

THE EFFECT OF ROE, LDR, NPL, AND GOVERNMENT OWNERSHIP ON PRICE TO BOOK VALUE: EVIDENCE FROM INDONESIA'S STATE-OWNED BANKS USING ARDL-PMG APPROACH (2004–2024)

O EFEITO DO ROE, DO LDR, DOS CRÉDITOS VENCIDOS E DA PARTICIPAÇÃO DO GOVERNO NO RÁCIO PREÇO/VALOR CONTÁBIL: EVIDÊNCIAS DOS BANCOS ESTATAIS DA INDONÉSIA UTILIZANDO A ABORDAGEM ARDL-PMG (2004–2024)

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Abstract

The objective of this study is to examine the impact of Return on Equity (ROE), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPLs), and government ownership on Price to Book Value (PBV) of state-owned banks (Himbara) in Indonesia during the period 2004–2024. Using a quantitative approach, this study applies the Autoregressive Distributed Lag (ARDL) model with the Pooled Mean Group (PMG) estimator for both short-term and long-term dynamics. The results show that ROE has a significant positive effect on PBV, indicating that profitability remains a key determinant of company valuation. LDR exhibits a mixed effect, reflecting liquidity management considerations, while NPLs have a significant negative impact in the long run, highlighting the importance of credit risk management. Government ownership exhibits a significant moderating role, suggesting that state involvement influences market and valuation stability. The ARDL-PMG results

Resumo

O objetivo deste estudo é examinar o impacto do Retorno sobre o Capital Próprio (ROE), do Índice de Empréstimos sobre Depósitos (LDR), dos Empréstimos em Atraso (NPLs) e da participação estatal sobre o Rácio Preço/Valor Contábil (PBV) dos bancos estatais (Himbara) na Indonésia durante o período de 2004 a 2024. Utilizando uma abordagem quantitativa, este estudo aplica o modelo de Lag Autorregressivo Distribuído (ARDL) com o estimador de Grupo de Média Agrupada (PMG) tanto para a dinâmica de curto quanto de longo prazo. Os resultados mostram que o ROE tem um efeito positivo significativo sobre o PBV, indicando que a rentabilidade continua sendo um determinante-chave da avaliação da empresa. O LDR exibe um efeito misto, refletindo considerações de gestão de liquidez, enquanto os NPLs têm um impacto negativo significativo no longo prazo, destacando a importância da gestão do risco de crédito. A participação do governo exibe um papel moderador



confirm the existence of a long-run equilibrium relationship.

Keywords: ROE. LDR. NPL. Government Ownership. PBV. ARDL-PMG. Bank Himbara.

significativo, sugerindo que o envolvimento do Estado influencia a estabilidade do mercado e da avaliação. Os resultados do ARDL-PMG confirmam a existência de uma relação de equilíbrio de longo prazo.

Palavras-chave: ROE. LDR. NPL. Propriedade do governo. PBV. ARDL-PMG. Banco Himbara.

1 INTRODUCTION

The banking sector plays a crucial role in economic stability and financial intermediation, particularly in emerging markets such as Indonesia. State-owned banks, commonly referred to as Himbara, dominate the financial system and significantly influence capital market performance. Price to Book Value (PBV) is widely used as an indicator of firm valuation, reflecting investor perception of a bank's financial performance and future prospects. Several internal financial indicators such as profitability (ROE), liquidity (LDR), and credit risk (NPL) are known to affect firm valuation. However, the role of government ownership in shaping investor confidence and valuation remains underexplored.

In the Southeast Asian regional context, Indonesia has adopted a state-led banking configuration by maintaining a very large portion of state ownership in major banks with systemic status, especially the Association of State-Owned Banks (HIMBARA), so that the state plays a direct role in determining the direction of the bank's corporate policies and strategies (Naqvi, 2022, Tihanyi *et al.*, 2019).

Government ownership, ranging from 60 to 100 percent, places Indonesia among the jurisdictions with the highest intensity of state ownership in the ASEAN banking sector. This distinguishes Indonesia's banking structure from countries that have pursued broader privatization agendas for commercial banks (Dong *et al.*, 2014; Ni, 2019).

This configuration demonstrates that state-owned banks are positioned as economic policy instruments that combine the functions of financial system stability, expanding access to financing, and supporting long-term development programs, including financing sectors and regions that are less attractive from a purely commercial perspective (Naqvi, 2022; Mateev, 2025). Dominant government ownership creates

opportunities for strengthening intermediation capacity and buffering functions during times of economic cycle stress. However, at the same time, ownership concentration has the potential to undermine market discipline and encourage incentive distortions, reflected in reduced bank efficiency and profitability (Claessens *et al.*, 2002; Ozili C. Uadiale, 2017).

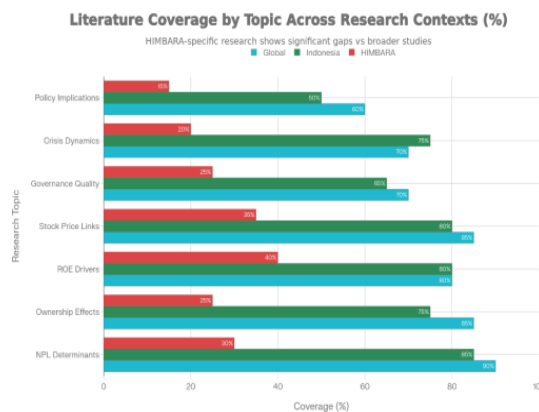
This structural context makes HIMBARA a relevant empirical arena to examine the relationship between government ownership and profitability within a state-led banking framework, particularly in the 2019–2024 period when external pressures and domestic policy dynamics pose significant tests to the resilience and performance of the Indonesian banking sector. Over the past decade, the Indonesian government has not only maintained the majority ownership structure of HIMBARA banks but has also strengthened the strategic role of this banking group through various policies that position state-owned banks as the primary drivers of the national development agenda. The establishment of Danantara as an entity that manages and optimizes state-owned enterprise assets reflects a new strategy that positions state-owned enterprises, including banks, as central instruments in orchestrating financing and managing large-scale assets under state control. This policy demonstrates that the government views state-owned banks not simply as market players competing with private banks, but as a policy instrument with an explicit mandate to support economic transformation and strengthen national production capacity.

