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Synergy of Regulators and Liquidity Management in Controlling Bank Risk to Improve Bank Performance

Wisnu Mawardi [1], Sugeng Wahyudi [1], Julia Safitri [2]

[1] Management Department, University Diponegoro, Semarang, Indonesia

[2] Management Department, Sekolah Tinggi Ilmu Ekonomi IPWI Jakarta, Indonesia

Abstract: This study uses banking companies as the object of research, considering the bank's very important role. The research object in this is banking companies listed on the IDX during 2014-2019. The type of data in this documentary is financial statement data for banking companies in Indonesia. The purpose of this study is to test the effect of the level of liquidity and adequacy on bank performance through interest rate risk and credit risk empirically. The assessment of bank performance greatly influences the comfort and confidence of prospective customers. An important objective of liquidity management is to determine and assess the bank's condition, whether it is in a healthy condition when carrying out operational activities or other activities, such as lending. The results show that all hypotheses are accepted, which means that the IRR harms the bank's ability to manage the income received by the costs incurred, influenced by the interest rate. The interest rate is determined by preference and supply of money.

Keywords: liquidity, capital adequacy ratio, return on asset, interest rate risk, agency theory.

监管机构和流动性管理在控制银行风险以提高银行绩效方面的协同作用

摘要：考虑到银行的重要作用，本研究以银行公司为研究对象。研究对象是 2014-2019 年间在互联网数据显示上上市的银行公司。本文档中的数据类型是印度尼西亚银行公司的财务报表数据。这项研究的目的是通过利率风险和信用风险，通过经验检验流动性和充足性水平对银行绩效的影响。对银行绩效的评估极大地影响了潜在客户的舒适度和信心。流动性管理的一个重要目标是确定和评估银行的状况，无论其进行经营活动还是进行其他活动（例如放贷）时，银行是否处于健康状态。结果表明，所有假设都被接受，这意味着内部收益率会损害银行根据利率影响产生的成本来管理收到的收入的能力。利率由偏好和货币供应量决定。

关键字：流动性，资本充足率，资产收益率，利率风险，代理理论.

1. Introduction

In this modern world, the role of banking in advancing a country's economy is very large. It has a very important place as an institution that influences economic activities. Banking institutions are one of the backbones of a country's economy because they have an intermediary function or intermediary between the owners of capital (fund suppliers) and users of funds (fund users). According to Law No. 10 of 1998, a bank is a business entity that collects funds from the public in the form of loans and distributes them to the community in the form of credit or other forms to improve the standard of living for the people at large. Given the very important role of the bank, the assessment of bank performance greatly affects the comfort and confidence of prospective customers. The better the bank's performance, the more potential customers will be interested in investing and making transactions. To decide whether a business entity or company has a good performance, an assessment can

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About the authors: Wisnu Mawardi, Sugeng Wahyudi, Management Department, University Diponegoro, Semarang, Indonesia; Julia Safitri, Management Department, Sekolah Tinggi Ilmu Ekonomi IPWI Jakarta, Indonesia

be carried out through financial performance and non-financial performance. The bank is a financial institution and part of the financial system. As an economic actor when running its business, it is strongly influenced by the bank's macro/internal factors and certain bank factors. The role of banking institutions in Indonesia is very strategic in economic development to improve people's welfare. Banking in Indonesia still faces challenges, including low credit growth, a robust structure in several banks, and inadequate customer protection.

Banking in Indonesia generally still relies on lending as the main source of income, in the form of interest income; however, according to Bank Indonesia's statistical reports, the average loan to deposit ratio of Indonesian banks is still below the healthy criteria, this indicates that the role of banking intermediation not maximal. However, with advances in technology, especially communication technology, and information technology, Indonesian banks have the opportunity to increase income beyond credit interest. Research by Safitri et al. [1], and Azmat et al. [2], found that credit risk impacts the performance of Islamic banking. In this regard, Safitri et al. [3] include interest rate risk in credit risk and find that the greater credit risk, which is marked by an increase in customer defaults, will reduce bank performance.

