

## The Influence of Liquidity, Exchange Rate Profitability and Firm Size on Hedging Decision Making in Bank Companies on the Indonesian Stock Exchange



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**ABSTRACT:** Risk within banking companies' operational activities is a crucial thing. Investment in the banking financial market has a performance decline as there is uncertainty in gaining higher profits. GDP in the financial service sector declined from 4.49% in the second quarter of 2019 to 1.03% in the second quarter of 2020 with the amount of decline about -77.06% (BPS, 2020). Therefore, banking companies need to do hedging in order to mitigate the risk. This study was quantitative and had a Systematic Literature Review. Moreover, the population was banking companies that had complete financial statements during 2018-2022 and were listed on IDX. Furthermore, the data were secondary and library research. The data analysis technique used discriminant analysis and descriptive analysis. Additionally, the statistical test results showed that liquidity, exchange rate, and firm size of banking companies did not affect hedging decisions. However, profitability which was referred to as ROA affected hedging decisions. It meant the function of discriminant showed that ROA had a strong divide in the companies' tendency of hedging. As a suggestion, the next researcher needed to use other variables outside the study with different years of observation and analysis models; in order to have optimal output.

**KEYWORDS:** Risk Management, Liquidity, Profitability, Exchange Rate, Firm Size, Hedging

### I. INTRODUCTION

In the current era of globalization, companies carry out many economic activities to encourage increased interaction between one country and other countries, including international transactions and international trade. The general characteristics of risk are uncertainty regarding the occurrence of an event and uncertainty that if it occurs it will cause losses.

Banking companies are seen as an example that cannot be separated from risk. In bank operational activities such as providing credit to customers, it is possible for customers to experience default in payments caused by several factors, giving rise to credit risk. In conducting business, banks are faced with various risks such as credit risk, interest rate risk, liquidity risk and management risk. The risks that will be faced by banks that have high potential could result in the bank experiencing difficulties that could hinder the continuity of its business and impact the company's performance. Not to mention that during the last five years, the two-year Covid-19 pandemic has caused bank financial performance to tend to be unstable.

Several policies implemented by the government to deal with the spread of Covid-19, including large-scale social restrictions (PSBB), have an impact on economic growth. Many companies are affected by their performance. Companies that had credit at banks experienced default due to reduced income because the company did not operate while the PSBB policy was implemented. The domestic economy in the second quarter of 2020 contracted -5.32% (yoy) as a result of depressed business activities and demand as COVID-19 cases continued to increase. Contractions occurred in all types of GDP expenditure.

The many regulations set by the government regarding banking show that regulators are very concerned about managing banking risks, such as risks to operational activities which are carried out responsibly because they have an impact on the economy (Mahendra, 2019). Existing risks cannot be avoided but managed. Company bank It is necessary to carry out risk management to minimize various risks that will occur, namely by hedging. The banking sector has an influence on achieving a better economy, so that it can improve the financial system in Indonesia.

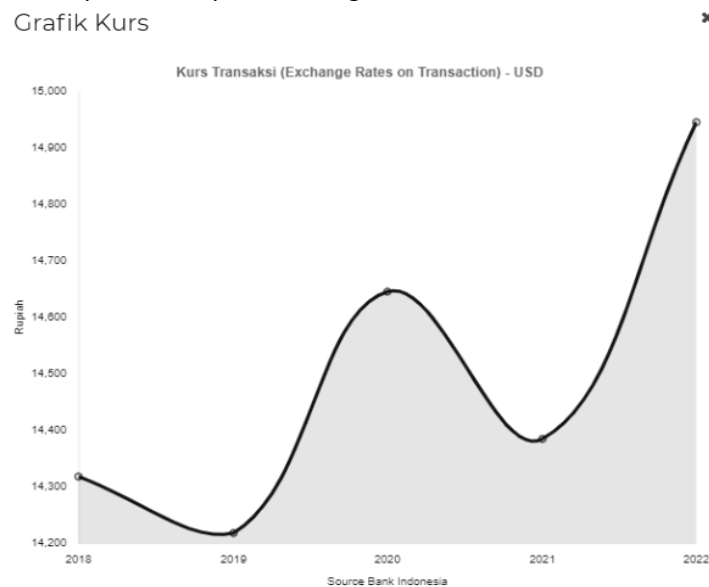
Bank Indonesia Regulation Number 15/8/PBI/2013 concerning "Hedging Transactions for Banks" states that hedging is a way or technique to reduce risks that arise or are expected to arise again due to price fluctuations in the financial market. Hedging is

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a method used to minimize the risk of loss due to business transactions arising from inside or outside the company, so that when a company wants to carry out transactions in the future, the company does not need to worry about losses that may arise, because the transactions carried out are guaranteed. by hedging instruments.

According to Hanafi in Ayuningtyas et. al., (2019) explains that hedging is a form of business that transfers risks to other parties who are believed to be better able to manage risks through trading financial instruments, namely derivative instruments. Derivatives are contracts or agreements whose value or profit opportunities are related to the performance of other assets. These other assets are referred to as underlying assets. Derivatives found on the Stock Exchange are financial derivatives. Financial derivatives are derivative instruments, where the underlying variables are financial instruments in the form of shares, bonds, stock indexes, bond indices, currency, interest rates and other financial instruments.

