

Banking Profitability: How does the Credit Risk and Operational Efficiency Effect?

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Abstract The aim of this study was to analyze the effect of credit risk and operational efficiency to the banking profitability. Credit risk as measured by non performing loans (NPLs), operational efficiency as measured by ratio of operating expense to operating income (OEOI) and banking profitability as measured by return on assets (ROA). The method used is descriptive and verification method, with secondary data from financial statements of 26 Regional Development Bank in Indonesia as a research object units. Data analysis technique is the multiple linear regression, hypothesis testing while using T - test to examine the effect of partial variables and F - test to examine the effect of variables simultaneously with a significance level of 5 %. Based on the results, it is concluded that the partial, NPLs has positive and significant effect to ROA; While the OEOI has negative and significant effects to the ROA Simultaneously that variable of NPLs and OEOI significantly influence to ROA variable with the level of 57.1%, while the remaining 42.9% thought to be influenced by other variables not examined in this study.

Keywords: *non-performing loans (NPLs), ratio of operating expenses to operating income (OEOI), return on assets (ROA)*

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1. Introduction

Regional Development Bank (BPD) in Indonesia was established with the intent to provide funding for the implementation of local development efforts in the framework of National Development. However up to this time, BPD still faces several problems, among which: limited capital; brand awareness community to BPD is still very low; quality of service does not meet the expectations of society; quality and human resources competencies have not been standardized; innovation and product development is still limited; networks office services is still limited ; not optimal strategic partnership; structure of public funding is relatively low; composition of the productive loan portfolio is relatively low, and not consolidate information technology [9].

As one of the commercial banks, BPD plays a very important role in the economy, especially the regional economy. The role is mainly seen how wide BPD can apply intermediary function. One commonly used indicator to measure the implementation of banking intermediation, is the ratio of loans to deposits (LDR) [7,17]. The higher this ratio is, the better it means that the bank could carry out intermediation function optimally. In carrying out the intermediation function BPD also have to make a profit to sustain its business and provide welfare to the shareholders. The indicator to measure the level of ability of bank management in make a profit (profit) as a whole is Return On Asses (ROA). The higher a bank's

ROA, greater the level of profit that the bank achieved and the better the bank's position in terms of utilization assets.

The ROA achieved by the BPD to December 2014 is 2,68% lower than the national banks (2,85%), and other groups such as state owned banks (3,75%); foreign owned banks (3,08%); but higher than foreign exchange banks (2,13%); non-foreign exchange banks (2,16%) and joint venture banks (2,11%) (Financial Services Authority, Republic of Indonesia, 2014). Thus, profitability achieved by the BPD becomes less optimal. Less than optimal profitability achieved by the BPD, allegedly effects of credit risk (NPLs) and operational efficiency (OEOI).

The aim of this study was to analyze the effect of credit risk as measured by NPLs and effect of operational efficiency as measured by OEOI ratios on banking profitability as measured by ROA.

2. Literature Review

2.1. Definition and Factors of Affecting Banking Profitability

Bank is an organization that combines human effort and financial resources to carry out the functions of the bank in order to serve the needs of the community and to make a profit for the owners of the bank [18]. The main purpose of banks, reaching the maximum level of profitability in conducting its operational activities. Profitability describes the company's ability to profit through all the capabilities of existing sources [16]. To measure the ability of bank management in gain (profit) overall use ratios Return on

Assets [11]. The larger a bank's ROA greater the level of profit that the bank achieved and the better the bank's position in terms of utilization assets.

2.1.1. Return On Assets (ROA)

Return on Assets (ROA) is an important indicator of the financial statements which have a variety of uses. The greater this ratio indicates better performance of banks [29]. According to Bank Indonesia Circular Letter No. 13/24/ DNDP 2011, Return on assets (ROA) is a ratio that assess how the rate of return on assets. Based on Bank Indonesia regulation, adequate ROA is above 1,25%. ROA will be used as a guide in measuring the profitability of banks by the Bank Indonesia as a banking supervisor, because ROA is an objective measurement method that is based on the data available to the bank about how banks have been managing the assets of the funds come from the public.

