

Strategic Financial Determinants of Shareholder Value: Analyzing the Moderating Role of Price-to-Book Value in Indonesia Banking

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Abstrak

Return saham mencerminkan kondisi perusahaan sekaligus mempresentasikan persepsi investor terhadap saham tersebut. Penelitian ini bertujuan untuk menganalisis pengaruh return on asset, return on equity, BOPO, capital adequacy ratio, loan deposit to ratio, net interest margin terhadap return saham dengan price to book value sebagai variabel moderasi pada perusahaan perbankan tahun 2014-2018. Teknik pengambilan data secara purposive sampling dengan populasi sebanyak sebelas perusahaan perbankan yang mempublikasikan laporan keuangan dan terdaftar di Bursa Efek Indonesia dari tahun 2014 sampai 2018. Pengujian dilakukan dengan software EViews 9 menggunakan regresi data panel dengan fixed effect. Hasil penelitian menunjukkan bahwa return on asset, return on equity, BOPO, loan to deposit ratio tidak berpengaruh signifikan terhadap return saham, sedangkan net interest margin berpengaruh negatif dan signifikan, capital adequacy ratio berpengaruh positif dan signifikan, serta net interest margin yang dimoderasi price to book value berpengaruh positif dan signifikan terhadap return saham.

Kata Kunci: Return on Asset; Return on Equity; BOPO; Capital Adequacy Ratio; Loan to Deposit Ratio; Net Interest Margin; Price to Book Value; Stock Return.

Abstract

Stock returns reflect the condition of the company while presenting investor perceptions of these shares. This study aims to analyze the effect of return on assets, return on equity, BOPO, capital adequacy ratio, loan deposit to ratio, net interest margin on stock returns with price to book value as a moderating variable in banking companies in 2014-2018. The data collection technique used purposive sampling with a population of eleven banking companies that publish financial statements and are listed on the Indonesia Stock Exchange from 2014 to 2018. Testing was conducted using EViews 9 software with panel data regression and fixed effect model. The results show that return on assets, return on equity, BOPO, loan to deposit ratio have no significant effect on stock returns, while net interest margin has a negative and significant effect, capital adequacy ratio has a positive and significant effect, and net interest margin moderated by price to book value has a positive and significant effect on stock returns.

Keyword: Return on Asset; Return on Equity; BOPO; Capital Adequacy Ratio; Loan to Deposit Ratio; Net Interest Margin; Price to Book Value; Stock Return.

1. Introduction

The capital market plays a critical role in a nation's economic development by facilitating fund mobilization and investment opportunities. In Indonesia, the banking sector serves as a cornerstone of the financial system, representing approximately 87.10% of the financial industry and functioning as a primary source of financing for the real sector (Juliana & Pahlevi, 2019). The performance of banking institutions, therefore, has far-reaching implications not only for financial stability but also for investor confidence and market dynamics. Stock returns are a key indicator of corporate performance and a primary consideration for investors in making investment decisions. Investors typically assess a company's financial health through fundamental analysis, which involves evaluating financial ratios derived from financial statements. Among these ratios, profitability measures such as Return on Assets (ROA) and Return on Equity (ROE), efficiency indicators such as Operating Expenses to Operating Income (BOPO), liquidity metrics such as Loan to Deposit Ratio (LDR), risk management proxies such as Capital Adequacy Ratio (CAR), and interest-based performance measures such as Net Interest Margin (NIM) are commonly used to gauge bank performance and predict stock returns. However, the relationship between these financial ratios and stock returns is not always straightforward and may be moderated by market-based valuation metrics such as Price to Book Value (PBV). Despite extensive research on the determinants of stock returns, few studies have comprehensively examined the simultaneous influence of these six financial ratios within the Indonesian banking sector while also considering the moderating role of PBV. Previous studies have often focused on limited variables or different industries, leaving a gap in understanding how these factors collectively affect stock returns in the context of Indonesian banking. Moreover, the period 2014–2018 represents a significant phase in Indonesia's banking landscape, characterized by regulatory changes, economic fluctuations, and evolving market competition, making it a pertinent timeframe for analysis. This study aims to fill this gap by analyzing the effect of ROA, ROE, BOPO, CAR, LDR, and NIM on stock returns, with PBV as a moderating variable, in banking companies listed on the Indonesia Stock Exchange (IDX) from 2014 to 2018. By employing panel data regression and a fixed effect model, this research seeks to provide empirical evidence on which financial ratios significantly influence stock returns and how PBV moderates the relationship between NIM and returns. The findings of this study are expected to contribute to the academic literature on banking finance and investment analysis, as well as offer practical insights for investors, bank managers, and policymakers in enhancing financial decision-making and strategic planning within the Indonesian banking industry.