Risk management is one of the cores of implementing the precautionary principle when managing a bank; in a changing environment, the bank has several risks, such as liquidity risk, market risk, credit risk, and bank exchange rate risk are expected to be able to manage these risks as well as able to hold on well [4]. Market risk is the risk of loss in the rise and fall of balance sheet positions that arise due to movements in the capital market. This risk is a combined risk that is formed due to changes in interest rates, changes in exchange rates, and other factors that determine the market price of shares, equities, and commodities. Banks are affected by factors of price formation on the capital market, such as interest rates, because they do:

a. Traded market risk - if a bank is active enough in trading market instruments such as bonds (whose value is closely related to the market rate)

b. The interest risk in banks' books is affected by the capital market due to their business structure, such as lending activities and receiving savings.

The risk of loss due to changes in market prices can occur due to three forms, namely:

a. Price risk is the risk of loss from movements or volatility of interest rates, exchange rates, equity prices, and commodity prices.

b. Liquidity risk, the risk that a certain amount will not be paid off due to lack of funds.

c. Discontinuity (gap) risk is the risk of loss from market price gaps and not due to continuous price movements.

According to Mittoo and Varotto [5], risk in the banking context is a potential event, both anticipated and unanticipated, which will harm bank income and capital. These risks cannot be avoided but can be managed and controlled.

Market risk arising from movements in interest rates has proven to have a massive impact on the development of the banking industry in Indonesia. The financial crisis experience of 1998 provides valuable lessons about the enormous impact of risk resulting from movements in interest rates. In 1998, the increase in relatively high interest rates due to the crisis, according to a Bank Indonesia Report, caused bad loans or non-performing loans at that time to reach 70%.

This study examines when capital is divided by credit risk and added by market risk and operational risk. Still, this research only emphasizes how capital is divided into credit risk and market risk. One indicator is interest rate risk, without involving operational risk, as a novelty in this study, namely interest rate risk. Credit risk is the biggest problem for banking companies, where the company's main income is from the distribution of credit obtained from third-party funds. Interest rate risk, an indicator of market risk, has a very important effect on credit performance and distribution. When interest rates rise, interest rates for savings, etc., will rise as well as loan interest rates. Banks are required to implement risk management effectively. The implementation of risk management includes the adequacy of risk management policies and procedures as well as the determination of risk limits. Banks are required to carry out a risk control process to manage certain risks that may endanger the continuity of the bank's business. The purpose of this study is to examine and analyze the effect of capital adequacy and liquidity on bank performance through interest rate risk as an intervening variable.

2. Theoretical Framework and Hypotheses Development

2.1. Agency Theory

Agency theory is the basis for understanding corporate governance. Agency theory is a contract between the owner (principal) and the manager (agent) [6]. Proper contract planning between owners and managers to equalize interests is the core problem of agency theory. The relationship between agents and principals arises because of the organizational management pattern of the company that separates the owners (shareholders) from the managers (managers). Shareholders act as principals who give certain powers to run the company towards managers acting as agents. The assumption is that the agent will act on behalf of and fully in the interests of the shareholders. This

pattern is common when companies get bigger and develop. It can no longer be managed like a small company where the owner can double as a manager. This separation can create a conflict of interest or what is often called an agency conflict. Agency conflicts can occur between creditors (debt holders) and shareholders. As is well known, these two parties have very different positions from one another. The creditor lends the money to the company, earns periodic interest in return, and returns the principal at maturity. By surrendering their money to the company, Shareholders get control rights and, through management, will determine the company's investment policy.

2.2. Stewardship Theory

Davis et al. [7] describes a situation where management is not motivated by individual goals but rather aimed at their main results for the organization's benefit. The theory assumes that there is a strong relationship between satisfaction and organizational success. Organizational success illustrates maximizing the utility of the principal and management groups. Maximizing the utility of this group will ultimately maximize the interests of individuals in the group of organizations. Stewardship Theory is based more on psychological and sociological theories, where managers are motivated to act and behave collectively for the organization's benefit. The cooperation of all members of the organization is the main characteristic of stewardship. Stewardship theorists assume that there is a strong relationship between organizational satisfaction and success. Organizational success describes the maximization of wealth for shareholders (owners). The organization's success will also maximize the utility of the management group, and the maximization of the utility of this group will ultimately maximize the interests of individuals in the group of organizations.