Banking companies in carrying out international transactions, such as investing in their assets, have an impact on the exchange rate risk for the transactions they use. Activities like this affect the risk of uncertainty caused by fluctuations in currency exchange rates. Fluctuations in exchange rates can affect the value of a company's cash flows, thereby impacting the value of cash flows that will be received in units of currency affected by the exchange rate when converted into domestic currency.



**Figure 1. Graph of Rupiah Exchange Rate Fluctuations Against the Dollar**  
Source: Bank Indonesia (2022)

Based on the graph in Figure 1 for 2018-2022, the value of the Rupiah will fluctuate. In 2019 there was depreciation of the US Dollar, which meant an increase in debts by debtors and receivables for banks after conversion to Rupiah. In terms of debt, of course the depreciation of the Rupiah exchange rate will be detrimental to the company because the value of debt will increase. However, from the receivables side, it will benefit the company because the return value of receivables increases after being converted to Rupiah. When the exchange rate depreciation occurred, the bank did not expect that cash flow disruption would come from large-scale credit restructuring which disrupted the bank's cash flow. The existence of this risk requires banks to make projections about their level of ability to provide restructuring.

The fluctuating exchange rate of the Rupiah against the US Dollar is caused by the large demand on the spot market to meet the need for US dollars (Gerianta, 2020). Fluctuations in exchange rates will increase the risk of companies that import, have debts and obligations in foreign currencies. This situation can result in losses for companies that carry out foreign currency trading activities or companies with foreign exchange exposure. The impact of a prolonged decline in the Rupiah currency can affect various business sectors both domestically and abroad which is uncertain and currently remains at an exchange rate of IDR 14,900. The weakening of the Rupiah exchange rate against the dollar could affect the operational and financial performance of several issuers.

Banking companies that carry out a lot of foreign exchange transactions must be more careful in managing their finances because these transactions can not only have an impact on exchange rate risk, but also have an impact on financial behavior due to seasonal factors, the week four effect, the Rogalski effect can also worsen financial conditions on the stock exchange. Effects (Azmi and Hasmita, 2016).

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Data from Indonesian Banking Statistics shows that the growth in the average net profit/loss of banking companies decreased from 123,940 billion rupiah in the third – fourth quarter of 2019 to 42,048 billion rupiah in the first – second quarter of 2020 with a decrease in net profit/loss in banks in Indonesia amounted to -66.07% (OJK, 2020b).

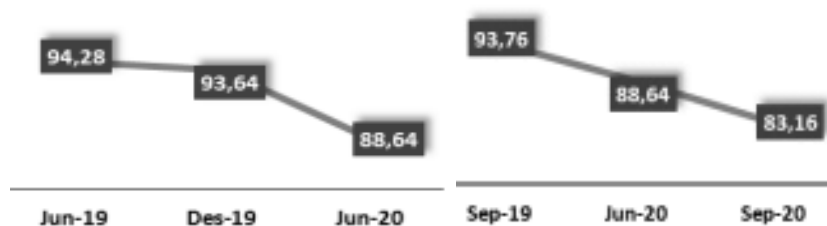
The decision to hedge can be influenced by external and internal factors. Internal and external factors of banking companies as explanatory variables were identified as influencing the variable use of hedging policies in this research, namely Liquidity, Exchange Rate, Profitability and Firm size (company size).

**Table 1. Liquidity Trends in % of Bank Companies Listed on the IDX**

MONTH	2018	2019	2020	2021	2022
JANUARY	83.29	93.97	93.36	82.44	78.00
FEBRUARY	80.03	94.12	92.50	81.8	78.45
MARCH	80.07	94.00	92.55	80.93	78.69
APRIL	77.32	94.25	92.18	80.83	80.27
MEI	79.60	96.19	90.94	80.89	80.39
JUNE	79.77	94.98	89.10	80.39	81.63
JULY	81.65	94.48	88.09	80.17	81.82
AUGUST	84.25	94.66	85.38	79.37	81.56
SEPTEMBER	83.91	94.34	83.46	79.11	82.39
OCTOBER	83.03	93.96	83.07	78.27	80.09
NOVEMBER	83.47	93.50	82.33	78.26	79.73
DECEMBER	92.27	94.43	82.54	77.49	78.98

**Source:** Financial Services Authority (OJK) (2023)

The banking intermediation function tends to decline in line with weak credit demand amidst the COVID-19 pandemic, which is indicated by credit which only grew 1.49% (yoy) while deposits grew 7.95% (yoy). The higher growth in deposits compared to credit caused the liquidity ratio to fall to the level of 88.64%. In line with liquidity which is within the threshold (78-92%), banking liquidity conditions are quite adequate as indicated by the AL/NCD and AL/DPK ratios which were recorded at 122.59% and 26.24% respectively. In the midst of low credit demand and disruption of economic activity during the COVID-19 pandemic, it is necessary to pay attention to the potential for increased credit risk and decreased profitability in the future.



**Figure 2. Graph of Liquidity Growth in Bank Companies**

**Source:** Financial Services Authority (2020)

Figure 2 shows that liquidity growth in the last five years in bank companies has fluctuated. However, it can be seen that in the II-IV quarter of 2019 and the III-IV quarter of 2020 there has been a significant decline over the last five years.

Liquidity is the company's ability to fulfill its short-term obligations, shown by the liquidity ratio, which is lower, the more difficult it is to carry out when there are short-term debts using foreign currency. Liquidity risk is the risk resulting from the bank's inability to meet maturing obligations from cash flow funding sources and/or from high-quality liquid assets that can be collateralized, without disrupting the bank's financial activities and condition.