2.1.2. The effect of NPLs on the ROA

Credit is the greatest asset investment and the largest source of revenue for banks. If the credit fails then the ability of banks to provide new loans will be limited. Besides bank revenue derived from loan interest will decrease and banks should establish loan loss reserves and finally will reduce the bank's profitability. Credit risk or credit quality of a bank is indicated by the Non Performing Loans (NPLs). Thus, NPLs can be used to measure the ability of banks to *cover* the risk of default of loan repayment by the debtor. Based on Bank Indonesia Circular Letter No. 13/24/DPNP on October 25, 2011 concerning the Commercial Banks, problem loans are loans to a third party of non bank consist of non performing loan (sub standard), doubtful and loss. The higher the level of NPLs, the greater the credit risk borne by the bank. NPL rate may affect the level of bank profitability. The research Karim [19] states in Malaysia and Singapore, clearly indicate that higher non-performing loan reduces cost efficiency. According to some previous research results stated that credit risk or NPLs have significant negative impact on the profitability and growth of the Banking sector [1,2,3,4,12,20,22,24,26,27]. While according the research of Oktaviantari [23], NPL influenced positive but it is not significant towards profitability (ROA).

2.1.3. The effect of OEOI on ROA

Operational efficiency is essential for banks to increase the rate of profit to be achieved. One ratio that is commonly used to measure the level of bank efficiency is the ratio of operating expenses to operational income (OEOI). Bank Indonesia as supervisor also use OEOI as an indicator to measure the level of efficiency of a bank. Based on Bank Indonesia Circular Letter No.6/23/DPNP/2005 subject: Rating System for Commercial Banks regulate OEOI ratio range from 94% to 97%. If the bank achieved the ratio of OEOI below 94% then the level of operational efficiency is very good, and vice versa. According to some previous research results stated that the operational efficiency (OEOI) has a positive and significant effect on bank profits as measured by ROA [4,14,20,22,25,27,31]; While the results of another study stated that the

operational efficiency has a significant negative effect on bank profits as measured by ROA [10,23,24,26].

2.2. Hypothesis

Based on the relationship between research objectives and theoretical framework to the formulation of the research problem, the research hypothesis are as follows:

- H1 : NPLs negatively effect on ROA
- H2 : OEOI negatively effect on ROA
- H3 : NPLs, OEOI effect on ROA.

3. Research Method

3.1. Research Method

The methods used in this research are descriptive method and verification method. Descriptive method is a method used to analyze data in a way to describe the data that has been collected as is without intending to apply general conclusions or generalizations. While the verification method is a method of research that aims to determine the relationship between the independent variable, namely NPLs and OEOI to the dependent variable is the banking profitability as measured by the ROA. This verification method is used to test the truth of a hypothesis. Influence or shape the causal relationship between variables X and Y can be known from the research method of verification [28].

3.2. Type, data Source, Population, Sample and Data Collection Methods

Data used in this study is secondary data All Indonesian regional development banks which include NPLs, OEOI, and the ROA were obtained from the Indonesian Banking Statistics Volume 13 No. 1 December, 2014 and Financial Statement Publications in 2014 (calculated quarterly). The research population was 26 regional development banks (BPD) serve as the object of study. While the object is observed financial statements position December 31, 2014. Data collection method used was to study the documentation. Study of documentation is done with the data collection and classification category of written materials related to the research problem.

3.3. Analysis Techniques Data

The data analysis technique used in this study is a multiple linear regression. First, it is tested to determine whether the assumptions of classical linear regression model doesn't have problem of normality, multi-collinearity, heterocedastity and autocorrelation. If all of them were fulfilled means that the model has a decent analysis used [15]. To examine the hypothesis was used T-test to determine statistical significance of the effect of independent variables on the dependent variable partialy, F-test to determine the statistical significance of the coefficient of multiple significance or F-test to determine significance of the independent variables on the dependent variable simultaneously. Data processing is done by using the software Statistical Package for Social Science (SPSS) version 21.0 for Windows. The regression equation used is as follows:

$$Y = a + \beta X_1 + \beta X_2 + e \quad (1)$$

Where,

Y = Return On Assets (ROA)

a = A constant which is the value of the variable Y when the variable X is 0 (zero)

β = Coefficient of the regression line

X_1 = Non Performing Loans (NPLs)

X_2 = Operating Expense to Operating Income (OEOI)

e = Residual.