2.3. Financial Intermediation Theory

According to Schumpeter [8], explaining the Financial Intermediation Theory for the first time, financial intermediation minimizes the costs of producing information in intensive problem-solving. Costs incurred because banks (intermediaries) receive delegations from fund owners to monitor funds loaned to debtors. That has an advantage in terms of costs in gathering information because this alternative is the activity of each bank, so that it is more profitable than the owner of the funds to do direct monitoring. As an intermediary institution, the intermediation function is measured by the ratio between the number of third-party funds collected and the number of creditors or financing channeled, known as the loan deposit ratio (LDR).

There are several views and other theories that explain that a bank and financial intermediary can exist in general due to its ability to mitigate liquidity risk in the flow of funds from depositors by acting as agents in this case, namely those that require funds or borrowers. This risk arises because of asymmetric information, contracting costs, and scale mismatches between the liquidity of the fund party and the liquidity of the party requiring funds. According to the intermediation theory, an intermediary financial institution can view banks as a model for solving various problems. The advantages of the Bank in a comparative aspect related to information on credit value of debtors are that banks have more ability to monitor debtors when compared to individual creditors [9]. Banks can also provide greater liquidity when compared to funds collected from the business and household sectors and can issue demand deposits, one of which can be exchanged for funds [10].

2.4. Keynesian Theory

This theory was put forward by Keynes and is called the "Liquidity Preference Theory of Interest" [11]. According to Keynes, the interest rate is determined by preference and supply of money. Liquidity preference is the desire to hold or hold money based on three reasons: the transaction motive, precaution, and speculation [11]. Post-classical economists generally supported Keynes's view that the interest rate was the remuneration received by a person because that person sacrificed his liquidity preference (money demand). Money demand has a negative relationship with the interest rate. Keynes explained the negative relationship between the demand for money and the interest rate. He said that people had an opinion about the natural rate. When the interest rate falls from the nominal interest rate in society, there is a belief that holding bonds (securities) when the interest rate rises (the bond price decreases), the bondholder will suffer a capital loss. To avoid this loss, the bondholder must take action to sell the bond by itself to get cash, and this cash will be held when interest rates rise. This relationship is called the speculative motive for the demand for money because the public will speculate about bonds in the future.

2.5. Hypothesis Development

2.5.1. Effect of Liquidity on Bank Performance

The bank's financial performance in this study is profitability with an indicator of return on assets (ROA) which is calculated from profit before tax divided by total assets [12], [13]. ROA provides information on the net income generated per unit of monetary asset invested. It also provides information on the ability of bank management to invest in bank assets. The liquidity carried out by the bank is measured by the loan to deposit ratio [14]; liquidity runs effectively if the bank can channel all its sources of funds in the form of credit after calculating the mandatory reserve

and liquidity. That shows that the higher the loan to deposit ratio, the more productive the source of funds owned by the bank, the higher the bank's profit. Empirical research states that LDR has a positive effect on ROA [15], [16], [17].

Based on the explanation of the level of liquidity and bank performance above, the hypotheses in this study are:

H1: Liquidity has a positive effect on Bank Performance.

2.5.2. Effect of Capital Adequacy on Bank Performance

Capital Adequacy Ratio (CAR) is an indicator of a bank's ability to cover the decline in assets caused by losses experienced by the bank. The higher / lower CAR is determined by the bank's ability when composing the composition of funds allocated to assets following the various levels of risk of the bank and generating profits. According to Bank Indonesia Circular Letter No. 11/3 / DPNP dated January 27, 2009, concerning Calculation of Risk Weighted Assets (RWA) for Operational Risk Using the Basic Indicator Approach (PID) that the CAR ratio takes into account credit risk, operational risk, and market risk CAR set by Bank Indonesia is minimal 8% as stated in BI Regulation Number 10/15 / PBI / 2008 Article 2 Paragraph 1 in line with the standards set by the Bank of International Settlements (BIS). Several studies show that partially CAR has a significant positive effect on ROA as found by Chavarín [18], Albulescu [19], Malik et al. [20], Rahman et al. [21], Islam and Nishiyama [22], Boadi et al. [23]. Furthermore, the results of other researches [24], [25] show that capital adequacy has a significant positive effect on the bank performance [26].

