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LIQUIDITY RISK, INCOME DIVERSIFICATION, AND BANK FINANCIAL PERFORMANCE

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ABSTRACT

Banking industry must have healthy financial performance in order to function properly as an intermediary organization between those who have capital and those who need it. Intense competition between banks, the emergence of the covid-19 pandemic and declining bank profits have forced banks to be more careful in managing risks and diversifying their income. This study aims to see the effect of liquidity risk and income diversification on banking financial performance. The research data comes from 36 listed companies on the Indonesian Stock Exchange (IDX) or with 108 observations of banking companies for the period 2019 - 2021. The dependent variable of this study is financial performance proxied by ROA (Return-on-Assets). Liquidity risk and income diversification are dependent variables. LDR (Loan-to-Deposit Ratio) is used to measure liquidity risk. Three ratios namely NII (Non- Interest-Income/Gross-Revenue-ratio), NII1 (Fee & Commission-Income/Revenue-ratio) and NIITA (Non-Interest-Income/Total-Assets-ratio) are used to measured income diversification. This study uses multiple regression analysis of panel data. The results of the study show that liquidity risk has a positive effect on bank financial performance. NII1 (Fee & Commission-Income/Revenue-ratio) has significant positive results on financial performance while the NII (Non-Interest-Income/Gross-Revenue-ratio) and NIITA (Non-Interest-Income/Total-Assets-ratio) do not have effect on financial performance of the bank.

Keywords: *Bank Financial Performance, Liquidity Risk and Income Diversification*

1. INTRODUCTION

Banks must always strive for financial performance to be in a healthy condition in order to function as an intermediary organization between those who have capital and those who need capital. Many factors can affect a bank's financial performance. One of the most significant determinants of a bank's performance is economic growth rate (Wagdi, 2022). The emergence of the Covid-19 disaster has had a detrimental effect on many businesses in Indonesia. The business world is experiencing very heavy challenges. This in turn will affect the financial performance of the business world including the banking world. Banking ROA in July 2019 was 2.5%, decreasing to 1.86% in July 2021.

Liquidity risk can affect banking financial performance. Loan to deposit ratio (LDR) indicates liquidity risk. The standard LDR according to Bank Indonesia is between 80% - 110%. The increasing of LDR, could make bank become more illiquid, meaning that the bank will find it difficult to fulfill its short-term liabilities, such as sudden deposits withdrawals by customers. The decreasing LDR level, could make bank become more liquid. The increasing liquidity of bank shows that there are much idle funds, that could reduce bank opportunity to get more revenue. Therefore, the LDR must be maintained so that it is not too high or too low. The LDR rate in March 2019 was 94% but in July 2021 the LDR level was 80.17%, which can be seen at Table 1.

Table 1. Development of LDR, NIM and ROA of Conventional Bank 2019 – 2021

	LDR	NIM	ROA
March 2019	94%	4.86%	2.6%
July 2019	94.48%	4.90%	2.5%
March 2020	92.55%	4.31%	2.57%
July 2020	88.09%	4.44%	1.9%
March 2021	80.93%	4.62%	1.87%
July 2021	80.17%	4.64%	1.86%

Source OJK - Accessed on 28th February 2022

Buchory's research (2015) found that financial performance could not be affected by liquidity risk, but Syaiful and Ayu found the positif effect (2019). Bank financial performance can also be affected by bank revenue diversification (Phan, *et all*, 2022). Bank revenue diversification is carried out by diversifying bank income that does not only rely on interest income. Revenue diversification has a positif effect on bank performance (Buyuran & Eksi, 2020), but Hafidiyah & Trinugroho (2016) found that income diversification has a negative effect on bank performance. The purpose of this study was to re-examine the effect of liquidity risk and income diversification on banking financial performance.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Agency Theory

Jensen and Meckling in 1976 introduced Agency Theory for the first time, namely the theory of the relationship between principals and agents in which the principal, namely the shareholder, delegates his authority to agents (managers) to manage company resources for the prosperity of the principal (Godfrey et al., 2010). Public as a principal and banking management as an agent in banking companies are influenced by a regulator, Bank Indonesia. Regulators in banking operations aim to provide assistance to principals in overseeing activities carried out by banks, besides that the success of banking agents or management is obtained by policies made by regulators so that banks will prioritize the interests of regulators first compared to other parties (Doloksaribu, 2012).

The existence of a conflict of interest between the principal (investor or shareholder) and the agent (manager) raises agency problems Ehikioya (2009). Based on agency theory, there is an imbalance of information held by the agent rather than the principal, in which case the agent is the bank and the principal is an external party (especially shareholders and depositors) (Iskandar, 2016). Agents tend to have more information on their performance, while principals tend to have less information than agents, allowing agents to make decisions that tend to benefit the agent. Constraints owned by principals or external stakeholders are expected to be overcome by professionals, so that agents or managers can be delegated by principals or external stakeholders to make decisions (Wirahadi & Septriani, 2008). If agency problems can be reduced or even eliminated, it is expected that financial performance will improve.