2. Literature Review

2.1 Signal Theory and Efficient Market Hypothesis

The theoretical foundation of this study is rooted in Signal Theory and the Efficient Market Hypothesis (EMH). Signal Theory, as proposed by Spence (1973), suggests that companies convey information about their financial health and future prospects through observable signals, such as financial ratios, which investors interpret to make investment decisions. In the context of banking, financial ratios extracted from financial statements—such as profitability, liquidity, and capital adequacy indicators—serve as critical signals that influence investor perception and stock valuation (Brigham & Houston, 2011). The Efficient Market Hypothesis, introduced by Fama (1970), posits that stock prices reflect all available information. In a semi-strong form efficient market, public information—including published financial statements—is quickly incorporated into stock prices, reducing the ability of investors to earn abnormal returns based solely on historical or publicly available data. This study operates under the assumption that Indonesia's capital market exhibits semi-strong efficiency, wherein financial disclosures by banking institutions are promptly reflected in stock prices, thereby influencing returns.

2.2 Stock Return and Its Determinants

Stock return represents the financial gain or loss experienced by an investor over a specific period and is a function of dividend income and capital appreciation. It serves as a primary metric for evaluating investment performance and corporate valuation. Fundamental analysis, which relies on financial ratios, is widely used by investors to forecast stock returns. Research by Dicky (2018) and Purwanto & Agustini (2017) confirms that investors tend to rely on financial performance indicators—particularly profitability, liquidity, and solvency ratios—when assessing stock attractiveness. In banking, these ratios are especially relevant due to the sector's highly regulated and financially sensitive nature.

2.3 Return on Assets (ROA)

ROA measures a bank's ability to generate profit relative to its total assets, reflecting operational efficiency and asset utilization. According to Ishaq, Amin, & Khan (2018), a higher ROA indicates effective management and attractive profitability, which can positively influence investor sentiment and stock returns. Previous studies, including those by Maryyam (2016) and Agave, Efrani, & Resmalana (2018), have found a positive and significant relationship between ROA and stock returns in banking contexts. Thus, it is hypothesized that: H1:ROA has a positive effect on stock returns.

2.4 Return on Equity (ROE)

ROE reflects the return generated on shareholders' equity and is a key indicator of financial leverage and profitability from an equity-holder perspective. High ROE signals efficient capital deployment and strong earnings potential, which can enhance stock valuation. Research by Saragih (2018) and Nurazi & Usman (2016) supports a positive association between ROE and stock returns in emerging markets. Therefore: H2:ROE has a positive effect on stock returns.

2.5 Operating Expenses to Operating Income (BOPO)

BOPO is an efficiency ratio that compares operating expenses to operating income. A lower BOPO indicates higher operational efficiency and cost management, which can translate into improved profitability and investor confidence. Studies by Nurazi & Usman (2016) and Sutrisno & Panuntun (2019) have shown that BOPO negatively affects stock returns, implying that inefficient cost management erodes returns. Hence: H3:BOPO has a negative effect on stock returns.

2.6 Capital Adequacy Ratio (CAR)

CAR measures a bank's capital strength relative to its risk-weighted assets, serving as a buffer against potential losses. A higher CAR indicates greater financial stability and risk resilience, which can attract investor interest and support stock prices. Empirical evidence from Saeedi (2016) and Lartey, Antwi, & Boadi (2013) confirms a positive relationship between CAR and stock returns in banking sectors. Consequently: H4:CAR has a positive effect on stock returns.

2.7 Loan to Deposit Ratio (LDR)

LDR assesses a bank's liquidity by comparing total loans to total deposits. While a higher LDR may indicate aggressive lending and potential profitability, it also raises liquidity risk. According to Juliana & Pahlevi (2019), a moderately high LDR can signal effective intermediation and positively influence returns. However, Iskandar (2017) found an insignificant relationship, suggesting contextual variability. For this study: H5:LDR has a positive effect on stock returns.

