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Why do bank risks affect stock returns? Examining the mediating role of profitability in Indonesia's tier-1 banks

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ABSTRAK

Introduction

Small-scale Indonesian banks face intense challenges following the implementation of the ASEAN Economic Community and domestic capital requirements. While profitability is shaped by credit risk, operational efficiency, and capital adequacy, the translation of these internal factors into stock returns remains uncertain. Islamic banks, with their unique risk-sharing principles, offer a distinct context for evaluating this relationship.

Objectives

This study investigates whether credit risk, operational efficiency, capital adequacy, and net interest margins influence stock returns in small Indonesian banks, and whether profitability, measured by return on assets, mediates this relationship within the framework of Islamic banking principles.

Method

The research applies a quantitative panel analysis of 15 listed small-scale Indonesian banks from 2014 to 2022. Financial and market data were drawn from official regulatory and market reports. Feasible generalized least squares with panel-corrected standard errors, alongside trimming and winsorization techniques, were employed to address heteroskedasticity, autocorrelation, and outliers.

Results

The findings demonstrate that credit risk and operational inefficiency reduce profitability, while net interest margins increase it. Capital adequacy shows no significant impact on profitability. However, none of these factors, including profitability itself, significantly explain stock returns, which appear dominated by external drivers such as macroeconomic variables and investor sentiment. Profitability does not mediate the relationship between risk factors and stock performance.

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Implications

The results highlight a disconnection between internal performance measures and market outcomes in small Islamic banks. For theory, the study challenges conventional risk-return models by emphasizing institutional and behavioral factors. For practice and policy, the findings underline the need for improved risk management, operational efficiency, transparency, and investor education to strengthen the link between profitability and shareholder value.

Originality/Novelty

This study contributes to the literature by integrating risk-return analysis with the specific context of Islamic banking. It shows how profitability drivers in small banks do not automatically translate into equity market performance, underscoring the importance of governance, Shariah compliance, and investor sentiment in shaping financial sustainability.

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INTRODUCTION

Since the implementation of the ASEAN Economic Community (AEC) on December 31, 2015, industrial competition in Southeast Asia has become increasingly open, including in the Indonesian banking sector. Indonesia boasts a large market share due to its large population, but also faces significant challenges due to its lack of capital compared to countries like Singapore and Malaysia. As a key driver of the Indonesian economy, the banking sector is required to continuously improve to remain competitive amidst intense regional competition.

Banks play a crucial role in channeling funds to productive sectors, particularly small and medium enterprises (SMEs)(Fasha et al., 2025), and supporting government development financing (Edo et al., 2024). However, trust in banks has declined since the 2008 global financial crisis, exacerbated by the emergence of financial technology (fintech) companies offering faster and more convenient financial services (Soma et al., 2024). Small-capitalized banks, or Tier-1 Core Capital Banks, are the most affected due to limited capital and technology (Santoso et al., 2020). To address this challenge, the Financial Services Authority (OJK) issued POJK No. 12/POJK.03/2020 concerning Banking Consolidation, which requires banks to have a minimum core capital of IDR 3 trillion. Banks that fail to meet this requirement risk forced mergers, downgrades to Rural Credit Banks (BPR), or even liquidation. This forces banks with Level 1 Core Capital to strengthen their capital through various strategies such as issuing pre-emptive rights (HMETD), capital injections, or acquisitions.

From an investor's perspective, a bank's financial health and strength significantly influence investment decisions. Stock returns, consisting of capital gains and dividends, are heavily influenced by a company's financial performance. Therefore, analyzing risk

and profitability indicators is crucial for evaluating the investment attractiveness of the banking sector (Fatma, 2020). Bank profitability, generally measured by Return on Assets (ROA), reflects a bank's ability to manage assets to generate profits. However, various data indicate that the ROA of Tier-1 Core Capital Banks tended to be low and unstable throughout 2014–2022, even falling below the healthy threshold of 1.25% as set by Bank Indonesia (SE BI No. 13/24/DPNP/2011). This indicates weak asset management efficiency in this group of banks.

In addition to ROA, banking risk, represented by the Non-Performing Loan (NPL) ratio, Net Interest Margin (NIM), Efficiency Ratio (BOPO), and Capital Adequacy Ratio (CAR), also plays a significant role in determining bank performance. An imbalance between risk and profitability will influence investor perceptions and ultimately stock returns (Devitra, 2013; Harahap & Hairunnisah, 2017). However, previous empirical studies have shown inconsistent results regarding the relationship between these financial ratios and stock returns. For example, research by Sefti (2021) found that profitability significantly influences stock returns, but dividend policy, as a mediating variable, was insignificant, demonstrating the complexity of the relationship between financial performance and investor returns.

The research gap is further exacerbated by the limited number of studies that simultaneously analyze the effect of bank risk on stock returns by incorporating profitability as a mediating variable, particularly in the context of small banks in Indonesia. Most studies focus on manufacturing companies or other industries (e.g., Sefti, 2021; Nugroho et al., 2021), with little attention paid to Tier-1 Core Capital Banks, which face acute capital challenges and external risks. However, studies such as Nugroho et al. (2021) have emphasized the importance of mediating variables in bridging the relationship between financial distress and stock returns—through systemic risk and profitability—thus necessitating replication and testing in the banking sector.

The theoretical contribution of this research lies in developing a framework for understanding the relationship between banking risk and stock returns through a mediation model approach, particularly in the context of small-scale financial institutions in developing countries. This research expands the scope of traditional risk-return models (such as the CAPM) by integrating banking sector-specific risk indicators (NPL, NIM, BOPO, and CAR) and profitability (ROA) as mediating variables. This approach responds to recommendations from previous studies (Barberis et al., 2018; Sefti, 2021; Nugroho et al., 2021), which emphasize the need for more contextual and sector-specific models to explain capital market dynamics. Thus, this research not only offers new insights into how risk and profitability simultaneously influence stock returns but also emphasizes the importance of adapting theoretical models to local market structures and institutional characteristics.

Therefore, the objective of this study is to analyze the influence of NPL, NIM, BOPO, and CAR on stock returns and profitability of Bank Modal Inti-1 listed on the Indonesia Stock Exchange from 2014 to 2022, and to examine how profitability mediates the effect of bank risk on stock returns. These findings are expected to provide valuable insights

into the factors influencing the performance of banks with core capital and serve as a reference for policymakers and stakeholders in the banking industry in improving capital adequacy and risk management strategies.

LITERATURE REVIEW

According to the Indonesian Law No. 10 of 1998, banking encompasses everything related to banks, including their institutions, business activities, processes, and methods of conducting business. A bank is a company that functions to collect funds from the public in the form of deposits and then channel those funds to others through loans or other means to improve the overall welfare of society. Generally, as Baihaqqy (2022) explains, the function of banks is to act as financial intermediaries by gathering funds from the public and distributing them for various purposes. Specifically, banks have three main functions: as an agent of trust, which relies on public confidence to manage deposited funds properly and allow withdrawal as agreed; as an agent of development, facilitating the collection and distribution of capital to support investment, distribution, and consumption of goods and services in economic development; and as an agent of services, providing additional services such as money transfer, safekeeping of valuables, issuance of bank guarantees, and bill payments to support overall economic activities.

Banks can be classified based on several aspects. First, based on business activities, according to Law No. 10 of 1998, there are two types of banks: Commercial Banks, which operate conventionally or based on Sharia principles and provide payment traffic services; and Rural Banks (BPR), which also operate conventionally and on Sharia principles but do not provide payment traffic services. BPRs have more limited commercial activities compared to Commercial Banks, for example, they cannot collect funds in the form of demand deposits (giro) or participate in payment traffic. Second, based on ownership status, Abdullah et al. (2018) classify banks into five groups: State-Owned Banks such as BRI, BNI, Bank Mandiri, and BTN; National Private Banks owned by Indonesian citizens, such as Bank Central Asia and Bank Mega; Foreign Private Banks which are branches or joint ventures with foreign banks like Citibank and HSBC; Regional Development Banks owned mainly by local governments, such as Bank Jatim and Bank Jabar; and Joint Venture Banks owned by both domestic and foreign parties but majority Indonesian-owned, such as Bank OCBC NISP and Bank DBS Indonesia. Third, based on pricing principles, Kasmir (2014) differentiates banks into conventional banks, which determine product prices through interest rates, and Sharia banks, which base transactions on Islamic law (Quran and Sunnah). Sharia banks apply pricing based on profit sharing (mudharabah), joint venture (musharakah), trade with agreed profit, and pure leasing (ijarah) principles.

According to Kasmir (2019), financial statements are reports showing a company's financial condition at a certain date or over a specific period. These reports include the balance sheet, which displays assets, liabilities, and equity at a specific time; the income statement, showing revenues and expenses over a period to determine profit

or loss; the cash flow statement, which details cash inflows and outflows; the statement of changes in equity, which explains changes in capital; and notes to financial statements that provide additional explanations for clarity. The main purpose of preparing financial statements is to provide information on asset types and amounts, liabilities, equity, income, expenses, changes in financial position, management performance, and other important notes to stakeholders. These stakeholders include company owners who evaluate business progress and dividends, management who assess company performance, creditors who determine loan feasibility, government for regulatory compliance, and investors who evaluate business prospects.

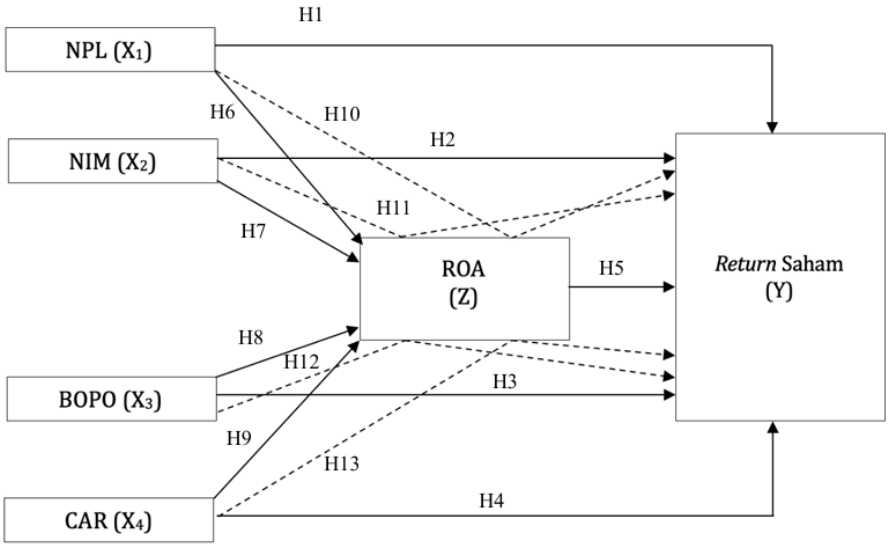
Financial statement analysis aims to provide an accurate picture of a company's financial condition. As Kasmir (2019) notes, the analysis helps identify financial position, strengths and weaknesses, necessary improvements, and comparisons with competitors. Therefore, financial analysis is a crucial tool for making sound and strategic business decisions.