The main objective of liquidity risk management is to maintain the bank's ability to fulfill funding obligations and to ensure continuous entry into market transactions (ensuring the Bank's funding sources).

When exchange rate fluctuations occur, this can endanger the company because of debts denominated in foreign currency. The higher the liquidity, the lower the use of derivative instruments because the risk of financial difficulties that arise tends to be low and the company also has reserve funds to face risks (Aslikan and Rokhmi, 2017). Companies can minimize the risks that occur by using hedging.

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The relationship between liquidity and hedging decisions in companies. The decision to hedge can affect a company's liquidity both positively and negatively depending on the hedging strategy and instruments used. In general, the decision to hedge can increase a company's liquidity because it can reduce the risks associated with market fluctuations and provide protection against future cash flows.

This is supported by research results from Kinasih (2019) showing that the liquidity variable has a significant effect on hedging policy. In contrast to research which shows that liquidity has an effect on hedging, according to Aditya and Asandimitra (2019) they state that liquidity has a negative effect on hedging decisions and is also supported by the results of research by Muslim and Puryandani (2019) which states that liquidity does not have a significant effect on the probability of using hedging.

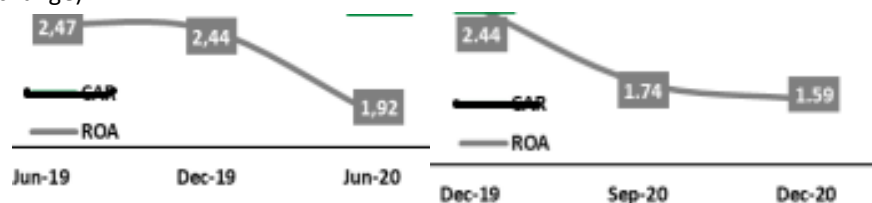
The decision to hedge is also influenced by the company's profitability, both positively and negatively depending on the hedging strategy and instruments used. In some cases, the decision to hedge can increase a company's profitability by reducing the risks associated with market fluctuations. The following is a graph of the development of return on assets of bank companies listed on the IDX.

**Table 2. Profitability Growth (in%) in Bank Companies Listed on the IDX**

MONTH	2018	2019	2020	2021	2022
JANUARY	1.56	2.59	0.20	2.17	2.56
FEBRUARY	1.65	2.45	0.14	1.97	2.36
MARCH	1.95	2.60	0.29	1.87	2.20
APRIL	1.78	2.42	0.31	1.86	2.33
MEI	1.70	2.41	1.10	1.8	2.36
JUNE	1.53	2.51	0.90	1.88	2.38
JULY	1.62	2.50	0.86	1.86	2.47
AUGUST	1.62	2.49	0.78	1.9	2.50
SEPTEMBER	1.62	2.48	0.76	1.91	2.53
OCTOBER	1.64	2.48	0.71	1.93	2.49
NOVEMBER	1.56	2.47	0.58	1.93	2.49
DECEMBER	1.39	2.47	0.66	1.89	2.45

Source: Financial Services Authority (OJK)

Table 2 shows the ROA growth trend in each month from 2018 to 2020, experiencing increases and decreases and remaining constant (no change).



**Figure 3. Profitability Growth Graph for Bank Companies Listed on the IDX**

Source: Financial Services Authority (OJK)

Profitability growth over the last five years in banking companies listed on the IDX has fluctuated. However, it can be seen that in the II-IV quarter of 2019, the level of profitability decreased from 2.44% to 1.92% and the III-IV quarter of 2020 also experienced a decline of 1.74% to 1.59%. Profitability can show the company's performance in gaining profits. The higher the level of profitability of a company means the possibility of the company experiencing bankruptcy is smaller. A high value indicates a high level of profit and company efficiency which can be seen from the level of income and cash flow.

Bank companies with high profitability do not need to make hedging decisions. But if the company's profitability is low, hedging activities need to be carried out. Profitability ratios provide important information for comparing previous period ratios with competitors' ratios. Lestari's (2018) research shows that the profitability variable has a negative influence on hedging decisions. The same statement is also supported by Shaari et.al. (2013) and Clark (2010) found that profitability has a positive and significant effect on hedging decisions. In contrast to research by Jang (2011) and Candradewi (2018) which found results that profitability

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had a significant negative effect on hedging decisions on the grounds that the higher the profitability, the company would face a smaller risk of financial distress costs and result in the company not hedging.

The exchange rate is a factor that influences hedging decisions in companies. Exchange rate fluctuations can affect a company's risk exposure and the decision to hedge can help protect the company from risk. Companies also need to monitor market conditions and exchange rate fluctuations related to the currency used in transactions. Companies need to have a flexible hedging strategy to adapt to changing market conditions.

The exchange rate is the price of a country's currency relative to the currency of another country (Abimanyu, 2004). Supply and demand affect the exchange rate. Apart from that, the Indonesian bank transaction rate is one piece of information related to the value of the Rupiah against the USD. According to Clark and Judge (2008), the lower the Rupiah rate against the USD, the more it will encourage business actors to hedge. Kinasih's research (2019) states that the Rupiah exchange rate simultaneously has a significant influence on hedging policy, and partially has no influence on hedging policy. Zulfiana (2014) in her research stated that the exchange rate has a positive relationship with hedging decisions.