2.8 Net Interest Margin (NIM)

NIM represents the difference between interest income and interest expense, normalized by earning assets. It reflects a bank's core profitability from its lending and deposit activities. Higher NIM suggests stronger interest-based earnings, which can enhance stock performance. Research by Zulbetti, AH, & Perwito (2015) supports a positive link between NIM and stock returns. Thus: H6:NIM has a positive effect on stock returns.

2.9 Price to Book Value (PBV) as a Moderating Variable

PBV compares a firm's market value to its book value and serves as an indicator of market perception and growth potential. A high PBV suggests that investors anticipate future value creation, which can amplify the effect of fundamental performance metrics on stock returns. Septariani (2015) and Zaini, Sadalia, & Fachrudin (2018) indicate that PBV moderates the relationship between financial ratios—particularly NIM—and stock returns by enhancing investor valuation of profitability signals. Accordingly: H7: PBV moderates the relationship between NIM and stock returns, such that the effect of NIM on returns is stronger when PBV is high.

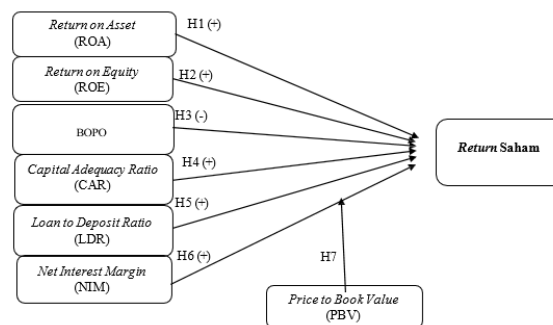


Figure 1. Conceptual Framework Model of Research

3. Research Methodology

This study adopts a quantitative research design using secondary data from banking companies listed on the Indonesia Stock Exchange (IDX) between 2014 and 2018. The research employs a panel data regression approach, which combines time-series and cross-sectional data, to analyze the effect of financial ratios on stock returns while accounting for the moderating role of Price to Book Value (PBV). Panel data regression is selected due to its ability to control for individual heterogeneity and improve estimation efficiency.

3.1 Population and Sample

The population of this study includes all banking companies listed on the IDX. The sample was selected using purposive sampling based on the following criteria:

- 1) Banks that consistently published audited financial reports during the 2014–2018 period.
- 2) Banks with complete data for all variables under study.
- 3) Banks that were not suspended or delisted during the observation period.

Based on these criteria, eleven (11) banking companies—consisting of four state-owned banks and seven private banks—were included in the final sample, yielding 55 firm-year observations.

3.2 Data Collection

All data were collected from secondary sources, including:

- 1) Annual financial reports published by each bank.
- 2) The Indonesia Stock Exchange (IDX) website.
- 3) Bank-specific investor relations pages and financial databases.

3.3 Variable Definition and Measurement

Variables in this study are operationalized as follows:

Table 1. Operational Definitions of Variables

Variable	Symbol	Measurement Formula
Stock Return	SR	$(\text{Year-end price}_t - \text{Year-end price}_{t-1}) / \text{Year-end price}_{t-1} \times 100\%$
Return on Assets	ROA	$\text{Net Income} / \text{Total Assets} \times 100\%$
Return on Equity	ROE	$\text{Net Income} / \text{Equity} \times 100\%$
Operating Expense Ratio	BOPO	$\text{Operating Expenses} / \text{Operating Income} \times 100\%$
Capital Adequacy Ratio	CAR	$(\text{Tier 1} + \text{Tier 2 Capital}) / \text{Risk-Weighted Assets} \times 100\%$
Loan to Deposit Ratio	LDR	$\text{Total Loans} / \text{Total Third-Party Funds} \times 100\%$
Net Interest Margin	NIM	$(\text{Interest Income} - \text{Interest Expense}) / \text{Average Earning Assets} \times 100\%$
Price to Book Value	PBV	$\text{Market Price per Share} / \text{Book Value per Share}$
Interaction (Moderation)	NIM×PBV	Product of NIM and PBV

3.4 Data Analysis Techniques

The analysis was conducted in the following stages:

- 1) Descriptive Statistics – to describe the characteristics of the data.
- 2) Classical Assumption Tests – including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation.
- 3) Panel Data Model Selection – using the Chow test and Hausman test to select between the Common Effect, Fixed Effect, or Random Effect models.
- 4) Regression and Moderation Analysis – estimating the regression model with the interaction term (NIM×PBV).
- 5) Hypothesis Testing – using a significance level of $\alpha = 5\%$ with EViews 9 software.