Stock performance is a measure of a company's achievement, visible through stock returns and abnormal returns. Stock returns represent investors' gains from changes in stock prices, while abnormal returns measure excess returns beyond market expectations. Regitasari and Ernandi (2021) state that increasing the number of shares outstanding, for example through rights issues, can affect stock liquidity and investor interest, ultimately impacting stock prices. Fatma (2020) explains that investors aim to gain dividends and capital gains as compensation for risk and time invested. There is a trade-off between risk and return, where higher risk requires higher expected returns. This study calculates stock returns using the percentage change in stock prices between current and previous periods, excluding dividends to avoid outliers.

This study aims to analyze the effect of bank risk on stock returns with profitability as a mediating variable at Bank Modal Inti-1 listed on the Indonesia Stock Exchange during the financial reporting period of 2014–2022. The conceptual framework of this study is explained in Figure 1.

Figure 1

The Conceptual Framework



Source: Authors' analysis.

Based on previous research, the proposed hypotheses are as follows:

Direct Effects:

- **H1:** Non-Performing Loan (NPL) has a significant negative effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H2:** Net Interest Margin (NIM) has a significant positive effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H3:** Operating Expenses to Operating Income (BOPO) has a significant negative effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H4:** Capital Adequacy Ratio (CAR) has a significant positive effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H5:** Return on Assets (ROA) has a significant positive effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H6:** Non-Performing Loan (NPL) has a significant negative effect on the profitability of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H7:** Net Interest Margin (NIM) has a significant positive effect on the profitability of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.

- **H8:** Operating Expenses to Operating Income (BOPO) has a significant negative effect on the profitability of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H9:** Capital Adequacy Ratio (CAR) has a significant positive effect on the profitability of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.

Mediation Effects:

- **H10:** Non-Performing Loan (NPL), mediated by profitability (ROA), has a significant negative effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H11:** Net Interest Margin (NIM), mediated by profitability (ROA), has a significant positive effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H12:** Operating Expenses to Operating Income (BOPO), mediated by profitability (ROA), has a significant negative effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.
- **H13:** Capital Adequacy Ratio (CAR), mediated by profitability (ROA), has a significant positive effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022.

METHOD

This study examines the factors influencing the profitability of profitability of conventional banks included in the Tier-1 Core Capital Bank group listed on the Indonesia Stock Exchange (IDX) during the period 2014–2022. The research employs a quantitative method, which according to (Maleong, 2019), involves empirical, measurable, objective, systematic, and rational standards to produce research data. Based on its purpose, this study is causal (conclusive) research, investigating the relationships between two or more variables in a cause-and-effect context (Sugiyono, 2022). The study includes independent variables (factors influencing) and dependent variables (factors influenced).

From the perspective of the type of investigation, this research is causal, which aims to describe the causes or occurrences of a problem, which is carried out experimentally and non-experimentally (Indrawati, 2015). The researcher did not intervene in data collection. Regarding the time dimension, this study uses panel data, which combines time series data (financial reports from 2014 to 2022) and cross-sectional data (annual financial reports of Tier-1 Core Capital Banks listed on the IDX).

The selection of the 2014–2022 research period was based on methodological considerations and the structural context of the Indonesian banking sector. The year 2014 marked the beginning of macroeconomic stabilization following the change of national government and post-global crisis consolidation, as well as the beginning of strengthening the financial sector regulatory framework towards the ASEAN Economic

Community (AEC) which came into effect at the end of 2015. Therefore, data from 2014 represents the beginning of the banking industry's transition phase towards regional integration.

Meanwhile, 2022 was chosen as the observation deadline to maintain the consistency and completeness of audited annual data from all conventional banks in the study population, particularly Tier-1 Core Capital Banks. At the time of this study, complete and audit-verified data for 2023 and 2024 were not yet available for all banks in the population, so their use risks introducing missing data or panel bias, which could reduce the validity of the model estimates.

Furthermore, the 2014–2022 period is considered representative enough to capture the risk and profitability dynamics of Indonesian conventional banks under various conditions, from pre-pandemic expansion, through the pressures of the COVID-19 crisis, to the initial post-pandemic recovery. This period also encompasses the implementation of important policies such as POJK No. 12/POJK.03/2020 concerning commercial bank consolidation, which is relevant to the research focus on Tier-1 Core Capital Banks.

Table 1

Classification of Research Characteristics

No	Research Characteristic	Type
1	Based on Method	Quantitative
2	Based on Purpose	Causal
3	Based on Investigation Type	Causal
4	Based on Researcher Involvement	Non-intervention
5	Based on Time Dimension	Panel Data

Source: Secondary data. Authors' analysis.

This study includes three types of variables: dependent, independent, and mediating variables. According to (Maleong, 2019), a research variable is anything defined by the researcher to be studied to obtain information and draw conclusions.

1. Dependent Variable: The outcome affected by independent variables.
2. Independent Variables: Variables that cause changes or influence the dependent variable.
3. Mediating Variable: A variable that explains the relationship between independent and dependent variables indirectly and cannot be measured directly.

Role of ROA as Mediating Variable

ROA is chosen as the mediating variable because:

- It explains how independent variables (NPL, NIM, BOPO, CAR) affect the dependent variable (stock return). ROA reflects bank profitability influenced by risk factors, which then impact stock returns.
- It demonstrates a causal relationship. For example, an increase in NIM or decrease in NPL increases ROA, subsequently improving stock return.

- ROA focuses directly on bank profitability, providing insight into how profitability mediates the effect of risk factors on stock return.
- Using ROA as a mediator allows a deeper analysis of the bank's ability to generate profits from assets, influencing investor perception and stock prices.

Thus, ROA as a mediating variable better describes the relationship between risk factors and stock returns than as a moderating variable, which would only affect the strength or direction of the relationship. According to (Maleong, 2019), the population refers to the entire group of objects or subjects with specific characteristics that the researcher wants to study. In this research, the population consists of 70 Core Tier-1 Capital Banks with capital less than IDR 6 trillion. Due to limitations in time and resources, this study applied purposive sampling to select a relevant sample (Maleong, 2019).The sampling criteria included Core Tier-1 Capital Banks that have been listed on the Indonesia Stock Exchange (IDX) since 2014 and have complete published financial reports available from 2014 to 2022. Applying these criteria resulted in a final sample of 15 banks.

Initially, there were 70 Core Tier-1 Capital Banks, but 48 were excluded because they were not listed on the IDX, 5 were excluded as they were listed after 2014, 5 banks were excluded due to incomplete or unavailable financial reports, and 2 were excluded due to suspended shares during the period of 2014 to 2022. Consequently, the study processed data from 15 banks over 9 years, resulting in a total of 135 data points. The 15 sampled banks include notable names such as PT Bank Pembangunan Daerah Banten Tbk (BEKS), listed on July 13, 2001; PT Bank Nationalnobu Tbk (NOBU), listed on May 20, 2013; PT Bank MNC Internasional Tbk (BABP), listed on July 15, 2002; and PT Bank China Construction Bank Indonesia Tbk (MCOR), listed on July 3, 2007, among others.

Two banks were excluded from the sample due to share suspension: Bank J-Trust (BCIC), which was suspended from 2014 to 2019, and Bank of India Indonesia (BSWD), suspended from 2019 to 2022 due to voluntary delisting.

Steps for Data Collection and Panel Data Analysis

1. Data Collection (Secondary Data): Financial data from the Indonesia Stock Exchange and Company Performance reports, Banking statistics from the Financial Services Authority (OJK), Stock movement data from Investing.com, References from relevant journals and books
2. Data Management and Presentation: Data grouping, Creating tabulations, Presenting data in tables or charts
3. Selection of Panel Data Regression Models: Common Effect Model (Assumes all entities and time periods are the same), Fixed Effect Model (Accounts for differences between entities through different intercepts), Random Effect Model (Accounts for entity differences through the error term)

4. Model Selection Tests: Chow Test (To choose between CE and FE), Hausman Test (To choose between FE and RE), Lagrange Multiplier Test (To choose between CE and RE
5. Classical Assumption Tests for Regression Models: Multicollinearity, Heteroskedasticity, Autocorrelation (if needed)
6. Significance Tests for Models and Coefficients: F-test (overall model significance), t-test (significance of each independent variable), Goodness of Fit (R-squared)
7. Descriptive Statistical Analysis: Calculating minimum, maximum, mean, and standard deviation to describe the data

RESULTS

Descriptive Statistics

This research analyzes the influence of various types of risk on stock returns with Return on Assets (ROA) as a mediating variable. The risks studied include credit risk (NPL), interest rate risk (NIM), operational risk (BOPO), and capital adequacy risk (CAR). Data was obtained from the financial report of Tier-1 Core Capital Banks which was listed on the Indonesia Stock Exchange during the 2014–2022 period, using a purposive sampling method and resulting in 135 observations from 15 banks.

Table 2

Descriptive Statistics of Variables Used in the Study (2014–2022)

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Sum	Observations
Y_RETURN	25.7720	-2.7170	875.9040	-77.6800	117.7607	3479.215	135
X1_NPL	3.2542	2.6680	22.2660	0.0000	2.8542	439.3211	135
X2_NIM	3.8210	3.7720	10.5590	-5.0310	1.9410	515.8370	135
X3_BOPO	100.2547	94.3150	287.9170	51.6530	28.8967	13534.39	135
X4_CAR	26.4366	22.5570	66.4280	8.0220	12.1629	3568.948	135
Z_ROA	0.0885	0.4460	4.4160	-14.7190	2.3451	11.9550	135

Source: Secondary data. Authors' analysis.

The table presents the descriptive statistics for the key variables used in this study, covering the period from 2014 to 2022. On average, stock returns (Y_RETURN) showed high variability with a mean of 25.77% and a wide range between -77.68% and 875.90%. The Non-Performing Loan (NPL) ratio averaged 3.25%, staying mostly below the 5% regulatory limit. Net Interest Margin (NIM) averaged 3.82%, slightly below the 5% benchmark, while Operating Expenses to Operating Income (BOPO) had a high average of 100.25%, indicating lower operational efficiency. The Capital Adequacy Ratio (CAR) averaged 26.44%, well above the 8% minimum requirement, showing strong capital buffers. Profitability, measured by Return on Assets (ROA), was low on average at 0.09%, with high fluctuations across banks. Overall, these statistics reflect the financial performance and risk profiles of the banks studied.

Table 3

Descriptive Statistics of Key Financial and Market Variables for Category-1 Capital Banks (2014–2022)

Variable	Mean	Std. Dev	Minimum	Maximum	Brief Description
NPL (%)	3.2542	2.8542	0.0000	22.2660	Low NPL on average, max observed at BEKS 2020
NIM (%)	3.8210	1.9410	-5.0310	10.5590	Average below minimum standard of 5%
BOPO (%)	100.2547	28.8967	51.6530	287.9170	Average above max limit of 85% (efficiency)
CAR (%)	26.4366	12.1629	8.0220	66.4280	Average meets minimum required 8%
ROA (%)	0.0885	2.3451	-14.7190	4.4160	Average below healthy threshold of 1.25%
Stock Return (%)	25.7720	117.7607	-77.6800	875.9040	Highly volatile, large fluctuations

Source: Secondary data. Authors' analysis.

