

DETERMINANTS OF BANKING OPERATIONAL EFFICIENCY AND THE RELATIONSHIP BETWEEN THE FACTORS TO MARKET PRICE: EVIDENCE FROM INDONESIA

Pariang Siagian¹

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¹ School of Accounting, Bina Nusantara University, Jakarta

Corresponding Author:
Pariang Siagian

Email: pariangsiagian@binus.ac.id

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ABSTRACT

Banks play an essential role in the economy, therefore, their performance must be maintained. Compared to other business sectors, the banking sector has continually achieved the greatest market shares over several periods. When a bank becomes more efficient, it can raise its income and market prices as well as investor confidence. This study examines various factors that influence operational efficiency and the implication for market prices. In 2016 – 2021 years, 28 banking companies were sampled from all banking companies listed on the Indonesia Stock Exchange. Purposive sampling was used for data collection, and linear multiple regression was used for data processing by running tests such as descriptive statistics, determination, regression equations, hypotheses, and implications. The findings reveal a statistically significant relationship between a firm's size, capital adequacy, loan-to-deposit ratio, net interest, and inflation with operational efficiency, while non-performing loans and exchange rates have no a substantial impact. Additionally, capital adequacy, loan-to-deposit ratio, inflation, and exchange rates had statistically significant effects on market prices, although operational efficiency, non-performing loans, and net interest did not. The mediating analysis reveals that there is no interaction between non-performing loans and net interest with market prices, but it is a mediator for other variables. The research is important for a variety of stakeholders, including managers, investors, and policymakers, who are interested in resolving banking business operations, increasing financial performance, and preserving market prices by establishing mitigation strategies related to specific-internal and external factors.

Keywords: *size, shares, capital, deposit, performing, interest, inflation, currency*

1. INTRODUCTION

The banking sector has become essential to supporting and fostering the nation's economic growth (Hussein et al., 2022). There is no difference in the fact that the banking sectors represent the most important financial institutions that play an important role in the development of the economic sector (Vunjak et al. 2020). Given that fact, the banking sector has a multidimensional impact on the development of the national economy (Topić-Pavković et al., 2022). An efficient banking business will contribute the most to the capital market (Northcott, C. N. 2004). Recently, the capital market in Indonesia has grown significantly with an increasing number of consumers from diverse social groups and income levels. In 2017, there were approximately

500,000 investors, with close to 3.88 million expected by the end of 2021. Banks have the highest capitalization value of any sector listed on the Indonesian Stock Exchange (IDX). This suggests that investors are interested in investing because majority of stock market prices and returns are expected to rise-capital gain.

When a bank becomes more efficient, it can raise competitiveness, profits, market prices and investor reliance. It is thought that both specific-internal and external factors cause had a contributed in the proclivity. Banking companies use a standard metric to assess their operational efficiency, or their ability to control expenses, generate operational income, and maintain market prices (Hughes et al., 2012). The specific-factors are often use to highlight the company performance, including company size, capital adequacy, loan-to-deposit ratio, non-performing loans, and net interest that are suspected to have an impact on efficiency, and market prices. Likewise, two macroeconomic issues-inflation and currency rate are also fathomed can be determined operational efficiency and market prices.

As mention, this study covers various specific factors: Firm-size expansion has always been sustainable and consistent with operating performance, although productive assets cannot generate interest income properly. The asset-based liquidity is significant for banking activities and prices (Bhati et al., 2019); Capital adequacy is a measure of how much capital a bank has available, reported as a percentage of a bank's risk-weighted credit exposures. It is an essential measure of a bank's financial health, indicating its ability to absorb potential losses and meet its financial obligations including to boost efficiency and market shares (Naoaj, M. S., 2023) including the Fixed Effect model, Random Effect model, and Pooled Ordinary Least Square (POLS; One of the most important forms of risk that banks face uncertainty-risk operation; Loan to deposit as a syndicated loan involves two or more lenders issuing a loan to a common borrower under the same contract. (Enkhtaivan & Bolortuya, 2019). Loan defaulters among commercial banks remain high leading to financial distress of the banks.

