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The Effect of Third-Party Funds, Credit Risk, Market Risk,
and Operational Risk on Profitability in Banking
for Period 2014-2017

Jullie J. Sondakh, Joy Elly Tulung, Herman Karamoy

Abstract

The study aimed to investigate the effect of third-party funds, credit risk, market risk, and operational risk on profitability in banking, especially on the banks included in BUKU 2 category simultaneously or partially. The sampling technique used in the study was saturated sampling. Therefore, a number of 54 banks were obtained as samples. The data in the study were quantitative data, namely in form of financial statements of banking companies included in BUKU 2 category for period 2014-2017. The data were obtained from websites of the concerned banks. The research method used was multiple linear regression analysis. In the study, to measure the Third-Party Funds variable used DPK ratio, to measure the Credit Risk variable used NPL and NPF ratio, to measure the Market Risk variable used NIM ratio, to measure the Operational Risk variable used BOPO ratio, and to measure the Profitability variable used ROA ratio. The result of the study showed that partially third-party funds and credit risk had no significant effect on profitability, partially market risk had significant positive effect on profitability, and partially credit risk had significant negative effect on profitability. While simultaneously, third-party funds, credit risk, market risk, and operational risk had significant effect on profitability.

Keywords: Third-Party Funds, Credit Risk, Market Risk, Operational Risk

JEL Classifications: G32, G21

INTRODUCTION

Banking plays a role in the economy of a country; Indonesia is no exception. The existence of banking sector is familiar, it plays more roles in society life because people currently tend to save their money, get loans, or make other transactions at banks. In addition, bank services have been so improved that they facilitate people to make transactions. Banking itself is a legal entity that has obtained permit to keep the customers' money that is then rechanneled to other customers or people in form of loans or other transactions. Currently banks are classified into four groups of Commercial Banks based on Business Activities (BUKU). The classification of BUKU categories is based on the amount of basic capital a bank has. Basic capital is crucial because it concerns with the level of security and power of a bank. Therefore, it can be said that the greater basic capital a bank has, the more secured customers' funds saved at the bank. The study investigated the banks included in BUKU 2 category. The banks included in the category have basic capital of 1 trillion rupiahs to 5 trillion rupiahs. Of all banks in Indonesia, 54 banks are included in BUKU 2 category. A bank is required to have good financial performance to make people or customers trust the bank and feel safer and sure to save their

money or to make other transactions at the bank. One of the aspects assessed in banking financial performance is profitability ratio. Profitability ratio measures or assesses the company's ability to gain profits. Therefore, if the profitability of a bank keeps increasing every year, it means that the bank's performance is good. One of the methods to measure profitability ratio is using ROA (Return on Assets). Tulung *et al* (2018), Karamoy & Tulung (2020) state the greater ROA, the better performance of the company, because the level of return obtained is greater.

There are limited studies discussing simultaneously about the effect of third-party funds, credit risk, market risk, and operational risk on profitability, some results are partially. Such as, the study by Sukma (2013) is about the third-party funds and profitability in banking, while Capraru & Ihnatov (2015) investigated credit risk on profitability in banking, then Winarso & Salim (2017) studied NIM on profitability in banking, Nusantara (2009) measured BOPO as operational risk on non-go-public banking.

Third-party funds are funds obtained from people in form of current account, saving, and time deposit that are then rechanneled to people in form of loans or other transactions. Third-party funds are crucial for banking because most of banking funds are sourced from third-party funds (Kuncoro, 2002). Cahyono (2017), the survival of a bank is inseparable from third-party funds. Similarly, the advancement or the decline of a bank depends on third-party funds it has. Why are third-party funds like "the heart" that runs all components in banking? Because most of banking capital or more than 80% is sourced from third-party funds. In addition, with third-party funds, the function of banking as an intermediation that collects funds and channels to people in form of credits or loans can be realized.