In relation to company size, large companies tend to have greater risk exposure, they may have more resources and flexibility to handle these risks without the need to hedge. Meanwhile, small companies may have smaller risk exposure, but they may have limited resources and capabilities to handle these risks. In this case, the decision to hedge can help protect a small company from unwanted market fluctuations and increase financial stability.

The banking industry profile report shows that banking assets in each quarter during 2018-2022 are still controlled by large banks as shown by the Concentration Ratio (CR) of 20 large banks. However, in the third quarter of 2019 BUK's assets grew by 7.11% (yoy), slowing down compared to the previous year of 8.56% (yoy). The fourth quarter of 2019 showed that BUK assets grew by 5.95% (yoy), slowing down compared to the previous year of 9.18% (yoy). This asset growth was supported by growth in TPF and several capital components, including capital reserves and additional paid-in capital. The slowdown is in line with slowing credit growth as the largest portion of assets. Not only that, in the first quarter of 2020 BUK assets grew by 8.07% (yoy), slowing down compared to the previous year of 9.49% (yoy). The slowdown in assets is in line with the slowdown in profits and slowdown in credit growth in the reporting month. In the second quarter of 2020, BUK assets grew by 4.97% (yoy), slowing down compared to the previous year of 7.66% (yoy). The slowdown in assets is in line with slowing capital growth.

The firm size variable shows the size of a company which can be seen through the total assets it owns. Company size influences the ease with which a company can obtain funding sources, both external and internal. Large companies certainly have wider operational activities and are riskier in international transactions using various foreign currencies than small companies. In carrying out its business activities, the company will encounter the risk of currency exchange rate fluctuations. The larger the size of a company, the greater the reason for the company to carry out hedging activities in order to protect the company from the risk of currency exchange rate fluctuations (Bodroastuti et., al, 2019). Firm size as one of the factors that influences hedging decisions is proven by the results of research from Setiawan and Mahardika (2019) and Bodroastuti et., al (2019) as well as research by Saraswati and Suryantini (2019) which states that firm size has a positive effect on decision making. hedging, but in contrast to research results which agree that firm size influences hedging decisions, Aditya and Asandimitra (2019) state that firm size has no influence on hedging decisions.

This research is a replication of research by Kinasih (2019) which also examined banking companies listed on the Indonesia Stock Exchange with the addition of variables, namely, profitability and firm size with the observation year 2018-2022 in banking companies listed on the IDX. The results of previous research regarding factors that influence hedging still contain inconsistent results so further research needs to be carried out to get more consistent results for the same company.

Based on the background description above, there is a research gap that occurred in previous research and developments regarding the application of techniqueshedgingSo the researcher felt interested in continuing the research again with the 2018-2022 observation period.

## II. LITERATURE REVIEW

### A. Agency Theory

The concept of agency theory (agency theory) according to Supriyono in Amri and Ajeng (2020), agency theory is a contractual relationship between the principal (contract giver) and the agent (contract recipient), the principal can contract the agent to work for the principal's interests or goals in order to provide authority making decisions to agents to achieve these goals. The agent has a responsibility for achieving these goals and the agent can receive compensation from the principal. Principals are shareholders and agents are top management (board of commissioners and directors). The higher the achievement of a principal's goal, the higher the remuneration the agent will receive.

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## **B. Risk and Risk Management**

According to Haniah (2019) risk is a situation of uncertainty that can cause losses, the situation worsens due to the occurrence of an event. Risk is the level of potential loss that arises because the expected investment results do not match. Risk is considered a state of uncertainty about a situation that will occur later with decisions taken based on various considerations.

## **C. Hedging**

Hedging in a general sense is a method used by companies to reduce the level of price fluctuations for their commodities, or to reduce the risk due to very sharp price fluctuations (Ambarwati, 2010). Hedging, also called heder in the world of finance, is an activity carried out to reduce risk or protect underlying assets or liabilities against the risk of fluctuations in interest rates and currency exchange rates in the future (Lutfi et al, 2018). According to Madura (in Hergina, 2018) hedging is an action carried out by companies that have businesses in several countries (multinationals) to mitigate the company's exposure to foreign exchange. Hedging activities are one of the actions that need to be taken by multinational companies to minimize credit risk or market risk in the future (Habibah et al, 2020). According to Bank Indonesia Regulation (PBI) No. 15/8/PB1/2013 hedging is a way or technique to reduce the risks that arise due to price fluctuations in the financial market. Thus, companies must be able to minimize and hedge their exposure to foreign exchange rates (foreign exchange). Thus, it can be concluded that hedging is one of the strategies carried out by companies to regulate or stabilize finances when there is turmoil in the economy.

## **III. RESEARCH METHODS**

### **A. Types of research**

This research uses quantitative methods. Quantitative research methods are a type of research whose specifications are systematic, planned and clearly structured from the start to the research design (Syahrudin and Salim, 2012). The type of research used by researchers is Systematic Literature review, reviewing previous research in a structured manner so as to identify the influence or not of liquidity, profitability, the Rupiah exchange rate, and firm size on hedging decisions in bank companies listed on the IDX.

### **B. Description of the Research Population (Object).**

A population is a group of objects or people who have one thing or several things in common and form a group to carry out special research (Santoso and Tjiptono in Putro, 2012).

The population used in this research is banking services companies registered on the Indonesia Stock Exchange which have complete financial reports totaling 31 banking companies.

Based on determining the population, a saturated sample was obtained and in this study it was relatively small, the researcher was able to access and collect the required data, so the entire population of 31 would be studied so that the researcher did not take samples.