Signaling Theory

Signal theory was first put forward by Spence, 1973 stating that signals provided by management are relevant information and can be utilized by external parties. The signals given can be in the form of bad news and good news. Signals in the form of bad news are a bad reputation or decreased performance experienced by the company, while signals in the form of good news convey a good reputation or increased performance experienced by the company (Godfrey et al., 2010). Management can provide signals to investors regarding their views about the company in the future (Brigham & Houston, 2014: 184). Based on this information investors could make better decisions.

Portfolio Theory

Harry M Markowitz in the decade of 1952's put forward portfolio theory. Diversification is able to reduce risk so that it can increase profits that is states by portfolio theory. This theory shows that non-interest income can be a way to diversify so that there is a spread of risk which is usually concentrated in bank loan portfolios. Banks do not only focus on lending activities, but banks can expand their activities that can generate non-interest income, such as activity from trading and fees. Elsas states that banks with diversified income portfolios through non-traditional activities can obtain greater benefits (Elsas et al., 2010)

Financial Performance

Financial performance measurement is needed to see how far a company has carried out activities in accordance with what has been planned. Return on assets (ROA) is used to measure banking financial performance in this study, because ROA may reflect the effectiveness of obtaining a return on asset. However, return on equity (ROE), net interest margin (NIM), and return on investment (ROI) can also measure financial performance of bank. According to Brigham & Houston (2018) return on assets is measured by dividing net profit after tax to the total assets owned by the company. An increase in ROA can increase financial performance.

Liquidity Risk

One of the risks faced by banks is liquidity risk. Liquidity risk is reflected by LDR (loan-to-deposit-ratio). LDR measures composition amount of credit extended divided by third party funds consist of time deposits, savings and demand deposits. Bank Indonesia sets a standard loan to deposit ratio between 80% -110%.

Revenue Diversification

The current decline in bank profits, which was triggered, among other things, by the decline in interest income has forced banks to try to increase income from non-interest sources. One of the ways that banks do is improve their income strategy by diversifying their sources of income from an interest approach to a non-interest approach.

Other activities of the bank apart from channeling bank loans in carrying out its business are by diversifying interest income into income other than interest income. Diversification of income in the banking world continues to grow rapidly, because banks can obtain income other than bank interest income (net interest income) by taking advantage of an opportunity

such as obtaining income from non-interest income originating from service income (services) provided to customers. By diversifying, the bank is not only focused on one activity so that it can reduce the bank's risk level and increase margins. Interest income is obtained from the difference between credit interest, while non-interest income can be obtained from fee and commission income, trading originating from foreign exchange transactions, or securities trading, as well as other non-interest income. In this study, income diversification uses the variables used by Olalere et all (2021), namely the NII (Non-Interest-Income/Gross-Revenue ratio), NII1 (Fee and Commission- Income/Revenue-ratio (NII1) and the NIITA (Non-Interest-Income/Total-Asset_ratio, while the dependent variable for financial performance is Return-on-Assets (ROA).

The effect of liquidity risk on bank financial performance

A company must have good liquidity to meet its short-term and long-term needs. In supporting good banking financial performance, companies must also focus on the it's ability to meet the probability of withdrawing deposits or deposits by depositors or customers by depending on the amount of credit available as a determinant of liquidity. LDR (loan-to-deposit-ratio) is used to measure liquidity risk. LDR measures the composition of the amount of credit extended divided by the amount of third-party funds in the form of demand deposits, savings and time deposits.

Banks are also said to be liquid if they are able to fulfill their debt obligations and fulfill credit requests submitted by debtors without delays. Asphalt's research (2019) which found that LDR has a positive effect on ROA. Through this statement, liquidity affects bank financial performance. Therefore, the hypothesis can be formed:
H_1: LDR has a positive effect on the financial performance of bank

The effect of income diversification on bank performance

According to the theory, the non-interest income portfolio is a risk in banking which is usually concentrated in bank loan portfolios, which can expand to activities that generate other non-interest income thereby increasing profitability (Nisar et al., 2018). Empirical results generally show that bank diversification has a positive effect on bank performance. Similar results have also been obtained by banks in Europe, America and Asia (Olalere, 2021). So, the hypothesis can be formulated
H_2: Income diversification has a positive effect on the financial performance of bank.