The literature on concentrated ownership and state-owned banks emphasizes the existence of two faces of government ownership: on the one hand, majority ownership gives state shareholders the ability to ensure stability, maintain credit flows in times of crisis, and encourage long-term development financing; On the other hand, ownership concentration has the potential to reduce market discipline and open up space for entrenchment through political intervention, management appointments that are not entirely performance-based, and credit distribution that does not always follow strict commercial considerations (Claessens *et al.*, 2002; Tihanyi *et al.*, 2019).

This paradox becomes even more pronounced in the context of HIMBARA, because the very dominant government ownership configuration combines with a broad public mandate and high expectations of stability, while profitability and operational efficiency indicators tend to be below the performance of national private banks (Harahap

& Hairunnisah, 2017; Sukmana & Muchtar, 2024). This condition raises conceptual and empirical questions about the extent to which government ownership still contributes positively to bank profitability, and at what point the benefits of stabilization and development begin to be accompanied by the risks of entrenchment, incentive distortion, and inefficiencies that have the potential to reduce HIMBARA's financial competitiveness in the long term.

Figure 1
Research Gap



Previous studies largely focus on static panel models, which fail to capture dynamic adjustments and long-run equilibrium relationships. Therefore, this study employs the ARDL-PMG approach to analyze both short-run and long-run effects, providing a more comprehensive understanding of valuation determinants in state-owned banks.

2 LITERATURE REVIEW

2.1 State-owned banks, state-led banking, and their implications for profitability and risk

A state-owned bank is defined as a banking institution whose shares are largely or entirely owned by the government, either through a ministry, state-owned enterprise, or other public entity, with the aim of performing a financial intermediation function while

supporting the agenda of financial system stability and national economic development (Tihanyi *et al.*, 2019).

The concept of state-led banking refers to a model in which the state not only acts as a regulator, setting rules and overseeing the stability of the banking sector, but also actively operates as the owner and controller of systemic banks, thus having the capacity to direct credit allocation, control risk-taking behavior, and utilize banks as instruments of fiscal and monetary policy (Mateev, 2025a; Naqvi, 2022a). State-owned banks generally have a dual mandate. On the one hand, they compete as commercial entities oriented toward profitability and efficiency. On the other hand, they bear a social responsibility to expand access to financing to segments of society and regions less attractive to private banks, as well as to maintain continuity of credit distribution during times of economic stress or financial crises.

The relationship between state ownership, profitability, and risk within a state-led banking framework forms a complex trade-off. On the one hand, government ownership provides implicit guarantees that lower the cost of funds and increase depositor confidence, allowing state-owned banks to mobilize funds at lower costs (Borsuke *et al.*, 2024; Kazdale *et al.*, 2024). On the other hand, the dual mandate creates incentive distortions: management may allocate credit not solely based on commercial considerations, but also on government policy directives.

2.2 Agency theory and ownership structure in banking

Agency theory was developed by Jensen and Meckling (1976) to explain the contractual relationship between shareholders as principals and managers as agents. Shareholders desire to increase the value of the company, while managers often have different personal interests, such as job security, compensation, or company expansion. This difference in interests creates an agency problem that is exacerbated by information asymmetry, as managers have greater access to the company's internal conditions than shareholders.

This conflict of interest results in agency costs, which are costs incurred to ensure managers act in the interests of shareholders. Agency costs consist of monitoring costs incurred by shareholders to supervise managers, bonding costs incurred by managers to

reassure shareholders, and residual losses, which are losses that persist even after monitoring mechanisms have been implemented (Shleifer & Vishny, 1986). This framework provides a basis for understanding how ownership structure and governance can influence managers' decision-making behavior.

This finding is relevant to the context of HIMBARA which faces a dilemma between government interests and market demands, and strengthens the argument that agency problems can arise in the form of conflicts between stabilization goals and achieving profitability.

2.3 Financial performance theory in banking

Financial performance in banking reflects the ability of financial institutions to manage resources, distribute credit, and generate sustainable profits. Theoretically, financial performance is viewed as a key indicator of bank health, reflecting the effectiveness of intermediation strategies, asset quality, and operational efficiency. Classical literature emphasizes that bank financial performance is not only an internal measure but also serves as a signal to investors and regulators regarding the stability of the financial system (Claessense *et al.*, 2002; Shleifer & Vishny, 1986).

In the modern banking context, financial performance has become increasingly complex due to the influence of external factors such as regulations, macroeconomic conditions, and government policy intervention. Banking financial performance indicators are generally divided into three main categories: profitability, risk, and efficiency. Profitability reflects a bank's ability to generate profits from its assets and equity; risk reflects exposure to potential losses due to non-performing loans or inability to meet liquidity obligations; while efficiency reflects a bank's ability to control operating costs to generate revenue.

2.4 Return on equity (ROE) and PBV

ROE reflects profitability and management efficiency. Higher ROE signals better performance, attracting investors and increasing PBV. ROE is a ratio used to measure a company's ability to generate profits from the capital (equity) owned by shareholders.

Meaning: The higher the ROE, the more efficient the company is at generating profits. It indicates how well management manages its own capital.

PBV is a ratio used to measure how much the market values a company's book value (equity). Meaning: $PBV > 1 \rightarrow$ the stock is valued higher than its book value (overvalued or has good prospects). $PBV < 1 \rightarrow$ the stock is valued lower than its book value (undervalued or underperforming).

The Relationship Between ROE and PBV A high ROE typically increases PBV because investors perceive the company's ability to generate high profits. The better the performance (higher ROE), the greater the market confidence, resulting in higher stock prices, and thus higher PBV.

2.5 Loan to deposit ratio (LDR) and PBV

LDR measures liquidity risk. While higher LDR indicates efficient fund utilization, excessive lending increases risk. The Loan-to-Deposit Ratio (LDR) is a liquidity ratio used to measure a bank's ability to distribute third-party funds (TPF) in the form of credit. This ratio indicates how much of the funds collected from the public are used to finance credit.

