Probability Factors Affecting Income Smoothing in Banks in 2010−2016

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ABSTRACT

The purpose of this research was to examine profitability factors in banking that affected income smoothing. Profit is the most important number for readers in making the economic decision. This research used probability factors that affected income smoothing in the bank. Probability ratio testing used Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM), and Operating Expense Ratio (OER). The population was all banks listed in Indonesian Stock Exchange in 2010-2016. The sample was 203 data obtained through purposive judgment sampling. Using Logistic Binary Regression from SPSS version 20, Eckel Index was used to determine which companies smooth its income. The result shows that ROA, NIM, and OER are significant to income smoothing. However, ROE does not affect income smoothing significantly.

Keywords: Income smoothing, probability factor, bank

INTRODUCTION

Trust in reading the financial statement is an essential factor in the economic decision for managers. The financial statement urges the manager to decide the future benefits and obligations. For example, it can be whether the managers should recognize the sales in this year or next year or whether the managers should give loan provision this month or next month to make regular income better. The managers believe that reporting excess profit can attract unintended scrutiny by regulators (Ozili, 2017). A financial statement is designed for the readers to measure the value of the company. It is a mean for management to take responsibility for the performance (Ngan, 2014). Moreover, it can be a reflection of the real condition in the company, and the stakeholders are always looking for net profit information.

The financial statement consists of statements of income, retained-earning, financial position, and cash flow. The readers need the knowledge to interpret the numbers in the financial statement. Return on Asset (ROA) and Return on Equity (ROE) are the ratio indicators of a profitable company. These ratios are directly related to income smoothing. Net Interest Margin (NIM) and Operating Expense Ratio (OER) are specified ratios for banking. Those are the efficiency measurements of the bank. NIM can measure how successful a firm is at investing its funds in comparison to the expenses on the same investment. Meanwhile, OER is a ratio to measure the future profit of a bank.

However, accounting numbers no longer reflect the underlying risk condition because banks can pursue additional management objectives such as smoothing their income by exaggerating loan loss provisions when income is high or understating them when income is low (Bouvatier, Lepetit, & Strobel, 2014). The banking industry is highly regulated by the government and needs to comply with many laws. These regulations are made to avoid bank failure. Income smoothing in banking industry plays significant roles. Managers are evaluated based on net income earned. Thus, the managers have some pressures to announce good income to satisfy shareholders.

Income smoothing is one of the methods to smooth income and to reduce income fluctuation, so the net income looks gradually increasing and vice versa. Income smoothing is also seen as a controversial practice in accounting by managers, investors, and policymakers. Managers do it with a specific purpose. It can be done because there are many accounting methods, and the company can choose its method to report its net income in financial statements. In general, it is done by increasing income when profit is low and decreasing income when profit is high.

According to Kirschenheiter and Melumad (2002), profit is one of the potential information contained in the financial statements. It is very important for internal and external parties of the company. Profit information is a component of financial statements that aims to assess the performance of the management, help estimate the long-term profitability of a representative, and estimate the risk of investing or lending funds.

The banking industry is very crucial and important intermediaries between the supplier of fund and demander of funds (Gitman & Zutter, 2012). Otoritas Jasa Keuangan (OJK - Financial Services Authority) and investors always monitor bank performance in yielding net income. This situation urges the managers to give the best income, good performance through income smoothing. Hence, the financial banking structure is opaque compared to other firms because of high leverage (Bouvatier, Lepetit, & Strobel, 2014).

Then, earning management can be defined as legal and reasonable management decision in reporting stable and predictable income. According to Dechow, Sloan, and Zha (2014) and Jiambalvo (1996), there is the broad and narrow definition for earning management. There are four types of earning management: Taking a big bath, income minimization, income maximization, and income smoothing. Related scandal case in earning management are Enron, Parmalat, AIG, Kimia Farma, and Lippo in Indonesia.

According to Tucker and Zarowin (2006), income smoothing is a type of earning management. Its objective is to reduce the amount of variation in periodic earning over time. The discretion permitted by accounting policies introduces flexibility that allows managers to adjust earning report to produce a smoother income stream. Income smoothing plays a dual role in determining the quality earnings such as garbling or efficient communication of private information.

