

## **The Effect of Loan to Deposit Ratio and Non-Performing Loans on Stock Prices with Return on Assets as an Intervening Variable at Regional Development Banks**

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### **ABSTRACT**

This research analyzes the effect of the loan to deposit ratio (LDR) and non-performing loan (NPL) on return on assets (ROA). Stock price, loan to deposit ratio (LDR), and non-performing loan (NPL) to stock price with return on assets (ROA) as the intervening variable. They are using quantitative secondary data from the annual financial report of the regional development bank listed on the Indonesia stock exchange in 2016-2020, analysing with path analysis. The results indicate that LDR has no significant effect on stock prices, NPL has no considerable effect on stock prices, LDR has no significant impact on ROA, NPL has no significant impact on ROA, and ROA has a positive and significant impact on stock prices.

**Keywords:** regional development bank, bank financial ratios, stock price

### **INTRODUCTION**

To earn the confidence of customers and investors, the banking industry will always govern itself with professionalism and transparency. Investors need to know what factors have a direct or indirect impact on stock prices. Information about a nation's political climate, interest rates, inflation rates, and economic and governmental circumstances is obtained from outside businesses. In the meantime, the company's internal factors include its overall financial performance, the amount of profits it makes, and the business decisions it makes (Adisetiawan, 2017).

By comparing the entire amount of bank loans with the total amount of deposits, the Loan to deposit ratio (LDR) evaluates bank liquidity. If the LDR displays an extremely high value, the bank is comparatively illiquid. The ratio known as non-performing loans (NPL) is used to assess how difficult it is for a debtor to repay debt because of deliberate or uncontrollable external circumstances. The amount of credit risk that banks face is reflected in non-performing loans (Manorko, 2011). The bank's credit risk decreases as the NPL decreases. Ratios used to evaluate a company's potential for profit-making are called profitability ratios. This ratio displays the earnings from sales and investment income in addition to gauging how good a company's management is. The key aspect is that this ratio shows how efficient the business is. (Kasmir, 2010) This company's profitability ratio makes use of the Return on Assets variable, another intervening variable. The return on assets (ROA) ratio examines how well an investment can generate expected returns (Fahmi, 2014).

Bank for Regional Development objects are used in this research. The primary goal of regional development banks is to promote regional development within their respective regions. They provide funding for infrastructure projects like roads, bridges, irrigation systems, and other development initiatives that boost the local economy and enhance the quality of life for local residents. They also boost regional economic growth by lending money to small and medium-sized enterprises (UKM) and other sectors of the local economy that are not catered to by commercial banks. Regional Development Banks assist local communities in becoming more capable of managing their finances, creating microenterprises, raising financial literacy, and preserving regional financial stability through community development and empowerment initiatives. This research sample uses regional Development Banks listed on the Indonesian Stock Exchange are, Bank Jawa Barat (BJBR), Bank Jawa Timur (BJTM), and Bank Banten (BEKS).

**Table 1**  
**Development Banks Stock Prices Data During the 2016-2020 Period (In million rupiah)**

No	Emiten Code	Year					Average
		2016	2017	2018	2019	2020	
1	BJBR	3090	2400	2050	1185	1550	2115
2	BJTM	570	710	690	655	685	662
3	BEKS	57	50	50	50	98	61
TOTAL		4017	3160	2790	1890	2333	2838
Industry Average		1339	1053	930	630	777	946
Developmental Average			(21.33)	(11.71)	(32.26)	23.44	(10.47)

Source: processed data

Hasibuan (2020) and Harahap (2017) found no evidence that the Loan to Deposit Ratio has a substantial impact on stock prices. According to research conducted by Johan et al (2016) the Loan to Deposit Ratio has little bearing on stock prices. Putri According to Marianita's Research (2020), stock values are positively impacted by non-performing loans. Non-performing loans have a significant impact on stock prices, according to research by Harahap (2017) and Hasibuan (2020), but non-performing loans have no significant impact on stock prices, according to research by Johan et al (2016). According to research by Octavian (2018), return on assets has little bearing on stock prices. According to Putri Marianita's Research (2020), stock prices are positively impacted by return on assets. According to research by Khasanah and Suwart (2022), return on assets has a beneficial impact on stock values, which is also the remark made here.