4. Result and Discussions

4.1. The Development ROA, NPLs and OEOI Regional Development Bank in Indonesia

Based on data until December 31, 2014, the development of ROA, NPLs and OEOI were achieved by 26 regional development banks operating in Indonesia (see Table 1) can be described as follows:

Table 1. The Development of the ROA, NPLs and OEOI of BPDs in Indonesia by December 31, 2014 (Percentage)

No.	BPDs	ROA	NPLs	OEOI
1	DI-Aceh	3.13	2.58	74.11
2	North Sumatera	2.60	5.47	80.30
3	West Sumatera	1.94	2.52	84.51
4	South Sumatera	2.13	7.10	81.54
5	Bengkulu	3.70	0.39	72.41
6	Lampung	3.89	1.06	69.33
7	Riau	3.37	2.79	70.59
8	Jambi	3.14	0.48	71.45
9	DKI-Jakarta	2.10	4.38	80.26
10	West Java	1.94	4.15	85.94
11	Central Java	2.84	0.93	75.67
12	DIY-Jogyakarta	2.88	0.87	72.64
13	East Java	3.52	3.31	69.63
14	West Kalimantan	3.19	0.48	71.77
15	East Kalimantan	2.61	10.36	80.39
16	Central Kalimantan	4.09	0.82	61.07
17	South Kalimantan	2.68	3.86	75.15
18	North Sulawesi	2.16	1.29	83.70
19	South Sulawesi	5.07	1.04	60.89
20	Central Sulawesi	3.73	1.40	69.27
21	Southeast Sulawesi	4.13	2.86	71.67
22	Bali	3.92	0.35	64.89
23	West Nusa Tenggara	4.61	1.46	66.00
24	East Nusa Tenggara	4.30	1.43	73.83
25	Maluku	0.01	2.38	99.56
26	Papua	4.57	7.38	91.38
	Minimum	0.01	0.35	61.07
	Maximum	4.61	10.36	99.56
	Average	2.68	2.70	78.08

Source: Published Financial Statements, December 31, 2014, downloaded May, 3, 2015, processed. The average value of ROA achieved by BPD until December 31, 2014 amounted to 2.68% lower than the national banks (2.85%), and other groups such as state owned banks (3.75%) and foreign owned banks (3.08%) but higher than foreign exchange banks (2.13%); non-foreign exchange banks (2.16%); and joint venture banks (2.11%) (Indonesian Banking Statistics, 2014). The lowest value of ROA at 0.01% is achieved by BPD Maluku, while the highest value of ROA at 4.61% is achieved by BPD West Nusa Tenggara.

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The average NPLs value was 2.70% achieved by period of December 31, 2014. The highest NPL value of 10.36% was achieved by BPD East Kalimantan and the lowest NPLs was 0.35% achieved by BPD Bali. By looking at the average value of the NPL shows that the credit risk was faced by BPD are at moderate albeit under tolerance required by Bank Indonesia at 3%–5%. It means being able to control the risk of BPD lending so that BPD has the ability to increase profits from lending.

The average value achieved OEOI period December 31, 2014 amounted to 78.08%, higher than the national banks (76.29%); state owned banks (69.57%); but lower than foreign; joint venture banks (78.49%) and foreign owned banks (79.30%). The highest value of 99.56% OEOI achieved by BPD Maluku and the lowest OEOI amounted to 61.07% achieved by the BPD Central Kalimantan. By looking at the average value of OEOI is still below the tolerance required by Bank Indonesia at 94% - 96%. This means that, although BPD is able to control its operational efficiency so that the BPD still has the ability to improve the operational efficiency.

4.2. Multiple Linear Regression Analysis

Multiple linear regression analysis was used to determine basically dependence of dependent variable with one or more independent variables, with the aim of estimating or predicting the average of population data or average value of the dependent variable based on the value of the independent variable known [15]. By regression analysis it can be seen whether there is influence between independent variables with the dependent variable. The results of multiple linear regression analysis in this study can be seen in Table 2.