Theoretical Meaning: LDR reflects a bank's intermediary function (financial intermediary). This ratio is an important indicator in assessing liquidity and credit distribution aggressiveness. Interpretation:

High LDR \rightarrow large credit distribution, high profit potential, but increased liquidity risk.

Low LDR \rightarrow secure liquidity, but suboptimal intermediation function.

Theoretical Relationship between LDR and PBV From the perspective of financial and banking theory: An optimal LDR indicates the effectiveness of credit distribution, which has the potential to increase interest income and profits. Increased profits will increase investor confidence, thereby impacting stock prices. Increased stock prices will increase PBV. However: An excessively high LDR can increase the risk of bad debts and liquidity, which can actually reduce investor confidence and PBV.

2.6 Non-performing loans (NPL) and PBV

NPL reflects credit risk. Higher NPL reduces investor confidence and firm value. Non-Performing Loans (NPL) is a ratio used to measure the level of problem loans in a bank, namely loans that experience delays in principal and interest payments within a certain period. Theoretical Meaning: NPL reflects the quality of a bank's productive assets, particularly in lending. In banking theory, NPL is a primary indicator of credit risk. High NPLs indicate weak credit risk management and the potential for significant losses.

Non-Performing Loan Classification:

Substandard Doubtful Loss Interpretation: Low NPL → good credit quality, low risk High NPL → poor credit quality, high risk

Theoretical Implications: According to risk management theory: NPLs are influenced by information asymmetry, moral hazard, and weak credit analysis. High NPLs will increase the provisioning for possible losses (CKPN). This has a direct impact on decreasing bank profitability.

Theoretical Conclusion NPL is an important indicator in assessing a bank's credit quality and risk level. PBV reflects the company's value based on investor perceptions in the capital market. Theoretically, an increase in NPL will negatively impact PBV by reducing financial performance and investor confidence.

2.7 Government ownership and PBV

Government ownership can increase credibility but may reduce efficiency due to political intervention. Government Ownership is the proportion of a company's shares owned by the government, either central or regional, in a company (especially state-owned enterprises or state-owned banks).

Theoretical Meaning: Government ownership reflects the government's role in a company's ownership structure. In agency theory, government ownership can influence management monitoring mechanisms. The government, as the majority shareholder, has the power to make strategic decisions. Theoretical Perspective: Agency Theory Government ownership can reduce agency conflicts due to tighter oversight. However, it

also has the potential to create a Type II agency problem, namely a conflict between the majority (government) and minority shareholders. Political Theory Companies with government ownership are often influenced by political interests, such as public policy, economic stability, or social programs. This can reduce efficiency if not managed properly. Resource-Based View (RBV) The government can provide access to strategic resources, such as capital, regulations, and networks, which can improve company performance.

The relationship between government ownership and PBV can be explained from two main perspectives:

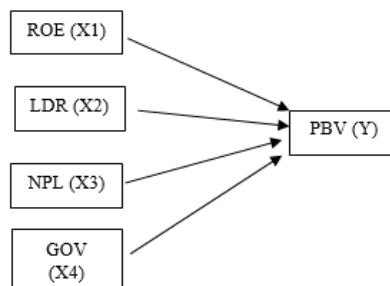
- a. Positive Influence Government ownership provides stability and confidence to investors. The existence of government support (implicit guarantee) reduces the risk of bankruptcy. Access to resources and policies can improve company performance.
- b. Negative Influences Political intervention can lead to economically inefficient decisions. Focusing on social goals can reduce corporate profitability. Conflicts of interest between the government and minority shareholders.

Theoretical Conclusion Government ownership plays a significant role in influencing company policies and performance. PBV reflects a company's value based on market perception. The effect of government ownership on PBV is not always linear, but rather depends on the balance between government control and managerial efficiency.

2.8 Conceptual framework

Figure 2

Conceptual Framework



The conceptual framework of this research is based on the understanding that Price to Book Value (PBV) is a key indicator reflecting market perception of the value of a banking company. PBV is influenced by several financial variables reflecting profitability, risk, liquidity, and ownership structure. In the context of HIMBARA, a key pillar of state-led banking in Indonesia, these variables are particularly relevant because state-owned banks are not solely profit-oriented but also fulfill their stabilization and development mandates (Mateev, 2025b; Naqvi, 2022b). Return on Equity (ROE) is positioned as a profitability indicator, demonstrating a bank's ability to generate profits from its equity. The higher the ROE, the greater the opportunity for PBV to increase, as investors perceive the bank as having good prospects sustainable profits (Harahap & Hairunnisah, 2017; Henry & Ruslim, 2022).

Thus, the conceptual framework of this study places PBV as the dependent variable influenced by ROE, LDR, NPL, and GOV as independent variables, with the relationship tested in two time horizons. The ARDL-PMG model is used to identify short-term influences, long-term relationships, and adjustment mechanisms through the Error Correction Term (ECT). This framework is expected to provide a comprehensive understanding of the financial consequences of government ownership on HIMBARA's profitability and valuation within the framework of Indonesian state-led banking.

3 METHODOLOGY

3.1 Research approach

This study uses a quantitative approach with an explanatory research design. The quantitative approach was chosen because the research focuses on examining the relationship between financial and ownership variables through statistical analysis based on numerical data. According to Creswell (2014), quantitative research aims to test theories by measuring variables and analyzing data using statistical procedures.

Therefore, this approach is appropriate for answering causal research questions, namely how independent variables influence dependent variables in a banking context. The explanatory research method was used because this study seeks to explain the causal relationships between financial and structural variables. Sekaran and Bougie (2016)

emphasized that explanatory research aims to identify and test causal relationships between the variables studied.

In this study, explanatory research was applied to explain the influence of financial ratios such as the Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), and Government Ownership on Price to Book Value (PBV), while considering the role of Return on Equity (ROE) as a profitability indicator. The research data consists of secondary data obtained from the financial reports of HIMBARA banks for the period 2004–2024.