Based on the explanation of the bank's capital adequacy and performance, the hypotheses in this study are:

H2: Capital Adequacy Has a Positive Effect on Bank Performance.

2.5.3. The Effect of Liquidity on Bank Performance through Interest Rate Risk

If the interest rate is high, investors will be more interested in saving their money in the bank, and vice versa if the interest rate is low, investors will prefer investing in stocks. Even though the resulting risk is greater, investors pursue higher returns because bank interest is no longer deemed adequate. Meanwhile, one of the factors affecting unsystematic risk is company liquidity.

The liquidity ratio aims to assess its financial capacity to meet its short-term obligations and financial payment commitments. The higher the liquidity ratio, the better it is for investors. A company with a high liquidity ratio will attract investors and will also impact share prices, which tend to rise due to high demand. This increase in share prices indicates an increase in the company's performance, and this will also impact investors because they will get a high rate of return from their investment [24], [25], [27], [28], [29].

Based on the explanation of capital adequacy and bank performance, the hypotheses in this study are:

H3: Interest Rate Risk May Mediate the Effect of Liquidity on Bank Performance.

2.5.4. Effect of Capital Adequacy on Bank Performance through Interest Rate Risk

Capital adequacy is a policy and regulation created by a company or bank regarding capital. In this study, capital means an investment fund from the owner in the framework of establishing a business entity to support bank business activities and meet the provisions approved by the monetary authority [30]. Capital Adequacy can increase public confidence. Thus, banks can accommodate various risks of losses that banks will later suffer from their operations. Furthermore, capital adequacy can affect the increase in profits and bank profitability from loan interest rates. In addition, it is also capable of being an indicator of CAR in measuring the level of bank capital adequacy. The way to calculate the CAR ratio is the ratio between own capital and RWA. [24], [31].

Based on the explanations of capital adequacy and bank performance above, the hypotheses in this study are:

H4: Interest Rate Risk May Mediate the Effect of Capital Adequacy on Bank Performance.

2.5.5. Effect of Interest Rate Risk on Bank Performance

Market risk can be described as a risk caused by the movement of market variables from the bank's portfolio, which can harm the bank (Adverse Movement) [32]. J. Keynes [11] argued that the demand and supply of money determine the interest rate. In determining the interest rate, the law of supply and demand applies. If the money supply is fixed, the higher the national income, the higher the interest rate. Interest is the fee for borrowing money. This service fee is compensation to the lender for the future benefits of the loan money if invested. Changes in interest rates will cause fluctuations in securities prices [33], [34]), [35), [36], [37], [38], [39]. Credit risk negatively affects bank performance. That shows that the greater the credit risk, the smaller the bank's performance [40].

Based on these descriptions relating to capital adequacy and bank performance, the hypotheses proposed in this study are:

H5: Interest Rate Risk has a Negative Effect on Bank Performance.

Based on the hypotheses built, an empirical research model can be made, which is presented in Figure 1.

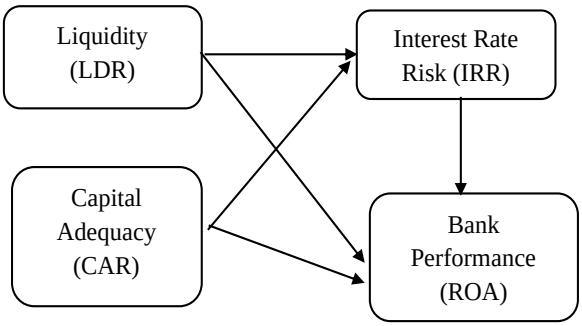

Fig. 1 Empiris model

3. Research Method

3.1. Types and Sources of Data

The object of research is banking companies listed on the Indonesia Stock Exchange during 2014-2019. The type of data in this documentary is financial statement data for banking companies in Indonesia for 2014-2019. Secondary data is obtained from other sources, in this case from the Indonesia Stock Exchange, in financial reports or annual reports on the websites www.idx.co.id. and Bloomberg. The research data uses panel data or pooling, a combination of time series data and cross-section data. Thus, a large sample can be obtained.

