

Analysis of Non-Performing Loans and Interest Rates on Bank Jasa Jakarta's Profitability (2004–2024)

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Abstract- This study examines the effect of Non-Performing Loan Gross (NPL Gross), Net Interest Margin (NIM), and BI Rate on the profitability of PT Bank Jasa Jakarta, measured by Return on Equity (ROE), over the period 2004–2024. Secondary data from 21 annual observations were analyzed using Ordinary Least Squares (OLS) multiple linear regression via EViews 13, with ROE(–1) included as a control variable, classical assumption tests confirmed normality, no multicollinearity ($VIF < 2$), no autocorrelation ($DW = 1.886$), and homoscedasticity. NPL Gross did not significantly affect ROE ($p = 0.081$) due to its consistently narrow variation. NIM negatively and significantly affected ROE ($p = 0.014$; $coeff. = -17.97$), reflecting an efficiency–profitability paradox during digital transformation. BI Rate negatively and significantly affected ROE ($p = 0.001$; $coeff. = -7.85$), consistent with monetary transmission theory. Simultaneously, the four variables explained 98.77% of ROE variation ($Adjusted R^2 = 0.9877$). Margin expansion during capital-intensive digital transformation does not improve profitability without operational cost discipline, management is advised to prioritize BOPO reduction and diversify funding toward low-cost CASA to reduce monetary policy sensitivity.

Keywords- Bank Jasa Jakarta; interest rate, non-performing loan; profitability, return on equity.

I. INTRODUCTION

The banking sector is the backbone of Indonesia's financial intermediation system, channeling surplus funds to productive uses and supporting economic growth for both large corporations and micro enterprises [1]. PT Bank Jasa Jakarta (BJJ) was founded on March 23, 1984, initially as a market bank and later granted commercial bank status in 1989. In September 2022, PT Astra International Tbk through PT Sedaya Multi Investama and WeLab Sky Limited acquired a 49.56% controlling stake in BJJ, aiming to meet minimum core capital requirements and pivot the bank toward digital banking [2]. This transformation culminated in the launch of Bank Saqu in November 2023 and the official renaming of the entity to PT Bank Saqu Indonesia in May 2025 [3].

Table 1. Return on Equity

YEAR	ROE	YEAR	ROE	YEAR	ROE
2004	0,2599	2011	0,1334	2018	0,0805
2005	0,2318	2012	0,1314	2019	0,0708
2006	0,1622	2013	0,1226	2020	0,0418
2007	0,1569	2014	0,0982	2021	0,0479
2008	0,1242	2015	0,1063	2022	0,0179
2009	0,1351	2016	0,1043	2023	-0,7800

YEAR	ROE	YEAR	ROE	YEAR	ROE
2010	0,1457	2017	0,0867	2024	-5,2900

Source: Data processed from PT Bank Jasa Jakarta annual financial reports

BJJ's profitability as measured by Return on Equity (ROE) exhibited extreme volatility over 2004–2024, from 25.99% in 2004 to -529% in 2024.

Table 2. Operating Expense Growth and Efficiency Ratio (BOPO) of PT Bank Jasa Jakarta During Digital Transformation

Year	Promotional Expense (IDR billion)	Other Operating Expense (IDR billion)	BOPO (%)
2022	2.78	68.07	84.27
2023–2024	64.35	302.81	114.83

Source: Data processed from PT Bank Jasa Jakarta annual financial reports and Bisnis.com (2024).

This collapse was driven by a massive surge in operational expenditure during digital transformation: promotional expenses rose from IDR 2.78 billion to IDR 64.35 billion in one year, and other operational costs quadrupled, pushing the cost-to-income ratio (BOPO) from 84.27% to 114.83% [4]. Meanwhile, BI Rate was raised to 6.25% in April 2024, intensifying cost-of-fund pressure [5].