### **C. Operational Definition of Variables**

According to Indriantoro (2002: 69) the operational definition of a variable is determining a construct so that it becomes a variable that can be measured. The operational definition in this research is as follows:

#### **1. Hedging**

Hedging is a strategy used to protect the value of assets owned by banking companies registered on the IDX from losses that occur due to existing risks. Hedging is considered an action to protect a company to avoid or reduce the risk of loss of foreign currency as a result of business transactions.

In this research, the hedging variable is measured by looking at annual reports and notes on the financial reports of bank companies listed on the Indonesia Stock Exchange. Companies that make hedging decisions using derivative instruments (such as options, swaps to protect risks against interest rates or exchange rates) will be given a value of 1, and companies that do not make hedging decisions using derivative instruments will be given a value of 0 (Paranita, 2011).

#### **2. Liquidity**

Liquidity shows the ability of a bank company on the Indonesian Stock Exchange to fulfill its financial obligations that must be fulfilled immediately or the ability of a bank company to fulfill its financial obligations when they are billed (Harahap, 2016).

#### **3. Profitability**

The profitability ratio shows the performance of bank companies on the Indonesian Stock Exchange in making profits.

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## 4. Exchange rate

The exchange rate or exchange rate is comparison of currency prices between countries, for example the Rupiah exchange rate against the US dollar, which shows how many Rupiahs are needed to replace one US dollar. The exchange rate is the value of a currency that can be converted into another currency.

## 5. Firm size

Firm size or company size shows the size of the bank company which can be seen from the size of the equity value, sales value and total asset value.

### D. Data analysis technique

This research uses discriminant analysis methods and descriptive statistics. Discriminant function analysis is useful for determining whether a set of variables is effective enough in predicting the type of object category being observed (determining which independent/exogenous variables are the strongest differentiators so that the company can make hedging decisions.

The endogenous variable in this study uses a continuous/predicate dummy measurement which states whether the bank company is hedging or not, so discriminant was chosen as the analysis technique. Stages of discriminant analysis according to Thom (2016), discriminant analysis is carried out through the following stages:

#### 1. Separating variables into dependent variables and independent variables;

Calculate Liquidity, Profitability, Exchange Rate and Company Size ratios from the financial statements of each sampled bank.

#### 2. Determine the method for creating a discriminant function. In principle, there are two basic methods, namely:

1) Simultaneous Estimation, in where all variables are entered together and then a discriminant process is carried out.

2) Step-Wise Estimation, where variables are entered one by one into the discriminant model. In this process, of course there are variables that remain in the model, and it is possible that one or more independent variables are temporarily removed from the model.

In this process, generally there are independent variables that will remain in the model which can then be included in the discriminant function, besides that there is also the possibility that one or more variables will be removed from the model.

#### 3. Test the significance of the discriminant function that has been formed, using Wilks Lambda, F test value and others.

#### 4. Testing the classification accuracy of the discriminant function, including knowing the accuracy of individual classification with casewise diagnostics.

#### 5. Interpreting the discriminant function.

The discriminant function equation is as follows:

$$D_{ij} = \alpha + w_1X_1 + w_2X_2 + \dots + w_nX_n$$

Information:

$D_{ij}$ : Z-score value of the discriminant function

$\alpha$ : Intercept

$w_1X_1$ : Coefficient value or weight of each variable X

X: Independent variable

#### 6. Carrying out discriminant function validation tests

Validity testing is carried out to determine how precisely a measuring instrument performs its measurement function (Ghozali, 2016).

## IV. RESULTS AND DISCUSSION

### A. Data Analysis Results

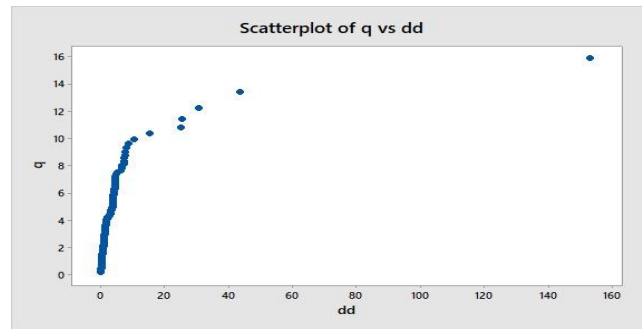
#### 1. Determinant Analysis

Based on SPSS processed data, the following are the results of the data requirements analysis carried out in the determinant analysis:

##### a. Data Normality Test

The data normality test carried out can be seen in the following picture:

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**Figure 4. Scatterplot graph**

Source: Minitab processed by researchers

Based on Figure 5, the data normality test shows that the P-value is 0.690323. The normal multivariate output above shows that all exogenous (independent) variables have fulfilled the normal multivariate assumption (normally distributed), because the value  $0.690323 > 0.05$  so that  $H_0$  is accepted, where  $H_0$  in this test is normally distributed data.

## b. Multicollinearity Test

The multicollinearity test for each variable is shown in the following table:

**Table 3. Matrix Structure**

Pooled Within-Groups Matricesa

		Liquidity	Profitability	Firm Size	N_Swap
Covariance	Liquidity	57.335	-.059	.986	-11.570
	Profitability	-.059	.063	.086	2.126
	Firm Size	.986	.086	4.590	56.592
	N_Swap	-11.570	2.126	56.592	422223.080
Correlation	Liquidity	1.000	-.031	.061	-.002
	Profitability	-.031	1.000	.160	.013
	Firm Size	.061	.160	1.000	.041
	N_Swap	-.002	.013	.041	1.000

a. The covariance matrix has 153 degrees of freedom.