HYPOTHESIS DEVELOPMENT

Third-Party funds are funds sourced from the public in the form of demand deposits, savings and deposits. These third-party funds are the largest source of funds, the funds raised will be used for the bank's activities. Sukma (2013) explains that third-party Funds are one of the largest sources of funds obtained from the public. Banks can take advantage of funds from these third parties to be placed in income-generating items for the bank, one of which is in the form of credit. The increase in third-party funds will also result in large credit growth so that bank profitability will increase. The relationship of third-party funds to profitability according Edo & Wiagustin (2014) where their research results show that third-party funds have a positive and significant effect on ROA. Where it is explained that the results of this research mean that any increase in third-party funds will also be followed by an increase in profitability,

where when the amount of TPF is channeled into credit, the income from the credit will increase as well as the bank's ability to generate profits will also increase.

H1: It is suspected that third-party funds have a significant positive effect on profitability

NPL or non-performing loans are loans that cannot be repaid due to deliberate factors or factors beyond the control of the debtor. Sukma (2013) stated Banks can run their operations well if they have an NPL below 5%. This means that the higher this ratio, the worse the quality of bank credit, which causes the number of non-performing loans to increase, the greater the possibility of a bank in a problematic condition, namely the loss caused by controlling bad credit. Meanwhile Dendawijaya (2009) suggests the impact of the existence of an unnatural NPL, one of which is the loss of the opportunity to earn income from loans, thereby reducing profitability and the negative impact on bank profitability.

The effect of NPL on Profitability (ROA) is supported by the research of Parsetyo and Darmayanti (2015). Their research results indicate that credit risk has a significant negative effect on profitability. This value indicates that if the credit risk faced increases, the profitability achieved will decrease, and vice versa. The results of this research are in accordance with the statement which states that an increase in credit risk affects profitability, because the higher the NPL level as a proxy for credit risk, the worse the quality of bank credit, which causes the number of non-performing loans to increase. A high NPL level makes the bank have to bear losses in its operational activities so that it affects the decline in profitability.

H2: It is suspected that credit risk has a significant negative effect on profitability

Veithzal (2013) explains that market risk is a risk that arises because of the movement of market variables from the portfolios held by the bank, which can harm the bank. One of the factors affecting market risk is the interest rate, which is measured by the difference between the funding interest rate and the loan interest rate given in absolute terms, the difference between the total cost of funding and the total cost of borrowing, which in banking terms is called the Net Interest Margin (NIM). The high NIM ratio shows the bank's ability to benefit from generating interest income by looking at the bank's performance in extending credit. The higher the NIM ratio value, the higher the profit that can be obtained by the bank. On the other hand, the lower the NIM ratio value, the lower the ability of the bank to make a profit which will have an impact on the financial performance of the bank, Kim *et al* (2018) state to indicate that the effect of lower transparency to increase banks' stock market risk has been especially strong

during the financial crisis. So it can be concluded that market risk (NIM) has a positive effect on financial performance.

H3: It is suspected that Market Risk has a significant positive effect on profitability.

Nusantara (2009) explaining the BOPO ratio shows the efficiency of banks in operating their main business, especially credit, where until now the income of banks in Indonesia is still dominated by interest income on loans. The smaller the BOPO, the more efficient the bank is in carrying out its business activities. BOPO is used to measure the level of efficiency and ability of a bank in carrying out its operational activities. The smaller the BOPO, the more efficient the operational costs incurred by the company concerned. However, the greater the BOPO indicates that the bank is not operating efficiently and the large amount of operational costs will reduce the amount of profit to be earned because operating costs or expenses act as a deduction factor in the income statement so that financial performance will appear to decline, indicating poor financial performance banking. So, it can be concluded that operational risk (BOPO) has a negative effect on financial performance (ROA).

H4: It is suspected that Operational Risk has a significant negative effect on profitability

Third-party funds are the largest source of funds used by banks. This source of funds from the community is then also used to provide loans or credit to the community, but when the borrower is unable to pay this debt obligation, a credit risk will arise to the bank. So that this will also affect the profitability of the bank, besides that the risks faced by the bank are not only credit risk but also market risk and operational risk, banks must be able to minimize this risk so as not to affect the results to be achieved.

