BANKING INTERMEDIATION, OPERATIONAL EFFICIENCY AND CREDIT RISK IN THE BANKING PROFITABILITY

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ABSTRACT

The aim of this study was to analyze the factors that affect the banking profitability, including banking intermediation, operational efficiency and credit risk. The method used is descriptive and verification method, with secondary data from financial statements 26 all over Indonesian Regional Development Bank 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, loan to deposit ratio (LDR) has negative effect but no significant effect to the return on assets (ROA); Operating expenses to operating income (OEOI) has negative and significant effects to the return on assets (ROA); While the non-performing loans (NPLs) has positive effect but no significant effect to the return on assets (ROA). Simultaneously that variable of LDR, OEOI and NPLs 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: loan to deposit ratio, non-performing loans, ratio of operating expenses to operating income, return on assets.

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 (Eko Budiwiyono , 2012) .

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) (Haruna, 2011; Buchory, 2006). 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. The not optimal profitability by BPD is thought to include the effect of the Loan to Deposits Ratio (LDR), Operating Expense to Operating Income Ratio (OEOI), and Non Performing Loan (NPLs).
    This study aims to analyze the factors that affect the banking profitability include LDR, OEOI, and NPLs.

Literature review

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 (Hempel, et.al., 1994). 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 (Harahap, 2015). To measure the ability of bank management in gain (profit) overall use ratios Return on Assets (Dendawijaya, 2009). 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.

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 (Taswan, 2010). 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.

The effect of LDR of the ROA
Intermediation is the process of transformation or direct purchases of a claim with a series of characteristics (maturity, denomination) of Defisit Spending Units/DSUs and turn it into a claim indirectly by a different set of characteristics to be sold to Surplus Spending Units/SSUs (Hempel et al., 1994; Kidwell, 2000). The implementation of financial intermediation in banking can be seen from the bank's ability to transform savings received primarily from household economic units into credit or loans for companies and others to invest in buildings, equipment and other capital goods (Rose, 2013). The indicators commonly used to measure the extent of intermediation by the banking system has been implemented is the ratio of Loans to Deposits Ratio (LDR). The higher this ratio is, the better it means that the bank could carry out intermediation function optimally. Vice versa, the lower this ratio means the bank in carrying out its intermediary function is not optimal. According to the research result Buchory (2006) implementation of financial intermediation function give effect to banking performance. The implementation of financial intermediation will also increase to banking profitability. Several previous studies stated that LDR has a significant positive effect on ROA (Nusantara, 2009; Prasanjaya, 2013; Artarina, 2013;   Vong, 2009; Widati, 2012; Restiyana, 2011); While the research conducted by Arimi, 2012; Purwoko, 2013; LDR hasn't significant positive effect to ROA.

The effect of OEOI of 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) in the same period.   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 (Sinha, 2014; Nusantara, 2009; Prasanjaya, 2013; Francis, 2013; Manikam, 2013; Artarina, 2013; And Widati, 2012); While the results of another study stated that the operational efficiency has a significant negative effect on bank profits as measured by ROA (Purwoko, 2013; Oktaviantari, 2013; Wibowo, 2013; Chatarine, 2014; Restiyana, 2011);

The effect of NPLs of 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 25th, 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 (2010) states in Malaysia and Singapore, clearly indicate thathigher 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 (Adeusi, 2014; Sinha, 2014; Arimi, 2012; Ahmad, 2014; Puwoko, 2013; Manikam , 2013; Eng, 2013; Nusantara, 2009; Artarina, 2013; and Restiyana, 2011). While according the research of Oktaviantari (2013), NPL influenced positive but it is not significant towards profitability (ROA)

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 : LDR positively effect on ROA
H2 : OEOI negatively effect on ROA
H3 : NPL negatively effect on ROA
H4 : LDR, OEOI, NPLs effect on ROA

Research method

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 variables, namely LDR, OEOI and NPLs 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. (Sugiyono, 2009)

Type, data source, population, sample and data collection methods.

Data used in this study is secondary data All Indonesian regional development banks which include LDR, OEOI, NPLs, and the ROA were obtained from the Indonesian Banking Statistics and Data Center Consultant EKOFIN 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.

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 (Gujarati, 2003). 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:

$$Y = a + \beta X_1 + \beta X_2 + \beta X_3 + e \qquad (1)$$

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 = Loan to Deposits Ratio (LDR)

X_2 = Operating Expense to Operating Income (OEOI)

X_3 = Non Performing Loans (NPLs)

e = Residual

Result and discussions

The development ROA, LDR, OEOI, and NPLs regional development bank in Indonesia

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

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.