Source: Minitab Processed Data (2023)

The Structure Matrix table shows the correlation between the independent (free) variables and the discriminant function that is formed. Variables that are not included in discriminant analysis are variables with low correlation values and the symbol "a" is given next to each variable.

Based on table 3, it shows that in the correlation matrix there are no numbers that reach a probability value of 0.05, so it can be concluded that there is no case of multicollinearity.

## c. Homogeneity of Variance Test

The variance test for each variable can be shown in the following table:

**Table 4. Homogeneity Test**

Test Results		
Box's M		3.459
F	Approx.	0.955
	df1	3
	df2	2535.652
	Sig.	0.453

Tests null hypothesis of equal population covariance matrices.

Source: Minitab processed data (2023).

Based on table 4 above, it shows that the sig value is  $> 0.05$ , so it is indicated that the variance between groups is homogeneous.



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## d. Test of Similarity of Means

The significance of each variable forming the discriminant function is shown in the following table:

**Table 5. Equality of Group Means**

Tests of Equality of Group Means					
	Wilks' Lambda	F	df1	df2	Sig.
Liquidity	.994	.954	1	153	.330
Profitability	.971	4.520	1	153	.035
Firm Size	.980	3.046	1	153	.083
N_Swap	1.000	.000	1	153	1.000

Source: Minitab processed data (2023)

To find out the independent variables that can influence the group, use the Wilk's Lambda statistical test and the significance level.

Based on the test results in table 5 above, it shows that:

- 1) The test results on the Liquidity variable produced a probability value (sig) of 0.330. This result shows that the p-value is greater than 0.05 so that liquidity has no effect on the decision of bank companies on the IDX to hedge. The hypothesis statement H1 is rejected and liquidity is not the first strongest determinant in influencing bank companies in hedging. The insignificant results on the liquidity variable could be due to the average liquidity level of the sample companies being 1.45 times unable to influence hedging activities.
- 2) The test results for the Profitability variable produced a sig of 0.035 with a significance of less than 0.05 (p-value < 0.05). These results indicate that the Profitability variable has a significant influence on bank companies' decisions to hedge. The hypothesis statement H2 is accepted which shows that profitability is the strongest determinant that influences bank companies listed on the Indonesia Stock Exchange in hedging.
- 3) The test results on the exchange rate variable produce a probability value (sig) of 1.000 with a significance greater than 0.05. These results show that the p-value is greater than 0.05 so that the exchange rate has no effect on the bank company's decision to hedge. The hypothesis statement H3 is rejected which shows that the exchange rate is not the second strongest determinant that influences bank companies listed on the Indonesia Stock Exchange to carry out hedging.
- 4) The test results on the Firm Size variable produced a probability value (sig) of 0.083 with a significance greater than 0.05. This result shows that the p-value is greater than 0.05 so that total assets have no effect on the bank company's decision to hedge. The hypothesis statement H4 is rejected which shows that firm size is not the third strongest determinant that influences bank companies listed on the Indonesia Stock Exchange to carry out hedging.

## e. Linear Function Formation Output

By using simultaneous discriminant testing, the discriminant function formed is shown in the following table:

**Table 6. Canonical Discriminant Function Coefficients**

	Function 1
Liquidity	.046
Profitability	2.816
Firm Size	.236
N_Swap	-.000045
(Constant)	-3.681

Unstandardized coefficients

Source: Minitab processed data (2023)

Based on table 6 above, a linear function can be formed as follows:

$$Y = -3.681 - 0.000045 \text{ Exchange Rate} + 2.816 \text{ Profitability} + 0.236 \text{ Firm Size} + 0.046 \text{ Liquidity.}$$

The explanation that can be given based on the discriminant function above is as follows:

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- 1) The constant value obtained is -3.681. This means that if the four variables that form the discriminant have a value of zero then the size of the decision to hedge will have a value below zero or fall into the category of not hedging.
- 2) The liquidity coefficient obtained is 0.046. This means that if the Liquidity ratio increases by one unit assuming the other three variables have fixed values, this will be followed by an increase in the hedging weight of 0.046.
- 3) Profitability coefficient obtained is 2.816. This means that if the Profitability ratio increases by one unit assuming the other three variables are constant values, this will be followed by an increase in the hedging weight of 2.816.
- 4) The exchange rate coefficient is obtained -0.000045. This means that if the exchange rate rises by one unit assuming the values of the other three variables remain constant, this will be followed by a decrease in the hedging weight of 0.000045. The test results on the exchange rate produce a negative coefficient. The existence of this negative influence shows that during this time when the value of the rupiah has experienced depreciation, bank companies on the Indonesia Stock Exchange tend to pay attention to cash flows so that there are no significant disturbances that cause the risk of exchange rate fluctuations.
- 5) The Firm Size coefficient obtained is 0.236. This means that if the Firm Size increases by one unit assuming the other three variables have fixed values, this will be followed by an increase in the hedging weight of 0.236.

Considering that only one discriminant function is used, the standard discriminant function can be used to determine the strongest differentiating variable. Profitability with the largest coefficient, namely 2.816, means that the Profitability variable has the strongest separating power regarding the tendency of bank companies on the Indonesian Stock Exchange to make hedging decisions.