The lender must absorb all the credit risk alone, receiving all income while at the same time, it must bear all the losses; Non-performing loans are financial pollution that can affect efficiency and economic growth as well as social welfare (Shihong, Z. 2012). The importance of non-performing financing on overall financial performance and not only focus on credit growth for profitability but also on controlled and supervised loan allocation (Altinay et al., 2022); Then, net interest affects the measurement of efficiency and leaves an impression on investors. Earnings from fees and commissions provide the main source of income used by credit institutions to offset the decrease in the interest margin (Dadang, L., 2021). However, related to the share price a percentage unit increase in net margin will decrease the price (Rafaqat et al. 2021). The other sides like inflation can affect operational efficiency as well as market perception. When inflation rises, it will impact on banking lending and the stock market (Boyd et al. 2001); The exchange rate is the standard instrument of analysis in economic and financial environments (Murshed, M., & Rashid, S. 2020). An increase in the foreign exchange rate against the local currency will impact the decline in stock indexes (Tjandrasa et al., 2020). The establishment of efficiency could raise market prices. It can be determined by the ability to minimize risk, maximize profit, and meet market prices (Gabriel, O. et al., 2019).

Given the recent events banking in Indonesia, this study aims to conduct the effect of various bank-specific and macroeconomic factors on efficiency, including the implication to market prices, covering a 6 period from 2016. This study's expected novelty is a longitudinal analysis that could be used as an approach to explain the influence of bank-specific, and macroeconomic factors on banking operational efficiency and the relationship between the factors to market prices. It is, therefore, essential to examine those fundamental factors when it comes to assess-

ing the specific performance and market prices of banking companies.

This paper is organized as follows: the next section is preparing some kinds of literature that have been reviewed, highlights the research design-method, followed by analysis and results, and a conclusion in the home stretch.

2. LITERATURE REVIEW AND HYPOTHESES

The majority of banks that list on the Indonesia Exchange have attained appropriate financial performance that can influence investors' perceptions. (Ulansari et al., 2020). Compared to other sectors, Indonesia's stock market for banking has the highest capitalization. To assess performance, using the essential metric for overall efficiency and market prices. Stock price volatility is generally related with long term debt ratio, earning volatility, asset growth, and size (Nazir et al., 2010). Forecasting accounting earnings and stock returns have long histories in accounting and finance. Commercial banks should also uphold their responsibility in a way that is excessive and proportionate to their actual costs to boost profits and market prices (Obeid R., & Adeinat, M. 2017). Despite the recent or continuing returns, forecasting market prices the forecaster with significant challenges (Green, J., & Zhao, W. 2022). Managers know that if they produce returns that exceed the firm's efficiency, they are creating value for their shareholders (Walker et al., 2021). A bank's disclosure of financial information can affect the willingness of investors to invest (Zogning, F. 2022).

Banking efficiency is a metric that indicates how to increase a firm's value and the scale efficiency measures implying that investors pay much attention to the improvement in bank profitability and future dividends (Alsharif, M., 2021). It must be considerable for a corporation when it faces the uncertainty market (Gabriel, O et al., 2019). Companies with significant efficiency and productivity will increase market prices, and explain why firms exist, how market borders are formed, and why there are disparities in their organizational performance (Pervan, M., & Višić, J. 2012).

Capital adequacy as a bank's risk of assets includes investments, credit, claims on other banks, and financial securities. The term efficiency, particularly in the banking sector, means the best utilization of limited resources with minimum cost and maximum output. (Ullah et al., 2023).

It affects efficiency, profitability, and liquidity (Arseto, D. D., 2022) meaning that profitability is influenced by the Capital Adequacy Ratio (CAR. Bank Indonesia stipulates a capital adequacy ratio of 8% as a minimum capital requirement that must be maintained as a particular proportion of the total risk-weighted assets. This is crucial in light of various variables.

Deposit activity is not as low as credit activity (Bošnjak et al., 2017). Loan-to-deposit is one of the essential factors for achieving profit and can affect both profitability and share prices. On the one hand, as it is based on outstanding volumes, thereby implying that past activities are included in the weights. The quantity of credit and public deposits might impact the market shares. Occasionally, investors make decisions using this proxy. Credit creation is linked to the growth of loan portfolio and loan deposit ratio. A bank creates deposits when cred its borrowers both insiders and outsiders' current accounts with loan proceeds.