Notes: NPL = Non-Performing Loan; NIM = Net Interest Margin; BOPO = Operating Expenses to Operating Income Ratio; CAR = Capital Adequacy Ratio; ROA = Return on Assets; Stock Return = Annual stock price return percentage.

The first independent variable (X1) is credit risk, proxied by the Non-Performing Loan (NPL), measured by comparing non-performing loans (classified as Collectibility 3, 4, and 5) to total loans. Based on Table, the NPL has a mean value of 3.2542 and a standard deviation of 2.8542, indicating low variability in the data as the standard deviation is smaller than the mean. The maximum NPL value observed was 22.2660, recorded by BPD Banten (Stock Code: BEKS) in 2020. The minimum value was 0.0000, recorded by Bank Nationalnobu (Stock Code: NOBU) from 2014 to 2016 and Bank Capital Indonesia (Stock Code: BACA) in 2021. According to Bank Indonesia Regulation (PBI) No. 15/12/PBI/2013, banks are required to maintain an NPL below 5%. On average, the banks sampled in this study have NPLs below this threshold. However, seven banks recorded NPLs above 5% during certain periods, including Bank Raya Indonesia (2019), BPD Banten (2014–2022), Bank MNC International (2014, 2017–2020), Bank Victoria International (2019–2021), Bank IBK Indonesia (2017–2020), Bank QNB Indonesia (2016 and 2019), and Bank Artha Graha (2017–2019)

The second independent variable (X2) is market or interest rate risk, proxied by the Net Interest Margin (NIM), calculated by dividing net interest income by average total earning assets. Table shows that the mean value of NIM is 3.8210 with a standard deviation of 1.9410, indicating low data variability. The maximum NIM was 10.5590, recorded by BPD Banten in 2014 (BEKS), while the minimum was -5.0310, recorded by Bank Capital Indonesia (BACA) in 2021. According to PBI No. 13/1/PBI/2011, banks are expected to maintain a minimum NIM of 5%. On average, the sampled Category-1 Capital Banks (Bank Modal Inti-1) have NIMs below the required minimum, suggesting that most are not yet able to meet this standard. Nonetheless, nine banks recorded NIMs

above the 5% threshold during certain years, such as Bank Raya Indonesia (2015), BPD Banten (2014–2015), Bank Maspion (2016), Bank Ina Perdana (2016), Bank Oke Indonesia (2017, 2018, 2022), Bank Mestika Dharma (2014–2022), China Construction Bank (2016), Bank Artha Graha (2014, 2017, 2018, 2022), and Bank Bumi Arta (2014–2019, 2022).

The third independent variable (X3) is operational risk, proxied by BOPO, calculated as the ratio of operating expenses to operating income. The mean BOPO value is 100.2547 with a standard deviation of 28.8967, indicating low variability. The highest BOPO was 287.9170, recorded by Bank Raya Indonesia (AGRO) in 2021, and the lowest was 51.6530 by Bank Mestika Dharma (BBMD) in the same year. Based on PBI No. 15/12/PBI/2013, banks should maintain a BOPO of no more than 85%. The average BOPO of the Category-1 Capital Banks in this study exceeds that limit, indicating that most of these banks have not met the efficiency standard set by Bank Indonesia. However, six banks managed to maintain BOPO below the maximum limit at certain times: Bank Raya Indonesia (2018), Bank Maspion (2016, 2017, 2022), Bank Ina Perdana (2022), Bank Victoria International (2022), Bank Mestika Dharma (2014–2022), and Bank Bumi Arta (2017–2018).

The fourth independent variable (X4) is capital adequacy risk, measured using the Capital Adequacy Ratio (CAR), which compares capital to risk-weighted assets. CAR has a mean of 26.4366 and a standard deviation of 12.1629, again indicating low data variability. The highest CAR observed was 66.4280 from Bank INA (BINA) in 2017, while the lowest was 8.0220 from BPD Banten (BEKS) in 2015. According to PBI No. 10/15/PBI/2008, banks are required to maintain a minimum CAR of 8%. The average and minimum CARs in the sample remain above this threshold, indicating compliance with the capital adequacy requirement.

The mediating variable (Z) is profitability, proxied by Return on Assets (ROA), calculated by dividing profit before tax by average total assets. ROA has a mean of 0.0885 and a standard deviation of 2.3451, showing high variability in the data as the standard deviation exceeds the mean. The highest ROA recorded was 4.4160 by Bank Mestika Dharma (BBMD) in 2021, while the lowest was -14.7190 by Bank Raya Indonesia (AGRO) in the same year. Based on Bank Indonesia Circular Letter No. 13/24/DPNP/2011, a healthy ROA is at least 1.25%. On average, the sampled banks fall below this threshold, indicating generally weak profitability. Nevertheless, five banks achieved ROA above 1.25% during certain periods: Bank Raya Indonesia (2014–2018), Bank Maspion (2016–2018), Bank Victoria International (2022), Bank Mestika Dharma (2014–2022), and Bank Bumi Arta (2014, 2018).

The dependent variable (Y) is stock return, measured by comparing the current year's stock price to the previous year's and dividing the difference by the previous year's price. The stock return has a mean value of 25.7720 and a standard deviation of 117.7607, indicating high variability. The maximum stock return observed was 875.9040 by Bank Bumi Arta (BNBA) in 2021, while the minimum was -77.6800 by Bank Raya Indonesia (AGRO) in the same year.

Regression Model Results

Table 4

Summary of Panel Data Regression Model Interpretation

Aspect	Sub-Structural I (Z_ROA)	Sub-Structural II (Y_RETURNSAHAM)	Notes / Recommendations
Best Model (Chow Test)	Common Effect Model (CEM)	Common Effect Model (CEM)	Based on p > 0.05
Best Model (LM Test)	Common Effect Model (CEM)	Common Effect Model (CEM)	Based on p > 0.05
Model Fit (Adjusted R^2)	0.9570 (Chow), 0.9527 (LM), 0.9795 (FGLS)	-0.0109 (Chow), -0.011 (LM), 0.089 (FGLS)	Sub-Structural I fits well; Sub-Structural II weak
Significant Variables	NPL, NIM, BOPO (p < 0.05); CAR not significant	None significant at 5% level	NPL and NIM insignificant in Sub-Structural II
Classical Assumptions	Heteroskedasticity present; Normality violated initially; autocorrelation present; cross-sectional dependence present	Same violations; residual normality violated	Corrected via FGLS with PCSE and trimming
Residual Normality (Jarque-Bera)	Initially violated (p=0.000), but satisfied after FGLS (p=0.389)	Not satisfied (p=0.00006), CLT justification used	Normality assumption acceptable for large samples
Autocorrelation	Present initially; Durbin-Watson = 2.48 suggests minimal after correction	Present initially	Addressed with FGLS
Multicollinearity	No multicollinearity detected (correlation < 0.9)	No multicollinearity detected	Confirmed by correlation and tests
Model Estimation Method	FGLS with PCSE, cross-section weights, trimming and winsorizing to handle outliers	Same	Robust to violations and outliers
Regression Equation	Strong model, high explanatory power	Weak explanatory power, some marginally significant	Sub-Structural II limited in explanatory power
Additional Notes	Outliers significantly affected model, addressed via trimming and winsorizing	External factors beyond financial ratios may influence stock returns	Suggest use of GLS/FGLS for robustness

Source: Secondary data. Authors' analysis.

There are three models that will be applied in the panel data regression analysis, namely the fixed effect model, the common effect model, and the random effect model. To determine the most appropriate model, three tests are conducted: the Chow Test, the Hausman Test, and the Lagrange Multiplier Test. The following are the results of the

tests conducted for selecting the panel data regression model in this study, The Chow Test was conducted to determine the most appropriate panel data regression model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). For Sub-Structural I, the cross-section chi-square value was 1.442 with a probability of 0.145, which is greater than 0.05, indicating that the Common Effect Model is more suitable. The adjusted R-squared value of 0.9570 suggests that about 95.70% of the variation in the dependent variable (Z_ROA) is explained by the independent variables (NPL, NIM, BOPO, and CAR). For Sub-Structural II, the cross-section chi-square value was 0.857 with a probability of 0.607, also greater than 0.05, thus supporting the use of the Common Effect Model. However, the adjusted R-squared value was -0.0109, indicating that the independent variables had little to no explanatory power for the dependent variable (Y_RETURNSAHAM). To improve the model, the study suggests using the General Least Square method with cross-section weights or applying trimming to handle outliers. Since both sub-structural models are best suited to the Common Effect Model based on the Chow Test, the next step is to proceed with the Lagrange Multiplier Test.

The Lagrange Multiplier (LM) test was applied to determine the most appropriate panel data regression model between the Common Effect Model (CEM) and the Random Effect Model (REM). Based on the results of the LM test in Sub-Structural I, the Breusch-Pagan cross-section value was 0.194 with a probability of 0.660. Since this probability is greater than 0.05, the null hypothesis is accepted, indicating that the Common Effect Model is more suitable than the Random Effect Model. The model also shows a high level of explanatory power, with an Adjusted R-squared value of 0.9527, meaning that approximately 95.27% of the variation in the dependent variable (Z_ROA) can be explained by the independent variables (NPL, NIM, BOPO, and CAR). In Sub-Structural II, the LM test yielded a Breusch-Pagan cross-section value of 0.454 with a probability of 0.501, again exceeding the 0.05 threshold. This confirms that the Common Effect Model is also more appropriate in this case. However, the Adjusted R-squared was negative (-0.011), indicating that the independent variables had little to no explanatory power over the dependent variable (stock returns). Interestingly, the findings revealed inconsistencies between financial indicators and stock returns in several banks, suggesting that factors beyond financial ratios—such as investor sentiment, external economic conditions, or speculative activity—may influence stock performance.

The probability values for the variables NPL (0.5613) and NIM (0.2267) are greater than 0.05, indicating acceptance of the null hypothesis for these variables. In contrast, BOPO (0.0181), CAR (0.0001), and ROA (0.0137) have probability values less than 0.05, leading to rejection of the null hypothesis. The F-test probability value is 0.01407, which is also below 0.05, indicating overall heteroskedasticity in the model except for NPL and NIM. This suggests the model violates the homoskedasticity assumption, potentially impacting the reliability and validity of the results.

The Jarque-Bera test on the standardized residuals yields a value of 452.1150 with a probability of 0.0000, which is less than 0.05, indicating that the residuals do not follow a normal distribution. Therefore, the normality assumption is not satisfied in this model.