3.2. Operational Definition of Variables and Measurement

3.2.1. Liquidity

A bank that can carry out an intermediation function is a bank that can collect deposits and then distribute them in the form of credit in a balanced manner. A bank has a loan to deposit ratio (LDR) according to the target in banking terms. The LDR for banks on target for commercial banks in Indonesia is a minimum of 78 percent and a maximum of 92 percent.

$$\text{LDR} = \frac{Total\ Credit}{DPK} \text{ x } 100\ \%$$

3.2.2. Capital Adequacy Ratio

Capital Adequacy ratio shows the ability of a bank to provide funds for business development needs and accommodate the risk of loss of funds caused by bank operations.

$$\text{CAR} = \frac{Modal\ Bank}{Aktiva\ Tertimbang\ \ Menurut\ \ Risiko} \text{ x } 100\ \%$$

3.2.3. Dependent Variable

Bank performance, ROA (Return on Assets) is a ratio that measures the ability of banks to generate profits or profits (which can be called profitability) by comparing profit before tax with resources or total assets owned.

$$\text{ROA} = \frac{profit\ \ before\ \ tax}{Total\ \ Aset} \text{ x } 100\ \%$$

3.2.4. Mediation Variables

Interest Rate Risk is the risk experienced due to changes in interest rates that occur in the market, which can impact company earnings.

$$\text{IRR} = \frac{RSA\ (\ rate\ \ sensitive\ \ assets\ )}{RSL\ (rate\ \ sensitive\ \ liabilities\ )} \text{ x } 100\%$$

3.3. Data Analysis Technique

In this study, data analysis techniques used Partial Least Squares (PLS) - Structural Equation Modeling (SEM) with the WarpPLS 6.0 application. Thanks to that, this research is predictive and exploratory. The use of PLS-SEM considers several advantages, including; PLS-SEM can work efficiently with small sample sizes and complex models, the assumption of data distribution in SEM-PLS is relatively looser than other methods such as CB (Covariance-based) -SEM [41].

To test hypothesis 1 to hypothesis 5, the following model equation can be made:

$$\text{ROA} = \alpha 1 + \beta 1\ \text{CARt} + \beta 2\text{LDR} + \beta 3\text{IRR} + \epsilon 1 \quad (1)$$

$$\text{IRR} = \alpha 2 + \beta 4\text{CAR} + \beta 5\text{LDR} + \epsilon 2 \quad (2)$$

4. Result and Discussion

4.1. Goodness of Fit Test

Based on the fit model results as presented in Table 1, it can be concluded that this research model is fit. That is also supported by the AVIF value of 1.052 and the AFVIF value of 1.065, which value is less than 3.3, indicating no multicollinearity problem between indicators and between exogenous variables. The predictive power of the model is shown by the GoF value of 0.403, so it can be concluded that the prediction of the model is very large because it is greater than 0.36.

Table 1 Fit research model (structure model evaluation) (WarpPLS 6.0 data processing)

Provisions	Conclusion
Average path coefficient (APC)=0.166, P=0.006	FIT
Average R-squared (ARS)=0.015, P=0.211	FIT
Average adjusted R-squared (AARS)=0.029, P=0.173	FIT
Average block VIF (AVIF)=1.052, acceptable if <= 5, ideally <= 3.3	FIT
Average full collinearity VIF (AFVIF)=1.065, acceptable if <= 5, ideally <= 3.3	FIT
Tenenhaus GoF (GoF)=0.403, small >= 0.1, medium >= 0.25, large >= 0.36	FIT

4.2. Full Collinearity VIF, Adjusted R Squared and R Square Test

Based on Table 2, the construct in this study is a very good category because based on the rule of thumbs is <3.3, which means that the model is free from problems of vertical, lateral collinearity, and common method bias.