Prior research on Indonesian bank profitability determinants has primarily used multi-bank panels or shorter time horizons [6], [7]. A study that simultaneously examines NPL Gross, NIM, and



BI Rate against the ROE of a single medium-sized bank across a 21-year horizon spanning the 2008 global financial crisis, COVID-19, and a digital-transformation episode remains limited [8]. BJJ offers a unique case: its NPL stayed consistently below OJK's 5% ceiling, its NIM rose while profits fell, and its reliance on interest-bearing deposits amplifies repricing risk when the policy rate tightens [9].

This study therefore asks: (1) Does NPL Gross significantly affect ROE of Bank Jasa Jakarta 2004-2024? (2) Does NIM significantly affect ROE? (3) Does BI Rate significantly affect ROE? (4) Do all three variables simultaneously affect ROE? Answering these questions contributes longitudinal single-bank evidence on how the efficiency-profitability paradox manifests during digital transformation, complementing existing multi-bank studies.

II. LITERATURE REVIEW

2.1 Financial intermediation

Financial intermediation theory explains that banks earn profit from the spread between lending income and deposit costs, known as Net Interest Margin (NIM). In this function, banks face credit risk, liquidity risk, market risk, and operational risk that must be managed to sustain profitability [1]. The monetary transmission mechanism describes how central bank policy rate changes cascade through money market rates, deposit rates, and lending rates, ultimately influencing bank margins and profitability [10].

2.2 Return on Equity

Return on Equity (ROE) measures the efficiency with which a bank converts shareholders' equity into net income [11]. The DuPont decomposition shows that ROE is simultaneously sensitive to net profit margin, asset utilization, and financial leverage, making it responsive to changes in credit risk, funding structure, and operational cost management [12]. Prior empirical studies in Indonesia confirm ROE as a primary indicator for investors evaluating bank performance [13]. ROE is calculated as:

$$\text{ROE} = (\text{Net Income} / \text{Total Equity}) \times 100\%$$

2.3 Non-Performing Loan Gross

Non-Performing Loan Gross (NPL Gross) measures the proportion of substandard, doubtful, and loss credits relative to total credit outstanding. An increase in NPL compresses profitability through three channels: reduced interest income from non-earning assets, larger expected credit loss provisions required under PSAK 71, and higher collection and

legal costs [14]. Luana et al. [15] found that NPL significantly and negatively affects ROE in ASEAN banking during 2019–2023, and Arifian and Noor [16] confirmed the same pattern for Indonesian banks. However, Akter and Sultana showed [17] that during periods of regulatory forbearance such as the COVID-19 pandemic, the NPL profitability link can lose statistical significance when dominant cost-side factors overshadow credit quality changes. NPL Gross is calculated as:

$$\text{NPL Gross} = (\text{Substandard} + \text{Doubtful} + \text{Loss}) / \text{Total Credit} \times 100\%$$

2.4 Net Interest Margin

The relationship between NIM and profitability is theoretically positive but empirically contingent on operational efficiency. NIM is calculated as:

$$\text{NIM} = (\text{Interest Income} - \text{Interest Expense}) / \text{Average Earning Assets} \times 100\%$$

When operational cost expansion outpaces net interest income growth, higher NIM coexists with lower profitability. This adverse selection mechanism, in which excessively high lending rates drive quality borrowers to competitors and leave the bank with riskier portfolios, can invert the NIM profitability relationship [18]. Az-Zahra and Pardistya [6] demonstrated this reversal in Indonesian conventional banking during periods of high interest rates.

2.5 BI Rate

BI Rate increases raise the cost of funds faster than asset yields can be repriced, squeezing net interest margins and elevating credit default risk. Darmawan et al. [7] and Gunawan and Rustariyuni [8] both established a significant negative effect of BI Rate on bank profitability in Indonesia. Medium-sized banks with limited low-cost current account and savings account (CASA) ratios are especially sensitive to policy rate tightening due to their reliance on repriced time deposits [9].

Based on this theoretical foundation, the research hypotheses are as follows. H1: NPL Gross significantly affects ROE of Bank Jasa Jakarta 2004–2024. H2: NIM significantly affects ROE. H3: BI Rate significantly affects ROE. H4: NPL Gross, NIM, and BI Rate simultaneously and significantly affect ROE of Bank Jasa Jakarta 2004–2024.