Based on Abbadi, Hijazi, and Al-Rahahleh (2016), management may use different methods to hide the changes in economic performance by creating reserves for future periods. Hence, it reduces income volatility. Riahi-Belkaoui (2004) said that income smoothing was the intentional dampening of fluctuations about some level of earnings. It was currently considered to be normal for a firm or an attempt of the firm management to reduce abnormal variations in earnings and to extend the accounting and management principles. There were two types of

income smoothing: intentional and natural smoothing.

The role of the banking industry is very important for economic growth. In general, the bank has three duties. First, the bank collects funds from society such as saving account, time deposit, and paying interest expense. Second, bank distributes those funds into credit to institutions or individual and collects interest revenue. Third, the bank provides payment services like bank guarantee, money order, foreign-exchange currency, and safety deposit boxes. With all the services provided, the bank earns a profit. There are several factors in determining its profit. Profit is the revenues reduced by the costs. Revenues for bank come from assets in the balance sheet, and costs for bank come from liabilities in the balance sheet.

ROA measures the overall effectiveness of management in generating profits with available assets (Gitman & Zutter, 2012; Sharpe, 1994). There are many pros and cons whether ROA has significant influence toward income smoothing. The pros of ROA are related to income and should influence income smoothing since income smoothing is derived from revenues and expenses (Puspitasari, 2009; Ghazali, Shafie, & Sanusi, 2015). Meanwhile, cons of ROA are that it is the only tool to express the percentage of income and not a true measure. It is because there are many measurements such as earning per share or price book value (Yahaya, Kutigi, & Mohammed, 2015). Consider the differences between pros and cons, the researcher wants to examine whether ROA has significant value toward income smoothing since all profit earned takes into account in calculating income smoothing. Based on the explanation, the first hypothesis is as follows.

H1 : ROA is significant to income smoothing.

Moreover, ROE measures the return earned by the common stockholders' investment in the company (Gitman & Zutter, 2012). The higher the ratio is, the better the company's performance will be. Profits generated using the equity have impact and relation to income smoothing. It has a smaller profit in conducting income smoothing (Mahjoubi & Abaoub, 2015). Various research shows different results. Corolina and Juniarti (2006) said the higher ROE would increase stock price and investor's willingness to invest more in its stocks.

Meanwhile, Hejazi, Ansari, Sarikhani, and Ebrahimi (2011) argued that ROE did not affect income smoothing. It was because the asymmetric theory was always existed, and outsiders could not calculate the real risk faced by the company. Based on theory, the second hypothesis is as follows.

H2 : ROE is significant to income smoothing.

Then, NIM is the ability of a bank to earn net interest revenue coming from productive assets. NIM is different from revenue generated by credit

loans and cost paid to saving and time deposits. Bank receives many types of revenues and costs regardless of where the sources come from. They may come from productive or non-productive assets. The spread is particularity high in Indonesia. The wider the spread is, the more profit will be earned by the bank. According to Bank Indonesia (2012), the good range for this ratio is from 3% to 10%.

Moreover, the profit earned from NIM has relation to income smoothing. Ozili (2017) showed that NIM significantly affected income smoothing. However, Lim and Yong (2017) suggested the opposite results. The gap exists because the differences and the researcher wants to examine it in this research. Based on this concept, the third hypothesis is as follows.

H3 : NIM is significant to income smoothing.

OER is a ratio to measure the efficiency level and ability to conduct an operation such as how the bank controls operational cost to operational income. According to Bank Indonesia (2012), the good ratio for OER is 78% − 94%. Operational costs are from paid interest cost for checking account, saving account, and depositors. All activities are related to primary bank activities. Meanwhile, operational income comes from received interest revenue from creditors though credit loan. Other operational revenues for the bank are loan provisions, foreign exchange rate, and dividend. Therefore, the fourth hypothesis is as follows.

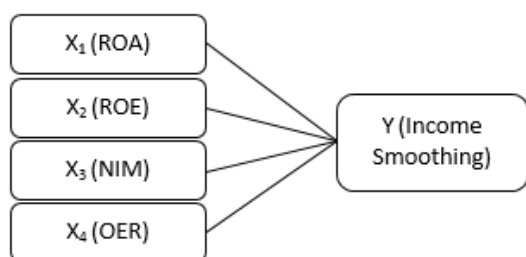H4 : OER is significant to income smoothing.