The average value of LDR achieved by BPD until December 31, 2014 amounted to 89.73%, higher than the national banks (89,42%), and other groups such as state owned banks (83,73%); foreign exchange commercial banks (85.66%); non-foreign exchange commercial banks (87,81%); but lower than joint banks (123,61%) and foreign owned banks (140,04%). The lowest value of LDR at 73.80% is achieved by South Sulawesi, while the highest value of LDR at 120.44% is achieved by Central Sulawesi.

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.

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.

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

No.	BPDs	ROA	LDR	OEOI	NPLs
1	DI-Aceh	3.13	92.38	74.11	2.58
2	North Sumatera	2.60	95.89	80.30	5.47
3	West Sumatera	1.94	98.34	84.51	2.52
4	South Sumatera	2.13	85.97	81.54	7.10
5	Bengkulu	3.70	86.06	72.41	0.39

6	Lampung	3.89	112.96	69.33	1.06
7	Riau	3.37	77.72	70.59	2.79
8	Jambi	3.14	100.83	71.45	0.48
9	DKI-Jakarta	2.10	92.57	80.26	4.38
10	West Java	1.94	93.18	85.94	4.15
11	Central Java	2.84	88.57	75.67	0.93
12	DIY-Jogyakarta	2.88	80.34	72.64	0.87
13	East Java	3.52	86.54	69.63	3.31
14	West Kalimantan	3.19	87.09	71.77	0.48
15	East Kalimantan	2.61	78.54	80.39	10.36
16	Central Kalimantan	4.09	79.82	61.07	0.82
17	South Kalimantan	2.68	91.44	75.15	3.86
18	North Sulawesi	2.16	90.10	83.70	1.29
19	South Sulawesi	5.07	73.80	60.89	1.04
20	Central Sulawesi	3.73	120.44	69.27	1.40
21	Southeast Sulawesi	4.13	111.84	71.67	2.86
22	Bali	3.92	96.41	64.89	0.35
23	West Nusa Tenggara	4.61	99.78	66.00	1.46
24	East Nusa Tenggara	4.30	87.69	73.83	1.43
25	Maluku	0.01	92.26	99.56	2.38
26	Papua	4.57	80.12	91.38	7.38
	Minimum	0.01	73.80	61.07	0.35
	Maximum	4.61	120.44	99.56	10.36
	Average	2.68	89.73	78.08	2.70

Source: Published Financial Statements, December 31,2014, downloaded May, 3, 2015, processed

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 (Gujarati, 2003). 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 :

$$ROA = 1.064 - 0.017X_1 - 0.994X_2 + 0.064X_3 \qquad (2)$$

The equation above it can be explained as follows:

1. Constant value (a) of 1.064, which means a positive constant value. This shows if the LDR (X_1), OEOI (X_2), and NPLs (X_3), has a value of zero, then the ROA (Y) increase by 1.064.
2. Regression coefficient for the variable LDR (X_1) is -0.017, indicating a negative the relationship between the LDR (X_1) with ROA (Y), meaning that if the addition of LDR (X_1) for every one unit, assuming other variables constant, the ROA (Y) decrease by 0.017. And vice versa, if there is a reduction of LDR (X_1) of the unit it will increase the ROA (Y) equal to 0.017.
3. Regression coefficient for the variable OEOI (X_2) is -0.994, 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 0.994. And vice versa, if there is a reduction of OEOI (X_4) of the unit it will increase the ROA (Y) equal to 0.994.
4. Regression coefficient for the variable NPLs (X_3) is 0.064, indicating a positive relationship between the NPLss (X_3) with ROA (Y), meaning that if there is additional NPLs (X_3) per unit, assuming other variables remain the ROA (Y) was increased by 0,064. And vice versa if there is a reduction in NPLs $(X_53$ of the unit it will decrease the ROA (Y) equal to 0.064

Table 2 : *Test Results of Multiple Linear Regression Coefficients*

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.
		B	Std. error	Beta		
1	(Constant)	1.064	.087		12.250	.000
	LDR	-.017	.066	-.017	-.257	.798
	OEOI	-.994	.092	-.818	-10.805	.000
	NPLs	.064	.034	.148	1.902	.060

Dependent variable: ROA; Source:Output SPSS 21.0.

Analysis of correlation coefficient and coefficient of determination

Correlation coefficient analysis was used to determine the direction and the strong relationship among the three independent variables. Those are the variable LDR (X_1), OEOI (X_2) and NPLs (X_3) with ROA as a dependent variable (Y). (see table 3).

Based on Table 3, it can be concluded that the variable the LDR (X_1), OEOI (X_2), and NPLs (X_3) with ROA dependent variable has a value of correlation (r) 0.756, meaning that the correlation level are in strong correlation (Sugiyono, 2009). While the coefficient of determination analysis was used to determine the contribution effect of LDR (X_1), OEOI (X_2), and NPLs (X_3) 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 LDR (X_1), OEOI (X_2), and NPLs (X_3) accounted for 57.1% of the ROA (Y), while the remaining 42.9% thought to be influenced by other variables not examined.