H5: It is suspected that Third-party Funds, Credit Risk, Market Risk, and Operational Risk have a significant effect on profitability

Research Model

Based on the previous explanation regarding the relationship between the independent variable and the dependent variable, also based on the research hypothesis and based on the description of the problem formulation and research objectives, the framework or concept used is as follows:

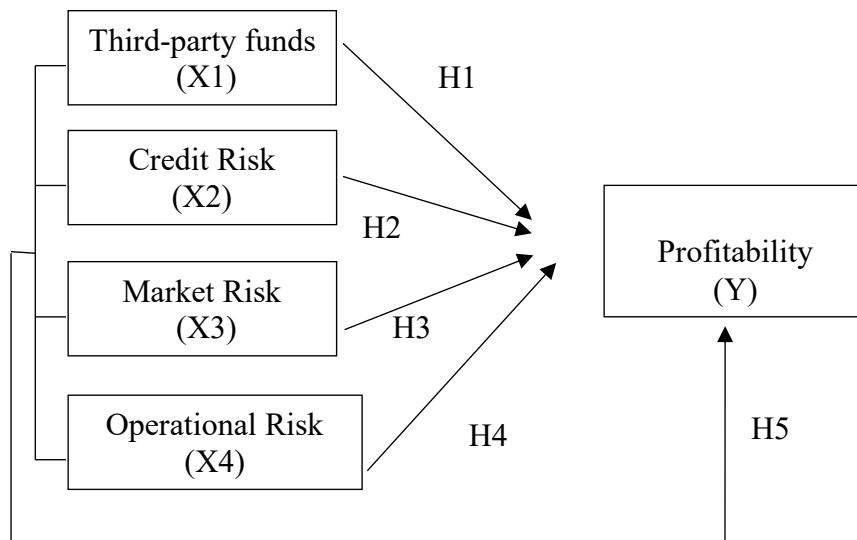


Figure 1. Research Model

Where:

Independent Variables

X1 = Third-party funds

X2 = Credit Risk

X3 = Market Risk

X4 = Operational Risk

Dependent Variable

Y = Profitability

DATA, VARIABLES, AND METHODOLOGY

This research aimed to analyze the existing hypotheses based on the formulated theory and further compute the existing data with a quantitative approach. The quantitative approach is an analysis whose data is in the form of numbers so that it can be calculated. The analytical method used was multiple linear analysis method, besides that, the F test was also performed to test the effect simultaneously, and the t test was performed to test the effect partially. The population taken in this research were banks which were included in the BUKU 2 category during the period 2014-2017 so that there were 54 banks. The sample size in this research were all banks included in the BUKU 2 category so that a sample of 54 banks was obtained.

Sources of data in this research used secondary data in the form of financial reports on banks which were included in the BUKU 2 category during the period of 2014-2017. Data was obtained from the websites of each banks. The type of data in this research was quantitative data. Quantitative data is data in the form of numbers or numeric and can or can be calculated, where in this research the data was in the form of financial reports from banks that were included in the category BUKU 2 for the period of 2014-2017.

Table 1. Definition of Operational Variables

Variable	Definition	References	Formula
Return on Asset (ROA)	The ratio of net income and total assets	Bank Indonesia	$ROA = \frac{\text{earning befor tax}}{\text{total assets average}} \times 100\%$
Third-party Fund (DPK)	This source of funds is the most important source of funds for bank operations and is a measure of the success of a bank if it is able to finance its operations from this source of funds	Kasmir, 2015	DPK = current account + savings + deposits
Credit Risk	credit risk is defined as the risk of loss in relation to the borrower (counterparty) unable and or unwilling to fulfill the obligation to	Idroes & Sugiarto, 2006	$NPL = \frac{\text{Total Non-Performing Loans}}{\text{total loans}} \times 100\%$ But for Islamic banks credit risk was calculated using the formula: $NPF = \frac{\text{Total Non-Performing Financing}}{\text{Total Financing}} \times 100\%$

	repay the borrowed funds in full at maturity or afterwards. Credit risk can be defined as the losses incurred due to the borrower fails or unwilling to fulfill or pay its obligations at the due date.		
Market Risk	risk of loss associated with changes in the market value of a portfolio of financial instruments	Hull, 2018	$\text{NIM} = \frac{\text{NetInterestMargin}}{\text{ProductiveAssets}} \times 100\%$
Operational Risk	the risk of loss resulting from inadequate or failed internal processes, people, and systems, or from external events	Hull, 2018	$\text{BOPO} = \frac{\text{Total costs (operating expenses)}}{\text{Total operating income}} \times 100\%$

RESULTS AND DISCUSSION

In this research, the object of research was all banks that were included in the category of BUKU 2. The Banks included in this category were banks whose core capital ranging from 1 trillion to 5 trillion. The number of banks included in this category was 54 banks. The following is a list of banks included in the BUKU 2 category.