Figure 1 Research Framework

The research framework can be seen in Figure 1. The urgency of this research is to examine the effect of ROA, ROE, NIM, and OER to income smoothing. This research is also expected to provide the readers the general knowledge about income smoothing. Investors can make a good selection in investing their stock and provide information about earning in the future. This research can fill the gap with an examination of profitability ratio in the banking industry only.

Then, the purpose of this research is to examine the effect of ROA, ROE, NIM, and OER on income smoothing. Thus, the research problems are: (1) does ROA affect income smoothing?; (2) does ROE affect income smoothing?; (3) does NIM affect income smoothing?; and (4) does OER affect income smoothing?

METHODS

This research applies quantitative methods. The researcher uses the secondary data from www.idx.co.id, internet, journals, and text-book. The samples are obtained through purposive judgment sampling. The criteria for samples are that the company has completed data from 2010-2016. From 45 banks, only 29 banks are selected. Then, 29 banks are multiplied by 7 years. Hence, 203 samples are from banks listed in Indonesian Stock Exchange (IDX) in 2010-2016.

Hypotheses are tested using binary logistic with the statistical tool of SPSS version 20. Then, income smoothing is calculated using Eckel Index. The equation for Eckel Index is as follows.

$$\text{Eckel Indeks} = \frac{CV \, \Delta I}{CV \, \Delta S} \qquad (1)$$

Where:
CV Δ I: Coefficient of variation changes for net income in one period.
CV ΔS: Coefficient of variation changes for sales in one period.

Companies that perform income smoothing can be detected from Eckel Index. If Eckel Index is more than 1, it means the bank does not perform income smoothing. If Eckel Index is less than 1, it means bank performs income smoothing.

RESULTS AND DISCUSSIONS

The purpose of this research is to examine whether income smoothing is influenced by ROA, ROE, NIM, and OER. Data are from banks listed in IDX in 2010-2016 (7-years) using purposive sampling with statistical tool SPSS version 20. Regression uses binary logistic because the dependent variable is dummy 0 as no income smoothing, and 1 as income smoothing. In statistical descriptive, the researcher tests the minimum value, maximum value, mean, and standard deviation from the collected sample. Table 1 shows the result for descriptive analysis.

The minimum ROA is 0%, and the maximum is 11%. It is with a mean of 2,05%. Then, the minimum ROE is 0%, and the maximum is 43,83% with a mean of 14,27%. Meanwhile, the minimum and maximum NIM is 0,6% and 16,64% respectively with a mean of 5,06%. Then, in OER, the minimum value is 44,78%, and the maximum is 235,2% with a mean of 85,11%.

There is no rule for good range ROA and ROE. However, for NIM and OER, there is a rule. Good range for NIM is 3% − 10%. From data, the mean is 5,06%. It can be said that the data are in good range. Then, good range for OER is 78% − 94%. In this data, the mean is 85,11%. The researcher considers the data in good range.

Table 1 Descriptive Analysis

	N	Min	Max	Mean		Std Deviasi	Variance	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std Error	Statistic	Statistic	Statistic	Std Error
Eckel Index	203	0,0000	1,00	0,5517	0,0349	0,4986	0,2490	-1,976	0,340
ROA	203	0,0000	0,1100	0,0205	0,0011	0,0152	0,0000	101,310	0,340
ROE	203	0,0000	0,4383	0,1427	0,0648	0,0924	0,0090	0,0680	0,340
NIM	203	0,0060	0,1664	0,0569	0,0017	0,0235	0,0010	38,230	0,340
OER	203	0,4478	23,520	0,8511	0,0141	0,2003	0,0400	202,920	0,340
Valid N (listwise)	203								

Table 2 Case Processing Summary

Unweighted Cases[a]		N
Selected Cases	Included in Analysis	203
	Missing Cases	0
	Total	203
Unselected Cases		0
Total		203

a. If weight is in effect, see classification table for the total number of cases.

Table 2 shows the number inputted in SPSS. It is to make sure that no data are left behind. All 203 data have been inputted. It represents 100% of the data. Then, Table 3 is coding for the dependent variable. Number 0 is for not doing income smoothing, and 1 is for income smoothing.