## f. Canonical Correlation Test

By using simultaneous discriminant testing, the canonic correlation test is shown in the following table:

**Table 7. Canonical Correlation**

### Eigenvalues

Function	Eigenvalues	% of Variance	Cumulative %	Canonical Correlation
1	.049 <sup>a</sup>	100.0	100.0	.216

a. First 1 canonical discriminant function was used in the analysis.

Source: Minitab processed data (2023)

The canonical correlation table explains how much influence variables have on hedging. The size of the relationship scale is between 0 and 1, the higher the canonical correlation value, the better the function explains the observed variables.

From the table above, a canonical correlation value of 0.216 is obtained when squared to 0.0467, meaning that 4.67% of the variance of the independent variable (group) can be explained from the discriminant model formed.

## 2. Descriptive Analysis

The following are the results of descriptive analysis, namely:

**Table 8. Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Liquidity	155	.12	95.05	1.4595	7.57085
Profitability	155	-.47	1.74	.0652	.25455
Firm Size	155	11.34	21.41	17.2661	2.15655
N_Swap	155	13901.00	15731.00	14497.4000	647.67382
Valid N (listwise)	155				

Source: Minitab Processed Data (2023).

Based on the SPSS processed data explained during the research period (2018-2022), 155 observation data were obtained using the pooled data technique which was obtained by changing the number of samples by the research period (31 samples x five years).

According to Dedi (2011) states that the data type consists of variables collected according to time sequence in a particular area for a number of individuals or categories. The explanation that can be given based on the results of the discriminant analysis above is as follows:

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- a. The results of descriptive analysis of liquidity during the research period obtained a minimum value of 0.12; The maximum value is 95.05 with an average of 1.4595. It can be seen that the average liquidity obtained exceeds 1,000, which means that in general the liquidity conditions in banking have a fairly good liquidity ratio. This is based on the average liquidity which is almost close to the standard set by Bank Indonesia, namely 78%.  
The insignificant results on the liquidity variable could be due to the average liquidity level of the sample companies being 1.45 times unable to influence hedging activities.
- b. The results of the descriptive analysis of Profitability obtained a minimum value of -0.47; The maximum value is 1.74 with an average value of 0.657. Profitability is negative at the minimum value, indicating that there is a sample that experienced losses at the bankKB Bukopin Tbk, Jago bank Tbk, Banten Regional Development bank Tbk, Victoria Intl bank. Tbk and bank Amar Indonesia Tbk resulting in negative profits.
- c. The results of the descriptive analysis of Firm Size obtained a minimum value of 11.34, a maximum value of 21.41 with an average value of 17.2661. Based on the average Firm Size value of more than 1,000, it can be seen that generally bank companies listed on the IDX have quite high average total assets. Companies that have high total assets can be said to be large in size, which in general regarding funding has reserve funds, so that the company is quite capable of facing risks due to market fluctuations.
- d. The results of descriptive analysis of the exchange rate obtained a minimum value of 13901.00, a maximum value of 15731.00 with an average value of 14497.40. Based on the average value obtained on the exchange rate, it can be seen that during the research year the exchange rate level was relatively low.

According to Inah (2019), the standard deviation value is closer to the average, the better and conversely, the further away it is, the greater the range of data variation. Table 18 shows a standard deviation value of liquidity of 7.57085 away from the average value. 1.4595 standard deviation value of Profitability shows a value of 0.25455 away from the average value. 0.652 standard deviation Firm Size shows a value of 2.15655 away from the average value. -the average is 17.2661 and the standard deviation of the exchange rate shows 647.67382 away from the average value of 14497.4000.

Table 8 shows that the standard deviation value for each item is far from the average value (mean), which indicates that there is variation in the data.

### **B. Discussion of Analysis Results**

#### **1) The Influence of Liquidity on Hedging Decisions**

Liquidity is an indicator that shows the ability of bank companies listed on the IDX to fulfill short-term obligations when they fall due. The results of the determinant analysis test, the probability value (sig) of the liquidity variable is 0.330, where the sig value is greater than 0.05. This research states that the liquidity variable partially has no influence on a company's tendency to hedge. The regression coefficient value in this study is 0.046, meaning that it is smaller than 0.05, so in this study H1 is rejected because the results of this study conclude that the liquidity variable partially has no effect on the decision to hedge. The results of this research are in line with Mediana (2016), that the liquidity variable has no effect on hedging decisions.

If you look at the financial reports, on average each bank company has a high level of liquidity and financial risk tends to be low so it can be said to be low or not hedging because it has reserve funds to overcome risks. Apart from that, banking companies can meet customers' funding needs when withdrawals depreciate in the rupiah and the company is able to quickly collect funds from other sources to meet the shortfall.

#### **2) The Influence of Profitability on Hedging Decisions**

Profitability is an indicator to see whether a bank company has good performance or not. Which shows the company's ability to generate profits. The results of the determinant analysis test, the probability value (sig) of the profitability variable is 0.035, which is greater than  $\alpha = 0.05$ . The regression coefficient value in this study is 2.816, which means it is greater than 0.05, so in this study H2 is accepted because the research results show that the profitability variable partially has an influence on the company's tendency to hedge. In general, the average level of profitability in banking companies on the IDX has been low over the last five years, namely in 2018-2022, the average company experienced difficulties in obtaining profits such as sales and asset management. Banking companies carry out hedging with the aim of protecting assets from exchange rate exposure. The results of this research are in line with research by Saraswati (2019) and Mayasari (2021) which states that profitability influences hedging decision making.