Hasibuan (2020) research states that the loan to deposit ratio has no direct effect on return on assets, while Harun (2016) research states that the loan to deposit ratio has a significant effect on return on assets. Research by Effendi et al (2021) states that non-performing loans negatively and significantly effect returns on assets. Hasibuan (2020) research states that non-performing loans have a direct effect on return on assets, while Harun (2016) research states that non-performing loans have no significant effect on return on assets. Based on the background, the author is interested in conducting research the effect of loan to deposit ratio and non-performing loans on stock prices with return on assets as an intervening variable in regional development banks.

### *Literature Review*

#### *Bank Health Level*

Bank health level (risk-based bank rating) both individually and on a consolidated basis. Referring to the Indonesia central bank circular, the principles used to assess the soundness level of commercial banks, which are the basis for assessing a bank's soundness level, are risk, proportionality, materiality/significance, and comprehensiveness/structure. Individual bank health level assessment includes the following factors: risk profile, good corporate governance, profitability, and capital.

#### *Loan to Deposit Ratio(LDR)*

Rivai (2016) deposit ratio is a ratio that measures the ratio of the amount of credit provided by the bank to the funds received by the bank, which describes the bank's ability to repay funds withdrawn by depositors by relying on the credit provided as a source of liquidity.

#### *Non-performing loans(NPL)*

According to Ismail (2009), non-performing loans are credit that the bank has distributed, but the customer cannot make payments or installments by the agreement signed by the bank and the customer.

#### *Stock price*

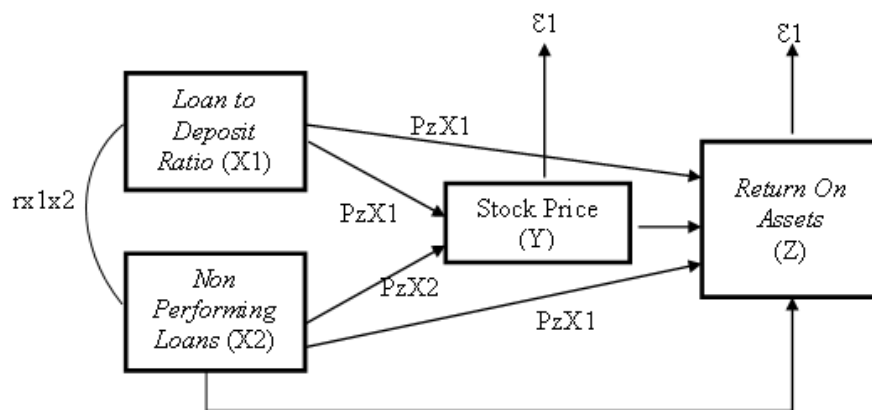
According to Jogiyanto (2013), the share price is the price that occurs on the stock market when the market participants determine the share prices. The supply and demand of the shares in the capital market determines the high and low stock prices.

*Return On Assets (ROA)*

*Return on assets (ROA)* is a profitability ratio measuring a company's ability to generate profits from the assets used. According to Fahmi (2014), ROA looks at the extent to which the investment can provide a profit return as expected, and the investment is the same as the company assets invested or placed.

**METHOD**

Path analysis is the analytical tool used in this study. Regression analysis is used to estimate causal links between variables (causal models) that have previously been created based on theory. Path analysis is an extension of multiple linear regression analysis (Ghozali, 2013). In contrast to ordinary regression, where the effect of the independent variable on the dependent variable is limited to direct effects, path analysis considers both direct and indirect effects of the independent variable on the dependent variable (Junaim, 2020). This study only makes use of the normality test.