Table 3 Dependent Variable Encoding

Original Value	Internal Value
No Income Smoothing	0
Income Smoothing	1

In logistic regression analysis, the researcher tests the overall model fit using -2 Log Likelihood, Cox and Snell R Square, Negelkerke R Square, and Hosmer and Lemeshow goodness of fit test. There is no need to test classic assumption like in parametric test. For -2 Log Likelihood, the researcher needs to run Block 0 and Block 1. Block 0 tests the independent variable. Then, Block 1 is added to the dependent variable. A good model will show the decreasing a number of -2 Log Likelihood. The results are in Table 4 and Table 5. The result for Block 0 in -2 Log Likelihood shows 279,241 and Block 1 shows 246,882. It means the numbers are decreasing. Thus, the model is in good fit, and it can be continued to the further test.

Table 4 Block 0 in -2 Log Likelihood

Iteration History [a,b,c]

Iteration		-2 Log Likelihood	Coefficients
			Constant
Step 0	1	279,241	0,207
	2	279,241	0,208

a. Constant is included in the model.
b. Initial -2 Log Likelihood: 279,241
c. Estimation is terminated at iteration number 2 because parameter estimates changed to less than 0,001.

Table 5 Block 1 -2 Likelihood

Iteration History [a,b,c,d]

Iteration		-2 Log likelihood	Coefficients				
			Constant	ROA	ROE	NIM	OER
Step 1	1	257,186	-1,319	19,302	-,863	-14,454	2,439
	2	250,926	-3,789	45,988	-1,104	-19,012	5,159
	3	247,422	-6,617	98,105	-3,506	-25,436	8,212
	4	246,893	-8,391	125,018	-4,413	-29,161	10,126
	5	246,882	-8,716	129,033	-4,490	-29,763	10,476
	6	246,882	-8,724	129,128	-4,492	-29,777	10,484
	7	246,882	-8,724	129,128	-4,492	-29,777	10,484

a. Method: Enter
b. Constant is included in the model.
c. Initial -2 Log Likelihood: 279.241
d. Estimation is terminated at iteration number 7 because parameter estimates changed to less than 0,001.

Table 6 Cox and Snell R Square and Nagelkerke R Square

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	246,882[a]	0,147	0,197

a. Estimation is terminated at iteration number 7 because parameter estimates changed to less than 0,001.

Table 6 is the results of Cox and Snell R Square and Nagelkerke R Square. This test is similar to R Square in the parametric test. The number shows that 19,7% of the independent variable can explain the dependent variable. Other variables explain the rest 80,3%.

Table 7 Hosmer and Lemeshow Test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	6,918	8	0,546

Table 7 is the result of Hosmer and Lemeshow test. It shows the goodness of fit that there is no difference between the model and its observation. If the significant number is more than 0,05, the model is correctly specified and can be used for the further test. The result for sig number is 0,546, and it is more than 0,05. Hence, the data are good and do not clash with the assumption made by the model.

After the overall model test and the number is in the range, the researcher continues the test for classification table. Classification table shows the comparison between the number of success predicted by the logistic regression model and actual observed number. It also compares the number of failures predicted by the logistic regression model and actual observed number.

Table 8 Classification Table

Classification Table[a]

Observed		Prediction		Correct Percentage
		Eckel Index		
		No Income Smoothing	Income Smoothing	
Step 1	Eckel Index	No Income Smoothing	43	48	47,3
		Income Smoothing	24	88	78,6
	Overall Percentage				64,5

a. The cut value is 0,500

Table 8 is the prediction regarding banks. Based on Eckel Index, about 91 (43+48) banks do not conduct income smoothing with 47,3% of accuracy. Meanwhile, it is observed that 112 (24+88) banks conduct income smoothing with 78,6% of accuracy. Based on prediction, 43 banks do not carry out income smoothing. Meanwhile, 48 banks do income smoothing. Moreover 24 banks do not carry out income smoothing, and 88 banks do income smoothing. With the overall accuracy of 64,5%, the number exceeds the standard 50%. It means all data in the model are good.