The estimated regression model is as follows:

$$SR_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 BOPO_{it} + \beta_4 CAR_{it} + \beta_5 LDR_{it} + \beta_6 NIM_{it} + \beta_7 (NIM \times PBV)_{it} + \varepsilon_{it}$$

Where:

SR_{it} = Stock return of bank i in year t

β_0 = Constant

β_1 to β_7 = Regression coefficients

ε_{it} = Error term

4. Results and Discussion

4.1 Hasil

4.1.1 Research Object and Sample Data

The object of this study consists of eleven banking companies, comprising four state-owned banks and seven private banks, which published their financial statements and were consistently listed on the IDX from 2014 to 2018. The list of companies and their annual stock returns are presented in the table below:

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Table 2. Banking Companies and Stock Returns (2014-2018)

No.	Emiten Code	Sub-Sector	Stock Return 2014	Stock Return 2015	Stock Return 2016	Stock Return 2017	Stock Return 2018
1	BBRI	State-Owned Bank	4%	61%	-2%	2%	-30%
2	BMRI	State-Owned Bank	-3%	37%	-14%	25%	-42%
3	BBNI	State-Owned Bank	7%	54%	-18%	11%	34%
4	BBTN	State-Owned Bank	-40%	39%	7%	34%	51%
5	BBMD	Private Bank	2%	-3%	-4%	-8%	40%
6	BBCA	Private Bank	5%	37%	1%	17%	56%
7	BDMN	Private Bank	-33%	20%	-29%	16%	94%
8	NISP	Private Bank	-20%	11%	-6%	62%	-60%
9	MCOR	Private Bank	-29%	61%	46%	-51%	25%
10	BMAS	Private Bank	-16%	19%	18%	5%	-20%
11	BJTM	Private Bank	0.2%	-5%	30%	30%	14%

4.1.2 Descriptive Statistical Analysis

Descriptive statistics for all variables were calculated from 55 observations (11 banks x 5 years). The results are summarized as follows:

Table 3. Descriptive statistics

Variable	Notation	Maximum Value	Minimum Value	Mean	Standard Deviation
ROA	X1	3.110	0.180	1.794	-
ROE	X2	24.820	0.930	11.789	-
BOPO	X3	93.470	58.200	75.552	-
CAR	X4	35.120	14.150	20.819	-
LDR	X5	108.860	66.570	89.317	-
NIM	X6	9.300	3.760	6.121	-
PBV	X7	27.810	1.740	11.189	-

4.1.3 Panel Data Regression Model Selection

Three panel data regression models were tested: Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The Chow Test and Hausman Test results are as follows:

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Table 4. Panel Model Selection Test Results

Test	Probability Value	Significance ($\alpha=0.05$)	Selected Model
Chow Test	0.0002	< 0.05	Fixed Effect
Hausman Test	0.0001	< 0.05	Fixed Effect

Both tests confirm that the Fixed Effect Model (FEM) is the most appropriate for this study.

4.1.4 Classical Assumption Tests (BLUE Test)

Before interpreting the regression, the selected FEM was tested for classical assumptions

Table 5. Classical Assumption Test Results

Test	Statistic / Probability	Criteria	Result
Normality (Jarque-Bera)	0.5873	> 0.05	Normally Distributed
Heteroskedasticity	0.1652	> 0.05	No Heteroskedasticity
Autocorrelation	0.27	> 0.05	No Autocorrelation
Multicollinearity	VIF < 10	-	No Multicollinearity

The model satisfies all classical assumptions, indicating that the regression estimates are BLUE (Best Linear Unbiased Estimator).

