THESIS PROPOSAL DEFENSE

The Impact of Key Financial Factors and Macro-Economic Variables on the Financial Performance and Stock Return of Indonesian Banks from Q4 2013 to Q1 2024

Lindawati Octaviani
22232001

THESIS SUPERVISOR

Prof. Ir. H. M. Roy Sembel, MBA., Ph.D., CSA., CIB., CIIM

Dr. Melinda Malau, SE., MM., CPA., CBV., CFRM., CFA

ipmi
INTERNATIONAL BUSINESS SCHOOL

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Abstract

Indonesia's banking sector has become a cornerstone of the national economy, significantly evolving over the past decade. This evolution has been shaped by strategic oversight and regulatory measures from Bank Indonesia (BI), the Financial Services Authority (OJK), and the Indonesia Deposit Insurance Corporation (LPS). Notably, between 2013 and 2024, the sector experienced robust asset growth and digital transformation, making substantial strides in financial inclusion and supporting national economic development.

This study examines the impact of key financial metrics—Capital Adequacy Ratio (CAR), Net Interest Margin (NIM), Loan-to-Deposit Ratio (LDR), CASA ratio, Cost to Income Ratio, Non-Performing Loans (NPL), and Provision Coverage Ratio—on the financial performance and stock returns of Indonesian banks over the period from Q4 2013 to QI 2024. Additionally, it considers macroeconomic variables, including Market Return (JKSE), GDP Growth Rate, Exchange Rate (IDR/USD), BI Interest Rate, and Inflation (Consumer Price Index). The study utilizes a purposive sampling method, focusing on data from the top 12 Indonesian commercial banks.

From 2013 to 2024, the sector's assets surged to IDR 10,317 trillion in 2022, with increasing profitability and stock returns in 2023. The adoption of digital banking is projected to expand services to 202 million mobile wallet users by 2025, further enhancing financial inclusion. Regulatory reforms, such as the Financial Sector Development and Strengthening Reform Bill (P2SK), have played a crucial role in stabilizing and increasing the efficiency of the banking sector. Increased lending activities have fueled infrastructure and industrial development, bolstering national economic growth. The strong performance of major banks has also positively influenced the Jakarta Composite Index (JKSE), reflecting investor confidence.

Moreover, Indonesian banks have played a vital role in the capital market by facilitating corporate fundraising and participating in government securities, with corporate fundraising reaching IDR 35.8 trillion by early 2023. These findings provide a comprehensive understanding of the factors driving the financial performance and stock returns of Indonesian banks, contributing valuable insights to both academia and industry practitioners.

Keywords: Indonesian banks' financial performance, Indonesian banks' stock return, Indonesian banking industry, Indonesian capital market

CHAPTER 1

INTRODUCTION

Phenomena (1 of 3)

Indonesian banking landscape:

- 106 commercial banks
- Over 27,920 bank offices
- Highly Regulated by: BI, OJK and LPS

Evolution of Indonesia's Banking Sector

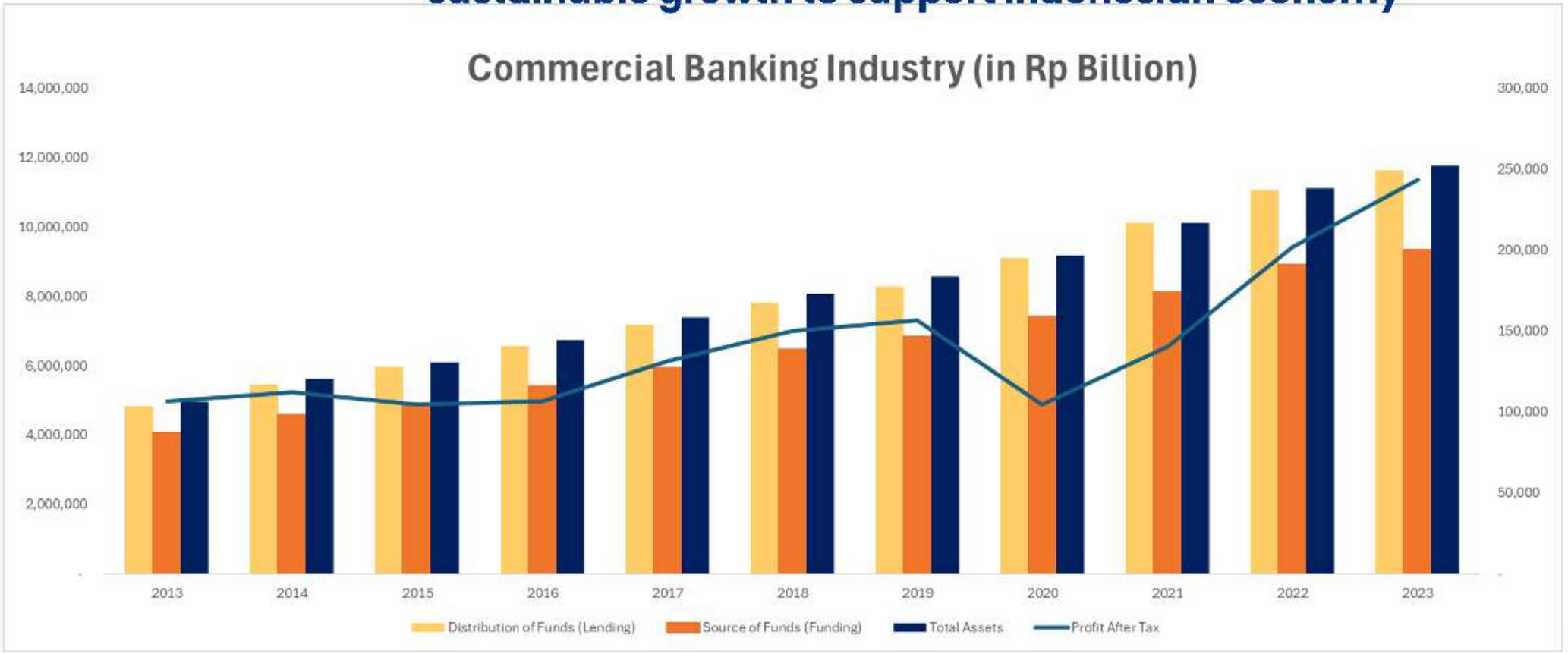
- Significant transformation from modest beginnings to a crucial financial pillar
- The Indonesian banking sector is undergoing significant changes, driven by various financial metrics and macroeconomic variables. Understanding the impact of these factors on financial performance and stock returns is crucial for stakeholders, including investors, policymakers, and bank managers.

Study Focus:

- Financial Metrics: CAR, NIM, LDR, CASA, Cost to Income, NPL, Provision Coverage
- Macro-Economic Variables: JKSE, GDP Growth, IDR/USD, BI Rate, CPI

Phenomena (2 of 3)

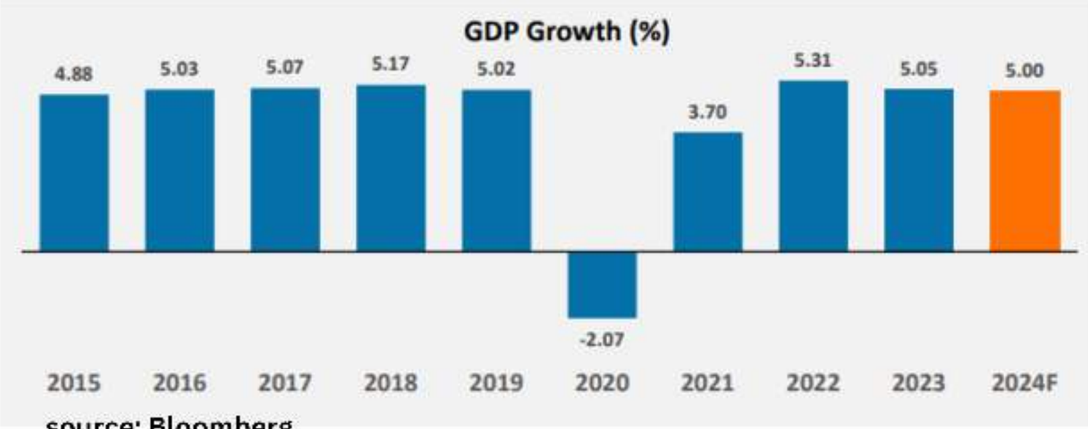
The Trend of Banking Industry Assets, Lending Disbursement and Funding are proven to have sustainable growth to support Indonesian economy



source: Indonesian Banking Statistic data from OJK website

Phenomena (3 of 3)

Banking Industry is considered sensitive to Macro-Economic Factors



source: Bloomberg

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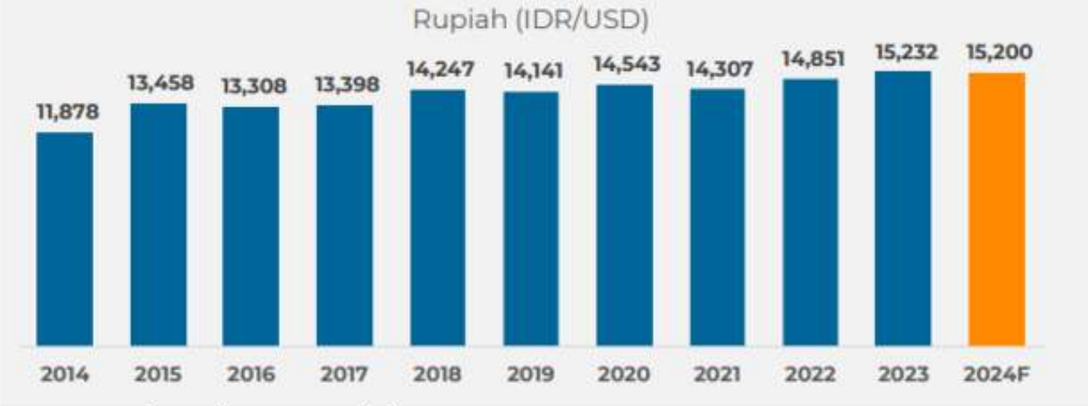
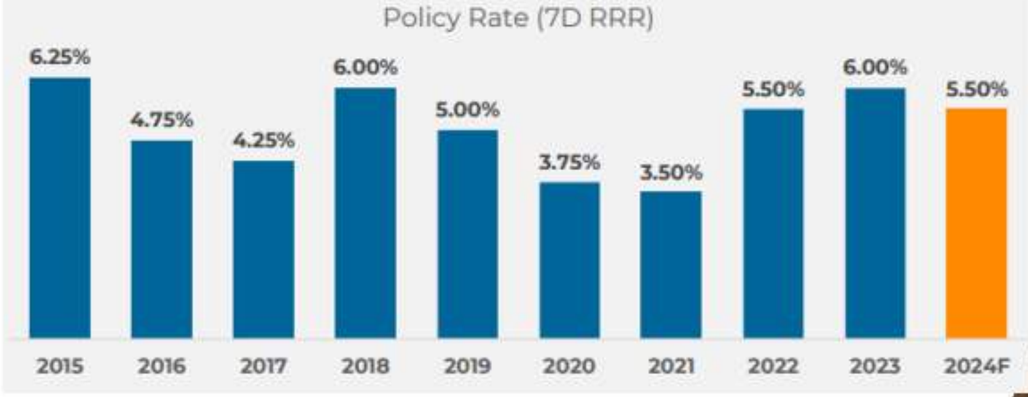


source: Bloomberg, BI website



source: Bloomberg, BI website

Research Background

- 106 commercial banks and 27,920 bank offices in Indonesia (2023).
- Regulated by Bank Indonesia, OJK, and LPS.
- Crucial financial pillar with resilience and growth through reforms and tech advancements.
- Diverse banks saw 7.4% total asset growth in 2023.
- Financial metrics and macro-economic factors significantly impact bank performance.
- Fitch Ratings upgraded operating environment score from 'bb+' to 'bbb-', indicating sustained asset quality and profitability.

RESEARCH QUESTIONS

PRQ (Principle Research Question):
How do key financial factors and macroeconomic variables impact the respective financial performance and stock return of Indonesian Banks ?

This principle research question is broken down into two research questions:
RQ1a: How do key financial factors impact the financial performance of Indonesian banks?
RQ1b: How do macroeconomic variables impact the financial performance of Indonesian banks?
RQ2a: How do key financial factors impact the stock return of Indonesian banks?
RQ2b: How do macroeconomic variables impact the stock return of Indonesian banks?

RESEARCH OBJECTIVES

The objectives of this research are:

- **O1a**: To analyze the impact of key financial factors on the financial performance of Indonesian banks.
- **O1b**: To analyze the impact of macroeconomic variables on the financial performance of Indonesian banks.
- **O2a**: To analyze the impact of key financial factors on the stock return of Indonesian banks.
- **O2b**: To analyze the impact of macro-economic variables on the stock return of Indonesian banks.

Research Contribution

THEORITICAL BENEFITS

1

BENEFIT 01

- Holistic Framework: Develops a comprehensive framework for understanding the impact of key financial factors and macro-economic variables on the bank's financial performance and stock return.
- Moderating roles: Explores how key financial factors and macro-economic variables positively impact the bank's financial performance and stock return.