Source: processed data

**Figure 1**  
**Data Analysis Tools**

**RESULT**

**Table 2**  
**One-Sample Kolmogorov-Smirnov Test**

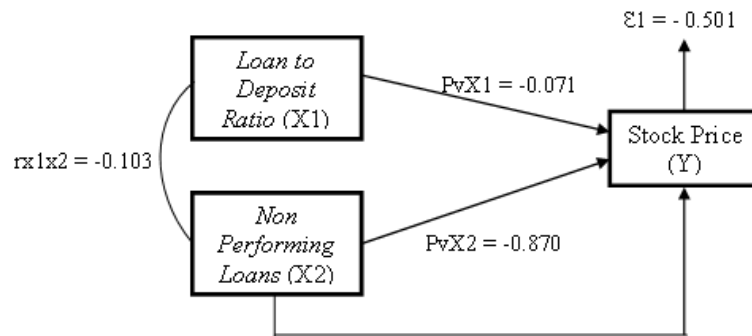
		Unstandardized Residuals
N		15
Normal Parameters, b	Mean	,0000000
	Std. Deviation	,62620007
Most Extreme Differences	Absolute	,192
	Positive	,192
	Negative	-,119
Statistical Tests		,192
Asymp. Sig. (2-tailed)		,141c

Source: processed data

The calculated value of 0.141 is greater than the significance value of 0.05, so the data is normally distributed.

*Structural Path Analysis I*

Structural equation I:  $Py = Pyx1 + Pyx2 + \epsilon 1$



Source: processed data

**Figure 2**  
**Structural Path Analysis I**

**Table 3**  
**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	6,184E-17	,140			,000	1,000
Zscore(LDR)	-,071	,145	-,071		-,488	,634
Zscore(NPL)	-,870	,145	-,870		-5,989	,000

Source: processed data

Based on the t-calculation results between the loan to deposit ratio variable and the share price as seen from the t-count, it is -0.488, while the t-table is 2.17881 ( $-0.488 < 2.17881$ ) with a significance of  $0.634 > 0.05$ , which means loan to deposit the ratio has no significant effect on stock prices. In the partial t-test results between the non-performing loan variable and the share price as seen from the t-count, it is equal to -5,989 while the t-table is 2.17881 ( $-5,989 > 2.17881$ ) with a significance of  $0.000 < 0.05$ , which means that non-performing loans have a negative effect on stock prices.

**Table 4**  
**ANOVA**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	10,491	2	5,246	17,941	,000b
Residual	3,509	12	,292		
Total	14,000	14			

Source: processed data

As is the basis for decision making in the f test, it can be stated that the loan to deposit ratio and non-performing loans simultaneously have a significant effect on stock prices. The results of testing this hypothesis simultaneously between the loan to deposit ratio and non-performing loan variables with the stock price variable show that F value  $> F$  table ( $17,941 > 3.885$ ), the significance level is  $0.000 < 0.05$ .

**Table 5**  
**Model Summary b**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,866a	,749	,708	,54072469

Source: processed data

The figure of 74.9% means that the loan to deposit ratio and non-performing loan variables can explain stock prices simultaneously. In comparison, 25.1% is effected or explained by other variables not included in this research.

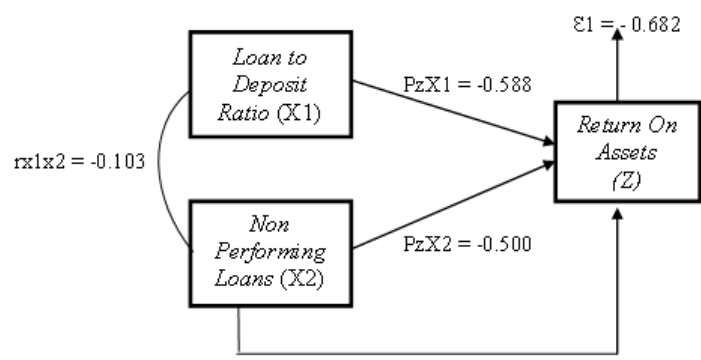
1. The magnitude of the direct and indirect effect of X1 on Y

$$\text{Directly } X1 \rightarrow Y = PvX1 \cdot PvX1 = (-0.071)(-0.071) = 0.005041 = 0.50\%$$