The normality test results show a Jarque-Bera value of 2622.894 with a probability of 0.0000, which is below the significance level of 0.05. This indicates that the residuals are not normally distributed, meaning the normality assumption is violated. This non-normality may affect the validity and reliability of the regression analysis. Therefore, it is recommended to consider data transformation or use more robust estimation methods to address this issue. Despite this, based on the Central Limit Theorem, if the sample size is large enough ($n \geq 30$), the sampling distribution of the mean tends to approximate normality, even if the original data is not normal. Additionally, previous research (Iqbal, 2015) states that normality is not a mandatory condition for the OLS regression to produce the Best Linear Unbiased Estimator (BLUE).

The autocorrelation test using the Breusch-Godfrey LM Test reveals that while partial t-test probabilities mostly exceed 0.05, the F-test probability is 0.0001, indicating the presence of autocorrelation in the model. This violates the assumption of no autocorrelation. Panel regression analysis shows lagged residuals with varying significance. The Durbin-Watson statistic of 2.48 suggests minimal autocorrelation, but cross-sectional dependence tests (Breusch-Pagan LM and Pesaran tests) indicate significant cross-sectional dependence in residuals, which should be addressed for more reliable model estimation.

Based on the data analysis, the Breusch-Pagan LM test indicated significant cross-sectional dependence among the individuals or regions, meaning that the residuals of the regression model are correlated across entities. The autocorrelation test showed that most independent variables did not have a significant individual effect on the dependent variable, supported by a negative adjusted R^2, which suggests the model does not fit the data well and that the independent variables fail to explain the variation in the dependent variable adequately. These findings revealed violations of classical assumptions such as normality, heteroskedasticity, autocorrelation, and cross-sectional dependence in the model. To address these issues, the study employed the Common Effect model using Generalized Least Squares (GLS) with Cross Section Weights, which provides more robust estimates despite assumption violations. Additionally, Feasible Generalized Least Squares (FGLS) with PCSE was applied to make the model resistant to problems like autocorrelation and heteroskedasticity, removing the need for further classical assumption tests afterward. Outliers were also identified as a major issue affecting residual distribution, so trimming was performed to remove extreme values beyond the 5th and 95th percentiles in the dependent variable. Subsequently, Winsorizing was used to lessen the influence of remaining outliers without significantly reducing the dataset.

Based on the panel data regression results using the Feasible Generalized Least Squares (FGLS) estimator with Panel Corrected Standard Errors (PCSE), the model for Sub-Structural I demonstrates robustness against violations of classical assumptions such as autocorrelation, heteroskedasticity, and cross-sectional dependence. Consequently, further tests for these assumptions are unnecessary. The regression analysis yielded a strong model fit, with an adjusted R-squared of 0.9795. Key variables such as NPL (X1_NPL), NIM (X2_NIM), and BOPO (X3_BOPO) showed significant effects

on the dependent variable Z_ROA, while CAR (X4_CAR) was not significant. The normality test based on the Jarque-Bera statistic indicated that residuals are normally distributed (p = 0.389), fulfilling the normality assumption. Additionally, the multicollinearity test revealed no strong correlations among the independent variables, confirming that the model is free from multicollinearity issues. Confidence intervals at a 95% level support the reliability of the coefficient estimates, and the resulting regression equation was specified accordingly.

For Sub-Structural II, the FGLS with PCSE regression results indicated a relatively weak model fit with an adjusted R-squared of 0.089. The independent variables and the lagged dependent variable Z_ROA had no statistically significant influence on the dependent variable Y_RETURNSAHAM_TRM at the conventional 5% level, although some variables showed marginal significance. The normality test for residuals, however, rejected the normality assumption (Jarque-Bera p = 0.00006), indicating that residuals are not normally distributed. Despite this, the Central Limit Theorem was referenced to justify the normality assumption for large samples (n > 30), implying that the sampling distribution of the mean tends toward normality. The multicollinearity test again showed no serious issues among explanatory variables, confirming the independence of regressors in the model. Overall, while Sub-Structural I provides a robust and well-fitting model, Sub-Structural II shows limitations in explanatory power and residual normality but still maintains acceptable variable independence.

Based on the correlation test among the independent variables shown, there are no strong correlations between the variables, as none of the correlation coefficients exceed 0.9 or fall below -0.9. This indicates that the model does not suffer from multicollinearity issues. Based on presents the 95% confidence intervals for the estimated coefficients obtained from the regression analysis. For example, the coefficient estimate for X1_NPL is -2.4262, with a 95% confidence interval ranging from -5.4634 to 0.6110. This means that the true coefficient value is expected to lie within this range with 95% confidence. The FGLS regression model using Cross Section Weights (PCSE) for Sub-Structural II is expressed as follows:

Y_RETURNSAHAM = -107.7267 - 2.4262 * X1_NPL - 2.7874 * X2_NIM + 1.0666 * X3_BOPO - 0.0666 * X4_CAR + 8.4245 * Z_ROA

Here, -107.7267 is the constant term, serving as the intercept of the regression equation.

Hypothesis Testing

Partial Influence Hypothesis

Table 5

Summary of Partial Effects of NPL, NIM, BOPO, and CAR on ROA (2014–2022)

Variable	Coefficient	Sig. Value	Effect on ROA	Significance
NPL	-0.0276	0.0031	Negative	Significant
NIM	0.0263	0.0008	Positive	Significant

Variable	Coefficient	Sig. Value	Effect on ROA	Significance
BOPO	-0.0793	0.0000	Negative	Significant
CAR	-0.0002	0.8928	No Effect	Not Significant

Source: Secondary data. Authors' analysis.

The first sub-structural model examines the partial effects of NPL, NIM, BOPO, and CAR on profitability (ROA) of Core Capital Bank-1 listed on the Indonesia Stock Exchange for the period 2014 to 2022. Based on the results shown in Table, the partial t-test values of the regression are as follows: The coefficient for NPL is -0.0276 with a significance level of 0.0031, indicating that the null hypothesis (H0) is rejected. This means that NPL has a significant negative effect on profitability (ROA) in Core Capital Bank-1 during the studied period. This finding aligns with previous studies by Hutagalung et al. (2013), who found a negative and significant effect of NPL on bank performance measured by ROA among the top 10 public banks listed on the IDX from 2007 to 2011. Similar results were reported by Mawardi (2005), Buchory (2021), Damayanthi et al. (2023), Ursulawaty (2019), Khalifaturofi'ah (2023), Ekadjaja & Ekadjaja (2020), Setyawan et al. (2022), Priharta & Gani (2023), Wahyudi & Wibowo (2022), Million et al. (2015), Abiola & Olausi (2014), and Lamothe et al. (2024). NPL is a crucial indicator reflecting how effectively a bank manages its loans. Non-performing loans represent credits that are overdue or problematic, which force banks to increase provisions for loan loss reserves (PPAP). This reduces interest income—the main source of bank revenue—leading to decreased overall profitability.

The Net Interest Margin (NIM) coefficient is 0.0263 with a significance level of 0.0008, signifying a positive and significant effect on ROA. Thus, the null hypothesis is rejected. This supports findings by Hutagalung et al. (2013), Mawardi (2005), Ursulawaty (2019), Mardin et al. (2021), Ekadjaja & Ekadjaja (2020), and Lamothe et al. (2024). NIM reflects the bank's ability to generate net interest income, which directly impacts pre-tax profits. Therefore, an increase in net interest income is a key driver of improved financial performance.

The BOPO variable has a coefficient of -0.0793 and a significance level of 0.0000, indicating a significant negative effect on ROA. This finding is consistent with research by Rizkika et al. (2017), Hutagalung et al. (2013), Muhamad (2015), Ursulawaty (2019), Ekadjaja & Ekadjaja (2020), Sukarno & Syaichu (2012), Stephani et al. (2017), and Lamothe et al. (2024). BOPO measures operational efficiency by comparing operating expenses with operating income. A BOPO ratio close to or exceeding 100% signals inefficiency, which often results in lower profitability. Efficient operational management is therefore essential for maximizing profits.

Lastly, the CAR coefficient is -0.0002 with a significance level of 0.8928, showing no significant effect on ROA, meaning the null hypothesis is accepted. This is supported by findings from Hutagalung et al. (2013), Mawardi (2005), and Setyawan et al. (2022), who all found no significant relationship between CAR and ROA in Indonesian banks. CAR reflects a bank's capital adequacy and its ability to manage risks affecting its capital base. During the study period, Core Capital Bank-1 showed a very healthy capital condition with an average CAR of 27.602%, well above the regulatory minimum of 8%.

The high CAR may indicate that banks rely more on loans for revenue rather than leveraging capital to develop products and services that could enhance profitability.

Sub-Structural II Analysis

Sub-Structural II examines the partial effects of NPL (Non-Performing Loan), NIM (Net Interest Margin), BOPO (Operational Efficiency Ratio), CAR (Capital Adequacy Ratio), and ROA (Return on Assets) on stock returns of Core Capital Banks (Bank Modal Inti-1) listed on the Indonesia Stock Exchange from 2014 to 2022.

Based on the partial t-test results, all variables—NPL, NIM, BOPO, CAR, and ROA—were found to have no statistically significant impact on stock returns ($p > 0.05$).

a. NPL

NPL shows a negative but insignificant effect on stock returns, indicating that higher NPL ratios do not significantly reduce stock returns. This aligns with previous studies (Satria & Hatta, 2015; Ayem & Wahyuni, 2017). Regulatory risk management by OJK/BI may limit the impact of NPL on investor decisions, as banks maintain NPL levels within acceptable limits. Examples like Bank BRI AGRO and Bank INA demonstrate that despite rising NPL, stock returns can increase due to strong financial performance and capital adequacy.

This insignificance may be due to several structural and investor behavioral factors. First, most banks in the sample were able to maintain their NPL ratios below the 5% threshold set by Bank Indonesia, so the level of credit risk that emerged was not high enough to raise serious investor concerns. Second, in the context of Indonesian banking, particularly for Bank Modal Inti-1, investors tend to pay more attention to other indicators considered more reflective of growth prospects and operational efficiency, such as ROA, BOPO, and banking digitalization strategies. Third, the inefficient stock market conditions can cause investors to respond slowly or indirectly to financial information such as NPLs, especially when such information is not accompanied by major fundamental changes at the bank in question.

As an illustration, the cases of Bank BRI Agro and Bank INA show that despite their NPL ratios increasing in certain years, their stock prices continued to rise. This was due to the success of their service digitalization strategies, increased operational efficiency, and strong capital support, which actually increased investor confidence. Furthermore, positive market sentiment toward the financial sector or corporate actions such as mergers and acquisitions often overshadowed concerns about high non-performing loans. Therefore, this finding confirms that the influence of NPLs on stock returns is contextual and often moderated by other external and internal variables, rendering the direct effect statistically insignificant.

b. NIM

NIM shows a positive but insignificant effect on stock returns, indicating that an increase in net interest margin was not statistically significant enough to boost Bank Modal Inti-1's stock returns during the 2014–2022 period. This finding is consistent with the partial t-test results and is supported by research by Dewi (2019), who also found that while NIM contributes to bank profitability, its impact on stock prices is not always direct or significant. Theoretically, a higher NIM reflects a bank's efficiency in generating interest

income from productive assets, which should increase profits and the stock's attractiveness to investors. However, in practice, stock returns are often more sensitive to macroeconomic and regulatory dynamics that affect the entire financial sector.