PRACTICAL BENEFITS

2

BENEFIT 02

- Actionable Insights: Offers actionable insights for optimizing key financial strategy to boost financial performance and stock return.
- Evidence-based research: Facilitates the strategic decision-making processes of key financial factors including in responding changing macro-economic variables to improve financial performance and stock return.

MANAGERIAL BENEFITS

3

BENEFIT 03

- Insight and more profound understanding: give managers insights and a deeper understanding of how key financial factors and macro-economic variables impacts financial performance and stock return.
- Practical recommendation: Offer practical recommendations to facilitate the decision-making process on technology investment and financial strategy.

POLICY BENEFITS

4

BENEFIT 04

- Investment policies: assist banks or governments in making effective decisions regarding strategic financial management
- Sustainability Integration: provides policymakers (e.g., regulators and government) with the ability to incorporate sustainability principles, i.e., industry, innovation, infrastructure, and decent work and economic growth.

make THE WORLD a better PLACE

Novelty

Integrated Analysis Framework

- Combines financial metrics (CAR, NIM, LDR, CASA ratio, etc.) and macro-economic variables (JKSE, GDP, IDR/USD, BI Rate, CPI).
- Offers a comprehensive view of their collective impact on bank performance and stock returns.

Focus on Indonesian Banks

- Examines top 12 publicly listed banks.
- Addresses unique regulatory and economic contexts.
- Adds localized insights to global financial literature.

Contemporary Economic Context

- Includes post-COVID-19 recovery and Fitch Ratings' 2024 upgrade from 'bb+' to 'bbb-'.
- Reflects current economic changes affecting the banking sector.

Strategic and Practical Implications

- Utilizes DuPont analysis to examine components of Return on Assets (RoA).
- Provides robust data analysis using panel data regression.
- Offers actionable insights for optimizing financial metrics, enhancing profitability, and informing regulatory policies.

CHAPTER 2

LITERATURE REVIEW

Literature Reviews

Efficient Market Hypothesis (EMH)

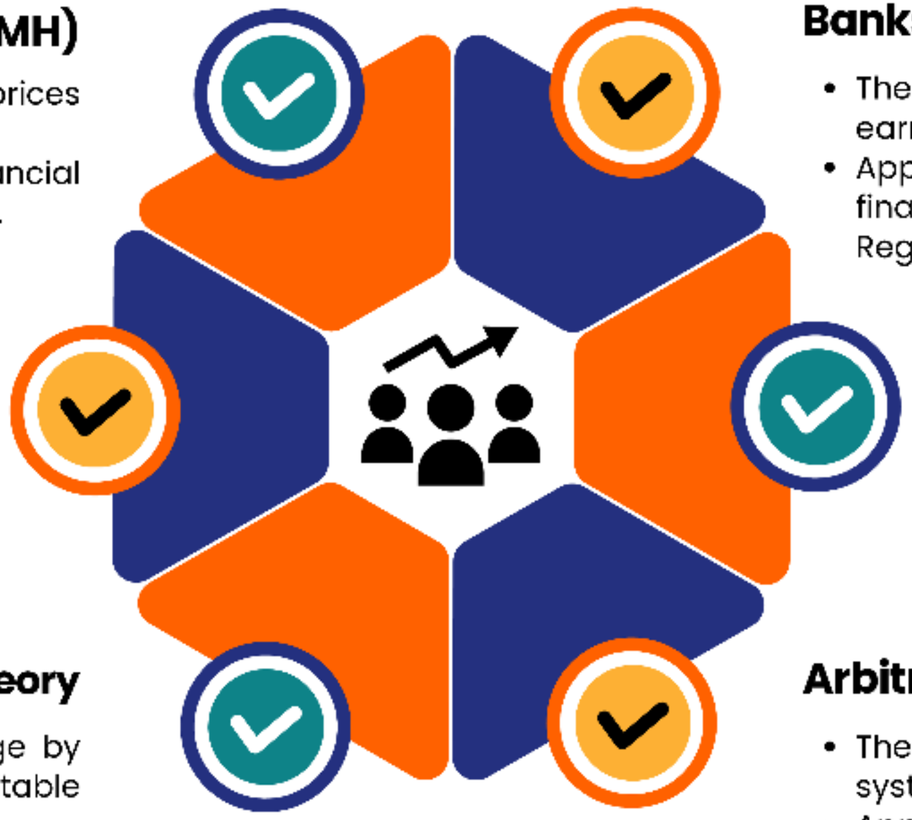
- Theory: Financial markets are efficient; asset prices reflect all available information.
- Application: Banks' stock prices mirror financial health and economic conditions (Fama, 1970).

Capital Asset Pricing Model (CAPM)

- Theory: Expected return on an asset is based on risk-free rate, beta, and market risk premium.
- Application: Analyzes how financial metrics and macroeconomic variables influence bank stock returns (Sharpe, 1964).

Resource-Based View (RBV) Theory

- Theory: Firms achieve competitive advantage by leveraging unique, valuable, and inimitable resources.
- Application: Financial metrics like CAR, NIM, and LDR enhance banks' stability and profitability (Penrose, 1959).



Banks' Financial Ratios (RBBR)

- Theory: Evaluates banks' risk profile, governance, earnings, and capital.
- Application: Key financial ratios determine banks' financial health and performance (OJK Regulations).

DuPont Analysis

- Theory: Dissects ROE into operating efficiency, asset use efficiency, and financial leverage.
- Application: Analyzes how financial decisions impact banks' overall performance and stock returns (Anthony et al., 2011).

Arbitrage Pricing Theory (APT)

- Theory: Asset returns are influenced by multiple systematic risk factors.
- Application: Evaluates impacts of financial performance and macroeconomic variables on bank stock returns (Ross, 1976).

Summary of Previous Research

Financial Ratio

Previous Research:

- Aziz et al. (2023): Efficiency (CIR), Asset Quality (NPL), ROA, Stock Return. Findings: CIR negatively impacts ROA and Stock Return; well-managed NPLs positively influence both ROA and Stock Return.
- Permatasari, Nurcahyono, Bilqis, and Nugroho (2023): return on assets (ROA) negatively affects financial distress.
- Syafruddin, Weinanto, and Haryani (2023): firm size, working capital, and firm efficiency have a positive and significant relationship with profitability.

Macroeconomics

Previous Research:

- Trisnowati et al. (2022): ESG Score, Financial Performance, Macroeconomics, Stock Returns. Findings: ESG score and financial performance positively impact stock returns; macroeconomic factors vary.
- Gunarto and Sembel (2019): Exchange Rate, GDP Growth Rate, Inflation Rate, Interest Rate, Stock Returns. Findings: Exchange Rate, GDP growth Rate, and Interest Rate have negative effects on stock returns; Inflation Rate has an insignificant effect.

Financial Ratio & Macroeconomics

Previous Research:

- Aziz et al. (2023): Efficiency (CIR), Asset Quality (NPL), ROA, Stock Return. Findings: CIR negatively impacts ROA and Stock Return; well-managed NPLs positively influence both ROA and Stock Return.
- Chiang, Sembel, and Malau (2024): NPL, LDR, ROA, NIM, Market Return, and the interaction between GDP growth with independent variables have the same effect on the stock returns.

Previously there has been some of researches on factors impacting on ROA, Stock Returns or both variables

However there is no specific study that using both 7 Key Financial Factors and 5 Macro-economic factors

Hypothesis Development (1/4)

What Is The Problem?

Research Problem 1a: Do the key financial factors positively impact the financial performance of Indonesian banks?

Research Question 1a: How do key financial factors impact the financial performance of Indonesian banks?

Research Objective 1a: To analyze the impact of key financial factors on the financial performance of Indonesian banks.

Hypothesis 1a.1	Hypothesis 1a.2	Hypothesis 1a.3	
Capital Adequacy Ratio (CAR) positively impacts the financial performance of Indonesian banks.	Net Interest Margin (NIM) positively impacts the financial performance of Indonesian banks.	Well-managed Loan-to-Deposit Ratio (LDR) positively impacts the financial performance of Indonesian banks.	
Hypothesis 1a.4	**Hypothesis 1a.5**	**Hypothesis 1a.6**	**Hypothesis 1a.7**
Cheap Funding (CASA ratio) positively impacts the financial performance of Indonesian banks.	High Cost to Income Ratio negatively impacts the financial performance of Indonesian banks.	Well-managed Non-Performing Loans (NPL) positively impact the financial performance of Indonesian banks.	Well-managed Provision Coverage Ratio positively impacts the financial performance of Indonesian banks.

Hypothesis Development (2/4)

What Is The Problem?

Research Problem 1b: Do the macroeconomic variables positively impact the financial performance of Indonesian banks?

Research Question 1b: How do macroeconomic variables impact the financial performance of Indonesian banks?

Research Objective 1b: To analyze the impact of macroeconomic variables on the financial performance of Indonesian banks.

Hypothesis 1b.1	Hypothesis 1b.2
GDP growth rate positively impacts the financial performance of Indonesian banks.	Strong IDR exchange rate over USD positively impacts the financial performance of Indonesian banks

Hypothesis 1b.3	Hypothesis 1b.4
BI Interest Rate positively impacts the financial performance of Indonesian banks.	Inflation (CPI) positively impacts the financial performance of Indonesian banks.

Hypothesis Development (3/4)

What Is The Problem?

Research Problem 2a: Do the key financial factors positively impact the stock return of Indonesian banks?

Research Question 2a: How do key financial factors impact the stock return of Indonesian banks?

Research Objective 2a: To analyze the impact of key financial factors on the stock return of Indonesian banks.

Hypothesis 2a.1	Hypothesis 2a.2	Hypothesis 2a.3	Hypothesis 2a.4
Capital Adequacy Ratio (CAR) positively impacts the stock return of Indonesian banks.	Net Interest Margin (NIM) positively impacts the stock return of Indonesian banks.	Well-managed Loan-to-Deposit Ratio (LDR) positively impacts the stock return of Indonesian banks.	Cheap Funding (CASA ratio) positively impacts the stock return of Indonesian banks.
Hypothesis 2a.5	**Hypothesis 2a.6**	**Hypothesis 2a.7**	**Hypothesis 2a.8**
High Cost to Income Ratio negatively impacts the stock return of Indonesian banks.	Well-managed Non-Performing Loans (NPL) positively impacts the stock return of Indonesian banks.	Well-managed Provision Coverage Ratio positively impacts the stock return of Indonesian banks.	Return on Assets (RoA) positively impacts the stock return of Indonesian banks.

Hypothesis Development (4/4)

What Is The Problem?

Research Problem 2b: Do the macroeconomic variables positively impact the stock return of Indonesian banks?

Research Question 2b: How do macroeconomic variables impact the stock return of Indonesian banks?

Research Objective 2b: To analyze the impact of macroeconomic variables on the stock return of Indonesian banks.

Hypothesis 2b.1	Hypothesis 2b.2
Market Return (JKSE return) positively impacts the stock return of Indonesian banks.	GDP growth rate positively impacts the stock return of Indonesian banks.

Hypothesis 2b.3	Hypothesis 2b.4	Hypothesis 2b.5
Strong IDR exchange rate over USD positively impacts the stock return of Indonesian banks.	BI Interest Rate positively impacts the stock return of Indonesian banks.	Inflation (CPI) positively impacts the stock return of Indonesian banks.