This time span allows for longitudinal analysis, allowing for a more comprehensive understanding of the dynamics of changes in financial variables. Creswell (2014) emphasized that quantitative research based on secondary data is relevant for examining relationships between variables in an organizational or institutional context, as the available data is structured and ready for statistical processing.

3.2 Types and sources of data

The type of data used in this study is secondary data. Secondary data was chosen because the study focuses on analyzing published financial reports from state-owned banks (HIMBARA). According to Creswell (2014), secondary data is data obtained by researchers from existing sources, usually official documents, archives, or publications that can be used to answer the research questions.

3.3 Population and sample

The population in this study was all state-owned banks that are members of the Association of State-Owned Banks (HIMBARA), namely Bank Mandiri, Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), and Bank Tabungan Negara (BTN). These four banks have unique characteristics as institutions with majority government ownership and play a strategic role in supporting fiscal policy and national development.

The research sample was determined using a purposive sampling technique, which involves selecting samples based on specific criteria relevant to the research objectives (Sugiyono, 2019). Based on these criteria, this study included only three HIMBARA

banks: Bank Mandiri, BRI, and BNI. Bank BTN was excluded due to its highly specific business characteristics, specifically housing finance and mortgages (KPR), which fundamentally differ in its asset portfolio structure and risk profile from the other three banks, which have a broader intermediation scope. Furthermore, BTN's Price-to-Book-Value (PBV) ratio data shows extreme fluctuations and tends to be higher, potentially creating an outlier that could disrupt the consistency of estimates ARDL model. Thus, the selection of three HIMBARA banks is considered more relevant and representative for analyzing the influence of ROE, LDR, NPL, and Government Ownership on PBV within a state-led banking framework, while BTN is more appropriate for specific research on the housing finance sector.

3.4 Data analysis technique

Steps include:

1. Panel unit root test
2. Lag selection
3. ARDL model estimation
4. PMG estimation
5. Error Correction Model (ECM) analysis

4 RESULTS AND DISCUSSION

Descriptive statistics include the minimum, maximum, average (mean), and standard deviation values for each variable. This analysis is essential for understanding data distribution, detecting potential outliers, and assessing trends and variations across HIMBARA banks during the observation period. The data used in this study comprises three HIMBARA banks: Bank Mandiri, BRI, and BNI, with an observation period of 21 years (2004–2024), resulting in a total of 63 observations. The variables analyzed include Price to Book Value (PBV) as the dependent variable, and Return on Equity (ROE), Loan to Deposit Ratio (LDR), Non-Performing Loans (NPL), and Government Ownership as the independent variables.

Table 1*Description of Research Data*

| | GOV | PBV | NPL | ROE | LDR |
|--------------|-----------|-----------|-----------|-----------|-----------|
| Mean | 6.158.286 | 1.931.276 | 3.896.984 | 2.185.905 | 7.837.159 |
| Median | 6.000.000 | 1.765.777 | 2.800.000 | 2.049.000 | 8.168.000 |
| Maximum | 9.911.000 | 4.689.445 | 2.520.000 | 4.383.000 | 9.804.000 |
| Minimum | 5.200.000 | 0.673072 | 0.970000 | 2.500.000 | 4.900.000 |
| Std.Dev. | 9.820.133 | 0.733435 | 3.827.745 | 9.484.860 | 1.249.837 |
| Skewness | 2.734.110 | 0.993855 | 3.691.110 | 0.381332 | -0.764963 |
| Kurtosis | 1.075.723 | 4.777.554 | 1.846.000 | 2.738.594 | 2.646.162 |
| Jarque-Bera | 2.364.497 | 1.866.556 | 7.704.602 | 1.706.219 | 6.472.927 |
| Probability | 0.000000 | 0.000088 | 0.000000 | 0.426088 | 0.039303 |
| Sum | 3.879.720 | 1.216.704 | 2.455.100 | 1.377.120 | 4.937.410 |
| SumSq.Dev. | 5.978.970 | 3.335.149 | 9.084.011 | 5.577.680 | 9.684.970 |
| Observations | 63 | 63 | 63 | 63 | 63 |

Source: Data primer (2026)

4.1 (ADF/PP TEST)

The results of the ADF – Fisher Chi-square and PP – Fisher Chi-square tests indicate that all variables in this study are stationary, although their significance levels vary.

- ROE: The ADF probability is 0.0168 and PP is 0.0000 <0.05, indicating that ROE is stationary.
- LDR: The ADF probability is 0.0009 and PP is 0.0000 <0.05, indicating that LDR is stationary with high significance.
- NPL: The ADF probability is 0.0102 and PP is 0.0000 <0.05, indicating that NPL is stationary.
- GOV: The ADF probability is 0.0187 and PP is 0.0000 <0.05, indicating that Government Ownership is stationary.
- PBV: The ADF probability is 0.0001 and PP is 0.0000 <0.05, indicating that PBV is highly stationary.

Thus, all variables fulfill the stationarity requirements I (1)) as required by the ARDL-PMG model, so they can be used for short-term and long-term relationship analysis.

Table 2

ADF/PP: First Difference

| variabel | ADF - Fisher Chi-square Prob.** | PP - Fisher Chi-square |
|----------|------------------------------------|------------------------|
| ROE | 0.0168 | 0.0000 |
| LDR | 0.0009 | 0.0000 |
| NPL | 0.0102 | 0.0000 |
| GOV | 0.0187 | 0.0000 |
| PBV | 0.0001 | 0.0000 |

4.2 (ADF/PP TEST)

Evidence of the cointegration test results can be demonstrated through the following statistical and probability values: Within-dimension (common AR coefficients)

- Panel PP-Statistic = -4,578,123, Prob. = 0.0000 → significant, indicating strong cointegration.
- Panel ADF-Statistic = -2,211,883, Prob. = 0.0135 → significant, confirming a long-term relationship.

Between-dimension (individual AR coefficients)

- Group PP-Statistic = -4,716,787, Prob. = 0.0000 → significant, proving cointegration at the individual bank level.
- Group ADF-Statistic = -2,426,109, Prob. = 0.0076 → significant, indicating a consistent long-term relationship between units.

