increase the incidence of the DER ratio in financing banking companies, especially in health. Bank. The results of this hypothesis accept Ha2 and reject H02. According to (Ismi et al., 2021), the level of company health to achieve success in the company's financial performance can be seen by measuring the company's ROE. ROE is, of course, not only an indicator for company owners to evaluate the extent to which existing management has worked in optimizing its functions and duties in improving company performance and also the welfare of company owners, but is also able to be a source of information for investors who will invest their capital in the company. So, the higher the ROE, the more investors will be interested in investing, and vice versa. This is in accordance with the Trade-Off theory, where if the company experiences an increase in DER, it will result in an increase in ROE and vice versa. (Satria & Sundari, 2021) explain that the relationship between ROE and DER is significantly positive, so it can also be interpreted. This is because in 2018-2022, the debt to equity ratio experienced a decrease and increase, and the same also applies to the return on equity ratio, thus stating that there is a decrease in the debt to equity ratio that causes the return on equity to increase." "Conversely, if the debt-to-equity ratio increases, the return on equity will decrease.

The third hypothesis is accepting hypothesis Ha3 and rejecting H03; this means that Capital Adequacy has a significant influence in a positive direction; this can be seen from the probability value of $0.001 < 0.05$ with a coefficient of 1.3880 and from these results, it is indicated that capital adequacy can increase and increase the debt-equity ratio. Capital

Adequacy Ratio is a ratio used to measure a bank's capital adequacy capability. Priharta et al. (2018), Capital Adequacy Ratio (CAR) is a ratio that shows the ability of bank capital to bear the risk of possible financing failures. A high Capital Adequacy Ratio indicates that the bank has sufficient and healthy funds and vice versa. The Capital Adequacy Ratio is low, and the risk of bank financing failure will be higher. The theory that Links the Capital Adequacy Ratio with Capital Structure (Herizona & Yuliana, 2020) Packing order theory explains that companies that have a high level of profit actually have a smaller level of debt. This trimmed debt level is not because the company has a small target debt level but because the company does not need external funds. The high level of profit makes their internal funds sufficient to meet investment needs. In Agency Theory, according to this approach, the capital structure is structured to reduce conflicts between various interest groups. The conflict between shareholders and managers is the concept of free cash flow. There is a tendency for managers to want to retain resources so that they have control over these resources. Debt can be considered as a way to reduce cash flow conflicts (Jensen & Meckling, 2019). If the company uses debt, managers will be forced to remove cash from the company to pay interest.

From a theoretical point of view, the capital buffer is negative (significant) where funding in companies must have capital financial criteria not to be $<8\%$, which means the bank will always maintain the stability of its performance. Therefore, this capital buffer can provide support for financing companies with debt. Obtained from loans from stakeholders or credit stakeholders, here we emphasize that trade-off theory and agency theory explain the role of financing or investment financing. If the company is pressed, it can use debt for capital with the consideration of the supervisor or managerial party who acts as an agency by monitoring the capital buffer value, which is higher than 8% . In the Tier 1 capital buffer theory, it is explained that bank supervisors in each country have the right to assess the adequacy of instruments added to Tier 1 bank capital to increase the total loss absorption capacity, such as subordinated debt and convertible debt.

Retrun Equity Ratio, which is positive and can be interpreted as the ratio of debt to capital, can provide additional company financing where of these 8 banks have high Retrun Equity Ratio values so that many stakeholders, investors and others have the confidence to invest their wealth in the company, so that this is related to the trade-off theory, where if the company experiences an increase in DER, it will result in an increase in ROE and vice versa. The Return Equity Ratio is, of course, not only an indicator for company owners to evaluate the extent to which existing management has worked in optimizing functions and tasks in improving performance.

The opportunity for the Debt Equity Ratio to increase in value is by financing companies with debt rather than bank capital, provided that the company is far from being affected by risk, because the capital adequacy ratio provides monitoring of this problem; from this, it can be seen that 8 banking companies have excellent capital adequacy ratios where the positive value here shows that 8 companies can use debt financing for the capital they have. The pecking order theory explains that companies that have a high level of profit actually have a lower level of debt. This trim debt level is not because the company has a small target debt level but because the company does not need external funds. The high level of profit makes their internal funds sufficient to meet investment needs. In Agency Theory, according to this approach, the capital structure is structured to reduce conflicts between various interest

groups. The conflict between shareholders and managers is the concept of free cash flow. There is a tendency for managers to want to retain resources so that they have control over these resources. Debt is a way to reduce cash flow conflicts.

CONCLUSION

In the estimation results, it is known that all variables in this study are stationary (unit root test), this is also confirmed that each variable has a convergence or gap for each company of 28.13% in forming the capital structure each year. Apart from that, this research uses the Modified Phillips-Perron, Phillips-Perron, and Augmented Dickey-Fuller cointegration tests with a value of $0.000 < 0.05$; there is a long-term relationship in influencing the capital structure of banking companies. This research is also identified as free from classical assumption testing. The best model chosen was the Random Effect Model, where the Buffer variable has a probability of $0.000 < 0.005$ with a coefficient of -1.113, which means that the Buffer has a negative significant influence on the Debt Equity Ratio. Return On Equity, which has a probability value of $0.004 < 0.05$ with a coefficient of 0.07, meaning that ROE is able to have a significant influence in a positive direction, where if ROE increases, DER will also increase. Capital Adequacy Ratio with a probability value of $0.001 < 0.05$ with a coefficient of 1.380, so it can be interpreted that CAR can influence DER significantly, and if CAR increases, it can also provide an increase in DER.