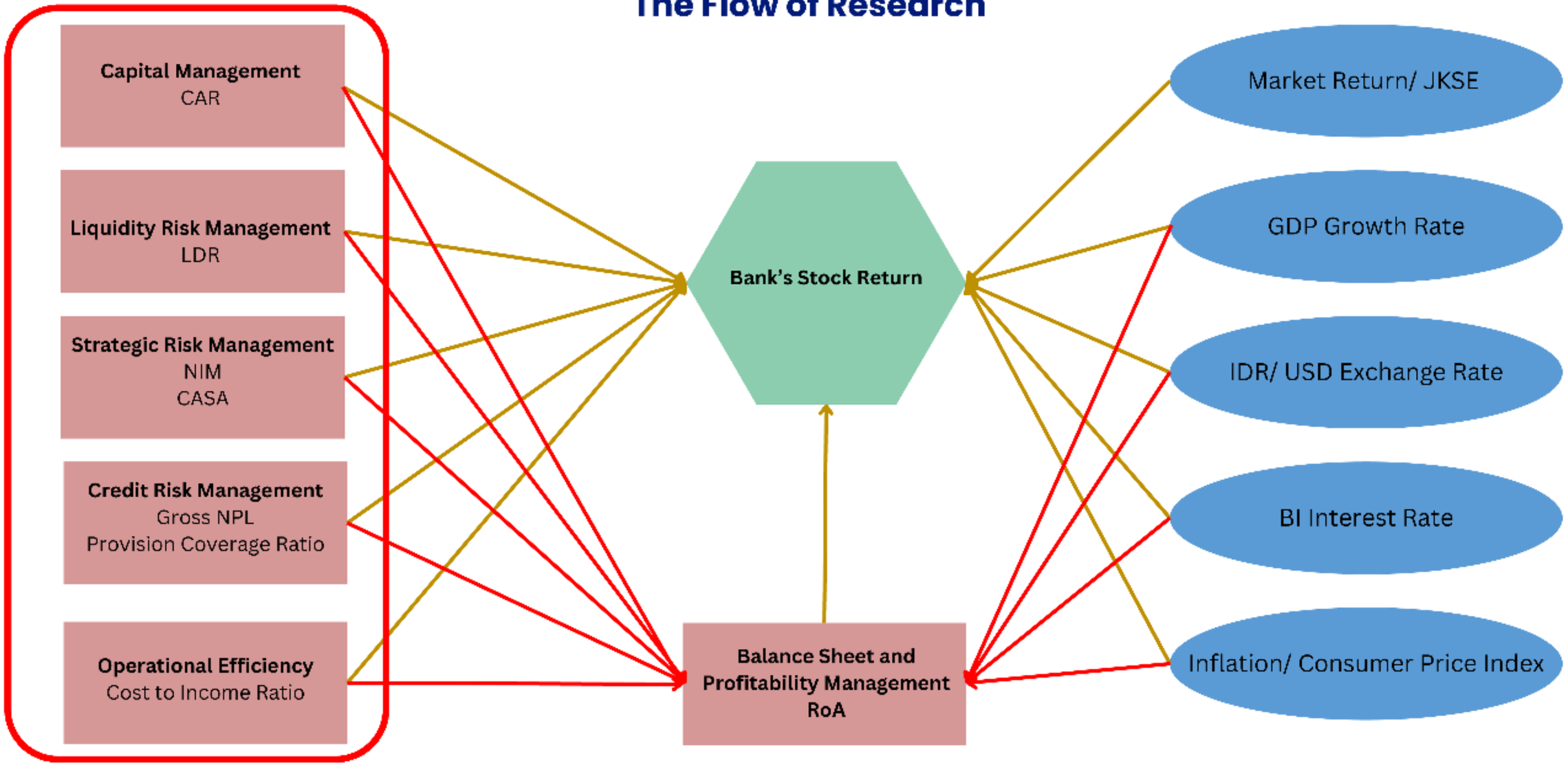
CHAPTER 3

RESEARCH METHODOLOGY

Conceptual Framework

The Impact of Key Financial Factors and Macro-Economic Variables on the Financial Performance and Stock Return of Indonesian Banks

The Flow of Research



Research Framework

KEY FINANCIAL FACTORS

Capital Management (CAR)	Total Capital / Total Risk-weighted Assets
NIM (Net Interest Margin)	Interest Income - Interest Expense / Average Productive Assets
Liquidity Management (LDR)	Total Loans / Total Deposits
Cheap Funding/ CASA ratio	Current Account + Saving Account / Total Deposits
Efficiency / Cost to Income Ratio	Total Operational Expense / Total Operational Income
Asset Quality Management (NPL)	Non-Performing Loans / Total Loans
Provision Management (Provision Coverage Ratio)	Total Provision / Non-Performing Assets

MACRO-ECONOMIC VARIABLES

Market Return	JKSE Return
GDP Growth Rate	GDP Growth Rate
Exchange Rate	IDR/ USD Exchange Rate
BI Interest Rate	2013 to August 2016: BI Rate August 2016 to Present (2024): BI 7-Day Reverse Repo Rate (BI7DRR)
Inflation	Consumer Price Index (CPI)

H1a.1, H1a.2, H1a.3, H1a.4, H1a.5, H1a.6, H1a.7

H2a.1, H2a.2, H2a.3, H2a.4, H2a.5, H2a.6, H2a.7

H2a8

H2b.1, H2b.2, H2b.3, H2b.4, H2b.5

H1b.1, H1b.2, H1b.3, H1b.4

Bank's Stock Return

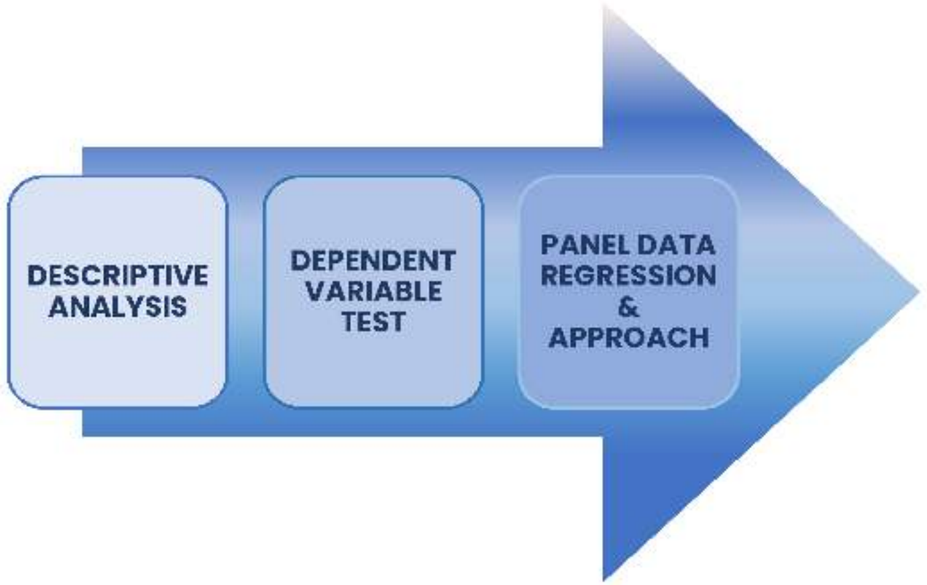
Bank's Profitability (RoA)

Research Methodology (1/7)

Research Design

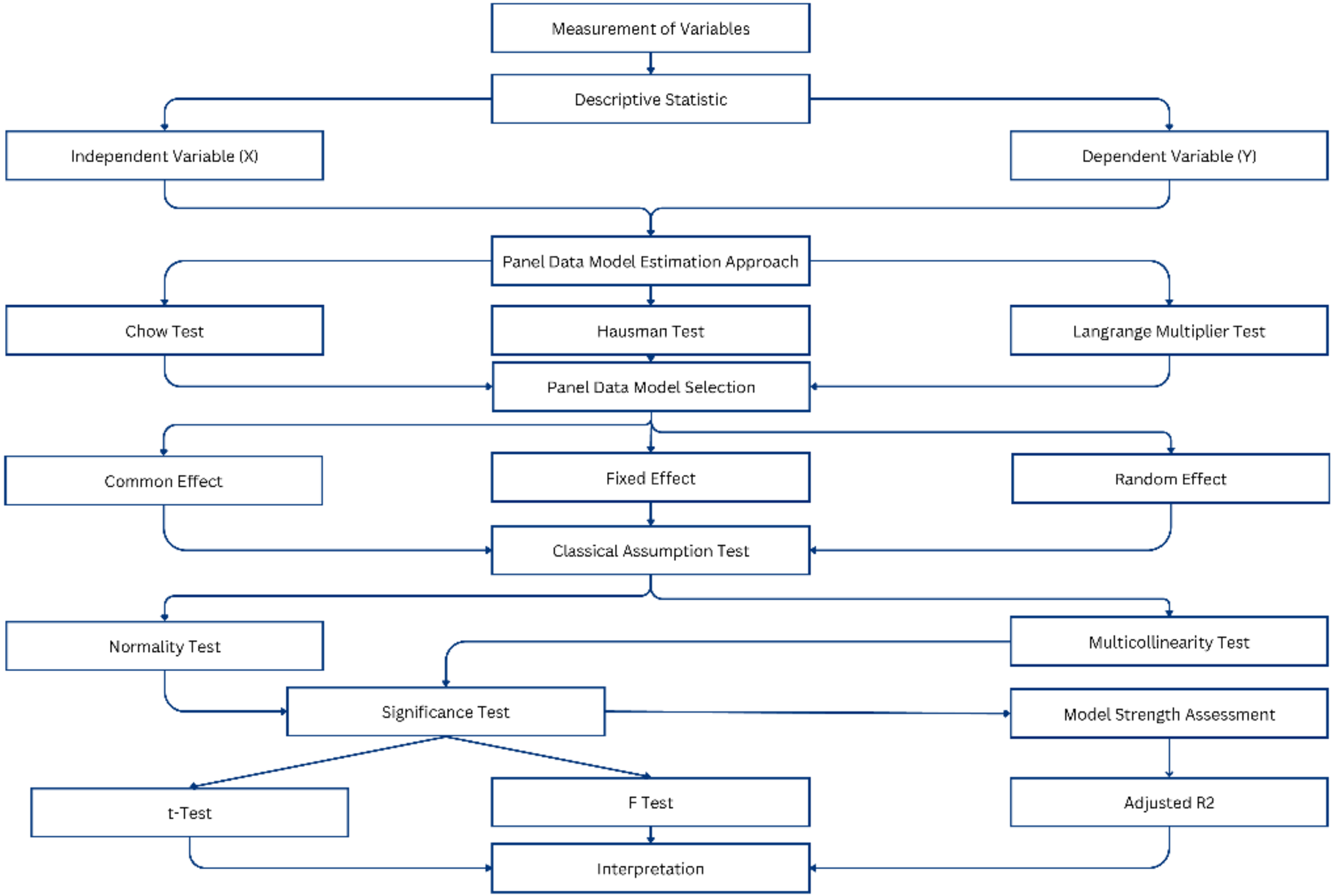
- Identifying Research Topic
- Literature Review and Define Problem
- Research Questions
- Research Design
- Data Collection and Statistical Method
- Data Analysis
- Conclusions, Limitations, Implications and Recommendations

Research Procedures in a nutshell



Research Methodology (2/7)

Research Process



Research Methodology (3/7)

Research Population and Sample

Sampling Method: Purposive sampling

The samples consisted of 12 banks in KBMI 4 and KBMI 3 as follows and data period coverage: Q42013 to Q12024 (42 data points).

No	Stock	Bank's Name	Total Asset (in IDR Billion) as of 31 Dec 2023	Total Credit to customers (in IDR Billion) as of 31 Dec 2023	Third Party Funds (in IDR Billion) as of 31 Dec 2023	Profit FY23 (in IDR billion)	Stock price in IDR full amount as of 2 Jan 2024	Market capitalization in IDR tn	IPO date	How long IPO until now? (in year)	KBMI category
1	BMRI	Bank Mandiri	1,688,850.0	1,085,787.0	1,244,014.0	51,096.9	5,827	589	14-Jul-03	21.0	KBMI 4
2	BBRI	BRI	1,835,249.0	1,146,083.0	1,353,201.0	53,153.0	5,467	731	10-Nov-03	20.7	KBMI 4
3	BBCA	BCA	1,370,871.0	787,499.0	1,083,093.0	47,986.0	9,218	1,230	31-May-00	24.1	KBMI 4
4	BBNI	BNI	1,048,726.0	687,913.0	801,933.0	20,784.0	5,130	180	25-Nov-96	27.6	KBMI 4
5	BBTN	BTN	438,750.0	296,584.0	349,934.0	3,501.0	1,219	18	17-Dec-09	14.6	KBMI 3
6	BNGA	CIMB Niaga	327,941.0	206,805.7	236,849.5	6,169.0	1,600	45	29-Nov-89	34.6	KBMI 3
7	BRIS	Bank Syariah Indonesia	353,624.0	237,502.0	293,776.0	5,704.0	1,725	115	09-May-18	6.2	KBMI 3
8	BNLI	Bank Permata	257,444.0	142,198.0	188,312.0	2,585.0	896	32	15-Jan-90	34.5	KBMI 3
9	NISP	Bank OCBC NISP	249,757.0	153,496.8	181,755.0	4,091.0	1,140	68	20-Oct-94	29.7	KBMI 3
10	BTPN	Bank BTPN	181,241.0	145,173.0	142,198.0	2,101.0	2,576	24	12-Mar-08	16.3	KBMI 3
11	BDMN	Bank Danamon	202,571.0	144,643.0	139,222.5	3,504.0	2,662	25	06-Dec-89	34.6	KBMI 3
12	PNBN	Panin Bank	198,845.0	129,289.0	132,567.0	2,151.0	1,130	31	29-Dec-82	40.5	KBMI 3
		Total sample	8,153,869.0	5,162,973.5	6,014,288.0	202,825.9					
		Total commercial banks	**11,765,838**	**7,186,935**	**8,457,929**	**243,326**					
		Sampling coverage	69%	72%	71%	83%					

The purposive sampling coverages in term of total assets, total credit to customers, total deposits and profit is 69%, 72%, 71% and 83%, respectively. This coverage is considered sufficient to reflect the overall commercial banking industry analysis.

Research Methodology (4/7)

Research Population and Sample

Sampling Method: Purposive sampling

Summary

Sampling Criteria and Rationale

- Focus on listed commercial banks in Indonesia for transparency and reliable data.
- Target top 12 banks based on total assets as of 31 Dec 2023, representing significant financial impacts.
- Include KBMI 4 and KBMI 3 banks for substantial core capital and financial stability.
- Over 68% coverage of all commercial banks ensures representative findings.
- Diversified bank types (state-owned, private, foreign) capture various banking practices.
- Include digital transformation leaders for contemporary financial analysis.
- Use top 12 banks for industry benchmarking and performance references.