Conclusion: The probability value of all tests is <0.05, thus proving a significant long-term relationship between ROE, LDR, NPL, GOV, and PBV, both on a panel and individual basis. The ARDL-PMG model can be used to distinguish short-term dynamics and long-term equilibrium.

Tabel 3

ADF/PP First Difference

| Alternative hypothesis: common AR coefs. (within-dimension) | | | |
|--|-----------|--------|--|
| | Statistic | Prob. | |
| Panel PP-Statistic | -4578123 | 0.0000 | |
| Panel ADF-Statistic | -2211883 | 0.0135 | |
| Alternative hypothesis: individual AR coefs. (between-dimension) | | | |
| | Statistic | Prob. | |
| Group PP-Statistic | -4716787 | 0.0000 | |
| Group ADF-Statistic | -2426109 | 0.0076 | |

4.3 Estimation ARDL-PMG longrun

The long-run pooled coefficients indicate the distinct roles of each variable:

- ROE (Return on Equity) has a positive coefficient of 0.8465 with a probability of 0.0000. This means that bank profitability has a significant and strong effect on increasing Price to Book Value (PBV). The higher the ROE, the higher the market valuation assigned by investors.
- NPL (Non-Performing Loan) also has a positive effect with a coefficient of 0.3357 and a probability of 0.0000. This is somewhat unusual, as NPLs typically have a negative impact. However, these results suggest that in the long run, the market may assess HIMBARA banks' ability to manage non-performing loans as part of a risk strategy that still supports valuations.
- LDR (Loan to Deposit Ratio) has a negative coefficient of -0.0329 with a probability of 0.7769, indicating it is insignificant. The intermediation ratio has not been shown to affect PBV in the long run, so the role of LDR is more relevant to short-term dynamics than to long-term structural equilibrium.

Table 4

ARD PMG-Longrun

| Long-run (Pooled) Coefficients | | | | |
|--------------------------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LNROE | 0.846529 | 0.064463 | 1.313.212 | 0.0000 |
| LNNPL | 0.335692 | 0.043783 | 7.667.186 | 0.0000 |
| LNLDR | -0.032888 | 0.115429 | -0.284918 | 0.7769 |
| C | 3.288.997 | 0.276160 | 1.190.977 | 0.0000 |

4.4 Estimation ARDL-PMG shortrun

The short-run mean-group coefficients (SG) estimate results show the following variable dynamics on PBV:

- ROE has a significant negative effect with a coefficient of -0.6816 (Prob. 0.0000). This means that in the short term, increased profitability is accompanied by a decrease in PBV, likely because the market responds cautiously to profit fluctuations. The ROE lag (-1) is insignificant (Prob. 0.1961).

➤ NPL has a coefficient of -0.0119 with a probability of 0.9852, making it insignificant. This indicates that non-performing loans do not directly affect PBV in the short term.

➤ LDR has a significant negative effect with a coefficient of -2.4112 (Prob. 0.0000).

This means that an increase in the intermediation ratio actually depresses PBV in the short term, likely because the market perceives liquidity risk. The LDR lags (-1 and -2) are insignificant (Prob. 0.7674 and 0.4680).

Table 5

ARDL-PMG Shortrun

| Short-run (Mean-Group) Coefficients | | | | |
|-------------------------------------|------------|-----------|------------|--------|
| COINTEQ | -1.155.579 | 0.268918 | -4.297.140 | 0.0001 |
| D(LNPBV(-1)) | 0.310109 | 0.326150 | 0.950817 | 0.3467 |
| D(LNROE) | -0.681578 | 0.136263 | -5.001.932 | 0.0000 |
| D(LNROE(-1)) | -0.321277 | 0.244941 | -1.311.653 | 0.1961 |
| D(LNNPL) | -0.011876 | 0.636517 | -0.018658 | 0.9852 |
| D(LNLDR) | -2.411.180 | 0.481250 | -5.010.250 | 0.0000 |
| D(LNLDR(-1)) | -0.487718 | 1.639.155 | -0.297542 | 0.7674 |
| D(LNLDR(-2)) | -0.639703 | 0.874132 | -0.731815 | 0.4680 |

4.5 Mechanism error correction term (ECT)

The error correction term (COINTEQ) for the three banks indicates the strength of their adjustment mechanisms toward long-term equilibrium: BBRI has a coefficient of -1.3081 with a probability of 0.0002, significant and negative. This indicates that when deviations from long-term equilibrium occur, BBRI is able to make corrections quickly enough to return to equilibrium. BMRI shows a coefficient of -1.5260 with a probability of 0.0000, also significant and negative. This larger value than BBRI indicates that Bank Mandiri has a stronger correction mechanism for adjusting to long-term imbalances. BBNI has a coefficient of -0.6327 with a probability of 0.0694, which is relatively weak and insignificant at the 5% level. This means that BNI's ability to correct long-term deviations is slower and less consistent than BBRI and BMRI. Conclusion: BBRI and BMRI have significant and strong error correction terms, indicating a rapid adjustment process toward long-term equilibrium, while BBNI's is relatively weak, resulting in slower correction of long-term imbalances.