Descriptive Statistics

All data in this research were processed or transformed in the form of normal logarithms (Ln).

Table 2 Descriptive Statistics of variables, 2014-2017

Variable	Obs.	Minimum	Maximum	Mean	Std. Dev.
LN_X1	216	13.46	17.75	15.8264	.84081
LN_X2	207	-4.61	1.70	-.0678	1.24895
LN_X3	216	-1.43	3.58	1.6898	.53216

LN_X4	216	3.91	5.46	4.4530	.19817
LN_Y	196	-2.53	2.42	.3861	.87521

From table 4.2. it can be seen the results of descriptive statistics from Banking Third-party Funds (X1) which were included in the BUKU 2 category during the period of 2014-2017, the entered data was 216 data where N was valid or 187 data was processed. From these results, it can be seen that the average X1 during 2014-2017 was 15.8264, where the minimum value was 13.46 owned by Bank Oke Indonesia in 2014 and the maximum value was 17.75 owned by Bank Muamalat Indonesia in 2014.

From Table 4.2. it can be seen that the descriptive statistics result of Banking Credit Risk (X2) that includes in BUKU 2 categories during 2014-2017 period, as many as 207 data entered, where the valid N or processed data in amount of 187 data. From these results, it can be seen that the average X2 during 2014-2017 is -0.0678, where the minimum value is - 4.61 owned by National Bank of Nobu in 2016 and the maximum value is 1.70 owned by Bank JTrust Indonesia in 2014.

From table 4.2. it can be seen the descriptive statistics result of Banking Market Risk (X3) that includes in BUKU 2 categories during 2014-2017 period, as many as 216 data entered, where the valid N or processed data in amount of 187 data. From these results, it can be seen that the average X3 during 2014-2017 is 1.6898, where the minimum value is -1.43 owned by Bank J Trust Indonesia in 2014 and the maximum value is 3.58 owned by Bank BTPN Syariah in 2017.

From table 4.2. it can be seen the descriptive statistics result of Banking Operational Risk (X4) that includes in the BUKU 2 classification during the 2014-2017 period, as many as 216 data entered, where the valid N or processed data in amount of 187 data. From these results, it can be seen that the average X4 during 2014-2017 is 4.4530, where the minimum value is 3.91 owned by Bank BNP Paribas Indonesia in 2014 and the maximum value is 5.46 owned by Bank of India Indonesia in 2016.

From table 4.2. It can be seen the descriptive statistics result of Profitability (Y) that includes in the BUKU 2 classification during the 2014-2017 period, as many as 216 data entered, where the valid N or processed data in amount of 187 data. From these results, it can be seen that the average Y during 2014-2017 was 0.3861, where the

minimum value was -2.53 owned by Bank BRI Syariah in 2014 and the maximum value was 2.42 owned by Bank BTPN Syariah in 2017.

Table 3. Multiple Linear Regression Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	21.920	1.669		13.135	.000
LN_X1	-.052	.043	-.048	-1.192	.235
LN_X2	-.045	.031	-.063	-1.437	.152
LN_X3	.503	.080	.261	6.304	.000
LN_X4	-4.894	.315	-.685	-15.554	.000

a. Dependent Variable: LN_Y

Based on the results of the analysis in table 3 multiple linear regression test, the multiple linear regression equation for this study is as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

$$Y = 21.920 - 0.052X_1 - 0.045X_2 + 0.503X_3 - 4.894X_4$$

Where:

- Y : Profitability
- a : Constanta
- b₁, b₂, b₃, b₄ : the regression coefficient of independent variable
- X₁ : Third-Party funds
- X₂ : Credit Risk
- X₃ : Market Risk
- X₄ : Operational Risk
- e : Error