Research Methodology (5/7)

Econometric Model and Variables

Identification and Measurement of Variables

Type	Variable	Symbol	Variable Measurement	Used in which model?
Dependent Variables	Profitability	ROA	$\frac{\text{Profit After Tax}}{\text{Average total assets during the period}}$	First regression quotation model
	Stock Return	SR	$\frac{(P1-P0)+D}{P0}$	Second regression quotation model
Independent Variables	Capital	CAR	$\frac{\text{Total Capital}}{\text{Total Risk-Weighted Assets}}$	First & Second regression quotation model
	Net Interest Margin	NIM	$\frac{\text{Net Interest Margin}}{\text{Average Productive Assets}}$	First & Second regression quotation model
	Loan to Deposit Ratio	LDR	$\frac{\text{Loans}}{\text{Deposits}}$	First & Second regression quotation model
	CASA ratio	CASA	$\frac{\text{Current Account + Saving Account}}{\text{Total Deposits}}$	First & Second regression quotation model
	Cost to Income Ratio	CIR	$\frac{\text{Total Cost}}{\text{Total Income}}$	First & Second regression quotation model
	Asset Quality	NPL	$\frac{\text{Loans with BI collect 3,4,5}}{\text{Loans Balance}}$	First & Second regression quotation model
	Provision Coverage Ratio	PCR	$\frac{\text{Total Provisions}}{\text{Gross Non Performing Assets}}$	
Controlled Variables	Market Return	JKSE Return	$(JKSEt-1JKSEt-JKSEt-1)\times 100$	Second regression quotation model
	GDP Growth Rate	GDP growth rate	$\frac{(GDPq-GDPq-1)}{GDPq-1}$	First & Second regression quotation model
	Exchange Rate	FX	$\frac{\text{IDR}}{\text{USD}}$	First & Second regression quotation model
	BI Interest Rate	BI Rate	BI Interest Rate	First & Second regression quotation model
	Inflation	CPI	Consumer Price Index	First & Second regression quotation model

Research Methodology (6/7)

Econometric Model and Variables (1)

Dependent variables: RoA: Return on Assets

Independent variables
1. Capital (CAR)
2. Net Interest Margin (NIM)
3. Loan to Deposit Ratio (LDR)
4. CASA ratio
5. Cost of Income Ratio (CIR)
6. Asset Quality (NPL)
7. Provision Coverage Ratio (PCR)

Controlled variables
1. GDP Growth Rate (GDP)
2. Exchange Rate (FX)
3. BI Interest Rate (BIrate)
4. Inflation (CPI)

The first regression equation model to test factors that affect the Banks's profitability:

$$RoA_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NIM_{it} + \beta_3 LDR_{it} + \beta_4 CASA_{it} + \beta_5 CIR_{it} + \beta_6 NPL_{it} + \beta_7 PCR_{it} + \beta_8 GDP_t + \beta_9 FX_t + \beta_{10} BIrate_t + \beta_{11} CPI_t + \varepsilon_{it}$$

Research Methodology (7/7)

Econometric Model and Variables (2)

Dependent variables: Stock Return

Independent variables
1. Capital (CAR)
2. Net Interest Margin (NIM)
3. Loan to Deposit Ratio (LDR)
4. CASA ratio
5. Cost of Income Ratio (CIR)
6. Asset Quality (NPL)
7. Provision Coverage Ratio (PCR)
8. Return on Assets (RoA)

Controlled variables
1. Market Return (JKSE)
2. GDP Growth Rate (GDP)
3. Exchange Rate (FX)
4. BI Interest Rate (BIrate)
5. Inflation (CPI)

The second regression equation model to test factors that affect the Banks's stock return:

$$SR_{it} = \beta_0 + \beta_1 CAR_{it} + \beta_2 NIM_{it} + \beta_3 LDR_{it} + \beta_4 CASA_{it} + \beta_5 CIR_{it} + \beta_6 NPL_{it} + \beta_7 PCR_{it} + \beta_8 RoA_{it} + \beta_9 GDP_t + \beta_{10} GDP_t + \beta_{11} FX_t + \beta_{12} BIrate_t + \beta_{12} CPI_t + \varepsilon_{it}$$

CHAPTER 4

FINDINGS, ANALYSIS & DISCUSSION

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
CAR	504	11.03	41.40	21.2421	4.51197	20.358
NIM	504	3.06	12.72	5.4565	1.50795	2.274
LDR	504	60.54	171.32	90.5203	14.79383	218.857
CASA	504	12.00	81.55	52.6139	15.75562	248.240
CIR	504	32.41	104.80	53.0513	14.86263	220.898
NPL	504	0.12	4.97	1.1464	0.93656	0.877
PCR	504	0.15	4.48	1.6435	0.71970	0.518
ROA	504	-1.24	5.03	2.1938	1.07377	1.153

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
JKSE	42	-16.76	6.78	-0.0678	4.20975	17.722
GDP	42	-4.19	5.05	0.9669	2.43920	5.950
FX	42	11430.0	15520.0	13945.786	1023.7023	1047966.368
BI	42	3.50	7.75	5.5179	1.43815	2.068
CPI	42	1.33	8.38	3.8543	1.90056	3.612
SR	504	-102.38	38.96	-0.9655	11.80847	139.440

Summary

CAR, NIM, LDR, CASA, CIR, NPL, PCR, FX, BI rate, CPI, ROA Ratios

- Lower standard deviation indicates less data variation.

JKSE, GDP, SR Ratios

- Higher standard deviation indicates more data variation.

Coefficient Correlation

Correlations

		CAR	NIM	LDR	CASA	CIR	NPL	PCR	ROA	JKSE	GDP	FX	BI	CPI	SR
CAR	Pearson Correlation	1	0.049	-0.079	0.064	-.194**	-.247**	.293**	0.082	0.223	0.166	.402**	-.389*	-.594**	-0.004
NIM	Pearson Correlation	0.049	1	-.095*	-.180**	-.144**	-.089*	-0.024	.524**	0.150	0.030	-.635**	.654**	.480**	0.073
LDR	Pearson Correlation	-0.079	-.095*	1	-.275**	.360**	0.019	-.401**	-.233**	-0.009	-0.007	0.071	0.021	-0.285	-0.042
CASA	Pearson Correlation	0.064	-.180**	-.275**	1	-.582**	-.362**	.547**	.468**	0.009	0.001	.722**	-.313*	-.309*	0.034
CIR	Pearson Correlation	-.194**	-.144**	.360**	-.582**	1	.345**	-.556**	-.463**	0.076	-0.109	-.649**	0.271	0.160	0.009
NPL	Pearson Correlation	-.247**	-.089*	0.019	-.362**	.345**	1	-.551**	-.523**	0.198	0.076	-.309*	-0.040	-0.147	0.041
PCR	Pearson Correlation	.293**	-0.024	-.401**	.547**	-.556**	-.551**	1	.416**	-0.085	-0.119	0.253	0.016	0.132	-0.006
ROA	Pearson Correlation	0.082	.524**	-.233**	.468**	-.463**	-.523**	.416**	1	-0.212	-0.061	0.024	.468**	.499**	0.049
JKSE	Pearson Correlation	0.223	0.150	-0.009	0.009	0.076	0.198	-0.085	-0.212	1	-0.198	-0.214	0.035	-0.089	.868**
GDP	Pearson Correlation	0.166	0.030	-0.007	0.001	-0.109	0.076	-0.119	-0.061	-0.198	1	-0.034	-0.004	0.002	-0.144
FX	Pearson Correlation	.402**	-.635**	0.071	.722**	-.649**	-.309*	0.253	0.024	-0.214	-0.034	1	-.535**	-.565**	-0.118
BI	Pearson Correlation	-.389*	.654**	0.021	-.313*	0.271	-0.040	0.016	.468**	0.035	-0.004	-.535**	1	.692**	0.079
CPI	Pearson Correlation	-.594**	.480**	-0.285	-.309*	0.160	-0.147	0.132	.499**	-0.089	0.002	-.565**	.692**	1	0.016
SR	Pearson Correlation	-0.004	0.073	-0.042	0.034	0.009	0.041	-0.006	0.049	.868**	-0.144	-0.118	0.079	0.016	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Summary

Analysis of Correlations

- Strong positive correlation (0.868) between JKSE and SR.
- Significant negative correlation (-0.649) between FX and CIR.
- Other correlations:
  - FX and CASA (0.722)
  - BI and CPI (0.692)
  - BI and NIM (0.654)
  - CAR and CPI (-0.594)

PANEL DATA REGRESSION MODEL SELECTION

First Model

Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	16.314084	-11,481	0.0000
Cross-section Chi-square	159.799051	11	0.0000

a chi square probability value of **0.0000 lower than 0.05**. This suggests that the **fixed effect model** is more favorable than the common effect model. Therefore, **the Hausman test** should be used to proceed with the model selection test.

Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	11	1.0000

The p-value for the cross-section random is **1.0000**, which is **more than** the significance level of **0.05**. This suggests that **the random effect model is more appropriate** than the fixed effect model. This concludes that the random effect model is the most optimal model for the first model.

Second Model

Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.004003	-11,479	0.4415
Cross-section Chi-square	11.48851	11	0.4033

a chi square probability value of **0.4033 greater than 0.05**. This suggests that the **common effect model** is more favorable than the fixed effect model. Therefore, **the Langrange Multiplier (LM) test** should be used to proceed with the model selection test.

LM Test

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	1.130776	9.701502	10.83228
	(0.2876)	(0.0018)	(0.001)

The p-value for the Breusch-Pagan test is **0.2876, which is more than 0.05**. This validates the earlier chow test, which concluded that **the common effect model** is the most optimal model for the second model.

CLASSICAL ASSUMPTION TEST (after taking out outliers)

Multicollinearity Test

First Model

Variable	Coefficient	Uncentered VIF	Centered VIF
CAR	3.73E-05	39.2866	1.692746
NIM	0.000304	21.75109	1.54052
LDR	3.07E-06	57.68639	1.497802
CASA	3.64E-06	24.49865	2.012444
CIR	4.64E-06	31.41072	2.281718
NPL	0.000996	4.86841	1.946298
PCR	0.002448	17.57816	2.82321
GDP	8.14E-05	1.224434	1.054667
FX	1.12E-09	488.6945	2.557143
BI	0.000498	36.06354	2.242769
CPI	0.000295	12.09721	2.320593

The results of the multicollinearity test shows that the VIF value in all variables is **smaller than 10**. Thus, it can be concluded that all first model variables are **independent of multicollinearity** problems because the VIF value < 10

Second Model

Variable	Coefficient	Uncentered VIF	Centered VIF
CAR	0.004769	41.89517	1.826335
NIM	0.062216	37.28139	2.637491
LDR	0.00039	60.48189	1.619672
CASA	0.000611	34.24176	2.877343
CIR	0.000613	34.19573	2.489795
NPL	0.133403	5.361663	2.181059
PCR	0.294942	17.61846	2.857054
ROA	0.181339	20.48596	3.778951
JKSE	0.007435	1.768307	1.761968
GDP	0.012682	1.548615	1.308008
FX	1.64E-07	590.6139	3.193826
BI	0.061068	36.84912	2.288046
CPI	0.040634	13.98491	2.671569

SIGNIFICANCE TEST

First Model - Random Effect Model (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.177355	0.460276	-0.385323	0.7002
CAR	-0.003144	0.005037	-0.624249	0.5328
NIM	0.359292	0.014377	24.99121	0.0000***
LDR	-0.002795	0.001445	-1.934317	0.0537*
CASA	0.027582	0.001573	17.53797	0.0000***
CIR	-0.006678	0.001775	-3.761707	0.0002***
NPL	-0.358294	0.026019	-13.77069	0.0000***
PCR	0.057031	0.040786	1.398313	0.1627
GDP	0.009181	0.007436	1.234756	0.2175
FX	-4.68E-05	2.76E-05	-1.695229	0.0907*
BI	0.094687	0.018391	5.148546	0.0000***
CPI	0.023688	0.014156	1.673387	0.0949*

Effects Specification

	S.D.	Rho
Cross-section random	3.13E-06	0
Idiosyncratic random	0.39174	1

Weighted Statistics

R-squared	0.794923	Mean dependent var	2.22158
Adjusted I	0.790114	S.D. dependent var	1.03727
S.E. of reg	0.475208	Sum squared resid	105.9109
F-statistic	165.2683	Durbin-Watson stat	0.499387
Prob(F-sta	0		

Unweighted Statistics

R-squared	0.794923	Mean dependent var	2.22158
Sum squa	105.9109	Durbin-Watson stat	0.499387

*** Highly Significant: p-value < 0.01

** Significant: 0.01 < p-value < 0.05

* Marginally Significant: < 0.05 p-value < 0.1

1. Test on Individual Regression Coefficient (t-Test)

- CAR: t-statistic value of **-0.624249** and a probability significance value of **0.5328 > 0.05. H1a.1 is rejected -> CAR has a negative and insignificant effect on ROA**
- NIM: t-statistic value of 24.99121 and a probability significance value of 0.0000 < 0.01. H1a.2 is accepted -> NIM has a positive and highly significant effect on ROA.
- LDR: t-statistic value of -1.934317 and a probability significance value of 0.0537 < 0.05 p-value < 0.1. H1a.3 is accepted -> LDR has a negative and marginally significant effect on ROA
- CASA: t-statistic value of 17.53797 and a probability significance value of 0.0000 < 0.01. H1a.4 is accepted -> CASA has a positive and highly significant effect on ROA.
- CIR: t-statistic value of -3.761707 and a probability significance value of 0.0002 < 0.01. H1a.5 is accepted -> CIR has a negative and highly significant effect on ROA.
- NPL: t-statistic value of -13.77069 and probability significance value 0.0000 < 0.01. H1a.6 is accepted -> NPL has a negative and highly significant effect on ROA.
- PCR: t-statistic value of **1.398313** and a probability significance value of **0.1627 > 0.05. H1a.7 is rejected -> PCR has a positive and insignificant effect on ROA**
- GDP: t-statistic value of **1.234756** and a probability significance value of **0.2175 > 0.05. H1b.1 is rejected -> GDP has a positive and insignificant effect on ROA**
- FX: t-statistic value of -1.695229 and a probability significance value of 0.0907 < 0.05 p-value < 0.1. H1b.2 is accepted -> FX has a negative and marginally significant effect on ROA
- BI: t-statistic value of 5.148546 and a probability significance value of 0.0000 < 0.01. H1b.3 is accepted -> BI has a positive and highly significant effect on ROA
- CPI: t-statistic value of 1.673387 and a probability significance value of 0.0949 < 0.05 p-value < 0.1. H1b.4 is accepted -> CPI has a positive and marginally significant effect on ROA

2. Simultaneous Significance Test (F-Test)

All variables have probabilities (F-statistics) or p-values (0.00) that are smaller than 0.05. This result reject F-test null hypothesis and conclude that at least one of independent variables significantly influences ROA.