Table 2 Full collinearity VIF, adjusted R squared and R squared test (WarpPLS 6.0 data processing)

	ROA	LDR	CAR	IRR
Full collinearity	1.047	1.120	1.068	1.025
R-Squared	0.071			0.041
Adj R Squared	0.089			0.030

4.3. Full Model Testing

Based on testing the first hypothesis, it states that liquidity has a significant positive effect on bank performance. The coefficient value is 0.146, and the p-value is 0.023, so that the first hypothesis can be accepted. The results of the second hypothesis testing show that capital adequacy has a positive effect on bank performance, namely the coefficient value of 0.270 and p-value <0.001 so that the second hypothesis can be accepted. The third hypothesis states that interest rate risk can mediate the effect of liquidity on bank performance, for a coefficient value of 0.139 and a p-value of 0.028. Thus, the third hypothesis can also be accepted.

Table 3 Result of path coefficient and P-value (WarpPLS 6.0 data processing)

Path Description	Path Koefisien	P-Value
LDR → ROA	0.146	0.023
CAR → ROA	0.270	<0.001
LDR→ IRR	0.139	0.028
CAR →IRR	0.151	0.01
IRR → ROA	-0.122	0.047

Furthermore, the fourth hypothesis is that interest rate risk can mediate the effect of capital adequacy on bank performance, with a coefficient value of 0.151 and a p-value of 0.019, so hypothesis four is accepted. The fifth hypothesis states that the level of interest rate risk has a significant negative effect on bank performance. The coefficient value is -0.122, and the p-value is 0.047, so that the fifth hypothesis is also accepted.

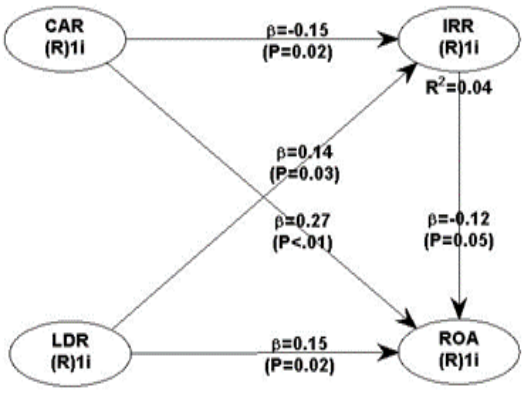

Fig. 1 Full model

4.4. Mediation Effect Testing

According to Baron and Kenny [42], in an analysis model that utilizes mediating variables, whether the model has full or partial mediation can be seen. Full mediation is the position of the independent variable that does not have a significant effect on the dependent variable and when there is no mediator. Meanwhile, partial mediation is when the independent variable directly affects the dependent variable without involving the mediator variable. Furthermore, the mediating variable can occur because the independent variable can predict the dependent variable directly; however, its value is relatively small compared to the predicted value of the mediator variable. When the coefficient of the predictive variable can be greater than the coefficient of the mediating variable on the dependent variable, it should not be called a mediator. Testing the indirect effect and the total effect in knowing the coefficient value of the indirect relationship in this study follows the procedure as a formulation and stages in mediation testing [42].

Based on the test results in Table 4, the mediation effect shows that the coefficient of indirect influence for testing the mediation hypothesis of LDR → IRR → ROA is 0.017 with a p-value of 0.037 (p <10%). It can be concluded that the meaning of these results is that the IRR value can significantly mediate the effect of liquidity on bank performance. In testing the direct line/path relationship, LDR → ROA is significant at 0.039. Meanwhile, the direct linkage path is CAR → IRR → ROA <0.001. Likewise, the direct connection line IRR → ROA is 0.047. Thus, there is a partial mediation of the liquidity relationship (LDR) on the bank performance (ROA) through interest rate risk as a partial mediating variable.

Table 4 Indirect effect and total effect (WarpPLS 6.0 data processing)

Indirect Effect	Path Coefficient	P-Value
LDR→IRR→ROA	0.017	0.037
CAR→IRR→ROA	0.018	0.029
Total Effect	**Path Coeffisien**	**P-Value**
LDR→ROA	0.129	0.023
CAR→ROA	0.288	<0.001
IRR→ ROA	-0.122	0.047

5. Discussion

Based on the research results, the effect of liquidity on bank performance with a p-value of 0.023 means that this hypothesis is accepted. That is in line with research conducted by Ahmad [43], where it was found that there was a positive relationship between liquidity and performance, which means that if a company needs to focus on positive liquidity management with company performance. Based on the findings of the relationship between the effect of liquidity on performance and based on the theory of Commercial loan theory, Shiftability theory, The doctrine of anticipated income, that banks can carry out the intermediation function are banks that can collect deposits and then distribute them in a balanced form of credit. This finding also shows the role of liquidity,

which means that liquidity is increasing, so the sources of funds owned by the bank are more productive.