III. RESEARCH METHOD

This study employs a quantitative explanatory design with a single-case longitudinal strategy using annual time-series data for PT Bank Jasa Jakarta over 2004-2024 [19]. The dependent variable is Return on Equity (ROE), calculated as net income divided by



total equity multiplied by 100%. Three independent variables are used: NPL Gross (sum of substandard, doubtful, and loss credits divided by total credit, multiplied by 100%); Net Interest Margin (net interest income divided by average earning assets, multiplied by 100%); and BI Rate (Bank Indonesia's 7-Day Reverse Repo Rate, in percent). ROE at period t-1 is included as a control variable to capture profit persistence [20].

Secondary data for ROE, NIM, and NPL Gross were sourced from PT Bank Jasa Jakarta's annual reports published on Bank Saqu's official website (www.banksaqu.co.id). BI Rate data were obtained from Bank Indonesia's Statistics of Economic and Financial Indonesia (SEKI) portal (www.bi.go.id). The full population of 21 annual observations (2004-2024) was used. After applying the one-period lag for the control variable, 20 effective observations covering 2005-2024 were available for regression estimation [21]. Table 3 presents the variable operationalization used in this study.

Table 3. Variable Operationalization

Variable	Definition	Indicator	Scale
ROE (Y)	Ratio measuring net income generated per unit of shareholders equity (Brigham & Houston, 2021)	Net Income / Total Equity x 100%	Ratio
NPL Gross (X1)	Ratio of non-performing credits (substandard, doubtful, loss) to total credit (Kasmir, 2019)	(Substandard + Doubtful + Loss Credits) / Total Credit x 100%	Ratio
NIM (X2)	Ratio of net interest income to average earning assets (Kasmir, 2019)	(Interest Income - Interest Expense) / Average Earning Assets x 100%	Ratio
BI Rate (X3)	Bank Indonesia benchmark interest rate as monetary policy instrument (Bank Indonesia, 2024)	BI 7-Day Reverse Repo Rate (%)	Ratio

Variable	Definition	Indicator	Scale
ROE t-1 (Control)	Prior-period ROE as control for profit persistence (Wooldridge, 2020)	Prior year ROE (%)	Ratio

Source: Compiled from various references (processed, 2025)

The empirical model is specified as: $ROEt = a + b1NPLGrosst + b2NIMt + b3BIRatet + b4ROEt-1 + et$. Parameters are estimated by Ordinary Least Squares (OLS) using EViews 13. Four classical assumption tests are conducted: (1) normality of residuals via the Jarque-Bera statistic (H_0 accepted if $p > 0.05$); (2) multicollinearity via Variance Inflation Factor with threshold $VIF < 10$; (3) autocorrelation via the Breusch-Godfrey Serial Correlation LM Test (H_0 accepted if Prob. Chi-Square > 0.05) and Durbin-Watson statistic; and (4) heteroscedasticity via the Breusch-Pagan-Godfrey test (H_0 accepted if Prob. Chi-Square > 0.05). Hypothesis testing uses Adjusted R^2 , the F-test for simultaneous significance, and t-tests for partial significance, all at the 5% significance level [22].

IV. RESULTS AND DISCUSSION

Results

Table 4. Descriptive Statistics of Research Variables (2004–2024)

Variable	Mean	Median	Min	Max	Std. Dev.
NPL Gross (%)	0.9119	0.7500	0.1000	2.0400	0.6213
NIM (%)	4.2400	4.2700	2.9800	5.3000	0.6327
BI Rate (%)	6.6905	6.5000	3.5000	12.750	2.1664
ROE (%)	-18.154	10.630	-529.00	25.990	118.812

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

Table 4 presents descriptive statistics for all variables over the 21-year observation window. NPL Gross averaged 0.91% with a narrow range of 0.10%–2.04% and a standard deviation of 0.62%, confirming consistently low and stable credit quality well below OJK's 5% ceiling. NIM averaged 4.24% (range: 2.98%–5.30%; std. dev.: 0.63%), reflecting relatively stable net intermediation capacity. BI Rate averaged 6.69% with a standard deviation of 2.17%, capturing multiple monetary policy regimes from tight (12.75% in 2005) to accommodative (3.50% in 2021). ROE



displayed extreme volatility: the mean was -18.15% , ranging from a high of 25.99% in 2004 to a historic low of -529% in 2024, with a standard deviation of 118.81. The extreme negative ROE in 2024 reflects accumulated losses from the digital transformation investment cycle rather than ordinary credit dynamics [4].