3. Coefficient of Determination Test (Adjusted R2)

The Adjusted R-squared value is 0.790114. This result can be interpreted that the CAR, NIM, LDR, CASA, CIR, NPL, PCR, GDP, FX, BI, and CPI variables can jointly explain the ROA of 79.01%, and the remaining 20.99% explained by other variables outside the research model.

SIGNIFICANCE TEST

Second Model - Common Effect Model (CEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-24.38267	6.579153	-3.70605	0.0002
CAR	-0.052948	0.069398	-0.762971	0.4459
NIM	0.070204	0.250775	0.279948	0.7797
LDR	0.063498	0.019844	3.199919	0.0015***
CASA	0.064524	0.024835	2.598099	0.0097***
CIR	0.044536	0.024887	1.789501	0.0742*
NPL	1.464794	0.366974	3.991548	0.0001***
PCR	0.798954	0.545755	1.463945	0.1439
ROA	1.088282	0.428486	2.539828	0.0114**
JKSE	1.195189	0.087056	13.72896	0.0000***
GDP	-0.101663	0.113433	-0.896233	0.3706
FX	0.000423	0.000407	1.039138	0.2993
BI	0.043659	0.248228	0.175881	0.8605
CPI	0.41589	0.202852	2.050208	0.0409**
R-squared	0.414095	Mean dependent var		-0.091867
Adjusted R-squarec	0.396625	S.D. dependent var		6.597568
S.E. of regression	5.124807	Akaike info criterion		6.13668
Sum squared resid	11450.95	Schwarz criterion		6.264523
Log likelihood	-1366.753	Hannan-Quinn criter.		6.187067
F-statistic	23.70365	Durbin-Watson stat		1.95303
Prob(F-statistic)	0.000000			

*** Highly Significant: p-value < 0.01

** Significant: 0.01 < p-value < 0.05

* Marginally Significant: < 0.05 p-value < 0.1

3. Coefficient of Determination Test (Adjusted R2)

The Adjusted R-squared value is 0.396625. This result can be interpreted that the CAR, NIM, LDR, CASA, CIR, NPL, PCR, ROA, JKSE, GDP, FX, BI, and CPI variables can jointly explain the SR of 39.66%, and the remaining 60.34% explained by other variables outside the research model.

1. Test on Individual Regression Coefficient (t-Test)

- CAR: t-statistic value of **-0.762971** and a probability significance value of **0.4459 > 0.05**. **H2a.1 is rejected -> CAR has a negative and insignificant effect on Bank Stock Returns (SR)**
- NIM: t-statistic value of **0.279948** and a probability significance value of **0.7797 > 0.05**. **H2a.2 is rejected -> NIM has a positive and insignificant effect on Bank Stock Returns (SR)**.
- LDR: t-statistic value of 3.199919 and a probability significance value of 0.0015 < 0.01. H2a.3 is accepted -> LDR has a positive and highly significant effect on Bank Stock Returns (SR)
- CASA: t-statistic value of 2.598099 and a probability significance value of 0.0097 < 0.01. H2a.4 is accepted -> CASA has a positive and highly significant effect on Bank Stock Returns (SR).
- CIR: t-statistic value of 1.789501 and a probability significance value of 0.0742 < 0.05 p-value < 0.1. H2a.5 is accepted -> CIR has a positive and marginally significant effect on Bank Stock Returns (SR).
- NPL: t-statistic value of 3.991548 and probability significance value 0.0001 < 0.01. H2a.6 is accepted -> NPL has a positive and highly significant effect on Bank Stock Returns (SR).
- PCR: t-statistic value of **1.463945** and a probability significance value of **0.1439 > 0.05**. **H2a.7 is rejected -> PCR has a positive and insignificant effect on Bank Stock Returns (SR)**
- ROA: t-statistic value of 2.539828 and a probability significance value of 0.0114 < 0.05. H2a.8 is accepted -> ROA has a positive and significant effect on Bank Stock Returns (SR).
- JKSE: t-statistic value of 13.72896 and a probability significance value of 0.0000 < 0.01. H2b.1 is accepted -> JKSE has a positive and highly significant effect on Bank Stock Returns (SR).
- GDP: t-statistic value of **-0.896233** and a probability significance value of **0.3706 > 0.05**. **H2b.2 is rejected -> GDP has a negative and insignificant effect on Bank Stock Returns (SR)**
- FX: t-statistic value of **1.039138** and a probability significance value of **0.2993 > 0.05**. **H2b.3 is rejected -> FX has a positive and insignificant effect on Bank Stock Returns (SR)**
- BI: t-statistic value of **0.175881** and a probability significance value of **0.8605 > 0.05**. **H2b.4 is rejected -> BI has a positive and insignificant effect on Bank Stock Returns (SR)**
- CPI: t-statistic value of 2.050208 and a probability significance value of 0.0409 < 0.05. H2b.5 is accepted -> CPI has a positive and significant effect on Bank Stock Returns (SR)

2. Simultaneous Significance Test (F-Test)

All variables have probabilities (F-statistics) or p-values (0.00) that are smaller than 0.05. This result reject F-test null hypothesis and conclude that at least one of independent variables significantly influences SR.

DISCUSSION

Summary

Impact on Return on Assets (ROA)

- NIM, CASA, BI, and CPI positively and significantly affect ROA.
- LDR, CIR, NPL, and FX negatively and significantly affect ROA.
- The first model's findings align with prior research by Ardiansyah et al. (2023) and Putri and Widjaja (2022).

CASA and Profitability

- Higher CASA ratios are associated with increased profits due to lower interest expenses on third-party deposits.
- Studies by Renjani (2020) and Khabibah et al. (2020) support the positive impact of CASA on ROA.

Macroeconomic Factors and ROA

- FX negatively affects ROA.
- Inflation and the BI rate positively influence ROA, as per Hasyim et al. (2023).

Impact on Stock Returns

- LDR, CASA, CIR, NPL, ROA, JKSE, and CPI positively and significantly impact stock returns from Q4 2013 to Q1 2024.
- Supported by research from Chiang et al. (2024) and Kalam (2020), indicating significant effects of LDR, NPL, and inflation on stock returns.

CHAPTER 5

CONCLUSION, LIMITATION, IMPLICATION & RECOMMENDATIONS

CONCLUSION

Summary

Research Gap and Objectives

- Examines inconsistent findings on financial and macroeconomic factors affecting bank profitability and stock returns.
- Objectives: Analyze the impact of financial metrics and macroeconomic variables on financial performance and stock returns.

Model 1 Findings (Bank Profitability - ROA)

- Positive impact: NIM, CASA, BI, CPI.
- Negative impact: LDR, CIR, NPL, FX.
- No impact: CAR, PCR, GDP.

Model 2 Findings (Bank Stock Returns)

- Positive impact: LDR, CASA, CIR, NPL, ROA, JKSE, CPI.
- Insignificant impact: CAR, NIM, PCR, GDP, FX, BI.

Statistical Analysis

- F-test results: All independent variables significantly impact dependent variables.
- Adjusted R-squared: 79.01% (Model 1 ROA), 39.66% (Model 2 stock returns), remaining variations due to other factors.

LIMITATIONS

Summary

Scope of Variables

- Financial indicators: CAR, NIM, LDR, CASA, CIR, NPL, PCR, and ROA
- Macroeconomic indicators: JKSE, GDP, FX, BI, and CPI
- Exclusions: Other RBBR (Risk Based Bank Rating) or TKB (Tingkat Kesehatan Bank) factors such as GCG, Sensitivity to Market Risk, Broader Asset Quality factors, Comprehensive Risk Profile, Regulatory Compliance

Time Frame

- Analysis period: Q4 2013 to Q1 2024 - may limit the ability to capture long-term trends or changes beyond this timeframe

Geographical Focus

- Specific to Indonesian banking sector, hence the findings are context-specific - cannot be generalized or extrapolated to other industries or geographic regions.

IMPLICATIONS

Theoretical Implications

Development of a Holistic Framework

- Integrates key financial and macroeconomic variables to assess banks' financial performance and stock returns.
- Significant metrics: Higher NIM and CASA ratios boost ROA and stock returns, while higher CIR and NPL reduce ROA.
- Provides a nuanced model for analyzing bank profitability and investment outcomes.

Exploration of Moderating Roles

- Highlights the importance of financial metrics and macroeconomic factors.
- BI Rate positively impacts ROA; CPI shows macroeconomic effects on profitability.
- GDP Growth Rate's non-linear effects suggest economic growth doesn't always improve bank performance, requiring context-specific analysis.

Practical Implications

Practical Implications for Financial Managers and Policymakers

- **Actionable Insights for Financial Strategy**
  - Optimize financial strategies to enhance bank performance.
  - Focus on improving NIM and CASA Ratio for profitability.
  - Manage LDR and FX carefully due to their impact on ROA.
- **Informed Decision-Making for Managers**
  - Control CIR and reduce NPLs to improve profitability.
  - Enhance operational efficiency and credit risk management.
  - Develop policies for sustainable growth and financial stability.
- **Guidance for Policymakers**
  - Use BI Rate and CPI insights to craft effective policies.
  - Align with central bank policies and plan for inflation effects.
  - Incorporate sustainability principles into regulatory frameworks for stability and growth.

RECOMMENDATIONS

Given the constraints of this study, there are several recommendations for researchers seeking to further advance and refine this investigation, specifically:

Summary

Study Variables and Recommendations

- Examined CAR, NIM, LDR, CASA, CIR, NPL, PCR, ROA for financial factors; JKSE, GDP, FX, BI, CPI for macroeconomic factors.
- Suggests including ROE, Liquidity Ratio, and GCG in future studies.

Observation Period

- Covered Q4 2013 to Q1 2024.
- Recommends extending or varying observation periods for more accurate results and larger sample sizes.

Scope and Limitations

- Focused on Indonesian banking companies.
- Future research should explore other industries or regions to enhance sample diversity and results.

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Total References: 108

Working Paper: 4

Journal: 63

Websites: 3

Book: 29

Report: 6

Conference: 2

Regulation: 2

Thank You

For Your Attention

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Appendix 1

Panel Dataset

A panel dataset combines both cross-sectional data (data collected from multiple subjects at a single point in time) and time-series data (data collected from the same subjects over multiple time periods). This allows for a comprehensive analysis that captures variations across banks and over time.

The components of Panel Dataset for this research are:

1. **Cross-Sectional Data:**
   - **Subjects:** The 12 top banks in Indonesia.
   - **Variables:** Financial metrics such as NIM (Net Interest Margin), CAR (Capital Adequacy Ratio), LDR (Liquidity Management), CASA ratio (Cheap Funding), Cost to Income Ratio (Efficiency), NPL (Asset Quality Management), Credit Cost Management.
2. **Time-Series Data:**
   - **Time Period:** Quarterly data from Q1 2013 to Q1 2024.
   - **Variables:** The same financial metrics and additional macro-economic variables such as JKSE Return (Market Return), GDP Growth Rate, Exchange Rate (IDR/USD), and Inflation Rate.