The following is a multiple linear regression equation:

$$FP = \alpha + \beta_1 LDR + \beta_2 NII + \beta_3 NII1 + \beta_4 NIITA + \varepsilon$$

Whereas: FP= Financial Performance, α = Constant, LDR= Loan-to-Deposit Ratio, β_1= regression coefficient LDR, NII= Non-Interest-Income/Gross-Revenue-ratio, β_2 = regression coefficient NII, NII1= Fee and Commission-Income/Revenue-ratio, β_3 = regression coefficient NII1, NIITA = Non-Interest-Income/Total-Assets-ratio (NIITA), and β_4 = regression coefficient NIITA.

3. RESEARCH METHOD

The research data uses annual data from the publication of banking financial reports through the website www.idx.co.id. Sample is selected by purposive sampling technique with the following sample selection criteria:

a. Banking companies that were listed on the Indonesia Stock Exchange (IDX) in the 2019 – 2021 period.
b. Banking companies that have financial reports in the study period with complete data.

The dependent variable of this study is financial performance (Y) which is proxied by Return on Assets (ROA). ROA is measured by dividing net income after tax by the assets used by a company (Alexander, 2018), and the independent variables are liquidity risk and income diversification. LDR (Loan to deposit ratio) measured liquidity risk (X1). LDR is measured by dividing the total amount of credit provided by the bank with the funds received by the bank or referred to as third party funds (D. Wijaya, 2013: 116), and income diversification which is proxied by three ratios (Olalere, 2021) consisting of NII (Non-Interest-Income/Gross-Revenue ratio, NII1 (Fee and Commission-Income/Revenue-ratio) and NIITA (Non-Interest- Income/Total-Assets-ratio.

4. RESULTS AND DISCUSSIONS

This study aims to see the effect of liquidity risk and income diversification on banking financial performance. The population in this study are banking companies. The companies studied are banking companies listed on the Indonesia Stock Exchange (IDX) for 2019-2021. There are 36 banks has selected with 108 observations.

The results of descriptive statistics are shown in table 1 as follows:

Table 1. Descriptive Statistics

	ROA	LDR	NII	NII1	NIITA
Mean	0.001541	0.801507	0.167995	0.056113	0.014456
Median	0.005550	0.807100	0.158737	0.047109	0.011653
Maximum	0.047400	1.713200	0.551039	0.195170	0.064432
Minimum	-0.158900	0.123500	0.018684	0.000000	0.001822
Std. Dev.	0.033490	0.234911	0.096907	0.049151	0.010676
Skewness	-2.995349	0.502470	1.279409	1.016966	1.659354
Kurtosis	13.43723	5.229694	5.776414	3.350763	7.010243
Jarque-Bera	651.7091	26.91649	64.15209	19.16961	121.9315
Probability	0.000000	0.000001	0.000000	0.000069	0.000000
Sum	0.166400	86.56280	18.14348	6.060159	1.561216
Sum Sq. Dev.	0.120009	5.904623	1.004840	0.258497	0.012196
Observations	108	108	108	108	108

Source: Processed Data

The descriptive statistics in Table 1 show that the mean of ROA, LDR, NII, NII1, and NIITA are 0.001541, 0.801507, 0.167995, 0.056113, and 0.014456 respectively. The maximum ROA value is 0.047400, namely BBHI 2021 and the minimum value is -0.158900, namely ARTO 2019. The maximum value of LDR is 1.713200, namely BTPN 2019 and the

minimum value is 0.123500, namely READ 2021. The maximum value for NII is 0.551039, namely READ 2021 and the minimum value is 0.018684, namely MAYA 2019 The maximum value for NII1 is 0.195170, namely MEGA 2019 and the minimum value is 0.000000, namely ARTO 2019. The maximum value for LDR is 1.713200, namely BTPN 2019 and the minimum value is 0.123500, namely READ 2021

Chow Test

Table 2. Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.332744	(35,68)	0.0000
Cross-section Chi-square	107.884762	35	0.0000

Cross-section fixed effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/30/23 Time: 04:35
Sample: 2019 2021
Periods included: 3
Cross-sections included: 36
Total panel (balanced) observations: 108
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.020182	0.015485	-1.303361	0.1954
LDR	0.007781	0.018207	0.427356	0.6700
NII	-0.010039	0.031547	-0.318217	0.7510
NII1	0.140806	0.052979	2.657792	0.0091
NIITA	0.641422	0.101715	6.306060	0.0000

R-squared	0.090132	Mean dependent var	0.001541
Adjusted R-squared	0.054797	S.D. dependent var	0.033490
S.E. of regression	0.032559	Akaike info criterion	-3.966307
Sum squared resid	0.109192	Schwarz criterion	-3.842135
Log likelihood	219.1806	Hannan-Quinn criter.	-3.915960
F-statistic	2.550813	Durbin-Watson stat	1.024880
Prob(F-statistic)	0.043531		

The Chow Test results are significant, then proceed with the Hausman Test.