Table 5. Variance Inflation Factor Results

Variable	Coeff. Variance	Uncentered VIF	Centered VIF
C	0.070126	77.289	NA
NPL Gross	36.4051	4.9999	1.515
NIM	41.9100	83.742	1.775
BI Rate	3.1957	17.150	1.632
ROE(-1)	0.0367	1.9024	1.682

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

The classical assumption tests confirmed model validity. The Jarque–Bera statistic for residuals was 0.286 ($p = 0.867 > 0.05$), confirming normally distributed residuals (mean ≈ 0 , skewness = 0.149, kurtosis = 2.495). Table 5 presents VIF results. All centered VIF values fall well below the threshold of 10, confirming no multicollinearity among the independent variables.

Table 6. Breusch–Godfrey Serial Correlation LM Test

Statistic	Value	Prob.
F-statistic	2.5429	0.1169
Obs*R-squared	5.6240	0.0601

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

Table 6 presents the Breusch–Godfrey Serial Correlation LM Test results. The Prob. Chi-Square(2) of 0.060 and F-statistic probability of 0.117, both above 0.05, confirm the absence of serial autocorrelation. The Durbin–Watson statistic of 2.210 also falls within the acceptable range (1.5–2.5), further corroborating this finding.

Table 7. Breusch–Pagan–Godfrey Heteroscedasticity Test

Statistic	Value	Prob.	Decision
F-statistic	0.1062	0.9786	Homoscedastic
Obs*R-squared	0.5506	0.9684	Homoscedastic
Scaled explained SS	0.0447	0.9998	Homoscedastic

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

Table 7 presents the Breusch–Pagan–Godfrey heteroscedasticity test results. All probability values

(F-statistic: 0.979; Obs*R-squared: 0.968; Scaled explained SS: 1.000) far exceed 0.05, confirming homoscedasticity. All OLS classical assumptions are satisfied, yielding Best Linear Unbiased Estimators (BLUE).

Table 8. OLS Regression and Hypothesis Test Results

Variable	Coeff.	Std. Err.	t-Stat	Prob.	Decision
Constant	0.759	0.265	2.868	0.012	—
NPL Gross	-11.304	6.034	-1.873	0.081	H1 Rejected
NIM	-17.968	6.474	-2.776	0.014*	H2 Accepted
BI Rate	-7.850	1.788	-4.391	0.001*	H3 Accepted
ROE(-1)	5.689	0.192	29.700	0.000*	Significant

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

Table 9. Summary of Hypothesis Test Results

Hypothesis	Statement	Prob.	Decision
H1	NPL Gross affects ROE	0.081	Rejected
H2	NIM affects ROE	0.014*	Accepted
H3	BI Rate affects ROE	0.001*	Accepted
H4	All variables jointly affect ROE (F-test)	0.000*	Accepted

Source: Processed from PT Bank Jasa Jakarta Annual Reports / EViews 13 Output (2025)

Table 8 presents the full OLS regression results. The model equation derived from estimation is:

$$\text{ROE} = 0.759 - 11.304(\text{NPLG}) - 17.968(\text{NIM}) - 7.850(\text{BI Rate}) + 5.689(\text{ROE}_{-1})$$

The Adjusted R^2 of 98.77% indicates the four variables jointly explain nearly all variation in ROE. The F-statistic of 382.39 ($p = 0.000$) confirms overall model significance. Table 7 summarizes the hypothesis test decisions.