Columns represent the variables being measured

Rows represent the observations for each bank in each quarter

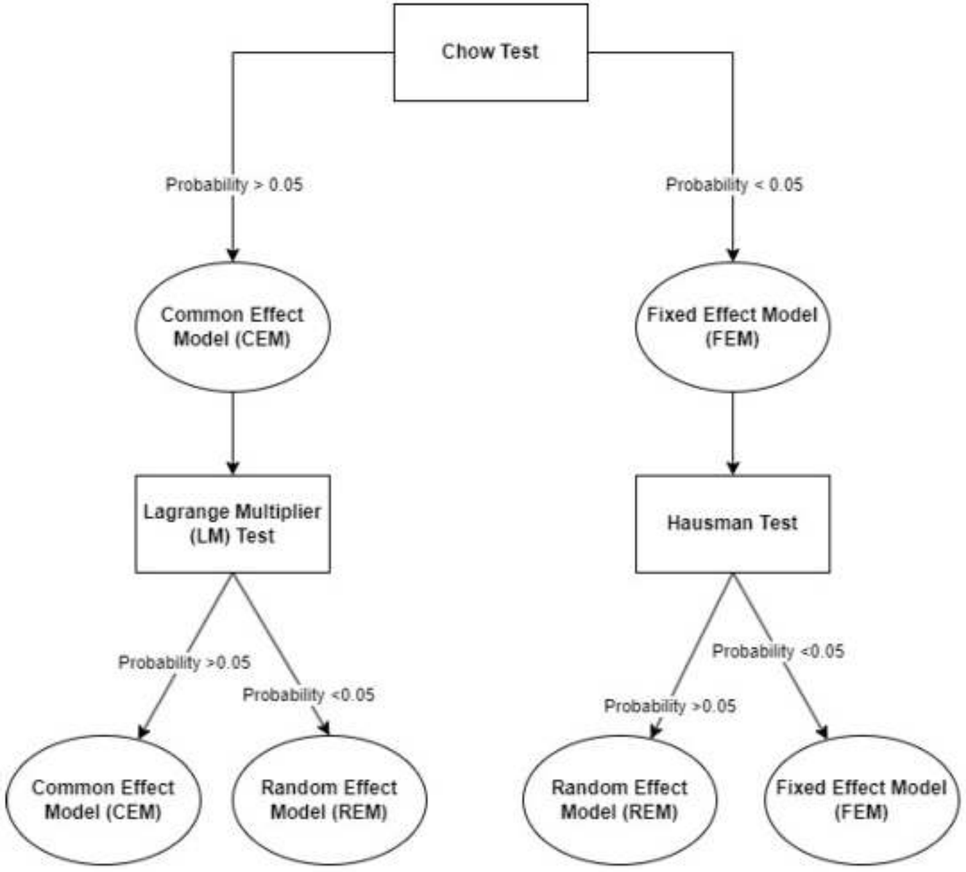
	A	B	C	D	E	F	G	H	I	J	K	L
	Group	Q	Y	Bank	CAR	NIM	LDR	CASA	CIR	NPL	PCR	ROA
	9	1	2022	BBCA	23.86	4.92	60.54		35.80	0.79		3.06
	10	2	2022	BBCA	24.72	4.98	63.47		34.34	0.69		3.47
	11	3	2022	BBCA	25.36	5.13	63.34		34.49	0.66		3.69
	12	4	2022	BBCA	25.77	5.34	65.23		33.92	0.59		3.91

Appendix 2

Model Choice: CEM, FEM and REM

Practical Implications of Model Choice

- **CEM:** Simplifies analysis by assuming homogeneity, but may overlook important bank-specific factors.
- **FEM:** Controls for unobserved heterogeneity, providing more reliable estimates when bank-specific traits are important.
- **REM:** Offers efficiency by assuming random variations, suitable when individual effects are uncorrelated with predictors.



Common Effect Model (CEM) Outcome

- **Equation:** $ROA_{it} = \alpha + \beta_1 NIM_{it} + \beta_2 CAR_{it} + \epsilon_{it}$
- **Interpretation:**
  - Intercept (α): Same for all banks.
  - Coefficients (β_1, β_2): Same impact of NIM and CAR on ROA across all banks.
  - Residual (ϵ_{it}): Error term.

Fixed Effect Model (FEM) Outcome

- **Equation:** $ROA_{it} = \alpha_i + \beta_1 NIM_{it} + \beta_2 CAR_{it} + \epsilon_{it}$
- **Interpretation:**
  - Intercept (α_i): Different for each bank, accounting for unique characteristics.
  - Coefficients (β_1, β_2): Same impact of NIM and CAR on ROA, adjusted for each bank's intercept.

Random Effect Model (REM) Outcome

- **Equation:** $ROA_{it} = \alpha + \mu_i + \beta_1 NIM_{it} + \beta_2 CAR_{it} + \epsilon_{it}$
- **Interpretation:**
  - Intercept (α): Same overall intercept.
  - Random Effect (μ_i): Randomly varying intercept for each bank.
  - Coefficients (β_1, β_2): Same impact of NIM and CAR on ROA, with random variations across banks.

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Appendix 3

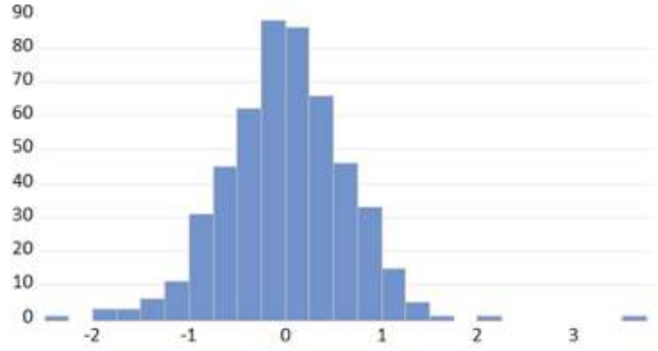
Comparison Analysis: CEM, FEM and REM

Key Differences	Common Effect Model (CEM)	Fixed Effect Model (FEM)	Random Effect Model (REM)
• Intercept	Single intercept for all banks	Different intercepts for each bank	Overall intercept with random variations
• Slope Coefficients	Assumes the same slope coefficients for all banks because it assumes all banks are homogeneous.	Also assumes the same slope coefficients for all banks but allows for different intercepts to account for individual bank characteristics.	Assumes the same slope coefficients for all banks and allows for random intercepts, assuming that the individual effects are random.
• Bank-Specific Effects	Not accounted for	Accounted for by different intercepts	Accounted for by random variations
• Heterogeneity	Assumes no heterogeneity	Controls for heterogeneity	Assumes heterogeneity is random
• Time-Invariant Variables	Can be estimated	Cannot be estimated	Can be estimated
• Efficiency	Simple and easy to use	More accurate if individual effects matter	More efficient if assumptions are correct
• Model Selection	When banks are assumed homogeneous	When banks have unique characteristics	When bank effects are random
• Test for Selection	Chow Test & Lagrange Multiplier Test	Chow Test and Hausman Test	Chow Test and Lagrange Multiplier Test
• Example Interpretation	Uniform impact of NIM and CAR and ROA	Different baseline ROA levels for each bank	Random impact of NIM and CAR and other variables on ROA

Appendix 4

CLASSICAL ASSUMPTION TEST

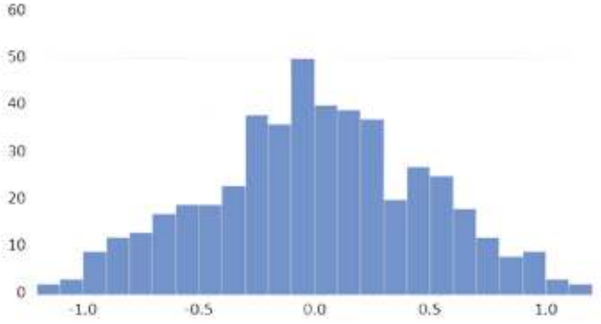
Normality Test First Model



Series: Standardized Residuals	
Sample 2013Q4 2024Q1	
Observations 504	
Mean	2.10e-17
Median	0.002489
Maximum	3.634221
Minimum	-2.429991
Std. Dev.	0.630375
Skewness	0.134805
Kurtosis	5.383605
Jarque-Bera	120.8395
Probability	0.000000

The normality test for the first model, yielded a Jarque-Bera probability value of **0.000**. Given that this value falls **below** the conventional significance threshold of **0.05**, the null hypothesis of normality is rejected.

Variable	Coefficient	Std. Error	t-Statisti	Prob.
@ISPERIOD("133")	-1.968328	0.479557	-4.10447	0.0000
@ISPERIOD("154")	-1.413056	0.480586	-2.94028	0.0034
@ISPERIOD("155")	-1.689431	0.478553	-3.53029	0.0005
@ISPERIOD("167")	1.310244	0.499676	2.62219	0.0090
@ISPERIOD("216")	-1.716951	0.478306	-3.58965	0.0004
@ISPERIOD("217")	-1.816398	0.4791	-3.79127	0.0002
@ISPERIOD("218")	-1.915404	0.479165	-3.99738	0.0001
@ISPERIOD("219")	-1.706247	0.479631	-3.55742	0.0004
@ISPERIOD("220")	-1.372499	0.478119	-2.87062	0.0043
@ISPERIOD("221")	-1.21976	0.478779	-2.54765	0.0112
@ISPERIOD("280")	-1.418544	0.481378	-2.94684	0.0034
@ISPERIOD("281")	-1.468995	0.479982	-3.06052	0.0023
@ISPERIOD("305")	-2.225074	0.481082	-4.62514	0.0000
@ISPERIOD("307")	3.864754	0.478965	8.06898	0.0000
@ISPERIOD("331")	-1.158898	0.484699	-2.39097	0.0172
@ISPERIOD("395")	-1.381204	0.485444	-2.84524	0.0046
@ISPERIOD("422")	-1.514734	0.479737	-3.15743	0.0017
@ISPERIOD("423")	2.035675	0.479384	4.24644	0.0000
@ISPERIOD("438")	1.223996	0.479559	2.55234	0.0110
@ISPERIOD("442")	1.611433	0.477668	3.37354	0.0008
@ISPERIOD("443")	1.253782	0.478593	2.61972	0.0091
@ISPERIOD("444")	1.181379	0.478416	2.46935	0.0139
@ISPERIOD("454")	1.499909	0.477724	3.1397	0.0018



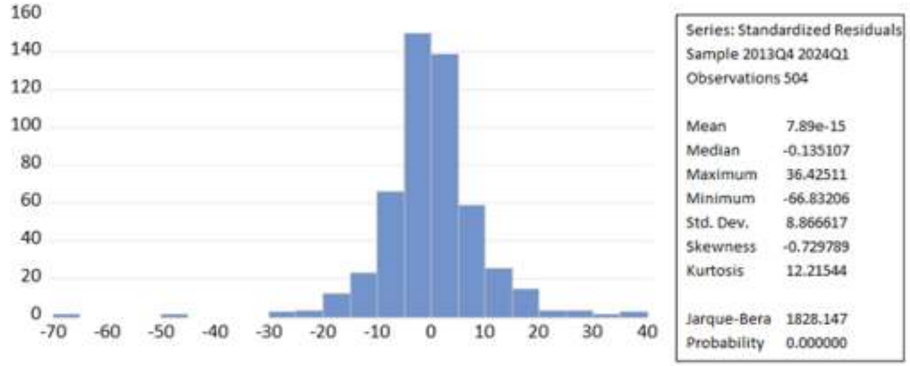
Series: Standardized Residuals	
Sample 2013Q4 2024Q1	
Observations 481	
Mean	1.29e-11
Median	-0.000110
Maximum	1.146482
Minimum	-1.186169
Std. Dev.	0.469732
Skewness	-0.050632
Kurtosis	2.618689
Jarque-Bera	3.119536
Probability	0.210185

the JB value for the second normality test is 3.119536, while the Chi-Square value of **0.210185** is **greater than the significant level of 0.05**. So it can be concluded that the data in the first model is a **normal distribution**

After doing outlier identification, a total of **23 outliers were detected within the first model**. To assess the impact of these atypical observations on the distributional properties of the data, the outliers were excluded and the normality test was re-administered on the revised dataset.

Appendix 5
CLASSICAL ASSUMPTION TEST

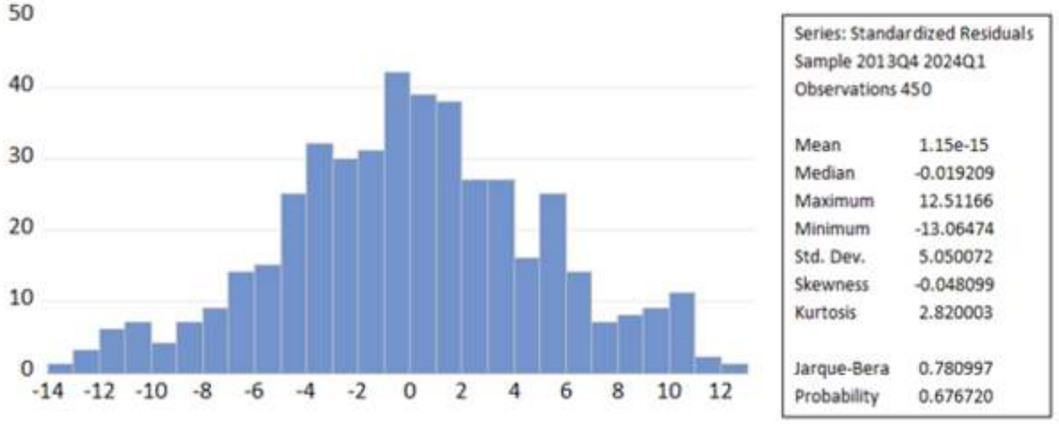
Normality Test Second Model



The normality test for the first model, yielded a Jarque-Bera probability value of **0.000**. Given that this value falls **below** the conventional significance threshold of **0.05**, the null hypothesis of normality is rejected.