Banks have a comparative advantage in providing credit. the main responsibility of financial institutions that is to allocate and multiply the savings of society which they intermediate capital has substantive resonations on the performance.

Net interest represents revenue that generated from banking productive assets. For both domestic and foreign banks, net interest has a variety of implications (Hamadi, H. & Awdeh, A., 2012). The net interest margins referred to in this box relate only to loans to and deposits from the nonfinancial private sectors. In terms of operational efficiency and market prices, low in-

terest rates do indeed significantly increase bank risk-taking (Saksonova, S. 2014). Structural changes in a bank's net interest income—or, conversely, in its net interest margin—have a significant impact on its efficiency and profit and are likely to lead the bank's investors and has a considerable effect on market prices (Busch et al., 2017).

Rising prices and a slow decline in purchasing power are two characteristics of the phenomenon known as inflation. Inflation targeting policy needs to be maintained. (Alkhaliq B., & Cili, M. R. 2022). In general, inflation became one of the serious matters over a period of time (Islam & Rabiul, 2017). The profit margin will increase when the inflation rate rises and investors become more interested in investing in the stock market. Substantially, it can affect the market share prices. A swapped exchange rate is used to determine how much a certain nation's currency is worth. An exchange rate is the price of one currency expressed in terms of another currency or group of currencies. (Hamilton, A. 2018). The exchange rate risk which occurs every time cause the company to have to face payment obligations in the future in foreign currency. (Anindhita, A. Y., 2017). It could have an impact on market supply and demand as well as be tied to the value of a certain nation. If the currency strengthens, the operational cost will decrease and market prices move up. Although the market stock price will decrease and operational costs will rise, investors' perceptions are going to decline.

As known, this study addresses assessing how certain specific-internal and external factors affect operational efficiency and the implications for market share prices. The bank's performance is a component that is heavily taken into account; hence, it is quite necessary to conduct a study and look for a relationship between these aspects. The purpose of this study is to examine how firm size, capital adequacy, loan-to-deposit, no-performing loans, net interest, inflation, and currency affect operational efficiency and how those factors to have an implication on market share prices, as formulated in the following hypothesis:

- H1: Firm size influences on operational efficiency
- H2: Capital adequacy influences on operational efficiency
- H3: Loan to deposit influences on operational efficiency
- H4: Non-performing loan influences on operational efficiency
- H5: Net margin influences on operational efficiency
- H6: Inflation influences on operational efficiency
- H7: Exchange rate influences on efficiency
- H8: Independent variables influence on operational simultaneously
- H9: Firm size influences on operational market price
- H10: Capital adequacy influences on market price
- H11: Loan to deposit influences on market price
- H12: Non-performing loan influences on market price
- H13: Net margin influences on market price
- H14: Inflation influences on market price
- H15: Exchange rate influences on market price
- H16: Independent variables influence on market price simultaneously

3. METHODOLOGY

3. 1. DATA AND SAMPLE

This study employs a quantitative approach to investigate the effect of specific-internal and external factors on operational efficiency and the implications for market shares in commercial banks in Indonesia. Secondary data was obtained from the websites of 28 companies sampled for the 2016–2021 period, yielding a total of 168 data observations. All of the data used is cross-sectional and time-series from those banking companies. Purposive sampling is used to select companies that meet the following criteria: (1) They were listed on the Indonesia Stock Exchange during the study; (2) They had annual reports published during the research; (3) There had been no mergers or initial public offerings during the study.

3. 2. VARIABLE MEASUREMENT

As previously stated, independent variables are firm size (FS), capital adequacy ratio (CAR), loan-to-deposit ratio (LDR), non-performing loan (NPL), net interest margin (NIM), inflation, and exchange rate, while operating efficiency is the dependent variable for research model 1. The factors utilized in research model 1 that are also used in research model 2 including operational efficiency-also as an intervening variable, and market price as dependent variables. Table 1 indicates that every variable utilized in this study were measured by using a variety of indicators.