#### **3) The Influence of Exchange Rates on Hedging Decisions**

The rupiah exchange rate is the Indonesian currency which has an influence on financial activities such as savings and bank loans. The regression coefficient value of the exchange rate variable has a value of 1.00 where the sig value is greater than 0.05.

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So in this research H3 is rejected because the results of this research state that the exchange rate variable influences the tendency of bank companies listed on the IDX to hedge. This result is supported by research conducted by Clark and Judge (2008) that the lower the exchange rate against the USD, the less it will encourage business actors to hedge.

Based on the data in table 18, the average value of the exchange rate indicator is 14,497.40. When the average company experiences a depreciation in the exchange rate against the dollar, this will not affect the company's hedging. Because the risks that the company will face can be minimized by using other methods, namely by utilizing reserve funds by managing funds on productive assets. Apart from that, this can also be done by managing PDN.

Net Open Position (PDN) is the sum of the absolute values for the sum of the net differences between assets and liabilities in the statement of financial position for each foreign currency with the net differences between claims and liabilities in the administrative account for each foreign currency, all of which are expressed in rupiah. The results of this research are in contrast to the results of research conducted by (Zulfiana, 2014) which states that the exchange rate has a positive relationship with hedging decisions, which means that the higher the exchange rate fluctuations will encourage banks to implement hedging policies.

### **4) The Influence of Firm Size on Hedging Decisions**

Company size is an important indicator for investors to look at when investing. The regression coefficient value for the firm size variable, namely 0.83, is greater than the value of  $\alpha = 0.05$ , so H4 is rejected because the results of this study state that the firm size variable has no influence on the tendency of bank companies listed on the IDX to hedge. Based on the data in table 18, the average value of the firm size indicator is 17.2661. Bank companies on the IDX have large average total assets so they have greater risk exposure, with more resources and flexibility to handle these risks without hedging.

When the average company experiences uncertainty and creates risk, in terms of funding companies with large total assets have funding sources from investors. The risks that the company will face can be minimized by using other methods, namely by utilizing reserve funds by managing funds on productive assets and high sales revenues. The results of this research are in line with research conducted by Ameer (2010), Ahmad and Haris (2012) which states that firm size is not significant in hedging decisions, where it is explained that company size is not always a strength or something that will encourage companies to carry out activities. hedging. Total assets can describe the asset resources a company has to gain profits.

## **V. CONCLUSIONS AND SUGGESTIONS**

### **A. Conclusion**

The results of research on bank companies listed on the Indonesian Stock Exchange provide new knowledge about the influence between the variables used in this research as follows:

- 1) Liquidity has no significant effect on hedging decisions and is not the first strongest differentiator in hedging. This is because bank companies have a high level of liquidity, have reserve funds to meet short-term obligations, and have more assets than debt.
- 2) Profitability has a significant influence on hedging decisions and is not the second strongest differentiator but is the first strongest discriminator in hedging. This is due to the low level of profitability.
- 3) The exchange rate has no significant effect on hedging decisions and is not the third strongest differentiator in hedging. This is because the company can carry out foreign exchange transactions at an exchange rate that is not too low for five years.
- 4) Firm Size has no significant effect on hedging decisions and is not the fourth strongest differentiator in hedging. This is because bank companies have large total assets which illustrate the company's level of preparation in fulfilling its obligations, therefore the company can overcome financial problems, so the company does not tend to hedge as a way to mitigate risk. In terms of funding, large companies that have large total assets have sources of funds that will be used from investors in bank operational activities.

### **B. Limitations**

This research is far from perfect and there are still several limitations, including:

- 1) This research only examines bank companies that have complete financial reports from 2018-2022 with a research sample of 31, meaning the coverage is quite small so the results obtained are less than optimal.
- 2) The research model with simpler analysis without using intervening or moderating variables does not show maximum results to see whether the variables of liquidity, profitability, exchange rate and firm size influence the tendency to hedge.

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- 3) The results of determinant analysis which measures the level or ability of exogenous variables to explain endogenous variables are still quite low (no more than 50%). This means that the variables used in the research model need to be added in order to get a better research model.

### C. Suggestions

From the results of research conducted on bank companies listed on the Indonesia Stock Exchange and the conclusions that have been outlined, several suggestions can be given as follows:

- 1) Bank companies registered on the IDX with high or low levels of liquidity should pay attention to the growth of each foreign exchange transaction and carry out hedging as a way to mitigate risks to their assets.
- 2) Bank companies registered on the IDX that have a low level of profitability are expected to continue to use hedging policies when carrying out international transactions so that companies can avoid risks such as fluctuations in foreign exchange rates.
- 3) Bank companies registered on the IDX should pay attention to every exchange rate that occurs every year so that bank companies can fulfill short-term obligations (pay debts) at low rates. Bank companies registered on the IDX must continue to hedge to protect their assets from the risk of currency exchange rate fluctuations in foreign exchange transactions.
- 4) Bank companies registered on the IDX that have low or high total assets should pay attention to the assets they own. For banks with large total assets with funding obtained through foreign exchange transactions, they must continue to hedge to protect the company from the risk of fluctuations in exchange rates.
- 5) To future researchers who will conduct research on the same topic, they can develop the use of other variables such as Leverage, Growth Opportunities, and Financial Distress, as well as taxes in research by adding the number of years of observation and different analysis models so that they can produce more accurate results..
- 6) For the OJK to provide policies related to risk management that banks must carry out considering that profitability ratios influence the company's tendency to hedge.

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