Table 6*Mechanism Error Correction Term (ECT)*

| BBRI | | | | |
|--------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| COINTEQ | -1.308.115 | 0.221593 | -5.903.235 | 0.0002 |
| D(LNPBV(-1)) | 0.101123 | 0.181426 | 0.557379 | 0.5895 |
| D(LNROE) | -0.856304 | 0.276744 | -3.094.209 | 0.0114 |
| D(LNROE(-1)) | -0.323223 | 0.279126 | -1.157.983 | 0.2738 |
| D(LNNPL) | 1.261.155 | 0.497008 | 2.537.496 | 0.0295 |
| D(LNLDR) | -1.827.187 | 1.033.280 | -1.768.336 | 0.1074 |
| D(LNLDR(-1)) | -2.452.705 | 0.983664 | -2.493.437 | 0.0318 |
| D(LNLDR(-2)) | -2.224.179 | 1.021.819 | -2.176.686 | 0.0546 |
| BMRI | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| COINTEQ | -1.525.965 | 0.127877 | -1.193.310 | 0.0000 |
| D(LNPBV(-1)) | 0.949733 | 0.113313 | 8.381.530 | 0.0000 |
| D(LNROE) | -0.775338 | 0.144829 | -5.353.471 | 0.0003 |
| D(LNROE(-1)) | -0.744550 | 0.082773 | -8.995.088 | 0.0000 |
| D(LNNPL) | -0.651064 | 0.136334 | -4.775.511 | 0.0008 |
| D(LNLDR) | -2.040.593 | 0.296285 | -6.887.272 | 0.0000 |
| D(LNLDR(-1)) | 2.767.353 | 0.326945 | 8.464.269 | 0.0000 |
| D(LNLDR(-2)) | -0.487304 | 0.253691 | -1.920.853 | 0.0837 |
| BBNI | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| COINTEQ | -0.632656 | 0.311156 | -2.033.246 | 0.0694 |
| D(LNPBV(-1)) | -0.120529 | 0.178172 | -0.676476 | 0.5141 |
| D(LNROE) | -0.413091 | 0.206005 | -2.005.244 | 0.0727 |
| D(LNROE(-1)) | 0.103942 | 0.146420 | 0.709889 | 0.4940 |
| D(LNNPL) | -0.645720 | 0.342079 | -1.887.635 | 0.0884 |
| D(LNLDR) | -3.365.761 | 0.950078 | -3.542.617 | 0.0053 |
| D(LNLDR(-1)) | -1.777.802 | 0.684808 | -2.596.057 | 0.0267 |
| D(LNLDR(-2)) | 0.792374 | 0.886945 | 0.893375 | 0.3926 |

Long-Run Results

- ROE → Positive and significant
- LDR → Mixed impact
- NPL → Negative and significant
- Government Ownership → Significant influence

Short-Run Results

Short-run dynamics vary across banks, indicating heterogeneity in adjustment processes.

Error Correction Term

The ECM coefficient is negative and significant, confirming long-run equilibrium.

4.6 Discussion

The findings confirm that profitability is the strongest determinant of firm valuation. Credit risk significantly reduces PBV, emphasizing the importance of risk management. Government ownership plays a dual role enhancing credibility while potentially reducing efficiency.

5 CONCLUSION

Research on the influence of ROE, LDR, NPL, and Government Ownership (GOV) on Price to Book Value (PBV) using the ARDL-PMG approach yields several important conclusions. NPLs have been shown to significantly impact PBV negatively, both in the short and long term. This finding confirms that asset quality is a fundamental factor influencing bank valuation. High NPLs are perceived as a credit risk that reduces investor confidence in a bank's ability to generate sustainable profits. These results are consistent with Credit Risk Theory and Agency Theory, and are supported by domestic and international empirical evidence.

This study concludes that:

1. ROE positively affects PBV in both short and long run.
2. LDR has a conditional impact depending on liquidity management.
3. NPL negatively affects firm valuation.
4. Government ownership significantly influences PBV.

The ARDL-PMG model confirms long-run equilibrium relationships among variables.

Research using the ARDL-PMG approach yields several key conclusions regarding the influence of ROE, LDR, NPL, and GOV on PBV: NPL has a significant negative effect in both the short and long term, confirming asset quality as a fundamental factor depressing bank valuations. ROE has a significant negative effect in the short term because profit fluctuations are perceived as instability, but remains a fundamental indicator in the long term. LDR has a negative impact in the short term because aggressive credit expansion raises liquidity concerns, although it can be perceived positively in some lags. GOV has no direct effect on PBV, but is significant as a moderating variable:

weakening the effect of ROE, strengthening the effects of NPL and LDR on PBV. The Error Correction Term (ECT) is significant for BRI and Mandiri, indicating a strong correction mechanism toward long-term equilibrium, while it is relatively weak for BNI. Conclusion: The PBV of Indonesian banking is determined by a combination of fundamental factors (ROE, LDR, NPL) and institutional factors (GOV). NPL is consistently the primary determinant, ROE and LDR exhibit different dynamics across time horizons, while GOV acts as a moderator. This finding confirms the importance of the interaction between financial and institutional factors in explaining the market valuation of HIMBARA banks.

5.1 Novelty

This study has several key novelties:

1. Methodological Approach
 - Uses ARDL-PMG (Pooled Mean Group), which is rarely used in Indonesian banking studies.
 - Capable of capturing short-term and long-term relationships simultaneously.
2. Integration of Ownership Variables
 - Includes government ownership as a primary variable, not just a control variable.
 - Examines the government's role in influencing market perceptions and bank valuations.
3. Long-Term Data (2004–2024)
 - Using a long period (20 years), provides more robust results than previous studies.
4. Focus on Bank Himbara
 - Specific study of state-owned banks with unique characteristics in emerging markets.
5. Dynamic Approach to PBV
 - Looks not only at static relationships but also at adjustment mechanisms towards long-term equilibrium.