External factors that can reduce the influence of NIM include fluctuations in Bank Indonesia's benchmark interest rate, exchange rate volatility, fiscal policy uncertainty, and market sentiment toward the banking sector as a whole (Almilia & Herdinigtyas, 2005; Alamsyah et al., 2019). For example, a decrease in the benchmark interest rate can suppress NIM by narrowing interest rate spreads, but at the same time, it can encourage market liquidity and boost stock prices by increasing investment activity. Cases such as Bank BRI Agro and Bank BPD Banten show that despite declining NIMs over several periods, stock returns continued to rise due to other factors such as digital banking expansion, business model restructuring, or investor optimism about institutional transformation. Therefore, the insignificant influence of NIM on stock returns confirms that investors consider more than just net interest performance, but also external macroeconomic aspects and the bank's overall strategic outlook.

c. BOPO

BOPO also showed a positive but insignificant effect on stock returns. In theory, a high BOPO ratio reflects low bank operational efficiency and should negatively impact investor confidence. However, these empirical results suggest that investors may prioritize other indicators such as potential profit growth or improvements in capital structure. This finding aligns with studies by Rizkika et al. (2017) and Stephani et al. (2017), which found that BOPO influences ROA, but its effect on stock returns is not always significant. Furthermore, in a global context, Anwaar's (2016) research on UK FTSE-100 companies showed that operational efficiency is not always the primary determinant of stock returns if external factors such as market sentiment and macroeconomic expectations are more dominant. The cases of Bank Capital and QNB Bank highlight situations where increases in the BOPO ratio coincide with increases in stock returns due to financial restructuring, enhanced digital services, and new capital support, which can create positive sentiment even if efficiency is not optimal.

d. CAR

CAR has a negative but insignificant effect on stock returns. CAR essentially reflects a bank's ability to absorb losses and maintain financial stability. However, high capital availability does not always translate into better stock performance, especially if the capital is derived from debt or not optimized for productive expansion. This finding supports the results of studies by Harahap & Hairunnisah (2017) and Muhamad (2015), and is reinforced by international studies such as Budhathoki et al. (2024) in Nepal and Kusairi et al. (2015) in the ASEAN region, which state that excess capital tends to reduce asset utilization efficiency, making it less attractive to investors. Investors tend to pay more attention to actual profitability (such as ROA) and operational efficiency (BOPO) than to indicators of capital resilience such as CAR. In the case of Bank INA and several other banks, even though CAR was well above the minimum threshold, stock returns did

not increase significantly because they were not accompanied by product innovation or expansion that directly impacted short-term profitability.

In conclusion, none of the examined financial ratios individually showed a statistically significant impact on the stock returns of Core Capital Banks in Indonesia during 2014–2022, suggesting that investors consider a broader range of factors beyond these traditional banking ratios.

DISCUSSION

This study found that profitability, as measured by Return on Assets (ROA), had a positive but insignificant effect on the stock returns of Bank Core Capital-1, listed on the Indonesia Stock Exchange, during the 2014–2022 period. This finding aligns with research by Sefti (2021), which states that although ROA plays a role in reflecting profitability, its influence on stock returns can be mitigated by market uncertainty and other external factors. Research by Nugroho et al. (2021) also shows that in situations of financial stress, profitability's role as a mediator of stock returns weakens due to the high influence of systemic risk.

Similarly, an international study by Rangkuti et al. (2020) found that profitability has a positive effect on bank performance, but its impact on stock returns is more pronounced when mediated by the effectiveness of risk management. In this context, the insignificance of ROA on stock returns in small banks in Indonesia indicates that investors are more influenced by perceptions of macroeconomic risk and external stability than by microfinance indicators.

The case study demonstrates that changes in ROA do not always align with movements in stock returns, as external factors such as corporate restructuring, acquisitions, or monetary policy and market liquidity may have a greater impact on stock values. Simultaneous analysis shows that NPL, NIM, BOPO, and CAR significantly influence ROA with an explanatory power of 97.95%. However, these variables, along with ROA, do not significantly explain stock returns, with a low explanatory power of only 8.89%.

This finding is consistent with a study by Iskandar et al. (2021) which emphasized that bank financial ratios, despite their impact on profitability, often fail to directly explain stock returns due to external distortions such as global economic instability and regulatory changes.

Path analysis shows that ROA does not mediate the relationship between NPL, NIM, BOPO, and CAR on stock returns, supported by the results of the Sobel test which shows the calculated Z value is below the critical value of 1.96. The implication is that investors do not seem to rely solely on profitability ratios in assessing bank stock performance, but rather pay more attention to market sentiment, risk management, and long-term growth strategies that are not directly reflected in financial statements.

Based on the analysis, it can be concluded that although profitability, as measured by ROA, has a positive influence on stock returns, this influence was not significant at Bank Core Capital-1 in Indonesia during the 2014–2022 period. This indicates that in the

context of banks with limited capital, profitability indicators are not a primary determinant of investment decisions, contrary to classical assumptions in financial theory.

Conversely, risk variables such as NPL, NIM, BOPO, and CAR were found to be significant on ROA, but not strong enough to influence stock returns directly or through ROA mediation. This finding is supported by various previous studies, both national (Sefti, 2021; Iskandar et al., 2021) and international (Rangkuti et al., 2020; Nugroho et al., 2021), which indicate that external factors such as market conditions, macroeconomic stability, and investor perceptions of systemic risk play a dominant role in shaping stock returns in the banking sector.

Thus, ROA does not function as an effective mediating variable in bridging the relationship between bank risk and stock returns. This implies the need for a more contextual and holistic approach in assessing the performance of small bank stocks, including considering non-financial external variables and long-term corporate strategies that are not directly reflected in financial statements.

Some Notes from Islamic Perspectives

Credit Risk, Operational Efficiency, and Capital Adequacy in Islamic Banking

The present study reveals that credit risk, operational efficiency, and capital adequacy significantly influence bank profitability, but their direct effects on stock returns are weak and statistically insignificant. In particular, higher non-performing loans (NPLs) and operating inefficiencies (BOPO) reduce profitability, whereas stronger net interest margins (NIM) improve it. However, the capital adequacy ratio (CAR) shows limited relevance in explaining profitability variations across small Indonesian banks. These findings underscore the sensitivity of profitability to internal risk management and efficiency, while stock performance appears shaped more by external factors such as market sentiment and macroeconomic conditions than by accounting ratios.

Prior literature supports this nuanced perspective. Studies highlight that Islamic banks, due to their adherence to Shariah principles, often adopt conservative lending practices, lowering exposure to credit risk compared to conventional banks (Abdeljawad et al., 2024; Hasan et al., 2023). Yet, operational efficiency remains a challenge, as Islamic banks typically face higher overhead costs and structural complexities (Mala et al., 2018; Yunan et al., 2023). At the same time, strong capital buffers, though vital, may not directly translate into profitability, as observed in the cautious risk-sharing frameworks of Islamic banks (Malim & Normalini, 2018; Athari & Bahreini, 2021). These comparative insights confirm that the structural and regulatory environment alters how risks manifest in bank outcomes.

The implications are multifaceted. Theoretically, they reaffirm that risk-return paradigms cannot be universally applied but must be contextualized within Islamic banking's ethical and operational frameworks. Practically, the results suggest that Islamic banks should focus on strengthening credit risk assessment and operational efficiency, given their more immediate effect on profitability. Policymakers should also recognize that capital adequacy, while essential for systemic stability, may not always

enhance profitability in smaller banks. Thus, supervisory frameworks could be refined to encourage not just capital compliance but also operational improvements and risk governance tailored to Islamic principles, thereby aligning profitability with long-term sustainability.

The Mediating Role of ROA in Islamic Banks

This research shows that Return on Assets (ROA) significantly responds to variations in credit risk, operational efficiency, and NIM, but does not act as a mediator between these risks and stock returns. ROA itself has no statistically significant effect on equity returns, suggesting that investor sentiment and macroeconomic shocks dominate price movements in small banks. The results thus indicate a disconnection between accounting-based profitability and market-based performance. This divergence raises important questions about the informational value of ROA in equity markets, particularly for smaller, under-capitalized financial institutions.

The literature on Islamic banks emphasizes ROA as a critical indicator of operational success. Rizal (2022) stresses its role in gauging managerial efficiency, while Ahsan and Qureshi (2021) show that higher credit and liquidity risks suppress ROA. Furthermore, Khan et al. (2022) highlight that risk-sharing mechanisms in Islamic banks enhance ROA by lowering exposure to bad debts. However, the inability of ROA to mediate between risks and stock returns, as found in this study, resonates with findings that investor sentiment and governance frameworks often overshadow financial ratios in driving market valuations (Grassa, 2016; Solihati et al., 2023).

Theoretically, this finding challenges the assumption that ROA is always a sufficient bridge between internal performance and market outcomes. Practically, it implies that Islamic banks must communicate more effectively how operational achievements translate into long-term shareholder value. Regulators should encourage greater transparency and disclosure of non-financial indicators, such as governance and Shariah compliance quality, which may better capture investor confidence. From a policy standpoint, promoting investor literacy about profitability measures in Islamic banking could help align perceptions with fundamentals, thereby enhancing market efficiency in evaluating small Islamic banks.

Profit-and-Loss Sharing and Risk-Profitability Dynamics

The results highlight that while profitability is shaped by risk factors, the expected mediation into stock returns does not occur, especially in the presence of Islamic banking's distinctive profit-and-loss sharing (PLS) mechanisms. Unlike conventional banks, which primarily rely on interest-based lending, Islamic banks distribute both profits and risks across stakeholders. This institutional feature may attenuate the direct influence of internal risks on shareholder returns, further explaining why profitability improvements fail to predict equity performance in small banks. Thus, the operationalization of PLS complicates traditional models of risk-return linkages.

Empirical evidence underscores this divergence. Korbi & Bougatef (2017) argue that PLS contracts alter the lender–borrower relationship, spreading risk more evenly. Malim & Normalini (2018) show that customers under PLS feel greater ownership, improving

project success and profitability. Yet challenges such as asymmetric information and governance weaknesses may offset these benefits, as Yasin et al. (2023) observe. Additionally, while PLS provides resilience during stable conditions, it can heighten vulnerability in volatile economies (Fitriyah, 2020). This explains the inconsistencies in the observed profitability-to-stock-return pathways in small banks.

From a theoretical lens, the findings suggest that PLS alters the conventional risk-return framework, necessitating modified models to assess profitability and valuation. Practically, Islamic banks should invest in robust monitoring systems and governance to reduce information asymmetries in PLS contracts. Policymakers could promote standardized PLS frameworks and stronger risk management practices, ensuring these instruments enhance both profitability and market confidence. In policy terms, enhancing education on the value of PLS mechanisms may also strengthen investor trust, ensuring that ethical principles are seen as drivers, not obstacles, to shareholder value.