Discussion

H1 is rejected: NPL Gross carries a negative coefficient (-11.30) but is not statistically significant ($p = 0.081$). The insignificance is not a theoretical failure but a statistical artifact: BJJ's NPL Gross ranged only from 0.10% to 2.04% with a standard deviation of 0.62%, providing insufficient variation to explain ROE swings in the regression [22]. Furthermore, BJJ's dramatic ROE decline in 2022–2024 was overwhelmingly driven by digital transformation operational costs rather than credit quality deterioration. This is consistent with Akter



and Sultana [17], who showed that NPL significance diminishes when cost-side factors dominate profitability dynamics.

H2 is accepted: NIM exerts a significant negative effect on ROE ($\beta = -17.97$; $p = 0.014$). This counterintuitive result reflects an efficiency–profitability paradox specific to the digital transformation context. In 2023, NIM rose from 3.74% to 5.29%, yet BJJ reported a net loss of IDR 47.44 billion because operational costs simultaneously surged: promotional spending increased 2,214% and other operational expenses quadrupled, worsening the BOPO ratio from 84.27% to 114.83% [4]. Under the DuPont framework, the collapse in net profit margin from cost expansion outweighed any NIM improvement [12]. Adverse selection effects may also have contributed, as excessively high lending rates designed to widen margins tend to repel creditworthy borrowers and concentrate default risk [18]. These findings align with Az-Zahra and Pardistya [6] and Murdiyanto [23].

H3 is accepted: BI Rate exerts a significant negative effect on ROE ($\beta = -7.85$; $p = 0.001$). When BI Rate rose to 6.25% in April 2024, BJJ faced acute repricing risk: time deposit rates had to be raised immediately to retain funds, while many lending contracts remained at fixed rates, compressing net interest income [24]. As a medium-sized bank with limited CASA, BJJ's funding mix is more sensitive to policy rate changes than larger peers [9]. The simultaneous occurrence of BI Rate tightening and peak digital transformation investment amplified the ROE decline through a dual squeeze. This result is consistent with Darmawan et al. [7] and Gunawan and Rustariyuni [8].

H4 is accepted: the joint F-test ($p = 0.000$) and Adjusted R^2 of 98.77% confirm that NPL Gross, NIM, BI Rate, and ROE(–1) simultaneously and significantly explain ROE variation. BJJ's profitability collapse was caused by the concurrent interaction of rising operational costs absorbing NIM gains, BI Rate tightening increasing funding costs, and stable but insufficient credit quality improvement. The highly significant positive coefficient on ROE(–1) (5.689; $p = 0.000$) reflects cumulative and self-reinforcing profitability losses across the transformation period, consistent with the profit persistence argument of Athanasoglou et al. [25].

V. CONCLUSION AND SUGGESTIONS

This study examined the effect of NPL Gross, NIM, and BI Rate on the ROE of PT Bank Jasa Jakarta over 2004-2024 using OLS multiple linear regression on 20 annual observations with ROE(–1) as a control variable. All classical OLS assumptions were satisfied. NPL Gross did not significantly affect ROE because its variation across the study period was too narrow to explain the bank's extreme profitability swings, which were instead dominated by operational cost surges from the Bank Saqu digital transformation. NIM exerted a significant negative effect on ROE, demonstrating that margin expansion during capital-intensive digital transformation is ineffective without operational cost discipline. BI Rate exerted a significant negative effect on ROE, confirming the vulnerability of medium-sized deposit-reliant banks to monetary tightening through repricing risk. Jointly, the four model variables explained 98.77% of ROE variation over the 21-year period.

This study contributes theoretical evidence that the NIM-profitability relationship can reverse during digital transformation episodes when operational cost expansion dominates net interest income growth, extending the adverse selection and DuPont efficiency frameworks to a banking digitalization context. Practically, Bank Saqu Indonesia management should prioritize BOPO reduction as the primary ROE recovery strategy, diversify funding toward CASA to reduce BI Rate sensitivity, and maintain rigorous credit monitoring to prevent NPL deterioration as the loan book expands post-transformation. Policymakers should account for the differentiated impact of rate tightening on medium-sized institutions with limited funding diversity. Future research should replicate this analysis on a panel of digital-transformation banks and incorporate quarterly data and operational efficiency variables such as BOPO and CASA ratio for a more granular view of the dynamics documented here.

VI. REFERENCES

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