Table 1. Operational parameters

No	Variables	Concepts	Measurements	Scales
1	Market price-Share return	A stock return is an indicator that assesses the exchange of stock prices and explains the return obtained of market value shifted.	Percentage of share prices value distinction	Ratio
2	Operation efficiency	The level of a bank's efficiency and capability in conducting operations activities can be gauged by comparing total operating costs to total operating income.	OCOI = Operating Costs to Operating Income	Ratio
3	Firm-size	The size scale that can be measured by the total assets with the aim of producing goods and services.	Firm size = Total Assets	Nominal
4	Capital adequacy ratio	A Capital Adequacy Ratio is a minimum capital provision based on assets and risk weight	CAR = Total Capital to risk weighted assets.	Ratio
5	Loan to Deposit Ratio	That shows a bank's ability to cover loan losses and withdrawals by customers	LDR = Total Loans to Total Deposits	Ratio
6	Non-performing loan	As a bank's loan that are to late repayment or unlikely to be repaid by the borrower.	NPL = Total NPL to Total Credit	Ratio
7	Net interest margin	Net Interest Margin is a measure of net interest income by using the productive assets.	NIM = Interest income to Productive assets	Ratio
8	Inflation rate	The indicator describes the tendency of the general price level of goods and services to increase in the market	Inflation = Price Index – Price index/ Price Index x 100%	Ratio
9	Exchange rate	The exchange rate of the rupiah against the United States dollar	Exchange Rate = ER2 – ER1 / ER1	Ratio

Source: Prepare by Author

3. 3. DATA ANALYSIS METHOD

In this inquiry, the regression analysis method is applied. The Chow, Hausman, and Langrange tests were used to determine which model as the best among the Common Effect Model, Fixed Effect Model, and Random Effect Model. For traditional presumptions; tests for normality, autocorrelation, heteroscedasticity, and multicollinearity were performed. The purpose of the hypothesis examinations is to look for those components' influences. The regression models are built as follows:

Research model 1:

$$OCOI_{it} = \alpha + \beta_1 FS_{it} + \beta_2 CAR_{it} + \beta_3 LDR_{it} + \beta_4 NPL_{it} + \beta_5 NIM_{it} + \beta_6 INF_{it} + \beta_7 ER_{it} + \varepsilon$$

Research model 2:

$$SR_{it} = \alpha + \beta_1 OCOI_{it} + \beta_2 FS_{it} + \beta_3 CAR_{it} + \beta_4 LDR_{it} + \beta_5 NPL_{it} + \beta_6 NIM_{it} + \beta_7 INF_{it} + \beta_8 ER_{it} + \varepsilon$$

Where:

OCOI = Operational efficiency

SR = Share Return

α = Beta coefficient of constant -intercept.

β = Beta coefficient of independent variables.

FS = Firm Size

CAR = Capital Adequacy Ratio

LDR = Loan to Deposit Ratio

NPL = Non-Performing Loan

NIM = Net Interest Margin

INF = Inflation

ER = Exchange rate

4. RESULTS

4. 1. STATISTICAL DESCRIPTION

With a total of 168 data observations, this study used multiple techniques to represent the overall data, including mean, median, maximum, minimum, and standard deviation (Table 2).

Table 2. Statistical description of the research variables for the period 2016 – 2021

	SR	FS	OCIO	CAR	LDR	NPL	NIM	INF	ER
Mean	0.065025	0.08107	0.810738	0.250506	0.824175	0.04589	0.050638	0.029169	0.022438
Median	0.041000	0.83350	0.833500	0.211000	0.862000	0.03581	0.049000	0.031000	0.011500
Maximum	1.114000	1.19400	1.194000	1.171000	1.135000	0.05461	0.095000	0.036000	0.109000
Minimum	-0.441000	0.10100	0.189000	1.131000	0.042000	0.01256	0.011000	0.017000	-0.041000
Std. Dev.	0.240538	0.16359	0.163594	0.179105	0.161761	0.07810	0.017432	0.006120	0.052232
Skewness	0.068295	-1.7576	-1.757648	1.364123	-1.503070	-0.09321	-0.092633	-1.058955	0.457754
Kurtosis	5.163968	8.12414	9.804680	22.26984	6.919961	4.20932	3.232328	2.968562	1.878415
Jarque- Bera	31.34276	21.25897	25.74275	298.3394	62.16865	13.4892	10.58865	29.91021	13.97405
Probability	0.000000	0.00000	0.000000	0.000000	0.000000	0.00239	0.005029	0.000000	0.000924
Sum	10.40400	12.9718	12.97180	40.08100	131.8680	7.09281	8.102000	4.667000	3.590000
Sum Sq. Dev.	19.19954	42.5533	4.255305	5.100492	41.60473	0.03857	0.048317	0.005954	6.433783
Observation	168	168	168	168	168	168	168	168	168