Variable	Coefficie	Std. Err	t-Stati	Prob.
@ISPERIOD("26"	-30.6933	6.6633	-4.606	0
@ISPERIOD("68"	-34.4352	6.6464	-5.181	0
@ISPERIOD("69"	18.9036	6.4376	2.9364	0
@ISPERIOD("133'	-20.8968	6.5123	-3.209	0
@ISPERIOD("152"	-58.0047	6.6475	-8.726	0
@ISPERIOD("187"	-19.4619	6.4494	-3.018	0
@ISPERIOD("194'	-75.5513	6.6756	-11.32	0
@ISPERIOD("195"	35.6582	6.4612	5.5188	0
@ISPERIOD("196'	-17.718	6.4636	-2.739	0.01
@ISPERIOD("199'	-16.5793	6.4435	-2.573	0.01
@ISPERIOD("218'	27.88	6.5019	4.288	0
@ISPERIOD("278'	14.2454	6.7047	2.1247	0.03
@ISPERIOD("281'	28.8836	6.4893	4.4519	0
@ISPERIOD("283	20.1048	6.4371	3.1233	0
@ISPERIOD("303	-20.7594	6.5608	-3.164	0
@ISPERIOD("313'	18.8824	6.4364	2.9337	0
@ISPERIOD("315"	24.8234	6.4178	3.8679	0
@ISPERIOD("318'	17.6187	6.4015	2.7523	0.01
@ISPERIOD("320	18.9726	6.6608	2.8484	0
@ISPERIOD("362	22.7543	6.6793	3.4066	0
@ISPERIOD("468	21.9483	6.4553	3.4002	0
@ISPERIOD("473'	-24.6731	6.4673	-3.815	0
@ISPERIOD("488	-27.9246	6.6635	-4.187	0
@ISPERIOD("497'	36.4177	6.4567	5.6403	0
@ISPERIOD("10")	11.5039	5.178	2.2217	0.03
@ISPERIOD("72")	12.6843	5.1874	2.4452	0.01
@ISPERIOD("88"	13.9695	5.1904	2.6914	0.01
@ISPERIOD("145"	-16.1631	5.1443	-3.143	0
@ISPERIOD("153"	14.052	5.1834	2.711	0.01
@ISPERIOD("157"	-15.3653	5.1602	-2.978	0
@ISPERIOD("161"	-13.3259	5.1539	-2.583	0.01
@ISPERIOD("169'	-15.106	5.2045	-2.903	0
@ISPERIOD("259'	13.6371	5.2706	2.5874	0.01
@ISPERIOD("280	-18.0148	5.2411	-3.437	0
@ISPERIOD("282	-20.2	5.1775	-3.902	0
@ISPERIOD("305'	15.8069	5.2591	3.0057	0
@ISPERIOD("319'	13.8328	5.1346	2.694	0.01
@ISPERIOD("323	16.6274	5.2274	3.1808	0
@ISPERIOD("348	-18.2489	5.1678	-3.531	0
@ISPERIOD("349	14.3267	5.1525	2.897	0
@ISPERIOD("353'	-12.8419	5.1902	-2.474	0.01
@ISPERIOD("375'	14.9843	5.1453	2.9122	0
@ISPERIOD("397'	17.1417	5.2221	3.2825	0
@ISPERIOD("404	-24.0117	5.5552	-4.322	0
@ISPERIOD("428	-14.7343	5.1754	-2.847	0
@ISPERIOD("437'	19.3797	5.1579	3.7573	0
@ISPERIOD("446	-31.244	5.3738	-5.814	0
@ISPERIOD("448	-14.1777	5.1717	-2.741	0.01
@ISPERIOD("451"	-13.1779	5.1446	-2.562	0.01
@ISPERIOD("464	-13.7932	5.2097	-2.648	0.01
@ISPERIOD("470'	-12.9791	5.2048	-2.494	0.01
@ISPERIOD("472'	17.8023	5.1658	3.4463	0
@ISPERIOD("482	15.4863	5.1716	2.9945	0
@ISPERIOD("499	-17.9072	5.1814	-3.456	0

For the second model's data, **a two-stage outlier identification** process was necessary to achieve normality. The initial identification detected **24 outliers**, while the second one revealed an additional **30 outliers**. Following the removal of these outliers, the normality test was re-applied to the refined dataset.



the JB value for the second normality test is 3.119536, while the Chi-Square value of **0.210185** is **greater than the significant level of 0.05**. So it can be concluded that the data in the first model is a **normal distribution**

Appendix 6

RESEARCH PROCESS RESULTS

Summary

Measurement of Variables

- Analyzed financial and macroeconomic data from 12 Indonesian banks (2013-2024).
- Variables: CAR, NIM, LDR, CASA, CIR, NPL, PCR, ROA, JKSE, GDP, FX, BI, CPI.
- Data includes cross-sectional and time-series aspects over 42 periods.

Descriptive Statistics

- Mean CAR: 21.24%, SD: 4.51%; Mean NIM: 5.46%, SD: 1.51% - indicating relatively low variability across banks
- Positive correlation between JKSE and Stock Returns (0.868).
- Negative correlation between FX and CIR (-0.649).

Panel Data Model Estimation Approach

- Panel data regression used to capture variations.
- Random effect model for ROA (Hausman test).
- Common effect model for Stock Returns (Chow and Lagrange Multiplier tests).

Panel Data Model Selection

- Fixed effect model preferred (Chow Test).
- Random effect model optimal (Hausman Test).
- Common effect model validated (Lagrange Multiplier Test).

Classical Assumption Test

- Normality Test: Data normally distributed (JB probability).
- Multicollinearity Test: VIF values < 10, no issues.

Significance Test

- t-Test: Positive impact of NIM, CASA, and BI on ROA; negative impact of CIR and NPL.
- F-Test: Variables collectively significant for ROA and Stock Returns.
- Adjusted R^2: 0.79 for ROA model, 0.396 for Stock Returns model.

Interpretation

- Financial and macroeconomic variables significantly impact bank performance.
- NIM and CASA positively affect ROA; LDR, ROA, and JKSE positively affect Stock Returns.
- Implications for improving bank performance and stock returns.

Appendix 7

Outliers Data for 1st model for Normality Test

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Group	Time	Quarte	Bank	CAR	NIM	LDR	CASA	CIR	NPL	PCR	ROA	JKSE	GDP	FX	BI	CPI	SR
134	4	Q2 2015	2015:02	BBNI	17.11	6.53	87.63	66.03	50.20	0.78	1.34	1.48	-5.86	3.74	13,282	7.50	7.26	-29.72
155	4	Q3 2020	2020:03	BBNI	16.75	4.32	83.11	65.38	44.18	0.53	2.01	0.88	-7.03	5.05	14,722	4.00	1.42	-14.86
156	4	Q4 2020	2020:04	BBNI	16.78	4.50	87.28	68.32	44.17	0.95	1.84	0.54	6.53	-0.40	14,080	3.75	1.68	2.83
168	4	Q4 2023	2023:04	BBNI	21.95	4.58	85.81	71.61	42.90	4.58	3.06	2.60	2.71	0.45	15,520	6.00	2.61	1.86
217	6	Q1 2015	2015:01	BNGA	16.40	5.22	92.35	43.44	54.31	1.85	1.05	0.19	1.25	-0.16	12,776	7.75	6.38	0.63
218	6	Q2 2015	2015:02	BNGA	15.87	5.07	92.76	47.42	56.09	1.69	1.02	0.20	-5.86	3.74	13,282	7.50	7.26	-6.67
219	6	Q3 2015	2015:03	BNGA	15.88	5.17	92.04	47.66	53.02	1.49	1.24	0.21	-6.34	3.31	13,840	7.50	6.83	17.22
220	6	Q4 2015	2015:04	BNGA	16.16	5.17	94.87	46.81	52.67	1.62	1.14	0.21	3.30	-1.73	13,803	7.50	3.35	0.00
221	6	Q1 2016	2016:01	BNGA	17.88	5.23	94.49	52.05	51.27	1.94	0.82	0.62	1.56	-0.36	13,309	7.25	4.45	0.87
222	6	Q2 2016	2016:02	BNGA	17.49	5.36	93.31	51.99	49.61	1.95	1.22	0.83	4.58	4.01	13,132	6.75	3.45	5.90
281	7	Q3 2020	2020:03	BRIS	19.38	5.73	82.65	58.65	37.62	1.73	2.67	0.84	-7.03	5.05	14,722	4.00	1.42	-28.67
282	7	Q4 2020	2020:04	BRIS	19.04	5.89	80.99	59.19	37.29	1.77	2.53	0.81	6.53	-0.40	14,080	3.75	1.68	36.44
306	8	Q2 2016	2016:02	BNLI	18.60	3.91	85.92	42.00	52.00	2.67	1.02	-1.24	4.58	4.01	13,132	6.75	3.45	17.02
308	8	Q4 2016	2016:04	BNLI	15.64	3.93	80.45	47.00	56.00	2.24	1.23	4.89	2.87	-1.81	13,471	4.75	3.02	0.00
332	8	Q4 2022	2022:04	BNLI	34.19	4.33	68.93	58.00	55.13	0.36	2.45	1.10	-3.26	0.36	15,315	5.50	5.51	-12.32
396	10	Q4 2017	2017:04	BTPN	24.91	9.32	96.62	12.00	50.00	0.45	1.30	1.19	6.78	-1.70	13,556	4.25	3.61	0.81
423	11	Q1 2014	2014:01	BDMN	18.43	7.51	94.12	41.42	59.44	1.16	1.15	1.43	3.20	0.04	11,430	7.50	7.32	6.21
424	11	Q2 2014	2014:02	BDMN	17.81	7.29	98.93	43.95	58.92	1.26	1.09	4.93	-0.31	3.83	11,729	7.50	6.70	-0.36
439	11	Q1 2018	2018:01	BDMN	22.46	6.48	93.52	48.76	71.27	2.23	0.92	3.00	-6.19	-0.41	13,780	4.25	3.40	4.00
443	11	Q1 2019	2019:01	BDMN	22.83	5.47	94.30	46.28	59.17	2.06	0.90	3.22	0.39	-0.52	14,128	6.00	2.48	7.08
444	11	Q2 2019	2019:02	BDMN	22.24	5.30	95.66	47.13	55.58	2.44	0.73	2.76	2.41	4.20	14,196	6.00	3.28	3.54
445	11	Q3 2019	2019:03	BDMN	23.04	5.27	96.48	48.26	54.25	2.65	0.77	2.61	-2.52	3.05	14,142	5.75	3.39	-1.26
455	11	Q1 2022	2022:01	BDMN	25.69	5.06	84.68	60.50	46.78	0.61	1.86	3.78	2.66	-0.94	14,374	3.50	2.64	2.46