From the above equation, it can be seen that the constant value is 2.701. It means that if the value of third-party funds (X1), credit risk (X2), market risk (X3) and operational risk (X4) is equal to 0, then the value of profitability (Y) is 21,920. The coefficient value of third-party funds (X1) is - 0.052. This means that if there is a 1%

increase in third-party funds, the profitability value (Y) will decrease by 0.052, and if there is a decrease in third-party funds by 1% in third-party funds, the profitability value (Y) will increase by 0.052. The credit risk coefficient (X2) is -0.045. This means that if there is a 1% increase in credit risk, the value of profitability (Y) will decrease by 0.045, and if there is a decrease in credit risk by 1%, the value of profitability (Y) will increase by 0.045. The market risk coefficient (X3) is 0.503. This means that if there is a 1% increase in credit risk, the profitability value (Y) will increase by 0.503, and if there is a 1% decrease, the profitability value (Y) will decrease by 0.503. The operational risk coefficient (X4) is -4.894. This means that if there is a 1% increase in operational risk, the profitability value (Y) will decrease by 4.894, and if there is a 1% decrease, the profitability value (Y) will increase by 4.894.

T-test

The t-test was conducted to partially determine the effect of the independent variable on the dependent variable. The basis for t-test decision making, if the value of $\text{sig} < 0.05$ or $\text{t-count} > \text{t-table}$ then there is an effect of the independent variable on the dependent variable or the hypothesis is accepted, whereas if the value of $\text{sig} > 0.05$ or $\text{t-count} < \text{t-table}$ then there is no influence of the independent variable on the dependent variable or the hypothesis is rejected. The formula for t table = $a/2 ; n-k-1$. In this study, it is known that t table = 1.97308.

From table 4.6. It can be seen that the t-test results for third-party funds (X1) $\text{sig} 0.235 > \text{sig} 0.05$ and $\text{t-count} 1.192 < \text{t-table} 1.97308$, meaning that there is no effect of third-party funds (X1) on profitability (Y) or hypothesis (H1) is rejected. For credit risk (X2) $\text{sig} 0.152 > \text{sig} 0.05$ and $\text{t-count} 1.437 < \text{t-table} 1.97308$, meaning that there is no effect of credit risk (X2) on profitability (Y) or the hypothesis (H2) is rejected. For market risk (X3) $\text{sig} 0.000 < \text{sig} 0.050$ and $\text{t-count} 6.304 > \text{t-table} 1.97308$, t is positive, meaning that market risk (X3) has a significant positive effect on profitability (Y) or hypothesis (H3) is accepted. For operational risk (X4) $\text{sig} 0.000 < \text{sig} 0.05$ and $\text{t-count} 15.554 > 1.97308$, t is negative, meaning that operational risk (X4) has a significant negative effect on profitability (Y) or hypothesis (H4) is accepted.

F-test

The F test is performed to see whether the independent variables simultaneously or jointly have an influence on the dependent variable or not. The basis for making the F test decision, if the sig value < 0.05 or F count $> F$ table then the independent variable simultaneously affects the dependent variable or the hypothesis is accepted, whereas if the sig value > 0.05 or F count $< F$ table then the independent variable simultaneously has no effect. the dependent variable or the hypothesis is rejected. The formula F table = k; n-k. In this study, it is known that F table = 2.42.

Table 4 F Test, ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.525	4	26.631	133.168	.000 ^b
	Residual	36.397	182	.200		
	Total	142.922	186			

a. Dependent Variable: LN_Y

b. Predictors: (Constant), LN_X4, LN_X1, LN_X3, LN_X2

From table 4 the F test, it can be seen that sig 0.000 $<$ sig 0.05 and F count 133.168 $>$ F table 2.42. This means that third-party funds, credit risk, market risk, and operational risk simultaneously have a significant effect on profitability or it can be said that the hypothesis (H5) is accepted.

Hypothesis Discussion

Third-party Funds on Profitability

Based on the results of the t-test for third-party funds (X1) sig 0.235 $>$ sig 0.05 and t-count 1.192 $<$ t-table 1.97308, these results indicate that the H1 hypothesis which states that there is an allegation that third-party funds have a significant positive effect on profitability is rejected. This means that third-party funds do not have a significant effect on profitability. The results of this study are supported by Sukma's (2013) research entitled the effect of third-party funds, capital adequacy and credit risk on profitability. The results of her research indicate that third-party funds have no significant effect on profitability in banking companies.