Source: evIEWS output

The above statistical description will clarify as follows:

In 2016, BC had the greatest share return of 1.1140, while QNBI had the lowest share return of 0.4410, with an average value of 0.0650 and a median of 0.0410. The OCOI variable had a minimum value in 2018 of 0.189 at Bank CIMB and a maximum of 1.194 at Bank SM in 2020, with an average value of 0.8107, a median of 0.8335, and a standard deviation of 0.1635. When referring to the regulation of the Central Bank, the OCOI is around 92%, and all of the banks reviewed are within a regulated range. The maximum value of CAR is 1.1173 was obtained by Bank SM in 2019 year, while the minimum value of 0.1310 was obtained by Bank Maya in 2016, with an average value of 0.2505, and a median of 0.2110. According to the minimum capital adequacy requirement, banks must have capital that is at least 8% of their risk-weighted assets (RWA). It is reasonable to conclude that the overall CAR performance of the 28 banks under review met the Central Bank regulation's minimum standard of 8%. In 2022, the savings bank reached the LDR's maximum value of 1,135. The minimum value was obtained by BTPN of 0.0420, with an average of 0.8241, a median of 0.8620, and a standard deviation of 0.1617. In line with the Central Bank's regulations. Demand deposits are made by commercial banks and must be approximated into designated categories. The NIM variable had a maximum value of 0.0950 obtained by Masp. Bank in 2017 and a minimum value of 0.0110 obtained by the BTPN in 2016, with an average value of 0.0506, a median of 0.0490, and a standard deviation of 0.1617. The regulation states that the maximum ratio must be greater than 6%. So, it might be possible to prevent a bank from getting into trouble. The inflation rate had a minimum value of 0.0170 (1.70%) and a maximum of 0.0360 (3.60%), with a median of 0.0310 and an average rate of 0.0291. According to the Authority, during the years 2016–2021, the inflation rate was below the 5% statutory limit during 2016 – 2021. The minimum rate for the USD exchange rate is 0.1090, the average is 0.0224, the median is 0.0115, and the standard deviation is 0.0522.

4. 2. STATISTICAL ANALYSIS OF DETERMINANTS ON OPERATIONAL EFFICIENCY (RESEARCH MODEL 1)

The appropriate regression model was selected as revealed in Table 3, and using Random Effect Model shown in Table 4. This was done before the regression test would be conducted.

Table 3. The results of selecting the best regression model-for research model 1

Type of tests	Results	Selected
Uji Chow (FEM vs CEM)	Cross Section Chi Square 0,0000 < 0,05	Fixed Effect Model
Uji Hausman (FEM vs REM)	<i>Cross Section Chi-random</i> 0,7295 > 0,05	Random Effect Model
Uji Langrage Multiplier (REM vs CEM)	Cross Section Breusch Pagan 0,0000 < 0,05	Random Effect Model
Conclusion		Random Effect Model

Source: evIEWS output

Table 4. REM for research model 1

Dependent Variable: OCOI

Method: Panel EGLS (Cross-section random effects)

Sample: 2016 – 2021

Periods included: 6

Cross-sections included: 28

Total panel (unbalanced) observations: 168

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.886039	0.213765	0.870300	0.3855
FS	1.585791	4.401513	2.360283	0.0191
CAR	3.199068	0.248698	-3.100441	0.0007
LDR	1.697281	2.606269	0.268231	0.7889
NPL	-0.712805	8.751705	0.424402	0.6719
NIM	1.644773	0.758847	2.849674	0.0018
ER	0.050864	0.047621	1.068091	0.2871
INF	2.982048	0.282897	-2.996999	0.0203
R-squared	0.780417	Mean dependent var		2.130789
Adjusted R-squared	0.775521	S.D. dependent var		0.535332
S.E. of regression	0.542120	Akaike info criterion		1.671691
Sum squared resid	45.84746	Schwarz criterion		1.859160
Log likelihood	-128.7503	Hannan-Quinn criter.		1.747786
F-statistic	8.543765	Durbin-Watson stat		2.969006
Prob(F-statistic)	0.000719			