Macroeconomic Variables, Sentiment, and Stock Returns

The study demonstrates that stock returns in small banks are poorly explained by accounting measures, pointing instead to external drivers such as macroeconomic dynamics and investor sentiment. This resonates with the observation that returns were volatile across the sample period, reflecting sensitivity to market shocks and perceptions rather than to fundamentals like ROA or CAR. Thus, macro-level and behavioral forces appear more decisive in shaping stock performance in small banks than in larger or conventional counterparts.

This aligns with prior findings that GDP growth and inflation significantly influence bank stock returns (Rahdian et al., 2023). Komba et al. (2024) emphasize the role of interest-rate volatility, which indirectly shapes perceptions of Islamic banks despite their non-interest-based structures. Sentiment also plays a central role: optimistic perceptions amplify positive macro signals, while negative sentiment during geopolitical or economic shocks depresses returns (Faadilah & Shofawati, 2023). Studies further suggest that Islamic bank equities, shaped by religious and ethical dimensions, may react differently to sentiment shifts compared to conventional banks (Alhomaidi et al., 2018).

The implications are critical. Theoretically, they point to the need to integrate macroeconomic and behavioral variables into risk-return frameworks, especially for Islamic banking contexts. Practically, Islamic banks should strengthen investor relations and communication to stabilize sentiment during macroeconomic turbulence. Policymakers, meanwhile, could consider creating specialized financial education programs and macro-prudential tools tailored to Islamic finance. By doing so, regulators can help insulate smaller Islamic banks from market overreactions and improve the alignment between fundamentals and market performance.

Lessons from Small-Scale Islamic Banks

This study finds that profitability metrics, while relevant for internal performance, do not translate into higher stock returns for small Indonesian banks. This echoes broader

challenges faced by under-capitalized Islamic banks in converting accounting profitability into shareholder value. Such institutions often struggle with scale, limited capital buffers, and market skepticism, all of which dilute the link between ROA and equity performance. This structural vulnerability further explains why stock returns are influenced more by sentiment and macro dynamics than by fundamental profitability.

Supporting evidence shows that capital adequacy enhances profitability and investor confidence (Malim & Normalini, 2018), while efficient working capital management boosts shareholder value (Högerle et al., 2020). Yet smaller Islamic banks often lack the capacity to achieve such efficiencies or economies of scale (Saif-Alyousfi, 2020). Weak governance structures further exacerbate the gap, reducing market trust in financial disclosures (Otero et al., 2019). Ethical compliance and Shariah governance, however, can attract socially conscious investors, partially mitigating these disadvantages (Moudud-Ul-Huq, 2021; Kusi et al., 2016).

Theoretically, the findings affirm that small-scale banks operate under constraints that weaken conventional profitability–valuation linkages. Practically, Islamic banks must prioritize operational efficiency, risk management, and technological adoption to enhance competitiveness. Policymakers should consider differentiated regulatory frameworks that support capitalization, innovation, and governance improvements in smaller banks. This may include consolidation incentives, capacity-building programs, and transparency standards aligned with Islamic finance ethics. Such measures would better position small Islamic banks to transform accounting profits into sustained shareholder value.

CONCLUSION

This study concludes that partially, financial ratios such as Non-Performing Loan (NPL), Net Interest Margin (NIM), Operating Expenses to Operating Income (BOPO), and Capital Adequacy Ratio (CAR) do not have a significant effect on the stock returns of Bank Modal Inti-1 listed on the Indonesia Stock Exchange for the period 2014–2022. Similarly, Return on Assets (ROA) shows a positive but insignificant effect on stock returns. Conversely, NPL has a significant negative effect on profitability, while NIM has a positive effect and BOPO has a negative effect on ROA. CAR does not show a significant effect on profitability. Furthermore, ROA does not mediate the relationship between the four banking risk ratios on stock returns. Independent variables are able to explain almost all of the variation in profitability (ROA) of 97.95%, but only explain 8.88% of the variation in stock returns, indicating that the stock market performance of small banks in Indonesia is more influenced by external factors outside of conventional financial indicators.

Theoretically, this study contributes to developing an understanding of the relationship between banking risk and stock returns using a profitability mediation approach. The finding that ROA does not mediate the effect of risk ratios on stock returns reinforces the literature emphasizing the limitations of traditional financial ratios in explaining stock movements, particularly in the small bank sector. This indicates the

need to develop a more comprehensive theoretical model that considers external factors such as market perception, bank governance, and digital growth strategies. This study also strengthens the contextual approach in financial studies that links bank internal stability with external capital market sensitivity.

The practical implications of this research suggest that supervisory authorities, such as the Financial Services Authority (OJK), need to place greater emphasis on operational efficiency and the quality of credit risk management, as both have been shown to significantly impact profitability. However, because these ratios do not directly impact stock returns, a policy approach that addresses non-financial aspects, such as information transparency, investor literacy, and a stable investment climate, is necessary. For investors, these results serve as a reminder that investment decisions should not be based solely on a bank's financial ratios; they also need to consider external dynamics and long-term management strategies. For bank management, these results serve as encouragement to increase efficiency and innovation to gain market confidence.

However, this study has limitations. First, the scope of the study was limited to 15 Bank Modal Inti-1, so the results cannot be broadly generalized to the entire Indonesian banking sector. Second, the model used only includes internal financial variables and does not include external factors such as macroeconomic conditions, policy changes, and market sentiment, which play a significant role in shaping stock returns. Third, the quantitative approach used cannot capture the qualitative dimensions of investor perceptions or management strategies. Therefore, further studies are recommended to expand the data coverage, use a mixed-method approach, and integrate external variables and investor behavior to gain a more holistic understanding of the determinants of stock returns in the Indonesian banking sector.

Author Contributions

Conceptualization	I.G. & A.M.S.	Resources	I.G. & A.M.S.
Data curation	I.G. & A.M.S.	Software	I.G. & A.M.S.
Formal analysis	I.G. & A.M.S.	Supervision	I.G. & A.M.S.
Funding acquisition	I.G. & A.M.S.	Validation	I.G. & A.M.S.
Investigation	I.G. & A.M.S.	Visualization	I.G. & A.M.S.
Methodology	I.G. & A.M.S.	Writing – original draft	I.G. & A.M.S.
Project administration	I.G. & A.M.S.	Writing – review & editing	I.G. & A.M.S.

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Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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Conflicts of Interest

The authors declare no conflicts of interest.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT, DeepL, Grammarly, and PaperPal to translate from Bahasa Indonesia into American English and improve the clarity of the language and readability of the article. After using these tools, the authors reviewed and edited the content as needed and took full responsibility for the content of the published article.

REFERENCES

Abdeljawad, I., Rashid, M., Alia, M., Qushtom, R., Irshaid, M., & Sahyouni, A. (2024). Cushion hypothesis and credit risk: Islamic versus conventional banks from the MENA region. *Plos One, 19*(7), e0306901. https://doi.org/10.1371/journal.pone.0306901

Abdullah, T., & Wahjusaputri, S. (2018). *Bank & lembaga keuangan [Banks & financial institutions]* (2nd ed.). Mitra Wacana Media.

Abiola, I., & Olausi, A. S. (2014). The impact of credit risk management on the commercial banks performance in Nigeria. *International Journal of Management and Sustainability, 3*(5), 295–306. https://doi.org/10.18488/journal.11/2014.3.5/11.5.295.306 295–306

Agam, D. K. S., & Pranjoto, G. H. (2021). Pengaruh CAR, LDR, BOPO, dan Size terhadap ROA pada sektor perbankan yang terdaftar di BEI 2015-2019 [The effect of CAR, LDR, BOPO, and Size on ROA in the banking sector listed on the IDX 2015-2019]. *Jurnal Kajian Ilmu Manajemen, 1*(2), 160–167. https://doi.org/10.21107/jkim.v1i2.11597

Ahsan, T. and Qureshi, M. (2021). The impact of Islamic banking model and Islamic financial development on bank performance: Evidence from dual banking economies. *International Journal of Islamic and Middle Eastern Finance and Management, 15*(3), 602-625. https://doi.org/10.1108/imefm-05-2020-0248

Akçayır, M., Dündar, H., & Akçayır, G. (2016). What makes you a digital native? Is it enough to be born after 1980? *Computers in Human Behavior, 60*, 435–440. https://doi.org/10.1016/j.chb.2016.02.089

Alamsyah, A., Ayu, S. P., & Rikumahu, B. (2019). Exploring relationship between headline news sentiment and stock return. *2019 7th International Conference on Information and Communication Technology, ICoICT 2019*. https://doi.org/10.1109/ICoICT.2019.8835298

Al-Homaidi, E. A., Tabash, M. I., Farhan, N. H. S., & Almaqtari, F. A. (2018). Bank-specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach. *Cogent Economics & Finance*, *6*(1). https://doi.org/10.1080/23322039.2018.1548072

Almilia, L. S., & Herdinigtyas, W. (2005). Analisis rasio CAMEL terhadap prediksi kondisi bermasalah pada lembaga perbankan periode 2000-2002 [Analysis of CAMEL ratios on the prediction of problematic conditions in banking institutions for the period 2000-2002]. *Jurnal Akuntansi & Keuangan, 7*(2), 131–147. https://doi.org/10.9744/jak.7.2.pp. 131-147

Anwaar, M. (2016). Impact of firms' performance on stock returns (Evidence from listed companies of FTSE-100 Index London, UK). *Global Journal of Management and Business Research, 16*(D1), 43–51. https://journalofbusiness.org/index.php/GJMBR/article/view/1961

Asri, M. H. (2017). Analisis rasio dengan variabel EPS (Earning Per Share), ROA (Return On Assets), ROE (Return On Equity), BOPO (Biaya Operasional Pendapatan Operasional) terhadap harga saham perusahaan perbankan [Ratio analysis with variables EPS (Earning Per Share), ROA (Return On Assets), ROE (Return On Equity), BOPO (Operating Expenses Operating Income) on the stock price of banking companies]. *Jurnal Ekonomi Bisnis, 22*(3), 275–287. https://ejournal.gunadarma.ac.id/index.php/ekbis/article/view/1760

Athari, S. and Bahreini, M. (2021). The impact of external governance and regulatory settings on the profitability of Islamic banks: Evidence from Arab markets. *International Journal of Finance & Economics, 28*(2), 2124-2147. https://doi.org/10.1002/ijfe.2529

Ayem, S., & Wahyuni, S. (2017a). Pengaruh loan to deposit ratio, capital adequacy ratio, return on asset dan non performing loan terhadap return saham. *Jurnal Akuntansi, 5*(1), 71–87. https://doi.org/10.24964/ja.v5i1.258

Baihaqqy, M. R. I. (2022). *Bank dan lembaga keuangan [Banks and financial institutions]* (D. R. Rizqian, Ed.). CV Amerta Media.