- Indirect X1 and X2 → Y = PyX1. rx1x2 . PyX2 = (-0.071)(-0.103)(-0.870) = -0.00636 = -0.63%
- Total direct and indirect effect → Y = 0.50% + (-0.63%) = -0.13%
  - The direct effect of LDR (X1) on stock price (Y) is 0.50% and the indirect effect of LDR (X1) on stock price (Y) is -0.63%. So the total Effect of LDR (X1) on HS (Y) of -0.13 %
  - The magnitude of the direct and indirect effect of X2 on Y
  - Directly X2 → Y = PyX2 . PyX2 = (-0.870)(-0.870) = 0.7569 = 75.69%
  - Indirect Effect X1 and X2 → Y = PyX2. rx1x2 . PyX1 = (-0.870)(-0.103)(-0.071) = - 0.00636 = - 0.63%
  - Total direct and indirect effect → Y = 75.69% - (-0.63%) = 75.06%
  - The direct effect of NPL (X2) on stock price (Y) Is 75.69% and the indirect effect of NPL (X2) on stock price (Y) Is -0.63%. so the total effect of DAR (X2) on ROA (Z ) Of 75.06%.
  - The effect of X1 and X2 simultaneously on Y  
The effect of LDR (X1) and NPL (X2) on Stock Price (Y) is:
    - Jump X1and X2 → Y  
= (PyX1 . PyX1) + (PyX2 . PyX2) = (-0.071 . -0.071) + (-0.870 . -0.870)  
= 0.005041 + 0.7569 = 0.761941 =76.19%
    - Indirect X1and X2 → Y  
= (PyX1. rx1x2 . PyX2) + (PyX2. rx1x2 . PyX1)  
= (-0.071 . -0.103 . -0.870) + (-0.870 . -0.103 . -0.071) = (-0.00636) + (-0.00636) = - 0.01272 = - 1.27%
    - Total Direct and Indirect Effect  
=76.19% + (-1.27%) = 74.9%

*Structural Path Analysis II*

Structural equation II: PZ = PZX1 + PZX2 + ε2



Source: processed data

**Figure 3**  
**Structure Path Analysis 2**

**Table 5**  
**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2,919E-16	,190		,000	1,000
Zscore(LDR)	-,588	,198	-,588	-2,972	,012
Zscore(NPL)	-,500	,198	-,500	-2,524	,027

Source: processed data

Based on the results of the t-test between the variable loan to deposit ratio and return on assets as seen from the t-count, it is -2.972, while the t-table is 2.17881 (-2.972 > 2.17881) with a significance of 0.12 < 0.05, which means loan to deposit ratio has a significant negative effect on return on assets. In the partial t-test results between the non-performing loan variable and return on assets, as seen from

the t-count, is -2.524 while the t-table is 2.17881 (-2.524 > 2.17881) with a significance of 0.027 > 0.05 which means non-performing loans has a significant negative effect on return on assets.

**Table 6**  
**ANOVA**

	<b>Model</b>	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	7,488	2	3,744	6,899	,010b
	Residual	6,512	12	,543		
	Total	14,000	14			

Source: processed data

The results of testing this hypothesis simultaneously between the loan to deposit ratio and non-performing loan variables with the return on asset variable show that F-count < F-table (6,899 > 3.885) the significance level is 0.010 < 0.05, so as is the basis for decision making in the f test it can be stated that the loan to deposit ratio and non-performing loans simultaneously have a significant effect on return on assets.

**Table 7**  
**Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	,731a	,535	,457	,73665456

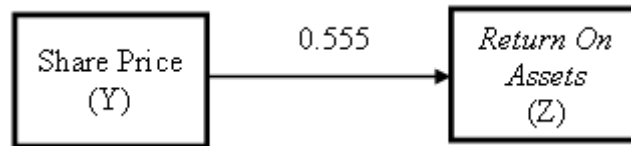
Source: processed data

The figure of 53.5% means that the loan to deposit ratio and non-performing loan variables can explain return on assets. In comparison, 46.5% is effected or explained by other variables not included in this research.