Sources: evIEWS output

4. 3. STATISTICAL ANALYSIS OF DETERMINANTS ON SHARE RETURN (RESEARCH MODEL 2)

To select the compatible model of determinants on share return, the best model was obtained in Table 5, namely Common Effect Model, in Table 6.

Table 5. The results of selecting the best regression model-for research model 2

Type of tests	Results	Selected
Uji Chow (FEM vs CEM)	Cross Section Chi Square $0.4159 > 0,05$	Common Effect Model
Uji Hausman (FEM vs REM)	<i>Cross Section Chi-random</i> $0.0003 < 0,05$	Fixed Effect Model
Uji Langrage Multiplier (REM vs CEM)	Cross Section Breusch Pagan $0.3596 > 0,05$	Common Effect Model
Conclusion		Common Effect Model

Sources: evIEWS output

Table 6. CEM for research model 2

Dependent Variable: SR

Method: Panel Least Squares

Sample: 2016 – 2021

Periods included: 6

Cross-sections included: 28

Total panel (unbalanced) observations: 168

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.851371	0.302140	4.211799	0.0000
OCOI	0.307242	0.055095	2.576548	0.0040
FS	2.291330	1.228181	8.865630	0.0000
CAR	4.044683	0.070070	-3.637692	0.0046
LDR	1.602486	0.705314	-4.689827	0.0003
NPL	0.350905	2.467605	0.953316	0.3419
NIM	0.092672	1.092008	-0.038917	0,8972
ER	-3.002081	0.005128	-2.405859	0.0054
INF	1.020167	0.013338	5.512034	0.0005
R-squared	0.839886	<i>Mean dependent var</i>		1.825084
Adjusted R-squared	0.826250	<i>S.D. dependent var</i>		0.183618
S.E. of regression	0.152939	<i>Akaike info criterion</i>		-0.864869
Sum squared resid	3.672262	<i>Schwarz criterion</i>		-0.696147
Log likelihood	80.78413	<i>Hannan-Quinn criter.</i>		-0.796384
F-statistic	10.10471	<i>Durbin-Watson stat</i>		3.002474
Prob(F-statistic)	0.000000			

Source: evIEWS output

Table 7. The results of selecting the best regression models for research model 1 and 2

Hip	Descriptions	Coeffi- cients	T - F counts	Prob.	Conclusions
H1	FS → OCOI	1.5857	2.3602	0.0191	Significant positive
H2	CAR → OCOI	3.1990	-3.1004	0.0007	Significant positive
H3	LDR → OCOI	1.6972	0.2682	0.7889	Not significant
H4	NPL → OCOI	-0.7128	0.4244	0.6719	Not significant
H5	NIM → OCOI	1.6447	2.8496	0.0018	Significant positive
H6	ER → OCOI	0.0508	0.0680	0.2871	Not significant
H7	INF → OCOI	2.9820	-2.9969	0.0203	Significant negative
H8	FS, CAR, LDR, NPL, NIM, IT, ER, INF → OCOI	R ² = 78.04%	8.5437	0.0007	Significant
H9	OCOI → SR	0.3072	2.5765	0.0040	Significant positive
H10	FS → SR	2.2913	8.8656	0.0000	Significant positive
H11	CAR → SR	4.0446	-3.6376	0.0046	Significant positive
H12	LDR → SR	1.6028	-4.6898	0.0003	Significant positive
H13	NPL → SR	0.3509	-0.9533	0.3419	Not Significant
H14	NIM → SR	0.0926	-0.0389	0.8972	Not significant
H15	ER → SR	-3.0020	-2.4058	0.0054	Significant negative
H16	INF → SR	1.0201	5.5120	0.0005	Significant positive
H17	OCOI, FS, CAR, LDR, NPL, NIM, IT, ER, INF → FS	R ² = 83.98 %	10.1047	0.0000	Significant