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REFERENCES

- Arman, A. (2016). The Effect of Foreign Ownership on Financial Performance of Banking Companies Listed on the Indonesia Stock Exchange (IDX). *Journal of Economics Business and Accountancy Ventura*. <https://doi.org/10.14414/jebav.v18i3.508>.
- Astuti, T. N., Mursalim, M., & Kalsum, U. (2020). Intervening Profitability: Corporate Social Responsibility on Firm Value. *Journal of Accounting and Management*, 17(4), 607–618.
- Bagiana, I. K., Eka Setiawati, L. P., Yulia Rengganis, R. R. M., & Sagung Pramanaswari, A. A. (2023). Analysis of Bank Soundness Level at Regional Development Bank of Bali for 2012 to 2021. *Economic Journal of Economics and Business*. <https://doi.org/10.33087/ekonomis.v7i1.654>.
- Borsuk, M., Kowalewski, O., & Pisany, P. (2024). State-owned Banks and International Shock Transmission. *Journal of International Financial Markets, Institutions and Money*, 91, 101947. <https://doi.org/10.1016/j.intfin.2024.101947>.
- Boubakri, N., Cosset, J.-C., Guedhami, O., Montreal, H., & Montreal, C. (2003). *Postprivatization Corporate Governance: the Role of Ownership Structure and Investor Protection* (37). http://www.feem.it/web/activ/_wp.htmlhttp://papers.ssrn.com/abstract_id=XXXXXX
- Budiandriani, N. (2025a). The Effect of Operational Cost Control and Financial Risk on Company Value in Primary Goods Retail Trading Companies Listed on the Indonesia Stock Exchange (IDX). *Economics and Digital Business Review*, 6(2), 1545–1553.
- Budiandriani, N. (2025b). The Effect of Operational Cost Control and Financial Risk on Firm Value in Primary Goods Retail Trading Companies Listed on the Indonesia Stock Exchange (IDX). *Economics and Digital Business Review*, 6(2), 1545–1553.
- Calvina, C., & Tjokrosaputro, M. (2023). BPR Banking Performance Before and During the Covid-19 Pandemic. *Journal of Business Management and Entrepreneurship*, 7, 1058–1071. <https://doi.org/10.24912/jmbk.v7i5.26506>

- Chalid, L., Kalsum, U., & Pelu, M. F. A. R. (2022). The Effects of Profitability, Financial Leverage, and Liquidity on Firm Value with Financial Distress and Earnings Management as Intervening Variables SEIKO : Journal of Management & Business, 5(1), 282–295.
- Christianti, A. (2019). Probability of Default as The Early Warning System for The Indonesian Banking Sector. Journal of Finance and Banking, 23. <https://doi.org/10.26905/jkdp.v23i2.2856>.
- Claessens, S., Djankov, S., H. Fan, J. P., & Lang, L. H. P. (2002). Disentangling the Incentive and Entrenchment Effects of Large Share holdings. *The Journal of Finance*. <https://doi.org/10.1111/1540-6261.00511>.
- Cornett, M. M., Guo, L., Khaksari, S., & Tehranian, H. (2010). The Impact of State Ownership On Performance Differences in Privately-Owned Versus State-Owned Banks: An International Comparison. *Journal of Financial Intermediation*, 19(1), 74–94. <https://doi.org/https://doi.org/10.1016/j.jfi.2008.09.005>.
- Cull, R., Martinez, M. S., & Verrier, P. J. (2018). Bank Ownership Trends and Implications. *World Bank Group*. <http://econ.worldbank.org>.
- Darwanto, D., Mus, A. R., & Nur, A. N. (2024). The Effect of ROA, ROE, EPS, PER, and PBV on Foreign Investor Interest in Investing in Stocks of Energy Sector Companies on the Indonesia Stock Exchange. *YUME: Journal of Management*, 7(1), 37–53.
- Daryatno, A. B. (2022). Factors Affecting the Financial Performance of Companies Listed on the Indonesia Stock Exchange (IDX). *Ultim Accounting Journal of Accounting Science*. <https://doi.org/10.31937/akuntansi.v14i1.2621>.
- Dong, Y., Meng, C., Firth, M., & Hou, W. (2014). Ownership Structure and Risk-Taking : Comparative Evidence From Private and State-Controlled Banks in China. *International Review of Financial Analysis*. <https://doi.org/10.1016/j.irfa.2014.03.009>.
- Eviyanti, Y. N., Suhartono, S., & Kristijadi, E. (2018). The Effect of Credit Risk on Bank Profitability With Efficiency as the Intervening Variable. *Russian Journal of Agricultural and Socio-Economic Sciences*. <https://doi.org/10.18551/rjoas.2018-02.20>.
- Gaffar, M. A., Mus, A. R., Suriyanti, S., & Mahmud, A. (2024). The Effect of Return on Equity and Return on Assets on Stock Prices in Pharmaceutical Companies Listed on the Indonesia Stock Exchange. *Innovative: Journal of Social Science Research*, 4(4), 1–16.
- Harahap, D. A., & Hairunnisah, A. I. (2017). The Effect of NPL, LDR, GCG, NIM, ROA, ROE, CAR, and BOPO on Stock Prices in Banking Companies Listed on the Indonesia Stock Exchange from 2010 to 2014. The Effect of NPL, LDR, GCG, NIM, ROA, ROE, CAR, and BOPO Towards the Stock Price in Banking Companies Listed

in the Indonesian Stock Exchange of the Year 2010-2014. *Journal of Dimension*.
<https://doi.org/10.33373/dms.v6i1.522>.

Hidayati, S. N., & Hwihanus. (2024a). Macro-Fundamental Analysis and Micro-Fundamental Analysis of Firm Value with Ownership Structure, Financial Performance, and Capital Structure as Intervening Variables in Banking Companies Listed on the Indonesia Stock Exchange, 2019-2023. *Ljit*.
<https://doi.org/10.35870/ljit.v2i2.2716>.

Hidayati, S. N., & Hwihanus. (2024b). Macro-Fundamental Analysis and Micro-Fundamental Analysis of Firm Value with Ownership Structure, Financial Performance, and Capital Structure as Intervening Variables in Banking Companies Listed on the Indonesia Stock Exchange, 2019-2023. *Ljit*.
<https://doi.org/10.35870/ljit.v2i2.2716>.

Ika, S. R., Nurhidayati, N., Nugroho, J. P., & Widagdo, A. K. (2023). Firm Value, Financial Performance, and Corporate Social Responsibility in the Indonesian Banking Industry. https://doi.org/10.2991/978-94-6463-160-9_8.

Irmayani, I., Mas'ud, M., & Djamereng, A. (2024). The Effect of Capital Structure, Dividend Policy, and Investment Opportunity Set on Firm Value in Construction Companies Listed on the Indonesia Stock Exchange. *Innovative: Journal of Social Science Research*, 4(5), 7847–7862.