From the research estimation results, a suggestion was obtained, which is expected for further research to use banking company objects from Book I, II, III, and IV categories and use more variables that can influence leverage from the debt and equity ratio. Apart from that, policyholders should continue to monitor and evaluate the amount of capital that banking companies must have and always pay attention to and maintain bank stability because it is hoped that they will be able to expand the factors that determine the extent of banking company performance. Apart from that, the assessment that has been carried out can mean that the bank's performance must be maintained by maximizing stability. This action will provide benefits to the company in terms of the trust of stockholders or the public in investing their wealth and shares. Apart from that, many investors have confidence in the company. So, with this action, the company's capital structure will improve and provide stable company performance.

BIBLIOGRAFI

- Ayuso, J., Pérez, D., & Saurina, J. (2004). Are capital buffers pro-cyclical?: Evidence from Spanish panel data. *Journal of Financial Intermediation*, 13(2), 249–264.
- Brasliņš, Ģ., & Arefjevs, I. (2014). Basel III: countercyclical capital buffer proposal-the case of Baltics. *Procedia-Social and Behavioral Sciences*, 110, 986–996.
- Dana, B. S. (2018). Evaluation Of Macro-prudential Policy On Credit Growth In Indonesia: Credit Registry Data Approach. *Etikonomi*, 17(2), 199–212.
- Effendi, T. U. (2018). Analisis Faktor Internal Bank Terhadap Capital buffer pada Industri Perbankan di Indonesia. *Jurnal Manajemen Bisnis Indonesia (JMBI)*, 7(2), 231–242.
- Fauziah, N., & Wulandari, F. (2020). Determinants of Banking capital buffer in Indonesia. *Journal of Indonesian Applied Economics*, 8(1), 13–23.
- Herizona, B. S., & Yuliana, I. (2020). Analisis Leverage Ratio Terhadap Pengungkapan Tanggung Jawab Sosial Perusahaan (Csr) Dan Diversitas Gender Sebagai Variabel Moderasi. *Jurnal Benefita*, 5(3), 341–351.
- Ismi, N., Cipta, W., & Yulianthini, N. N. (2021). Analisis Pengaruh Debt to Equity Ratio dan Firm Size Terhadap Return On Equity Pada CV. Dwikora Usaha Mandiri. *Jurnal Manajemen Indonesia*, 9(1), 10–17.
- Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In *Corporate governance* (pp. 77–132). Gower.
- Kartika, A., Indriyaningrum, K., Nurhayati, I., & Sudiyatno, B. (2022). Determinants of Capital Buffer: Study on Conventional Commercial Banks in Indonesia. *European Journal of Business and Management Research*, 7(2), 289–294.
- Leary, M. T., & Roberts, M. R. (2010). The pecking order, debt capacity, and information asymmetry. *Journal of Financial Economics*, 95(3), 332–355.
- Liu, J. (2016). Bank's regulatory capital buffer and counter-cyclical behavior—Empirical analysis based on China's 18 commercial banks. *International Journal of Management Science and Business Administration*, 2(4), 7–16.
- Mahyudin, W. A., & Rosman, R. (2022). Performance of Islamic banks based on maqāṣid al-sharī'ah: A systematic review of current research. *Journal of Islamic Accounting and Business Research*, 13(4), 714–735.
- Mwangi, L. W., Makau, M. S., & Kosimbei, G. (2014). Relationship between capital structure and performance of non-financial companies listed in the Nairobi Securities Exchange, Kenya. *Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics*, 1(2), 72–90.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221.
- Nusantara, S. T. D. (2019). *PEGARUH STRUKTUR MODAL TERHADAP RETURN ON EQUITY (ROE) PADA PT. SUMMARECON AGUNG Tbk Muhibah*.
- Omete, F. I. (2023). *Financial Intermediation Efficiency and Performance of Commercial Banks Listed On the Nairobi Securities Exchange in Kenya*. JKUAT-COHRED.
- Prihadi, T. (2019). *Analisis laporan keuangan*. Gramedia Pustaka Utama.
- Režňáková, M., Svoboda, P., & Polednáková, A. (2010). Determinants of capital structure: Empirical evidence from Slovakia. *Ekonomický Časopis (Journal of Economics)*, 3(58), 237–250.

- Rinaldi, L. (2023). Accounting and the COVID-19 pandemic two years on: insights, gaps, and an agenda for future research. *Accounting Forum*, 47(3), 333–364.
- SAKANKO, M. A. (2023). *A STATE-LEVEL IMPACT ANALYSIS OF FINANCIAL INCLUSION ON POVERTY REDUCTION IN NIGERIA*. UNIVERSITY OF ABUJA.
- Sangadah, D. (2022). Fundamental Factors and Capital Behavior of Banking in Indonesia. *Jurnal Ekonomi & Bisnis JAGADITHA*, 9(2), 154–164.
- Satria, M. R., & Sundari, R. (2021). Pengaruh debt to equity ratio (der) terhadap return on equity (roe) pada sektor perbankan yang terdaftar di be (periode 2016-2019). *KINERJA*, 18(1), 148–154.

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