Source: evIEWS output

4. 4. LINIER REGRESSION EQUATIONS

A linear regression equation was employed to find the coefficient values of each independent variable. This equation is applied to determine how independent variables effect on efficiency -or share returns. The regression equation in Table 5 is as follows:

$$\text{OCOI} = 0.8860 + 1.5857\text{FS} + 3.1990\text{CAR} + 1.6792\text{LDR} - 0.7128\text{NPL} + 1.6447\text{NIM} - 2.9820\text{INF} + 0.0508\text{ER}$$

$$\text{RS} = 2.8513 + 0.3072\text{OCOI} + 2.2913\text{FS} + 4.0446\text{CAR} + 1.6028\text{LDR} + 0.3519\text{NPL} + 0.0926\text{NIM} + 1.020\text{INF} - 3.0020\text{ER}$$

Interpretation:

The OCOI remains at 0.8860 if the other variables are zero, conforming to the constant value of research model 1 of 0.8860. The coefficient value of FS is 1.5857. Hence, if the other factors remain constant, a 1% change in FS will result in a 1.5857% decrease in the OCOI. The constant value for research model 2 is 2.8513, the OCOI coefficient is 0.3072, and it is predicted that the other variables will remain constant. As a consequence, every 1% change in this variable will increase SR by 0.3072%. For the other variables, it can be conducted for the same reason.

4. 5. HYPOTHESIS TESTS

The regression panel data was estimated using a random effects model for research model 1. Table 4 shows that variables FS, CAR, NIM and INF have a significantly positive effect on OCOI,

whereas factors LDR, NPL, and ER have no a considerably effect on OCOI. The simultaneous results (F-test) indicate that all independent factors have an impact on OCOI with a probability value of 0.000. The goodness of the fit test demonstrates that overall independent variables can be determined with an SR of 78.04% based on the coefficient of determination R². While other factors not considered in this study account for or determine 31.96% of the variance.

According to research model 2 with the Common Effect Model (Table 6), some factors have a statistically significant impact on RS. There are OCOI, FS, CAR, LDR, ER, and INF. While other variables such as NPL and NIM have no impact on RS. Owing to the adjusted coefficient of determination R², these variables may explain RS to a value of 83.98%, while other factors do not account for 16.08%.

4. 6. THE ROBUSTNESS IMPLICATION TEST

The Sobel test was utilized to determine whether there was an established connection between endogenous (internal and/or external) factors and market prices through operational efficiency. By multiplying each beta coefficient of the independent variable (M-1) with the coefficient value of the intervening variable OCOI, it was possible to determine whether there were any direct or indirect influences on the relationship between the two sides. The coefficient of indirect impact is expressed as OCOI x M-1. The two results are compared to determine the direct influence. (M-2). It can be argued that independent factors have an indirect effect on stock returns through the intermediary variable if the indirect coefficient exceeds the direct coefficient and vice versa. The robustness implications are shown in Table 8 when OCOI is used as an intervening variable.

Table 8. The intervening robustness test

Variables	Coefficient of beta M-1	Indirect impact (OCOI x M-1)	Coefficient of direct impact M-2	.
FS	1.5857	0.4871	1.3709	OCOI as an intervening
CAR	3.1990	0.9827	0.6342	OCOI is an intervening
LDR	1.6972	0.5217	0.3008	OCOI is an intervening
NPL	-0.7128	-0.2726	-0.2189	OCOI is not an intervening
NIM	1.6447	0.5052	0.9565	OCOI is not an intervening
ER	0.0508	0,0156	-0.3992	OCOI is an intervening
INF	2.9820	-0.8160	-0.8458	OCOI is an intervening
OCOI	0.3072			

Source: evIEWS output

Research model 2 reveals that NPL and NIM are unrelated to share price or stock return. This is confirmed by the robustness test in Table 8, which also serves as more evidence that OCOI is not mediating between each side. OCOI, however, is a mediator between FS, CAR, LDR, ER, and INF and the market price. These results verify the findings of the second investigation model.