Kazdal, A., Kılıç, Y., & Yılmaz, M. H. (2024). Financial Market Discipline on Bank Risk: Implications of State Ownership. *Central Bank Review*, 24(2), 100157.
<https://doi.org/https://doi.org/10.1016/j.cbrev.2024.100157>.

Khafifah, A., Nurfadila, N., Muslim, M., & Ahmad, H. (2022). Factor Analysis of Good Corporate Governance, Company Value, and Profitability of Banking Companies on the Indonesia Stock Exchange During The Covid-19 Pandemic. *Center of Economic Students Journal*, 5(1), 63–73.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2000). Government Ownership of Banks. *National Bureau of Economic Research*. <http://www.nber.org/papers/w7620>.

Luo, D., & Yao, S. (2009). World Financial Crisis and the Rise of Chinese Commercial Banks. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1448521>.

Mateev, M. (2025a). The Role of Government in Shaping Market Competition and Ownership Structure in The Banking Industry: Substitutes or Complements? *Journal of Government and Economics*, 20, 100158.
<https://doi.org/https://doi.org/10.1016/j.jge.2025.100158>.

Mateev, M. (2025b). The Role of Government in Shaping Market Competition and Ownership Structure in The Banking Industry: Substitutes or Complements? *Journal of Government and Economics*, 20, 100158.
<https://doi.org/https://doi.org/10.1016/j.jge.2025.100158>.

- Murniati, S., Mus, H. A. R., Semmaila, H. B., & Nur, A. N. (2019). Effect of Investment Decisions, Financing Decisions and Dividend Policy on Profitability and Value of The Firm. *International Journal of Accounting & Finance in Asia Pasific*, 2(1). <https://doi.org/10.32535/ijafap.v2i1.359>.
- Mursalim, Mallisa, M., & Kusuma, H. (2017). Capital Structure Determinants and Firms' Performance: Empirical Evidence From Thailand, Indonesia and Malaysia. *Polish Journal of Management Studies*, 16(1), 154–164.
- Muthiah, N., & Chalid, L. (2025). The Effect of Managerial Ownership, Institutional Ownership, and Interest Rates on Company Value in Food and Beverage Sub-Sector Companies Listed on the Indonesia Stock Exchange for the 2021-2023 Period. *Economics and Digital Business Review*, 7(1), 1–11.
- Naqvi, N. (2022). Economic Crisis, Global Financial Cycles and State Control of Finance: Public Development Banking in Brazil and South Africa. *European Journal of International Relations*. <https://doi.org/10.1177/13540661221114370>.
- Ni, Y. (2019). Research on the Ownership Structure and Market Value of Chinese Listed Commercial Banks. *American Journal of Industrial and Business Management*. <https://doi.org/10.4236/ajibm.2019.911131>.
- Nianty, D. A., Mus, A. R., Sinring, B., & Dewi, R. (2023). The Effect of Investment Decision Capital Structure and Dividend Policy on Financial Performance and Company Value in Banking Companies Listed on The Indonesia Stock Exchange (IDX) for The 2019-2021 PERIOD. *Environmental & Social Management Journal/Revista de Gestão Social e Ambiental*, 17(6).
- Nurfan, H. M., Mus, A. R., & Zakaria, J. (2024). The Effect of Capital Structure and Profitability on Company Value in Pharmaceutical Sub-Sector Manufacturing Companies Listed in the Indonesia Stock Exchange. *Journal La Bisecoman*, 5(2), 195–200.
- Nurfitria, N., Putri, A. A., Lestari, H. S., & Leon, F. M. (2023). The Effect of Credit Risk Management on Financial Performance in Indonesian Banking. *International Journal of Social Science and Human Research*. <https://doi.org/10.47191/ijsshr/v6-i2-03>.
- Ozili, P. K., & Uadiale, O. (2017). Ownership Concentration and Bank Profitability. *Future Business Journal*, 3(2), 159–171. <https://doi.org/https://doi.org/10.1016/j.fbj.2017.07.001>.
- Ridjal, E., Mas'ud, M., & Djamereng, A. (2025). The Effect of Capital Structure on Financial Performance in Food and Beverage Subsector Manufacturing Companies Listed on the Indonesia Stock Exchange (IDX) for the Period 2017-2022. *Economos: Journal Economic & Business*, 8(1), 1–9.
- Shleifer, A., & Vishny, R. W. (1986). Large Shareholders and Corporate Control. *Journal of Political Economy*. <https://doi.org/10.1086/261385>.

- Sinay, L. J., Latupeirissa, S. J., Pelu, S. M., & Tilukay, M. I. (2022). The Impact of Bank-Specific Factors on Non-Performing Loans in Indonesia: Evidence From Ardl Model Approach. *Barekeng Journal of Mathematical and Applied Sciences*. <https://doi.org/10.30598/barekengvol16iss2pp675-686>.
- Sukmana, L.M., & Muchtar, S. (2024). Analysis of the Influence of Financial Ratios on Commercial Banking Stock Prices on the IDX-Pefindo Index. *Solusi*. <https://doi.org/10.26623/slsi.v22i2.8992>.
- Thanwain, T., Laekkeng, M., Mas'ud, M., & Junaedi, A. (2025). Literature Study on The Influence of Share Ownership Structure, Internal and External Factors on Firm Value Through Capital Structure in the Indonesian Capital Market. *YUME: Journal of Management*, 8(3), 1333–1346.
- Tihanyi, L., Aguilera, R. V, Heugens, P., Essen, M. van, Sauerwald, S., Durán, P., & Turtorea, R. (2019). State Ownership and Political Connections. *Journal of Management*. <https://doi.org/10.1177/0149206318822113>.
- Wang,R.,& Luo,H.(2019). Does Financial Liberalization Affect Bank Risk-Taking in China? *Sage Open*. <https://doi.org/10.1177/2158244019887948>.
- Zaidirina,N.A.,Lindrianasari,L. & Bangsawan,S. (2017). Implementation of Corporate Governance and Mandatory Disclosure in the Indonesian Banking Sector: Good News or Bad News. *International Journal of Monetary Economics and Finance*. <https://doi.org/10.1504/ijmef.2017.10008397>.