Credit Risk on Profitability

Based on the results of the credit risk t-test (X2) sig 0.152 > sig 0.05 and t-count 1.437 < t-table 1.97308, these results indicate that the H2 hypothesis which states that the existence of an alleged credit risk has a significant negative effect on profitability is rejected. The results of this study are supported by Nur' Aini's (2017) research entitled the effect of capital adequacy, credit risk, operational efficiency and liquidity on profitability (survey on conventional commercial banks in Indonesia on 2011-2015 period). The results of her research show that credit risk has no effect on profitability. In addition, in this study, it is known that the credit risk variable for conventional banks is calculated using NPL and NPF. So that, the results of this study are also supported by research from Nusantara (2009) in his research entitled analysis of the effect of NPL, CAR, LDR and OEOI on bank profitability (comparison of go public commercial banks and non-go public commercial banks in Indonesia for the period 2005-2007) The results of his research show that partially NPL has no effect on ROA of non-go public banks. And also supported by research by Sabir, Ali and Habbe (2012) in their research entitled the effect of bank health ratios on the financial performance of Islamic commercial banks and conventional banks in Indonesia. The results showed that NPF did not have a significant effect on the ROA of Islamic banks in Indonesia.

Market Risk on Profitability

Based on the results of the t-test, it is known that the market risk (X3) sig 0.000 > sig 0.05 and t-count 6.304 < t-table 1.97308, it is also known that the t-value is positive. This means that the H3 hypothesis, which states that the presumption of market risk has a positive significant effect on profitability, is accepted. The results of this study are supported by the results of research by Karamoy & Tulung (2020) in their study entitled the effect of banking risk on financial performance in 2013-2015 (regional development banks throughout Indonesia). The results of their research indicated that NIM had a significant and positive effect on ROA.

Operational Risk on Profitability

Based on the results of the t-test, it is found out that the operational risk (X4) sig 0.000 < sig 0.05 and the t-value of 15.554 > 1.97308, it is also known that the t-value is negative. This means that the H3 hypothesis, which states that the presumption of operational risk has a negative significant effect on profitability, is accepted. The results of this study are

supported by Fitri (2016) research entitled the influence of market risk, credit risk and operational risk on financial performance (empirical study of banking companies listed on IDX in 2010-2015). From the results of this research, it shows that operational risk as measured using BOPO has a negative significant effect on banking financial performance.

Third-party Funds, Credit Risk, Market Risk and Operational Risk on Profitability

Based on the results of the F-test $\text{sig } 0.000 < \text{sig } 0.05$ and $F\text{-count } 133.168 > F\text{-table } 2.42$. This means that third-party funds, credit risk, market risk, and operational risk simultaneously have a significant effect on profitability or it can be said that the hypothesis (H5) is accepted. There are also research results from Husaeni (2017) in his research entitled Analysis of the effect of third-party funds and Non Performing Financing on Return On Assets in BPRS in Indonesia, in this research it shows that third parties and NPF simultaneously have a significant effect on the ROA variable.

CONCLUSION

Third-party Funds do not have a significant effect on profitability in banks that are included in the BUKU 2 classification for the 2014-2017 period. Credit Risk has no significant effect on the profitability in banks that are included in the BUKU 2 classification for the 2014-2017 period. Market Risk has a positive significant effect on the profitability in banks that are included in the BUKU 2 classification for the 2014-2017 period. Operational risk has a negative significant effect on the profitability in banks that are included in the BUKU 2 classification for the 2014-2017 period. Third-party Funds, Credit Risk, Market Risk and Operational Risk simultaneously or jointly have a significant effect on the profitability of banks that are included in the BUKU 2 classification for the period 2014-2017.

Suggestions for future researchers who will conduct research related to this research are to add other independent variables besides third-party funds, credit risk, market risk and operational risk. The future researchers can also choose other research objects or can examine banks that are included in the classification of Commercial Bank based on Business Activities (BUKU) 1, 3 and 4.

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