Hausman Test

Table 3. Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var (Diff.)	Prob.
LDR	0.070183	0.027315	-0.000012	NA
NII	-0.006857	-0.021288	0.000387	0.4630
NII1	-0.375140	0.065437	0.004884	0.0000
NIITA	0.267397	0.727369	0.071446	0.0853

Cross-section random effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 01/30/23 Time: 04:39
Sample: 2019 2021
Periods included: 3
Cross-sections included: 36
Total panel (balanced) observations: 108
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.036375	0.012086	-3.009741	0.0037
LDR	0.070183	0.021690	3.235808	0.0019
NII	-0.006857	0.039414	-0.173973	0.8624
NII1	-0.375140	0.097051	-3.865394	0.0003
NIITA	0.267397	0.340708	0.784827	0.4353

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.664921	Mean dependent var	0.001541
Adjusted R-squared	0.472743	S.D. dependent var	0.033490
S.E. of regression	0.024318	Akaike info criterion	-4.317092
Sum squared resid	0.040212	Schwarz criterion	-3.323710
Log likelihood	273.1230	Hannan-Quinn criter.	-3.914312
F-statistic	3.459928	Durbin-Watson stat	2.153934
Prob(F-statistic)	0.000004		

The result of Hausman Test is not significant then the fit model used is the common effect model.

Regression Result

The results of the regression equation with common effect are shown in Table 4 below:

Table 4. Regression Result

Dependent Variable: ROA
Method: Panel EGLS (Cross-section weights)
Date: 01/30/23 Time: 17:43
Sample: 2019 2021
Periods included: 3
Cross-sections included: 36
Total panel (balanced) observations: 108
Linear estimation after one-step weighting matrix
White period standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.010805	0.003119	-3.463806	0.0008
LDR	0.009320	0.003659	2.547188	0.0123
NII	-0.007571	0.024196	-0.312928	0.7550
NII1	0.100013	0.027653	3.616665	0.0005
NIITA	0.300286	0.225469	1.331830	0.1859

Weighted Statistics

R-squared	0.388223	Mean dependent var	0.025545
Adjusted R-squared	0.364465	S.D. dependent var	0.059955
S.E. of regression	0.028562	Sum squared resid	0.084029
F-statistic	16.34049	Durbin-Watson stat	2.198344
Prob(F-statistic)	0.000000		

Unweighted Statistics

Based on Table 4, the result is obtained as follows: ROA = -0.010805 + 0.009320 LDR - 0.007571 NII+0.100013 NII1 + 0.300286 NIITA + ε. It can be summarized that liquidity risk proxied by LDR shows significant positive results on bank financial performance measured by ROA. It can be said that liquidity risk has a positive impact on bank financial performance so that H1 is accepted. The research results are in line with the results of Asphalt's research (2019). The research result proves that an increase in financial performance proxied by ROA can be triggered, one of which is an increase in liquidity risk proxied by LDR.

The interesting thing happened in income diversification. Income diversification consists of three ratios namely the NII (Non-Interest-Income/Gross-Revenue ratio), NII1 (Fee and Commission- Income/Revenue-ratio) and NIITA (Non-Interest-Income/Total-Assets-ratio). Based on table 4.8 it can be seen that income diversification proxied by NII (Fee and Commission-Income/Revenue-ratio) describes significant positive result on bank financial performance proxied by ROA, therefor H3 is accepted. This proves that an increase in financial performance as a proxy for ROA can be triggered by one of the income-

diversification proxies in the form of the NII1 (Fee and Commission-Income/Revenue-ratio. Income diversification proxied by the NII (Non-Interest-Income/Gross-Revenue-ratio), and the NIITA (Non-Interest-Income/Total-Assets ratio), showed insignificant results on bank financial performance proxied by ROA. In other words, income diversification proxied by the NII (Non-Interest-Income/Gross-Revenue-ratio), and the NIITA (Non-Interest-Income/Total-Assets-ratio), do not have effect on bank financial performance measured by ROA so H2 and H4 are rejected.

5. CONCLUSIONS AND SUGGESTIONS

This study provides the conclusion that liquidity risk effects positively on financial performance of the bank within certain limits. The research study also show that banks in order to improve their performance can diversify their income by increasing non-interest income, especially through the acquisition of fees and commissions. The diversification of income is not significant as proxied by the NII (Non-Interest-Income/Gross-Revenue-ratio), and NIITA (Non-Interest-Income/Total-Assets-ratio), gives an indication that non-interest income from fees and commissions is not the main part of the bank's non-interest income so that even though income from fees and commissions changes or have positif effect on bank financial performance, but overall non-interest income tends to be stable so that it does not affect the bank's financial performance.

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