Barberis, N., Greenwood, R., Jin, L., & Shleifer, A. (2018). Extrapolation and bubbles. Journal of Financial Economics, 129(2), 203-227. https://doi.org/10.1016/j.jfineco.2018.04.007

Buchory, H. A. (2021). Analysis of funding strategy, credit performance, and banking profitability (Case study of CIMB-Niaga Bank in Indonesia). *Estudios de Economia Aplicada, 39*(4). https://doi.org/10.25115/eea.v39i4.4485

Budhathoki, P. B., Bhattarai, G., & Dahal, A. K. (2024). The impact of liquidity on common stocks returns: Empirical insights from commercial banks in Nepal. *Banks and Bank Systems, 19*(1), 148–156. https://doi.org/10.21511/bbs.19(1).2024.13

Damayanthi, I. G. A. E., Wiagustini, N. L. P., Suartana, I. W., & Rahyuda, H. (2023). Strategies to reduce credit risk and liquidity risk to increase bank profitability. *Uncertain Supply Chain Management, 11*(4), 1759–1768. https://doi.org/10.5267/j.uscm.2023.6.015

Devitra, J. (2013). Kinerja keuangan dan efisiensi terhadap return saham perbankan di Bursa Efek Indonesia Periode 2007-2011 [Financial performance and efficiency on banking stock returns on the Indonesia Stock Exchange for the Period 2007-2011]. *Jurnal Keuangan dan Perbankan (Journal of Finance and Banking), 15*(1), 38–53. https://journal.perbanas.id/index.php/jkp/article/view/181

Dewi, A. R. (2019). Pengaruh LDR, NIM Dan ROA terhadap return saham (Studi kasus pada bank umum yang terdaftar di Bursa Efek Indonesia 2014-2017) [The effect of LDR, NIM and ROA on stock returns (Case study on commercial banks listed on the Indonesia Stock Exchange 2014-2017)]. *Jurnal Manajemen & Kewirausahaan, 7*(1), 69–77. https://doi.org/10.26905/jmdk.v7i1.2983

Edo, J. J. R., Soma, A. M., & Sitorus, P. M. (2024). Factors influencing fintech adoption among MSME's in Bandung West Java Indonesia. *JASF – Journal of Accounting and Strategic Finance, 7*(2), 283–299. https://doi.org/10.33005/jasf.v7i2.486

Ekadjaja, A., & Ekadjaja, M. (2020). Tata kelola perusahaan, risiko keuangan, dan kinerja perbankan di Indonesia*. Jurnal Ekonomi, 25*(3), 391–412. https://doi.org/10.24912/je.v25i3.687

Faadilah, F., & Shofawati, A. (2023). Islamic stock market reaction to the Russia-Ukrainian war. *Jurnal Ilmiah Ekonomi Islam*, *9*(3), 3569–3571. https://doi.org/10.29040/jiei.v9i3.11310

Fasha, A. M., Soma, A. M., & Sitorus, P. M. (2025). Relationship between peer-to-peer lending model improvement and company reputation: A case study at PT Amartha. *Jurnal Ekonomi dan Bisnis, 28*(1), 1–20. https://doi.org/10.24914/jeb.v28i1.13137

Fatma, E. R. T. (2020). Pengaruh ROA, ROE, LDR, CAR, dan NPL terhadap harga saham [The effect of ROA, ROE, LDR, CAR, and NPL on stock prices]. *Jurnal Mitra Manajemen, 4*(12), 1651–1663. http://dx.doi.org/10.52160/ejmm.v4i12.501

Fitriyah, T. (2020). Development of Sharia banking and its contributions for the development of national banking. *International Journal of Nusantara Islam, 8*(1), 10-18. https://doi.org/10.15575/ijni.v8i1.8532

Ghozali, I. (2021). *Aplikasi analisis multivariate dengan program IBM SPSS 26 [Application of multivariate analysis with the IBM SPSS 26 program]* (10th ed.). Badan Penerbit Universitas Diponegoro.

Grassa, R. (2016). Ownership structure, deposits structure, income structure and insolvency risk in GCC Islamic banks. *Journal of Islamic Accounting and Business Research, 7*(2), 93-111. https://doi.org/10.1108/jiabr-11-2013-0041

Harahap, D. A., & Hairunnisah, A. I. (2017). The effect of NPL, LDR, GCG , NIM , ROA , ROE , CAR , BOPO towards the stock price in banking companies listed in Indonesian Stock Exchange of the year 2010-2014. *Jurnal Dimensi, 6*(1), 22–40. https://doi.org/10.33373/dms.v6i1.522

Hasan, M., Rabbani, M., Sarker, T., Akter, T., & Hasan, S. (2023). Role of risk disclosure on creditworthiness and driving forces of risk disclosure of banks: Islamic vs conventional banks. *International Journal of Islamic and Middle Eastern Finance and Management, 16*(5), 892-909. https://doi.org/10.1108/imefm-01-2022-0008

Högerle, B., Charifzadeh, M., Ferencz, M., & Костин, К. (2020). The development of working capital management and its impact on profitability and shareholder value: evidence from germany. *Strategic Management, 25*(2), 27-39. https://doi.org/10.5937/straman2002027h

Hutagalung, E. N., Djumahir, & Ratnawati, K. (2013). Analisa rasio keuangan terhadap kinerja bank umum di Indonesia [Analysis of financial ratios on the performance of commercial banks in Indonesia]. *Jurnal Aplikasi Manajemen, 11*(1), 122–130. https://jurnaljam.ub.ac.id/index.php/jam/article/view/502

Indrawati. (2015). *Metode penelitian manajemen dan bisnis: Konvergensi teknologi komunikasi dan informasi [Management and business research methods: The convergence of information and communication technologies]*. Refika Aditama.

Iqbal, M. (2015). *Regresi data panel (2) tahap analisis [Panel data regression (2) analysis stage]*. Perbanas. https://dosen.perbanas.id/regresi-data-panel-2-tahap-analisis/

Iskandar, Y. (2021). Pengaruh net interest margin, return on equity, return on asset, capital adequacy ratio terhadap price book value pada bank umum di Indonesia [Pengaruh net interest margin, return on equity, return on asset, capital adequacy ratio terhadap price book value pada bank umum di Indonesia]. *DIALEKTIKA : Jurnal Ekonomi Dan Ilmu Sosial, 6*(1), 9-16. https://doi.org/10.36636/dialektika.v6i1.592

Kasmir. (2014). Bank dan lembaga keuangan lainnya [Banks and other financial institutions]. Rajawali Pers.

Kasmir. (2019). Analisis laporan keuangan [Financial statement analysis]. PT Raja Grafindo Persada.

Khalifaturofi'ah, S. O. (2023). Cost efficiency, innovation and financial performance of banks in Indonesia. *Journal of Economic and Administrative Sciences, 39*(1), 100–116. https://doi.org/10.1108/jeas-07-2020-0124

Khan, S., Aslan, H., Khan, U., & Bhatti, M. (2022). Are Islamic and conventional banks decoupled? Empirical evidence from Turkey. *International Journal of Emerging Markets, 19*(10), 3063-3087. https://doi.org/10.1108/ijoem-08-2022-1233

Komba, C., Sobe, P., & Mwakujonga, J. (2024). Effects of interest and exchange rate volatility on stock returns: evidence from the financial sector of tanzania. *NG Journal of Social Development, 13*(1), 215-225. https://doi.org/10.4314/ngjsd.v13i1.16

Korbi, F. & Bougatef, K. (2017). Regulatory capital and stability of Islamic and conventional banks. *International Journal of Islamic and Middle Eastern Finance and Management, 10*(3), 312–330. https://doi.org/10.1108/IMEFM-06-2016-0079

Kusairi, S., Sanusi, N. A., & Ismail, A. G. (2015). Impact of deposit insurance on banking industry of ASEAN countries: in quest of stability. *Banks and Bank Systems, 10*(4), 41–50. https://www.businessperspectives.org/index.php/publishing-policies2/impact-of-deposit-insurance-on-banking-industry-of-asean-countries-in-quest-of-stability

Kusi, B., Agbloyor, E., Fiador, V., & Osei, K. (2016). Does information sharing promote or detract from bank returns: Evidence from Ghana. *African Development Review, 28*(3), 332-343. https://doi.org/10.1111/1467-8268.12209

Lamothe, P., Delgado, E., Solano, M. A., & Fernández, S. M. (2024). A global analysis of bank profitability factors. *Humanities and Social Sciences Communications, 11*, Article Number 124. https://doi.org/10.1057/s41599-023-02545-6

LP2M. (2022, October 24). *Mengenal financial intermediary – Definisi, peran, dan manfaat [Financial intermediary - Definition, role, and benefits]*. LP2M. https://lp2m.uma.ac.id/2022/10/24/mengenal-financial intermediary-definisi-peran-dan-manfaat/

Mala, C., Rodoni, A., & Yaman, B. (2018). Market power and efficiency of islamic banking and conventional banking in indonesia. *Global Review of Islamic Economics and Business, 6*(2), 131-143. https://doi.org/10.14421/grieb.2018.062-05

Yunan, Z., Alharthi, M., & Jeris, S. (2023). The risk of political instability and the performance of islamic banks: does corruption matter? *Journal of Financial Crime, 31*(6), 1384-1406. https://doi.org/10.1108/jfc-09-2023-0229

Maleong, L. (2019). *Metodologi penelitian kualitatif [Qualitative research methodology]*. PT. Remaja Rosda Karya.

Malim, N. and Normalini, M. (2018). Factors influencing the margins of Islamic banks. *Global Business Review, 19*(4), 1026-1036. https://doi.org/10.1177/0972150918772970

Mardin, Haanurat, A. I., & Syafaruddin. (2021). Pengaruh rasio keuangan terhadap kinerja bank umum konvensional periode 2014-2019 [The effect of financial ratios on the performance of conventional commercial banks for the period 2014-2019]. *Competitiveness, 10*(1), 59–71. https://doi.org/10.26618/competitiveness.v10i1.5157

Mawardi, W. (2005). Analisis faktor-faktor yang mempengaruhi kinerja keuangan bank umum di Indonesia (Studi kasus pada bank umum dengan total assets kurang dari 1 triliun). *Jurnal Bisnis Strategi, 14*(1), 83–94. https://doi.org/10.14710/jbs.14.1.83-94

Million, G., Matewos, K., & Sujata, S. (2015). The impact of credit risk on profitability performance of commercial banks in Ethiopia. *African Journal of Business Management, 9*(2), 59–66. https://doi.org/10.5897/ajbm2013.7171

Moudud-Ul-Huq, S. (2021). Impacts of sharīʿah supervision and corporate social responsibility on banks' risk-taking behavior and profitability. *International Journal of Islamic and Middle Eastern Finance and Management, 15*(4), 811-828. https://doi.org/10.1108/imefm-03-2020-0126

Muhamad, N. K. (2015). The effect of CAR, NPL and BOPO on profitability and stock returns in the banking listed on the Indonesia Stock Exchange in 2009-2013. *Jurnal EMBA, 3*(2), 258–269. https://doi.org/10.35794/emba.3.2.2015.8530

Nugroho, M., Arif, D., & Halik, A. (2021). The effect of financial distress on stock returns, through systematic risk and profitability as mediator variables. Accounting, 7, 1717–1724. https://doi.org/10.5267/j.ac.2021.4.026

Oktary, D., & Pratiwi, R. (2021). An analysis on the effects of NPL, NIM, LDR on profitability level and stock returns in conventional banks listed in the main board of Indonesia Stock Exchange in the period of 2014-2018. *Sentralisasi, 10*(1), 1-11. https://doi.org/10.33506/sl.v10i1.1087

Otero, L., Alaraj, R., & Lado-Sestayo, R. (2019). How corporate governance and ownership affect banks' risk-taking in the mena countries? *European Journal of Management and Business Economics, 29*(2), 182-198. https://doi.org/10.1108/ejmbe-01-2019-0010

Otoritas Jasa Keuangan. (2022). *Statistik perbankan Indonesia - Desember 2022 [Indonesian banking statistics - December 2022]*. Otoritas Jasa Keuangan.