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	.756	.571	.558	.0715790

Source: Output SPSS 21.0.

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 (LDR, OEOI and NPLs) partially to the dependent variable (ROA). Partially, the influence of the three 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 LDR on the ROA
   Partial test results between the LDR with an ROA shows the t-test value of -.257 less than t-table (2.064) with a significant value of 0.798 which is above 0.05. This means that the LDR do not effects on ROA. Thus hypothesis H1 stating LDR positive effect on ROA is rejected. The test results are in line with previous research conducted by Arimi (2012) and Purwoko (2013) research result showed LDR hasn't significant positive effect to ROA. However, contrary to the results of Nusantara (2009); Prasanjaya (2013); Artarina (2013); Vong (2009); Widati (2012) and Restiyana (2011) which states that LDR has a significant positive effect on ROA in the banking firm.

2. Effect of OEOI on the ROA
   Partial test results between the OEOI to LDR shows the t-test value of -10.805 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 (2013); Oktaviantari (2013); Wibowo (2013); Chatarine (2014) and Restiyana (2011) which states that OEOI had negative significant effect towards profitability (ROA). However, contrary to the research results according to Sinha (2014); Nusantara (2009); Prasanjaya (2013); Francis (2013); Manikam (2013); Artarina (2013) and Widati (2012) which states that OEOI have significant effect on ROA

3. Effect of NPLs on the LDR
   Partial test results between NPL to LDR shows the t-value of 1.902 less than the t-table (2.064) with a significant value of 0.060 which is above 0.05. This means that the NPLs effects on ROA and not significant. Thus the hypothesis H3 which states NPLs negatively effect the ROA is rejected. This mean NPLs in BPD have effect on the bank profitability but not significant, because the average NPL rate in BPD is relatively small. NPL is relatively small indicating that the credit risk faced by small BPD as a result of good credit management. The test results are in line with the research results of Oktaviantari (2013) which states that NPL have influence positive but it is not significant towards profitability (ROA). However, contrary to the research results according to Adeusi (2014); Sinha (2014); Arimi (2012); Ahmad (2014); Puwoko (2013); Manikam (2013); Eng (2013); Nusantara (2009); Artarina (2013) and Restiyana (2011) which states that NPL have significant negative effect on ROA.

Table 4 : *Partial Test Results (T-Test)*

Model		T-count	T-table	Sig.	Description
	(Constant)	12.250		.000	
1	LDR	-.257	2.064	.798	Not Significant
	OEOI	-10.805	2.064	.000	Significant
	NPLs	1.902	2.064	.060	Not Significant

Dependent variable: ROA; Source: Output SPSS 21.0.

Simultaneous significant test (F-test)

F - test was conducted to determine the effect of independent variables (LDR, OEOI and NPLs) simultaneously to the dependent variable (ROA). Simultaneously influence of the five 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 44.367 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 (LDR, OEOI and NPLs) simultaneously significant effect to dependent variable (ROA). Thus the H4 hypothesis which states LDR, OEOI and NPLs

effect on ROA is acceptable. The test results are in line with previous research conducted by Prasanjaya (2013) that the CAR, OEOI, LDR and Firm Size with The F test influence the profitability. Furthermore, according to Purwoko (2013) 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 (2013), the research result shows OEOI, NIM and NPL has significant effect toward bank profitability. And Eng (2013), the research result shows NIM, LDR and NPL have significant on ROA. Nusantara (2009), 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 (2013), 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 (2013), from the F test result shows CAR, BOPO, LDR and Firm Size significantly influence the profitability; Artarina (2013) the research result shows that simultaneously CAR, LDR, BOPO, and NPL have significant effect on ROA. Widati (2012), 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 (2011), 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	.686	3	.227	44.367	.000
	Residual	.512	100	.005		
	Total	1.194	103			

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

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, loan to deposit ratio (LDR) has negative effect but no significant effect to the return on assets (ROA); Operating expenses to operating income (OEOI) has negative and significant effects to the return on assets (ROA); While the non-performing loans (NPLs) has positive effect but no significant effect to the return on assets (ROA). Simultaneously that variable of LDR, OEOI and NPLs significantly influence to ROA variable.
3. The amount of the contribution or influence variable of LDR, OEOI and NPLs 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.

Suggestion

Based on the research results found that the determinants of bank profitability are the most significant in BPD in Indonesia in 2014 is a factor of operating efficiency (OEOI), therefore, these factor has to be really well managed by the management in addition to other determinants of bank profitability. The variable OEOI can be used as guidelines for the management of banks in managing a bank to become a soundness or healthy bank.

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