Based on Table 2, the regression equation is as follows:

$$ROA = 1.049 + 0.66X_1 - 0.996X_2 \quad (2)$$

The equation above it can be explained as follows:

1. Constant value (a) of 1.049, which means a positive constant value. This shows if the NPLs (X_1) and OEOI (X_2) has a value of zero, then the ROA (Y) increase by 1.049.
2. Regression coefficient for the variable NPLs (X_1) is 0.066, indicating a positive relationship between the NPLs (X_1) with ROA (Y), meaning that if there is additional NPLs (X_1) per unit, assuming other variables remain the ROA (Y) was increased by 0.066 and vice versa.
3. Regression coefficient for the variable OEOI (X_2) is - 0.966, indicating a negative the relationship between the OEOI (X_2) with ROA (Y), meaning that if the addition of OEOI (X_2) for every one unit, assuming other variables constant, the ROA (Y) decrease by 0.966 and vice versa.

Table 2. Test Results of Multiple Linear Regression Coefficients

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
1 (Constant)	1.049	.065		16.078	.000
NPLs	.066	.032	.153	2.041	.044
OEOI	-.996	.091	-.820	-10.914	.000

Dependent variable: ROA; Source: Output SPSS 21.0.

4.3. Analysis of Correlation Coefficient and Coefficient of Determination

Table 3. Test Results Correlation Coefficient and Coefficient of Determination Model Summary

Model	R	R square	Adjusted R square	Std. error of the estimate
1	.755 ^a	.571	.562	.0712473

Source: Output SPSS 21.0.

4.4. Partial Significance Test (t-test)

To examine hypotheses on the significance of the partial model used t-test. It is intended to determine the effect of independent variables (NPLs and OEOI) partially to the dependent variable (ROA). Partially, the influence of the two independent variables to the ROA as an independent variables, shown in the Table 4 partial test results (t-test), it can be argued that:

1. Effect of NPLs on the ROA

Partial test results between NPL to ROA shows the t-value of 2.041 less than the t-table (2.064) with a significant value of 0.044 which is below 0.05. This means that the NPLs has positive effect and significant effect to the return on assets (ROA). Thus the hypothesis H1 which states NPLs negatively effect the ROA is rejected. The test results are in line with the research results of Oktaviantari [23] which states that NPL have influence positive but it is not significant towards profitability (ROA). However, contrary to the research results according to Adeusi [1]; Sinha [27]; Arimi [3]; Ahmad [2]; Puwoko [24]; Manikam [20]; Eng [12]; Nusantara [22]; Artarina [4] and Restiyana [26] which states that NPL have significant negative effect on ROA.

2. Effect of OEOI on the ROA

Partial test results between the OEOI to ROA shows the t-test value of -10.914 is greater than t-table (2.064) with a significant value of 0.000 which was below 0.05. This means that the OEOI effects on ROA and significant. Thus hypothesis H2 which states OEOI negatively effect on ROA is acceptable. The test results are in line with previous research conducted by Purwoko [24]; Oktaviantari [23]; Chatarine [10] and Restiyana [26] which states that OEOI had negative significant effect towards profitability (ROA). However, contrary to the research results according to Sinha [27]; Nusantara [22]; Prasanjaya [25]; Francis [14]; Manikam [20]; Artarina [4] and Widati [31] which states that OEOI have significant effect on ROA.

Correlation coefficient analysis was used to determine the direction and the strong relationship among the two independent variables. Those are the variable NPLs (X_1) and OEOI (X_2) with ROA as a dependent variable (Y). (see Table 3).

Based on Table 3, it can be concluded that the variable the NPLs (X_1) and OEOI (X_2), with ROA dependent variable has a value of correlation (r) 0.755, meaning that the correlation level are in strong correlation [28]. While the coefficient of determination analysis was used to determine the contribution effect of NPLs (X_1) and OEOI (X_2) with ROA as a dependent variable (Y) expressed as a percentage. Based on Table 3 that the R^2 value was 0.571 or 57.1% indicating that NPLs (X_1) and OEOI (X_2), accounted for 57.1% of the ROA (Y), while the remaining 42.9% thought to be influenced by other variables not examined.