Pramudia, I. K. D., Suryantari, E. P., & Artaningrum, R. G. (2022). Pengaruh tingkat kesehatan bank terhadap return saham pada bank umum di BEI tahun 2019-2021 [The effect of bank health level on stock returns in commercial banks on the IDX in 2019-2021]. *Jurnal Ekonomika, Bisnis, dan Humaniora (JAKADARA), 1*(2), 89–98. https://doi.org/10.36002/jd.v1i2.2287

Priharta, A., & Gani, N. A. (2023). Determinants of bank profitability: Empirical evidence from Republic of Indonesia state-owned banks. *Contaduria y Administracion, 69*(3), 49–65. https://doi.org/10.22201/fca.24488410e.2024.4999

Purwoko, D., & Sudiyatno, B. (2013). Faktor - faktor yang mempengaruhi kinerja bank (Studi empirik pada industri perbankan di Bursa Efek Indonesia) [Factors that affect bank performance (Empirical study on the banking industry on the Indonesia Stock Exchange)]. *Jurnal Bisnis Dan Ekonomi (JBE)*, 20(1), 25–39. https://www.unisbank.ac.id/ojs/index.php/fe3/article/view/2344

Rahdian, A., Mardian, S., & Razikun, M. (2023). The measurement of good corporate governance in Islamic banking and its effect on financial performance (empirical study of Islamic commercial banks in Indonesia). *Jurnal Akuntansi Dan Keuangan Islam, 11*(2), 189-204. https://doi.org/10.35836/jakis.v11i2.530

Rangkuti, Z., Ernasari, Suhadak, Rahayu, S. M., & Solimun. (2020). The effects of Tier-1 capital to risk management, and profitability on performance using multiple fixed effect panel data model. Human Systems Management, 39(1), 117-128. https://doi.org/10.3233/HSM-190553

Regitasari, M., & Ernandi, H. (2021). Analysis of the difference between stock performance before and after the announcement of right issues in companies listed on the Indonesia Stock Exchange (IDX) for the 2015 and 2018 periods [Analisis perbedaan antara kinerja saham sebelum dan sesudah pengumuman right issue pada perusahaan yang terdaftar di Bursa Efek Indonesia

(BEI) periode 2015 dan 2018]. *Academia Open, 5*, 10.21070/acopen.5.2021.1662. https://doi.org/10.21070/acopen.5.2021.1662

Rizal, F. (2022). Analysis of the robustness of islamic commercial banks in indonesia during the covid-19 pandemic. *Journal of Islamic Economics and Finance Studies, 3*(1), 12-23. https://doi.org/10.47700/jiefes.v3i1.4251

Rizkika, R., Khairunnisa, K., & Dillak, V. J. (2017). Analisis faktor-faktor yang mempengaruhi profitabilitas bank umum syariah di Indonesia (Studi pada bank umum syariah yang terdaftar di Otoritas Jasa Keuangan selama tahun 2012-2015) [Analysis of the factors that affecting Islamic bank profitability in Indonesia (Empirical study Islamic bank in Otoritas Jasa Keuangan period 2012-2015). *E-Proceeding of Management, 4*(3), 2675-2686. https://openlibrarypublications.telkomuniversity.ac.id/index.php/management/article/view/5210

Saif-Alyousfi, A. (2020). Determinants of bank profitability: Evidence from 47 Asian countries. *Journal of Economic Studies, 49*(1), 44-60. https://doi.org/10.1108/jes-05-2020-0215

Santoso, W., Sitorus, P. M., Batunanggar, S., Krisanti, F. T., Anggadwita, G., & Alamsyah, A. (2020). Talent mapping: A strategic approach toward digitalization initiatives in the banking and financial technology (FinTech) industry in Indonesia. *Journal of Science and Technology Policy Management, 12*(3), 399–420. https://doi.org/10.1108/JSTPM-04-2020-0075

Satria, I., & Hatta, I. H. (2015). Pengaruh kinerja keuangan terhadap harga saham 10 bank terkemuka di Indonesia [The effect of financial performance on stock prices of 10 leading banks in Indonesia]. *Jurnal Akuntansi, 19*(2), 179–191. http://journal.tarumanagara.ac.id/index.php/jakt/article/view/2289

Sefti, E. D. (2021). The effect of profitability, leverage and liquidity on stock return with dividend policy as a mediation variable in manufacturing companies listed on the Indonesia Stock Exchange. International Journal of Economics, Business and Management Research, 5(10), 123–138. https://ijebmr.com/uploads/pdf/archivepdf/2021/IJEBMR_847.pdf

Setyawan, I. R., Ekadjaja, M., & Ekadjaja, A. (2022). Industry market structure and banking performance in Indonesia. *Academic Journal of Interdisciplinary Studies, 11*(2), 346–354. https://doi.org/10.36941/ajis-2022-0056

Sharma, S., Bhardwaj, I., & Kishore, K. (2023). Capturing the impact of accounting and regulatory variables on stock prices of banks – an empirical study of Indian banks in panel data modeling. *Asian Journal of Accounting Research, 8*(2), 184–193. https://doi.org/10.1108/AJAR-11-2020-0110

Shkodra, J., Anastasioub, D., & Kallandranisc, C. C. (2024). The impact of non-performing loans on commercial bank profitability: Evidence from the Western Balkans. *Financial and Credit Activity Problems of Theory and Practice, 3*(56), 49–58. https://doi.org/10.55643/fcaptp.3.56.2024.4355

Sihombing, P. R. (2021). *Statistik multivariat dalam riset [Multivariate statistics in research]* (I. Ahmaddien, Ed.). Widina Bhakti Persada Bandung.

Solihati, G., Suhardiyanto, H., Hakim, D., & Irawan, T. (2023). Integrating good corporate governance, islamic corporate social responsibility, zakat, syariah governance, and syariah compliance: exploring their interconnected impact on the financial health of islamic commercial banks. Journal of Contemporary Administration and Management (Adman), 1(3), 271-277. https://doi.org/10.61100/adman.v1i3.94

Soma, A. M., Wati, I. K., & Ispriyahadi, H. (2024). Improving digital payment system services: The impact of e-service quality and e-Loyalty on user preferences. *Al-Uqud: Journal of Islamic Economics, 8*(2), 302–313. https://doi.org/10.26740/al-uqud.v8n2.p302-313

Stephani, R., Adenan, M., & Hanim, A. (2017). Analisis pengaruh rasio keuangan terhadap kinerja bank umum di Indonesia. *E-Journal Ekonomi Bisnis dan Akuntansi, 4*(2), 192–195. https://doi.org/10.19184/ejeba.v4i2.5825

Sugiyono. (2022). Metode penelitian kuantitatif, kualitatif, dan R&D [Quantitative, qualitative, and R&D research methods]. Alfabeta.

Sukarno, K. W., & Syaichu, M. (2012). Analisis faktor-faktor yang mempengaruhi kinerja bank umum di Indonesia [Analysis of factors affecting the performance of commercial banks in Indonesia]. Jurnal Studi Manajemen Organisasi, 3(2), 46-58. https://doi.org/10.14710/jsmo.v3i2.4193

Sulaeman, M., Kusnandar, H. F., Gunawan, G. G., Widyaningrum, M., & Kasetyaningsih, S. W. (2018). Pengaruh debt to equity ratio dan non performing loan terhadap return saham emiten Bursa Efek Indonesia subsektor perbankan [The effect of debt to equity ratio and non-performing loans on stock returns of Indonesia Stock Exchange issuers in the banking subsector]. *Jurnal Ilmiah Manajemen dan Bisnis, 19*(1), 21–31. https://doi.org/10.30596/jimb.v19i1.1730

Syofyan, S. (2003). Keputusan "go public" dan hubungannya dengan kinerja bank-bank swasta di Indonesia [The decision to "go public" and its relationship with the performance of private banks in Indonesia]. *Media Riset Bisnis dan Manajemen, 3*(1), 75–97. https://doi.org/10.25105/mrbm.v3i1.12625

Tahmat, & Nainggolan, I. M. (2020). Pengaruh tingkat kesehatan bank terhadap return saham bank BUMN periode 2009-2018 [The effect of bank health level on stock returns of state-owned banks for the period 2009-2018]. *EKUITAS (Jurnal Ekonomi dan Keuangan), 4*(3), 373-395. https://doi.org/10.24034/j25485024.y2020.v4.i3.4261 373–395.

Ursulawaty, H. L. (2019). Pengaruh rasio keuangan terhadap kinerja bank di Indonesia (Studi empiris pada bank swasta devisa). *UG Jurnal, 13*(9), 34-40. https://ejournal.gunadarma.ac.id/index.php/ugjournal/article/view/4346

Wahyudi, R., & Wibowo, D. D. (2022). Pengaruh loan to deposit ratio dan nonperforming loan terhadap return on assets pada bank kategori KBMI 3 yang terdaftar di Bursa Efek Indonesia periode 2021 [The effect of loan to deposit ratio and nonperforming loan on return on assets in KBMI 3 category banks listed on the Indonesia Stock Exchange for the period 2021]. *JIMEN Jurnal Inovatif Mahasiswa Manajemen, 3*(1), 89-101. https://jom.unsurya.ac.id/index.php/jimen/article/view/101

Widarjono, A. (2018). *Ekonometrika pengantar dan aplikasinya disertai panduan Eviews [Introductory econometrics and its applications with EViews guide]*. UPP STIM YKPN.

Wulansari, D., & Prihantoro, P. (2018). Pengaruh kinerja keuangan terhadap harga saham yang terdaftar di Bursa Efek Indonesia [The effect of financial performance on stock prices listed on the Indonesia Stock Exchange]. *Journal of Business Economics, 23*(1), 1–18. https://doi.org/10.35760/eb.2018.v23i1.1815

Yasin, M., Kabul, L., Herman, L., Hidayat, A., & Muhdin, M. (2023). Overcoming asymmetric information with a profit sharing system at Islamic bank: Acceleration of theory and practice. *Journal of Economics Finance and Management Studies, 6*(8), 3566-3572. https://doi.org/10.47191/jefms/v6-i8-02

Yitnosumarto, S. (1990). *Dasar-dasar statistika dengan penekanan terapan bidang agrokompleks, teknologi dan sosial [Fundamentals of statistics with an emphasis on applied ag*