Regression equation based on Table 9 is as follows.

$$Y = -8{,}72 + 129{,}12ROA - 4{,}49ROE - 29{,}78NIM + 10{,}48OER \quad (2)$$

ROA has the coefficient value of 129,12 and significant value 0,007. It shows that the value is smaller than its significant value of 0,05. Thus, H1 is accepted. It means ROA is positive and significant to income smoothing. Then, ROE has the coefficient value of -4,49 and significant value of 0,209. It means that the value is bigger than its significant value of 0,05. Thus, H2 is rejected. ROE is not significant to income smoothing.

Moreover, in NIM, the coefficient value is -29,78 and significant value is 0,002. The value is smaller than its significant value of 0,05, so H3 is accepted. It implies that NIM is significant to income smoothing. Moreover, OER has the coefficient value of 10,48 and significant value of 0,002. This value is smaller than its significant value 0,05. Hence, H4 is accepted. It means OER has significant effect on income smoothing. Constanta value is -8,72. It means the value of income smoothing is -8,72 if ROA, ROE, NIM, and OER equal to zero (0).

ROA is significant to income smoothing since ROA is the ability of a company to generate profit using its assets. The more profit is, the more flexibility to income smoothing will be. During high profit, the manager can reserve some profits to be used in recession time, so all income looks smooth. Investor and creditor require the company to have a smooth income. Investors want increasing share return and good dividend. Meanwhile, creditors want on time repayment debts. This research is in line with Puspitasari (2009) and Budiasih (2009).

ROE is not significant to income smoothing since ROE is the ability to generate profit using its equity. The equity in banks is a little bit different than other regular company. Equity in banks consists of a share and retained earnings. Moreover, there is a minimum requirement for a bank using Capital Adequacy Ratio (CAR) with minimum 8%. Then, the investors and creditors do not need information regarding equity. There is no relationship between income and total equity. This research agrees with Corolina and Juniarti (2006).

NIM is negatively significant to income smoothing since NIM is the difference between received interests and paid interests. Negative NIM means bank pay too much for the costs. It means that increasing NIM will decrease income smoothing. This is logically correct because the higher income is, the less action for income smoothing will be. The result agrees with Puspitasari (2009).

OER is positive and significant to income smoothing since it is the ability to run operational activity. OER measures how efficient a bank manages its cost against revenue. The higher OER is, the higher income smoothing will be. It is because the higher

Table 9 Logistic Regression

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	ROA	129,12	47,76	7,31	1	0,007	1,202E+056	26.887.481.714.329 61.000	5.370E+096
	ROE	-4,49	3,58	1,58	1	0,209	0,011	0,000	12.393
	NIM	-29,78	9,85	9,15	1	0,002	0,000	0,000	0,000
	OER	10,48	3,42	9,40	1	0,002	35.754.687	43.757	29.215.542.378
	Constant	-8,72	3,25	7,22	1	0,007	0,000		

a. Variable(s) on step 1: ROA, ROE, NIM, and BOPO.

ratio means an inefficient bank. Good range for OER is 78% − 94%. It means banks acquire more revenues than the paid expenses. The higher ratio means the bank must conduct income smoothing to reduce fluctuation in reporting income. This research is in line with Aulia (2016) and Muhamad (2015).

CONCLUSIONS

The result of this research indicates that ROA has the positive and significant effect on income smoothing with sig. value of 0,07. Income smoothing is influenced by earned net income by the company. The more profit is, the more flexibility manager has to conduct income smoothing. It is because the reserve income can be used as they want.

ROE is not significant to income smoothing with sig. value of 0,209. It means income smoothing is not influenced by equity. Equity in banking is different with regular company in which banks require CAR of 8% which agrees with Basel Agreement 1988. The fluctuations happen in equity are not influenced by income smoothing.

NIM is negative and significant to income smoothing with sig. value of 0,002. It is directly related to income smoothing and contributes this practice. If the bank earns high interest, the managers do not have to conduct income smoothing. Meanwhile, OER is positive and significant to income smoothing with sig. value 0,002. OER plays an important key for income smoothing since it is a part of loan loss provisions and selling securities.

This research has some limitation. First, the researcher does not divide the banks into a private bank or state-owned bank. Second, the researcher does not differentiate the total assets that the banks have. Last, the researcher does not consider the age of the bank. This research fills the gaps from previous research. Most researches use free cash flow, loan provisions, and the size of the company. Moreover, the researcher suggests that future researchers use different variables such as CAR, loan-deposit ratio, dividend payout ratio, earning per share, and return market share.

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