1. The magnitude of the direct and indirect Effect of X1 on Z
  - a. Direct  $X1 \rightarrow Z = PzX1 \cdot PzX1 = -0.588 \cdot -0.588 = 0.3457 = 34.57\%$
  - b. Indirect  $X1 \rightarrow Z = PzX1 \cdot rx1x2 \cdot PyX2 = -0.588 \cdot -0.103 \cdot -0.500 = 0.03028 = -3.03\%$
2. Total Direct and Indirect Effect  $\rightarrow Z = 34.57\% + (-3.03\%) = 31.54\%$   
It is found that the direct effect of LDR (X1) on ROA (Z) is 34.57% and the indirect effect of LDR (X1) on ROA (Z) is -3.03%. So the total Effect of LDR (X1) on ROA (Y) of 31.54%
3. The magnitude of the direct and indirect Effect of X2 on Z
  - a. Direct  $X2 \rightarrow Z = PzX2 \cdot PzX2 = -0.500 \cdot -0.500 = 0.25 = 25.00\%$
  - b. Indirect  $X1 \text{ and } X2 \rightarrow Z = PzX2 \cdot rx1x2 \cdot PzX1 = -0.500 \cdot -0.103 \cdot -0.588 = -0.03028 = -3.03\%$
4. Total Direct and Indirect Effect  $\rightarrow Z = 25.00\% + (3.03\%) = 21.97\%$   
It is found that the direct effect of NPL (X2) on stock price (Y) is 25.00% and the indirect effect of NPL (X2) on stock price (Y) is 3.03%. So the total effect of DAR (X2) on ROA (Y) amounts to 21.97%.
5. The effect of X1 and X2 simultaneously on Y  
The magnitude of the joint effect of LDR (X1) and NPL (X2) on HS(Y) is:
  - a.  $X1 \text{ and } X2 \rightarrow Z = (PzX1 \cdot PzX1) + (PzX2 \cdot PzX2) = (-0.588 \cdot -0.588) + (-0.500 \cdot -0.500) = 0.3457 + 0.25 = 0.5957 = 59.57\%$
  - b.  $\text{Indirect } X1 \text{ and } X2 \rightarrow Z = (PzX1 \cdot rx1x2 \cdot PzX2) + (PzX2 \cdot rx1x2 \cdot PzX1) = (-0.588 \cdot -0.103 \cdot -0.500) + (-0.500 \cdot -0.103 \cdot -0.588) = -0.03028 + -0.03028 = -0.06056 = -6.05\%$
  - c. Total Direct and Indirect Effect  
 $= 59.57\% + (-6.05\%) = 53.5\%$

### Structural Path Analysis III

Structural equation III:  $PZY = PZY + PZY$



Source: processed data

**Figure 4**  
**Structural Path Analysis 3**

**Table 8**  
**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.232E-17	,223		,000	1,000
Zscore(ROA)	,555	,231	,555	2,406	,032

Source: processed data

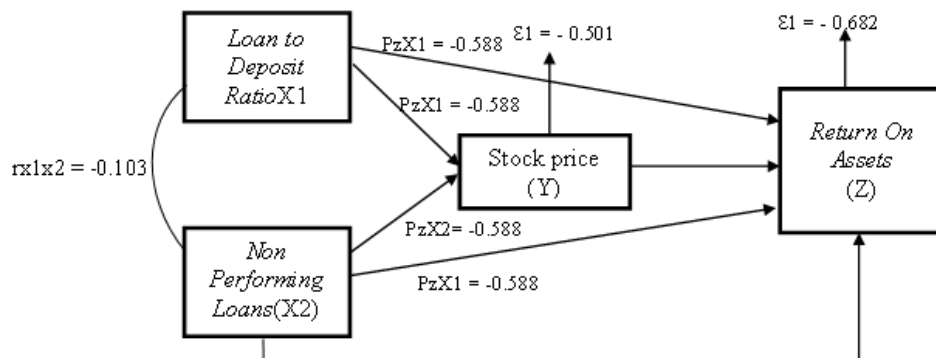
It shows that the t value of the return on assets variable is 2.406, while the t-table is 2.17881 (2.406 > 2.17881) with a significance level of 0.032 < 0.05, meaning that the return on assets variable has a significant effect on stock prices.