4.1.5 Regression Estimation Results

The final regression equation obtained from the Fixed Effect Model is:

$$SR = -358.6540 + 2.5698 ROA + 7.5888 ROE + 1.5841 BOPO + 9.5009 CAR + 0.5567 LDR - 32.7717 NIM + 9.4650 (NIM*PBV)$$

The detailed regression output is as follows:

Table 6. Panel Data Regression Results (Fixed Effect Model)

Variable	Coefficient	Std. Error	t-Statistic	p-Value
C	-358.6540	-	-	-
ROA	2.569809	40.40632	0.063599	0.9496
ROE	7.588772	4.762912	1.593305	0.1196
BOPO	1.584142	1.877671	0.843674	0.4043
CAR	9.500885	2.578114	3.685208	0.0007***
LDR	0.556720	1.001760	0.555742	0.5817
NIM	-32.77170	15.21235	-2.154282	0.0378**
NIM*PBV	9.465017	2.076108	4.559021	0.0001***

Table 7. Hypothesis Test Results and Conclusions

Hypothesis	t-Statistic	p-Value	Conclusion
H1: ROA has a positive effect on stock returns	0.063599	0.9496	Rejected
H2: ROE has a positive effect on stock returns	1.593305	0.1196	Rejected
H3: BOPO has a negative effect on stock returns	0.843674	0.4043	Rejected
H4: CAR has a positive effect on stock returns	3.685208	0.0007	Accepted
H5: LDR has a positive effect on stock returns	0.555742	0.5817	Rejected
H6: NIM has a positive effect on stock returns	-2.154282	0.0378	Rejected
H7: PBV moderates the effect of NIM on stock returns (interaction is positive)	4.559021	0.0001	Accepted

4.2 Discussion

The study examines the effects of various financial ratios on stock returns in the Indonesian banking sector. Return on Assets (ROA) shows a positive coefficient (2.5698) but is statistically insignificant ($p = 0.9496$), leading to the rejection of H1. This result contradicts some previous studies but aligns with others, possibly because banking profits are heavily influenced by external factors like interest rates and economic conditions, making ROA less impactful on short-term stock returns. Return on Equity (ROE) also has a positive coefficient (7.5888) but is not significant ($p = 0.1196$), resulting in the rejection of H2. This supports the view that investors may rely on other factors beyond ROE when predicting stock returns. The ratio of Operating Expenses to Operating Income (BOPO) reveals a positive but insignificant coefficient (1.5841, $p = 0.4043$), contrary to the expected negative relationship, and thus H3 is rejected. This may indicate that higher operational costs could be associated with business expansion, which investors might view positively, although BOPO alone does not strongly influence returns in this period. Capital Adequacy Ratio (CAR) stands out with a positive and highly significant coefficient (9.5009, $p = 0.0007$), leading to the acceptance of H4. This confirms CAR as a strong indicator of financial stability and investor confidence, consistent with signaling theory. Loan to Deposit Ratio (LDR) shows a positive but insignificant effect (0.5567, $p = 0.5817$), resulting in the rejection of H5. The mixed implications of LDR signaling both profitability potential and liquidity risk may explain its lack of significant impact. Net Interest Margin (NIM) presents a negative and significant coefficient (-32.7717, $p = 0.0378$), leading to the rejection of H6. This suggests that a high NIM may reflect high operational costs or a less competitive environment, reducing profitability and investor appeal in the Indonesian context. Importantly, the moderating effect of Price to Book Value (PBV) on the relationship between NIM and stock returns is positive and highly significant (9.4650, $p = 0.0001$), supporting H7. This implies that a strong market valuation (high PBV) mitigates the negative effect of NIM, turning the combined influence positive, emphasizing the role of market perception in translating financial performance into stock returns. Overall, the findings reveal that not all fundamental ratios significantly affect stock returns; CAR is a key positive driver, while NIM negatively influences returns unless moderated by PBV. This highlights the need to consider both financial ratios and market-based indicators in investment decisions, with investors in the Indonesian banking sector prioritizing capital adequacy and market perception over traditional profitability and efficiency ratios in the short term.

5. Conclusion

This study concludes that among the financial ratios analyzed, only the Capital Adequacy Ratio (CAR) has a positive and significant effect on stock returns in Indonesian banking companies for the period 2014–2018. In contrast, Return on Assets (ROA), Return on Equity (ROE), Operating Expenses to Operating Income (BOPO), and Loan to Deposit Ratio (LDR) do not significantly influence stock returns. Net Interest Margin (NIM) has a negative and significant effect. However, the moderating role of Price to Book Value (PBV) is confirmed, as it strengthens the relationship between NIM and stock returns. These findings imply that investors in the Indonesian banking sector place greater emphasis on capital strength and market valuation rather than traditional profitability and efficiency metrics. For managers, maintaining a high CAR and managing NIM efficiently are essential strategies. Future research should incorporate macroeconomic variables and expand the sample to improve generalizability.

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