5. DISCUSSION

According to the aforementioned findings and justifications, it is established that an assortment of variables has a substantial impact on operational efficiency. Firm size has a significant impact which implies that obtaining efficiency is considerably influenced by the size of assets. By reducing operating costs, it is essential to expand firm operations and generate business income.

Investors might also evaluate a firm based on its assets in making investing decision.

Capital adequacy and operational efficiency are significantly related. Risk-weighted assets and total capital are used to determine whether a bank's capital is sufficient. If this adequacy declines, banks will become less efficient. In Indonesia, adequacy was set at 8%. Overall banks studied reached that target. Banking managers must conform and consistently preserve that level above the provision. This indicator is useful for investors when making investments.

To determine a bank's liquidity throughout a certain period, the loan-to-deposit ratio is used to compare the total loan to customers' deposits. This study disproves the association between loan-to-deposit and operational efficiency. Providing loans will generate interest income, but receiving savings or deposits will incur interest expenses. However, this study states that there is a significant influence between loan deposits and market share. Investors must be aware of this circumstance and how it may impact their decision to invest. This is to ensure they can evaluate the quality of liquidity and effectiveness of banking intermediation by utilizing this measurement.

As is known, a non-performing loan refers to the amount of bank loans. In the financial crisis, borrowers will face difficulties making their instalment payments on time. Even though many banks are concerned about increasing that performance, it has had no impact on operational efficiency. Additionally, since this factor indicates no discernible relationship to market prices, investors consider it can't be affected.

Even though currency fluctuations have an impact on banking operations, this study revealed that the exchange rate had no statistically significant effect on banking operational efficiency. Due to the unpredictability of the indigenous currency, growing import costs may result in increased costs for goods and services. Foreign market competition will reduce demand for banking services, but it is unlikely to have a significant effect on the way they'll be run. However, this study reveals a negative substantial relationship between the exchange rate and market prices. This invention can be helpful because as the price of the currency declines, investors are more likely to invest in stocks, which raises the price of market share, and vice versa.

Indonesia's inflation rates were stable during this study. When prices are rising, people will stop producing, purchasing, and spending money. This might have an impact on the bank's operational income and escalate to increased expenses. When inflation rates exceed a certain threshold, financial performance will be impacted. In all likelihood, this study suggests that economies with high inflation rates will increase market share price movements.

Operational efficiency is examined to find out if it can act as a mediator between independent and dependent variables. The robustness test determines and validates research model 2's conclusion that non-performing loans and net margin are unrelated to share returns. As a result, operational efficiency is not a mediator between these two variables and share returns. Operational efficiency is used as an intermediary variable for other factors like firm size, capital adequacy, loan-to-deposit ratio, currency, and inflation.

6. CONCLUSIONS

A banking system is closely related to managing those specific-internal and external factors. Managing and controlling the operating business processes, including financial performance, is very substantial. The results of research model 1 revealed that firm size, capital adequacy, net interest, and inflation have a substantial effect on operational efficiency. Whereas loan-to-deposit, non-performing loans, and currency have no statistical effect. In managing operational efficiency, both internal and external factors should be identified and anticipated. Yet, due to the market price, non-performing loans and net interest as internal factors have no a statistically

significant impact, while the other variables, including two external factors, have a considerable influence.

Based on the findings, the following recommendations are proposed: Those results can be used to create business plans for enhancing banking financial performance, such as the implementation of business rules into banking activities to achieve efficiency and business competition. The regulator must carry out the necessary policies in controlling banking operations, keep track of and comprehend the actions, and contribute as development agents and financial intermediary institutions. In addition, investors need to monitor their financial performance to reduce unnecessary risks. Making an investment selection is essential for minimizing risks and increasing returns related to both internal and external factors.

To the best of our knowledge, it is the only accessible proxy for assessing the financial performance of the sample companies. There are some limitations, including the use of the conventional operational cost-to-operating income approach to quantify operating efficiency. It is suggested that non-parametric data envelopment analysis be employed, which could result in more precise outcomes. Additionally, the results might not fully represent Indonesian banking as a whole, the research periods are short, and they might also not be flawless models. For the future, studies should improve methodologies, add research variables and periods, and include proactive mitigation, which also entails paying closer attention to banking performance.

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