Furthermore, the research results on the effect of capital adequacy on bank performance with a p-value <0.001 indicate that this hypothesis is accepted. Research that is in line shows that partially capital adequacy has a positive effect on bank performance, namely [18], [19], [20]. Bank management is responsible for ensuring that bank capital is always sufficient to support operations and plan bank capital requirements to support business development [43]. Based on the findings in this study that capital adequacy has a positive effect on bank performance, where good capital adequacy is the higher the capital adequacy, the more capital the bank has to cover the decline in assets. Bank management must ensure that it has sufficient capital. That means that banks do not just fulfill regulatory requirements.

For hypotheses 3 and 4, interest rate risk can mediate the effect of liquidity on bank performance with a p-value of 0.03, and interest rate risk can mediate the effect of capital adequacy on bank performance with a p-value of 0.02, so interest rate risk can mediate the effect of both. The findings in this study are significant when liquidity gets better when it affects performance through interest rate risk. As seen from the results of significant data processing, bank performance will increase when managing liquidity is properly mediated by interest rate risk and will further improve performance. Based on the findings in this study, the proxied capital adequacy ratio with CAR (capital adequacy ratio) on bank performance is proxied by ROA (return on assets) through significant interest rate risk, and interest rate risk mediates between the two variables. Interest rate risk acts as partial mediation, which means that a bank's capital is very important, a healthy bank that can manage its capital well. Capital regulation is necessary for long-term solvency and credibility; capital acts as a buffer against bankruptcy maintenance of sufficient capital to solve the problem of financial fragility and prevent a liquidity crisis [30].

The risk of interest rates can have a significant negative effect on bank performance. That can be proven from the data processing results in this study, namely the coefficient value of -0.12 and p-value of 0.05. The results of this study can prove empirically that interest rate risk is a mediator variable between liquidity and bank performance. A significant ratio may exist between liquidity and bank performance, which positively affects bank performance, with the risk of the company's interest rate, which is a bank in this study. The bank will be more careful in managing liquidity if the interest rate risk becomes an alarm for the company. When the interest rate risk increases, which is indicated by the number of credit defaults, the company can control liquidity. The bank's performance is not disturbed, meaning that the bank's performance will remain good with interest rate risk.

6. Conclusion

The purpose of this study empirically examines the effect of the level of liquidity and adequacy on bank performance through interest rate risk and credit risk. The object of this research is banking companies listed on the IDX (Indonesia Stock Exchange) during 2014-2019. This study indicates that the level of liquidity has a direct and indirect effect on financial performance. The test results show that H1, H2, H3, H4, and H5 are accepted. Thus, it can be concluded that the higher the level of liquidity, the higher the profit from the bank.
Furthermore, IRR has a significant positive/ unidirectional effect on interest rate risk for the first effect and has a significant negative direction or opposite to the bank's capacity level. The interest rate influences the bank's ability to manage the income received with the costs incurred. When the IRR value increases, an increase in Interest Rate Sensitive Assets (IRSA) is greater than the percentage increase in Interest Rate Sensitive Liabilities (IRSL). Conditions like this can increase various interest rate risks if interest rates fall up to a negative ratio. Such a condition can reduce interest rate risk because interest rates are increased or a positive relationship. The next effect, IRR, has a positive or negative relationship to ROA. A positive effect on ROA can occur when the IRR value increases when the interest rate trend is also increasing. An increasing IRR indicates that the increase in IRSA has a greater percentage when compared to the percentage increase in IRSL.

7. Limitations

Given the important role of interest rate risk interaction in credit risk to improve company performance, future research can expand on other variables that are thought to influence this concept positively. With the expansion of these variables, we can find out what factors contribute to influencing company performance to provide more complete research implications, both theoretically and practically.

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