Appendix 8

Outliers Data for 2nd model for Normality Test Purpose

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Grou	Time	Quar	Bank	CAR	NIM	LDR	CAS	CIR	NPL	PCR	ROA	JKSE	GDI	FX	BI	CPI	SR
27	1	Q1 2020	2020:01	BMRI	17.65	5.26	94.91	64.13	46.13	0.47	2.65	3.55	-16.76	-2.41	14,592	5.00	2.96	-55.45
69	2	Q1 2020	2020:01	BBRI	18.23	6.66	90.39	57.45	41.50	0.63	2.33	3.19	-16.76	-2.41	14,592	5.00	2.96	-60.25
70	2	Q2 2020	2020:02	BBRI	19.83	5.72	85.78	57.55	50.24	0.77	2.08	2.41	3.19	-4.19	14,879	4.50	1.96	22.86
71	2	Q3 2020	2020:03	BBRI	20.38	5.76	82.58	59.02	49.82	0.78	2.26	2.07	-7.03	5.05	14,722	4.00	1.42	1.00
73	2	Q1 2021	2021:01	BBRI	19.40	7.00	86.77	58.91	41.71	0.86	2.54	2.65	-4.11	-0.93	14,496	3.50	1.37	7.04
85	3	Q3 2014	2014:03	BBCA	17.24	6.49	75.88	76.22	40.51	0.30	2.51	3.86	0.01	3.27	12,062	7.50	4.53	14.34
134	4	Q2 2015	2015:02	BBNI	17.11	6.53	87.63	66.03	50.20	0.78	1.34	1.48	-5.86	3.74	13,282	7.50	7.26	-29.72
146	4	Q2 2018	2018:02	BBNI	17.46	5.45	87.28	66.72	46.46	0.94	1.43	2.73	-3.08	4.21	14,268	4.50	3.12	-20.2
153	4	Q1 2020	2020:01	BBNI	16.07	4.88	92.26	67.41	43.85	0.52	2.37	2.83	-16.76	-2.41	14,592	5.00	2.96	-63.9
154	4	Q2 2020	2020:02	BBNI	16.71	4.47	87.79	67.50	43.51	0.55	2.07	1.38	3.19	-4.19	14,879	4.50	1.96	16.36
156	4	Q2 2021	2021:02	BBNI	18.18	4.85	87.83	69.60	40.73	0.90	2.06	1.48	0.64	3.30	14,365	3.50	1.33	-16.6
162	4	Q2 2022	2022:02	BBNI	18.42	4.70	90.06	69.23	40.43	0.58	2.58	2.44	-3.32	3.73	14,773	3.50	4.35	-16.86
170	5	Q4 2013	2013:04	BBTN	15.62	5.44	104.42	46.86	57.17	3.04	0.28	1.79	0.42	-2.18	12,204	7.50	8.38	-11.49
188	5	Q2 2018	2018:02	BBTN	17.42	4.10	107.80	49.81	61.53	3.01	0.41	0.28	-3.08	4.21	14,268	4.50	3.12	-24.49
195	5	Q1 2020	2020:01	BBTN	18.73	3.13	114.22	44.01	58.99	2.38	1.05	0.76	-16.76	-2.41	14,592	5.00	2.96	-102.36
196	5	Q2 2020	2020:02	BBTN	19.10	3.16	111.27	44.68	56.43	2.40	1.06	0.63	3.19	-4.19	14,879	4.50	1.96	38.96
197	5	Q3 2020	2020:03	BBTN	18.95	3.13	93.26	36.96	55.72	2.26	1.08	0.59	-7.03	5.05	14,722	4.00	1.42	-31.25
200	5	Q2 2021	2021:02	BBTN	17.80	3.41	89.12	37.47	51.99	1.87	1.20	0.68	0.64	3.30	14,365	3.50	1.33	-19.34
218	6	Q3 2015	2015:03	BNGA	15.88	5.17	92.04	47.68	53.02	1.49	1.24	0.21	-6.34	3.31	13,840	7.50	6.83	17.22
260	7	Q2 2015	2015:02	BRIS	11.03	7.11	92.05	26.53	90.09	4.38	0.59	0.78	-5.86	3.74	13,282	7.50	7.26	10.00
279	7	Q1 2020	2020:01	BRIS	21.99	6.08	92.10	57.54	43.22	2.95	1.12	1.00	-16.76	-2.41	14,592	5.00	2.96	-12.24
281	7	Q3 2020	2020:03	BRIS	19.38	5.73	82.65	58.65	37.62	1.73	2.67	0.84	-7.03	5.05	14,722	4.00	1.42	-28.67
282	7	Q4 2020	2020:04	BRIS	19.04	5.89	80.89	59.19	37.29	1.77	2.53	0.81	6.53	-0.40	14,080	3.75	1.68	36.44
283	7	Q1 2021	2021:01	BRIS	23.10	6.13	77.28	57.76	35.30	0.92	2.04	1.72	-4.11	-0.93	14,496	3.50	1.37	-28.36
284	7	Q2 2021	2021:02	BRIS	22.27	6.18	74.48	54.81	34.22	0.75	2.17	1.64	0.64	3.30	14,365	3.50	1.33	17.17
304	8	Q4 2015	2015:04	BNLI	15.00	3.96	87.84	36.79	98.86	1.40	1.08	0.16	3.30	-1.73	13,803	7.50	3.35	-16.40
306	8	Q2 2016	2016:02	BNLI	18.60	3.91	85.92	42.00	52.00	2.67	1.02	-1.24	4.58	4.01	13,132	6.75	3.45	17.02
314	8	Q2 2018	2018:02	BNLI	19.59	3.96	86.11	48.00	66.00	1.49	2.11	0.50	-3.08	4.21	14,268	4.50	3.12	12.90
316	8	Q4 2018	2018:04	BNLI	19.44	4.11	90.08	48.30	64.50	1.73	1.77	0.78	2.28	-1.69	14,378	6.00	3.13	27.36
319	8	Q3 2019	2019:03	BNLI	19.84	4.23	87.99	50.00	63.46	1.19	1.65	1.28	-2.52	3.05	14,142	5.75	3.39	12.6
320	8	Q4 2019	2019:04	BNLI	19.89	4.39	86.32	50.70	62.44	1.34	1.30	1.30	4.79	-1.74	13,901	5.00	2.72	17.75
321	8	Q1 2020	2020:01	BNLI	19.61	4.59	79.94	53.50	60.98	1.23	1.49	0.69	-16.76	-2.41	14,592	5.00	2.96	-9.18
324	8	Q4 2020	2020:04	BNLI	35.68	4.74	78.69	51.22	58.67	1.04	2.41	0.97	6.53	-0.40	14,080	3.75	1.68	20.86
345	9	Q3 2016	2016:03	NISP	18.97	4.63	92.13	42.50	46.50	0.61	1.94	1.93	-0.40	3.13	13,040	6.50	3.07	-21.75
350	9	Q4 2016	2016:04	NISP	18.28	4.62	89.96	39.40	46.30	0.77	1.68	1.85	2.87	-1.81	13,471	4.75	3.02	15.46
354	9	Q4 2017	2017:04	NISP	17.51	4.47	93.42	38.50	45.60	0.72	2.23	1.96	6.78	-1.70	13,556	4.25	3.61	-6.67
363	9	Q1 2020	2020:01	NISP	18.71	3.89	89.84	45.50	44.40	0.88	2.08	2.42	-16.76	-2.41	14,592	5.00	2.96	-5.00
376	9	Q2 2023	2023:02	NISP	23.07	4.40	78.86	54.80	43.58	0.67	2.58	2.21	0.43	3.86	15,038	5.75	3.52	13.92
398	10	Q2 2018	2018:02	BTPN	23.62	8.91	93.72	12.00	45.00	0.54	1.24	2.41	-3.08	4.21	14,268	4.50	3.12	8.75
405	10	Q1 2020	2020:01	BTPN	21.95	4.80	169.09	29.00	89.05	0.49	1.21	1.47	-16.76	-2.41	14,592	5.00	2.96	-41.86
429	11	Q3 2015	2015:03	BDMN	20.15	7.11	91.09	46.13	53.70	1.85	0.92	1.76	-6.34	3.31	13,840	7.50	6.83	-22.1
438	11	Q4 2017	2017:04	BDMN	23.24	6.87	93.29	49.30	51.99	1.88	1.04	2.47	6.78	-1.70	13,556	4.25	3.61	27.70
447	11	Q1 2020	2020:01	BDMN	23.21	5.29	95.08	50.13	52.47	1.64	1.09	2.22	-16.76	-2.41	14,592	5.00	2.96	-51.67
449	11	Q3 2020	2020:03	BDMN	25.93	4.93	88.70	52.50	57.95	1.51	1.20	1.26	-7.03	5.05	14,722	4.00	1.42	-25.25
451	11	Q1 2021	2021:01	BDMN	26.23	5.00	85.33	54.45	53.90	0.85	1.59	3.05	-4.11	-0.93	14,496	3.50	1.37	-14.25
465	12	Q1 2014	2014:01	PNBN	16.20	3.78	89.13	65.94	79.67	0.75	0.77	2.05	3.20	0.04	11,430	7.50	7.32	-9.33
469	12	Q1 2015	2015:01	PNBN	16.70	4.03	92.24	38.92	83.22	0.42	0.92	1.74	1.25	-0.16	12,776	7.75	6.38	22.9
471	12	Q3 2015	2015:03	PNBN	19.78	4.48	96.93	41.43	88.20	0.52	0.90	1.22	-6.34	3.31	13,840	7.50	6.83	-21.47
473	12	Q1 2016	2016:01	PNBN	19.92	4.98	93.71	39.47	82.77	0.50	0.92	1.68	1.58	-0.36	13,309	7.25	4.45	17.86
480	12	Q4 2017	2017:04	PNBN	21.99	4.68	96.39	36.34	78.79	0.77	0.92	1.61	6.78	-1.70	13,556	4.25	3.61	-16.67
483	12	Q3 2018	2018:03	PNBN	23.04	4.60	102.60	37.18	78.48	0.88	0.85	1.92	-0.70	3.09	14,788	5.25	2.88	13.27
489	12	Q1 2020	2020:01	PNBN	24.48	5.08	103.26	40.21	45.19	0.39	1.68	2.00	-16.76	-2.41	14,592	5.00	2.96	-57.25
496	12	Q2 2022	2022:02	PNBN	27.49	5.22	91.75	49.91	42.09	0.59	1.36	1.98	-3.32	3.73	14,773	3.50	4.35	28.70
500	12	Q4 2022	2022:04	PNBN	29.91	5.20	91.67	47.07	41.77	0.81	1.46	1.82	-3.26	0.36	15,315	5.50	5.51	-23.35

Appendix 9

CONCLUSION: First Model

RoA = -0.385323 - 0.624249CAR + 24.99121NIM - 1.934317LDR + 17.53797CASA- 3.761707CIR- 13.77069NPL+ 1.398313PCR + 1.234756GDP - 1.695229FX + 5.148546BIrate + 1.673387CPI

Where:

- C is the constant or intercept (-0.177355).
- CAR is the Capital Adequacy Ratio. **(Insignificant)**
- NIM is the Net Interest Margin. **(Highly Significance)**
- LDR is the Loan-to-Deposit Ratio. **(Marginally Significance)**
- CASA is the Current Account and Savings Account ratio. **(Highly Significance)**
- CIR is the Cost to Income Ratio. **(Highly Significance)**
- NPL is the Non-Performing Loans ratio. **(Highly Significance)**
- PCR is the Provision Coverage Ratio. **(Insignificant)**
- GDP is the Gross Domestic Product growth rate. **(Insignificant)**
- FX is the Exchange Rate (IDR/USD). **(Insignificant)**
- BI is the Bank Indonesia Interest Rate. **(Highly Significance)**
- CPI is the Consumer Price Index (inflation). **(Marginally Significance)**

Appendix 10

CONCLUSION: Second Model

SR = -3.70605 - 0.762971CAR + 0.279948NIM + 3.199919LDR + 2.598099CASA +1.789501CIR + 3.991548NPL + 1.463945PCR + 2.539828RoA + 13.72896GDP - 0.896233GDP + 1.039138 FX + 0.175881BIrate + 2.050208CPI

Where:

- C is the constant or intercept (-24.38267).
- CAR is the Capital Adequacy Ratio. **(Insignificant)**
- NIM is the Net Interest Margin. **(Insignificant)**
- LDR is the Loan-to-Deposit Ratio. **(Highly Significance)**
- CASA is the Current Account and Savings Account ratio. **(Highly Significance)**
- CIR is the Cost to Income Ratio. **(Marginally Significance)**
- NPL is the Non-Performing Loans ratio. **(Highly Significance)**
- PCR is the Provision Coverage Ratio. **(Insignificant)**
- ROA is the Return on Assets. **(Significance)**
- JKSE is the Jakarta Composite Index (Market Return). **(Highly Significance)**
- GDP is the Gross Domestic Product growth rate. **(Insignificant)**
- FX is the Exchange Rate (IDR/USD). **(Insignificant)**
- BI is the Bank Indonesia Interest Rate. **(Insignificant)**
- CPI is the Consumer Price Index (inflation). **(Significance)**

Appendix 11
DISCUSSION

- Based on the result of the first model using random effect model, NIM, CASA, BI, and CPI postively and significantly affects the return on assets (ROA) for period Q4 2013 to Q1 2024. Meanwhile, LDR, CIR, NPL and FX negatively and significantly affects the return on assets (ROA).
- The findings of the first model align with prior research by **Ardiansyah et al. (2023)** which demonstrated that NPL, CASA, and LDR collectively influence ROA. Additionally, **Putri and Widjaja (2022)** indicated that NPLs negatively impact profit variations in Commercial Banks listed on the IDX between 2013 and 2017. The NPL ratio has an inverse relationship with ROA, as elevated NPL levels correlate with an increase in non-performing loans, leading to a reduction in potential profits. Higher NPLs compel banks to allocate greater reserves to mitigate the risk of these loans, thereby increasing the reserve burden. This, in turn, diminishes profit generation and disrupts banking efficiency
- **Renjani (2020)** measured that CASA positively impacts the ROA of foreign exchange Islamic commercial banks between 2015 and 2019. Similarly, other studies, such as those by **Khabibah et al. (2020)** have demonstrated that CASA contributes to enhanced banking profitability. A higher CASA ratio is associated with increased bank profits, as CASA represents a portion of low-cost funds within third-party deposits. An increased share of these low-cost funds reduces the interest expenses banks must incur when raising third-party funds, thereby enhancing the bank's potential net profit. Consequently, a higher CASA ratio indicates a greater potential for profit generation, making banks with high CASA ratios more attractive to investors
- **Hasyim et al. (2023)** examined the impact of macroeconomic factors on profitability (ROA), revealing that the exchange rate (FX) negatively affects ROA, while both inflation and the BI rate exert a significant positive influence on profitability. These findings are consistent with the results of the first model in the current study.
- The results of the second model, employing the common effect model, indicate that LDR, CASA, CIR, NPL, ROA, JKSE, and CPI have a positive and significant impact on the stock returns of Indonesian banks during the period from Q4 2013 to Q1 2024.
- This finding is supported by previous research, such as **Chiang et al. (2024)** which demonstrated that LDR, NPL, and market returns positively and significantly influenced stock returns for the period 2007-2011. Additionally, **Kalam (2020)** found that inflation (CPI) has a significant effect on stock returns, while **Ibrahim and Agbaje (2013)** established a co-integrated relationship between stock returns and inflation. Their results further indicate that inflation has a positive and significant impact on stock returns, underscoring its importance as a macroeconomic variable that influences investment flows and determines the direction and variations in stock returns over time.