Table 4. Partial Test Results (T-Test)

Model	T-count	T-table	Sig.	Description
1 (Constant)	16.078		.000	
NPLs	2.041	2.064	.044	Significant
OEOI	-10.914	2.064	.000	Significant

Dependent variable: ROA; Source: Output SPSS 21.0.

4.5. Simultaneous Significant Test (F-test)

F - test was conducted to determine the effect of independent variables (NPLs and OEOI) simultaneously to the dependent variable (ROA). Simultaneously influence of the two independent variables to the independent variables ROA is shown in Table 5. Based on the results of the F-test calculations in Table 5, F-count was 67.139 greater than the F-table (3.028) with a significance value (sig) of 0.000 is below 0.05. This means that the independent variables (NPLs and OEOI) simultaneously significant effect to dependent variable (ROA). Thus the H3 hypothesis which states NPLs and OEOI effect on ROA is acceptable. The test results are in line with previous research conducted by Prasanjaya [25] that the CAR, OEOI, LDR and Firm Size with The F test influence the profitability. Furthermore, according to Purwoko [24] coefficient of determination, which shows the magnitude of the influence OEOI, NPL, NIM, CAR and LDR to ROA are 73.1%, while the rest of 26.9% explained by other causes outside the model. Then Manikam [20], the research result shows OEOI, NIM and NPL has significant effect toward bank profitability. And Eng [12], the research result shows NIM, LDR and NPL have significant on ROA. Nusantara [22], from the result of analyse indicate that data NPL, CAR, LDR and OEOI in significant toward ROA bank go public at level of significant less than 5%. Oktaviantari [23], NPL influenced positive but it is not significant towards profitability (ROA). The OEOI influenced negative significant towards profitability (ROA), and LDR influenced positive significant towards profitability

(ROA). Prasanjaya [25], from the F test result shows CAR, BOPO, LDR and Firm Size significantly influence the profitability; Artarina [4] the research result shows that simultaneously CAR, LDR, BOPO, and NPL have significant effect on ROA. Widati [31], the result of CAR and LDR are significant positive influence to the ROA, but PPAP have positive and not significant influence to

ROA, DER have positive significant to ROA, OEOI have positive and not significant to ROA. And Restiyana [26], the results of this study indicate that CAR, LDR, and the NIM has positive and significant impact on ROA in the banking firm. While the NPL and OEOI significantly and negatively related to ROA banking.

Table 5. Simultaneous Test Results (F-Test)

ANOVA						
Model	Sum of squares	Df	Mean square	F	Sig.	
1	Regression	.682	2	.341	67.139	.000 ^b
	Residual	.513	101	.005		
	Total	1.194	103			

Dependent variable ROA; Predictors: (constant), OEOI, NPLs.

5. Conclusion

Based on the background, the formulation of the problem, hypotheses, methods and research results and discussion, some conclusions can be drawn as follows:

1. In 2014 BPD (Regional Development Bank) in Indonesia has been able to create a banking profitability as measured by Return on Assets (ROA) amounted to 2.68% lower than the national banks, state owned banks and foreign owned banks but higher than foreign exchange banks, non-foreign exchange banks and joint venture banks. The lowest value of ROA is achieved by BPD Maluku, while the highest value of ROA is achieved by BPD West Nusa Tenggara.
2. Based on the results, it is concluded that the partial, the non-performing loans (NPLs) has positive effect and significant effect to the return on assets (ROA). While Operating expenses to operating income (OEOI) has negative and significant effects to the return on assets (ROA); Simultaneously that variable of NPLs and OEOI significantly influence to ROA variable.
3. The amount of the contribution or influence variable of NPLs and OEOI to the dependent variable of ROA is 57.1% while the remaining 42.9% thought to be influenced by other variables not examined in this study.

6. Recommendation

Based on the results of the study found that the NPLs and OEOI significant effect on bank profitability (ROA) in BPD in Indonesia in 2014, therefore, the NPL and ROA should be completely managed by the management in addition determinants other than bank profitability. Efforts to be made by the bank management to manage NPLs and increase operational efficiency is to organize the structure of funding sources to improve low-cost funds, giving credit to the productive sectors with the principles of prudence and improve efficiency. Results of this study are expected to be used as guidelines for the management of the bank to manage bank profitability to be a healthy bank

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