a. The magnitude of the direct effect of Y on Z

$$Y \rightarrow Z = PZY \cdot PZY = 0,555 \cdot 0,555 = 0,3080 = 30,80$$

*Structural Path Analysis IV*

Structural equation IV:  $Y = PyX1 + PyX2 + \epsilon1 + PzX1 + PzX2 + \epsilon2 + Pzy$



Source: processed data

**Figure 5**  
**Causality relationship analysis of path coefficients between variables X1, X2, Y, and Z**

1. The effect of loan to deposit ratio through return on assets on stock prices

a. Direct Effect of X1 on Z

$$= PzX1 \cdot PzX1 = -0,588 \cdot -0,588 = 0,3457 = 34,57\%$$

b. Indirect Effect of X1 Through Y on Z

$$= PyX1 \cdot Pzy = -0,588 \cdot 0,555 = -0,3263 = 32,63\%$$

c. Total Direct and Indirect Effect

$$= 34,57\% + 32,63\% = 67,20\%$$

From the above calculations, the direct effect of the loan to deposit ratio on stock prices is 34.57%. The indirect effect of the loan to deposit ratio through return on assets on stock prices is 32.63%, and the total effect is 67.20%. This means that the indirect effect value is smaller than the direct effect value; this shows that indirectly X1 through y has an insignificant effect on Z.

2. The effect of non-performing loans through return on assets on stock prices

a. Direct Effect of X2 on Z

$$= PzX2 \cdot PzX2 = -0,500 \cdot -0,500 = 0,25 = 25,00\%$$

- b. The indirect Effect of X2 through Y on Z  
 $= P_{yX2} \cdot P_{zy} = -0.500 \cdot -0.555 = 0.2775 = 27.75\%$
- c. Total direct and indirect effects  
 $= 25.00\% + 27.75\% = 52.75\%$

From the calculation, the direct effect of non-performing loans on stock prices is 25.00%. The indirect effect of non-performing loans through return on assets on stock prices is 27.75%, and the total effect is 52,75%. It means the indirect effect value is greater than the direct effect value. This shows that X2 directly through y has a significant effect on Z.

- 3. The effect of loan to deposit ratio and non-performing loans simultaneously through return on assets on stock prices
  - a. Direct Effect of X1 and X2 on Z  
 $= P_{zX1} \cdot P_{zX1} + P_{zX1} \cdot P_{zX2} + \epsilon_1 + \epsilon_2 = -0.588 \cdot -0.588 + (-0.588) \cdot -0.500 + 0.501 + 0.682$   
 $= 0.345 + 0.294 + 0.501 + 0.682 = 182.2 \%$
  - b. Indirect Effect of X1 and X2 Through Y on Z  
 $= P_{yX1} \cdot P_{zy} + P_{yX2} \cdot P_{zy} + \epsilon_1 + \epsilon_2 = -0.071 \cdot 0.555 + (-0.870) \cdot 0.555 + 0.501 + 0.682$   
 $= -0.034 + (-482.85) + 0.501 + 0.682 = -48.17 \%$
  - c. Total Direct and Indirect Effects  
 $= 182.2 \% + (-48.17\%) = 134.03\%$

From the calculation above, the direct effect of the loan to deposit ratio and non-performing loans on stock prices is 182.2%. The indirect effect of the loan to deposit ratio and non-performing loans simultaneously through return on assets on the share price is -48.17%, and the total effect is 134.03%, which means that the indirect effect value is smaller than the direct effect value; this shows that directly X1 and X2 through y have an insignificant effect on Z.

## CONCLUSION

The results of this research reveal that: (1) *loan to deposit ratio* has a direct effect on share price; (2) *non-performing loans* have a direct effect on share price; (3) the variables loan to deposit ratio and non-performing loan simultaneously have a significant effect on stock prices; (4) the variable loan to deposit ratio has a direct effect on return on assets; (5) the non-performing loan variable has a direct effect on return on assets; (6) the loan to deposit ratio and non-performing loan variables simultaneously have a significant effect on return on assets; (7) the return on asset variable has a significant effect on stock prices; and (8) the loan to deposit ratio and non-performing loan variables through return on assets on stock prices have an effect.

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