

## The Effect of Leverage, Firm Size, Profitability, and Liquidity on Hedging Decisions

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### Abstract

**Purpose:** This study aims to determine the effect of leverage, firm size, profitability, and liquidity on hedging decisions of manufacturing companies listed on the Indonesia Stock Exchange (IDX)

**Methodology:** The sample in this study are 22 manufacturing companies listed on the IDX from 2014 to 2019. This research uses the logistic regression analysis technique.

**Findings:** The results show that the variable leverage, firm size, and profitability have a positive effect and are significant on hedging decisions, while the liquidity variable has no effect on hedging decisions.

**Novelty:** This study continues previous research by using a different population, adding independent variables, and using the manufacturing sector.

**Keywords:** Leverage, Firm Size, Profitability, Liquidity, Hedging

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### Introduction

Competition between companies is getting tougher, due to the rapid development of science and technology, as well as the number of new companies that have sprung up. These conditions make companies must be able to improve and manage their business processes well. Efficiency is one of the keywords for this problem. Company efficiency concerns the management of the input and output relationship, which is defined by how the company allocates a number of resources to be able to produce maximum output (Sribudiani, 2014).

International trade activities are considered as one way for an entity or company to enlarge or expand market share. Ambarwati (2010) explained that companies that carry out international trade are referred to as multinational companies, while companies operating within the scope of the country are called domestic companies. Multinational companies have business lines that are cross-border and also a holding company in the home country.

The motivation of a company to trade internationally is to get more returns than when trading only within the scope of the country. Trade within the scope of the country has very strong competitive pressure so that companies can only get returns at the normal level, while international trade has gaps in foreign markets that can provide higher returns (Horne dan Wachowicz, 2013). The problems faced by multinational companies in achieving their goals are far more complex than those of domestic companies. One of the biggest risks for multinational companies is the occurrence of fluctuations in foreign exchange rates. In this context, the exchange rate can be defined as the number of mature units of money that can be exchanged and traded in an active market, where the value of each currency is influenced by supply and demand (Horne dan Wachowicz, 2013).

Bartram (2008) states that an unfavorable impact will arise on prices, profits, and sales levels when foreign exchange rate fluctuations are not prevented. In the company's financial statements there are losses caused by fluctuations in foreign exchange rates, so the profits earned are smaller than they should be. When the company's profit declines, the company's share price in the stock market also decreases and in the end the company will lose investors.

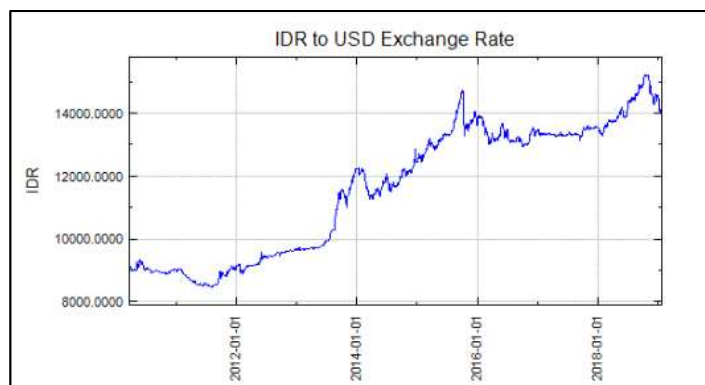


Figure 1. Fluctuations in the IDR Exchange Rate againsts USD  
Source: Statistik Kemengad 2020

The Figure 1. shows an overview of the fluctuations in the IDR exchange rate against the USD for 6 years from January 1, 2012 to January 1 2018. It can be seen that IDR has no stability, so it has an impact on the international trade of a company. Fluctuations in foreign exchange rates will have an impact on the productivity of manufacturing companies, especially in activities related to the purchase of raw materials. When USD appreciates and IDR depreciates, the price of raw materials will increase than they should have paid.

Ambarwati (2010) stated that one of the important tools in risk management is the derivative securities market. Meanwhile, the way to reduce or reduce the level of risk is by hedging. Empirical studies on variables or factors that have an influence on the use of hedging in a company have been carried out by many researchers, but give different results from one another. Several factors are predicted to influence the use of hedging, namely leverage, company size, profitability, and liquidity.

According to the definition presented by Horne and Wachowicz, (2013:147) that leverage is defined as the use of fixed costs, and comes from the issuance of interest-rate debt or shares. Multinational companies require higher capital compared to national companies in terms of company operations, considering that the transactions carried out are transactions between countries. Companies can use foreign debt financing as a way to help finance. Foreign debt financing can be allocated for most of the company's activities, so it will greatly assist the company's operations. The researcher chooses the Debt to Equity Ratio (DER) to be used as a proxy for measuring the company's leverage ratio, where the level of this ratio is proportional to the level of use of the company's debt, so the company will tend to carry out hedging policies. Previous studies that examined the relationship between leverage and hedging decision making gave different results. Research by Saraswati and Suryantini (2019), Kurniawan and Asandimitra (2018), Hadinata and Hardianti (2018), Ariani and Sudiarta (2017), Dewi and Purnawati (2016), and Clark & Judge (2005), says that leverage has a positive relationship against hedging. Meanwhile, research by Aslikan and Rokhmi (2017) and Widyagoca and Lestari (2016) said that leverage has a negative relationship with hedging.

The next factor that is predicted to have a relationship with hedging decisions is firm size. Suwito (2005) explains that company size is a classification or classification of companies based on the total number of recorded assets. Companies that have large assets can be interpreted that the size of the company is also large, otherwise companies that have small assets can be interpreted that the size of the company is also small. Having a large number of assets makes the risk faced by the company even greater, especially when

conducting international transactions, so it is likely that hedging policies will be implemented to protect the company's assets. The measuring instrument used to calculate company size is the natural logarithm of total assets (LnTA). Previous studies that examined the relationship between firm size and hedging decision making gave different results. Research by Saraswati and Suryantini (2019), Megawati et al. (2016), and Guniarti (2014) say that company size has a positive effect on hedging decisions. Meanwhile, research by Krisdian and Badjra (2017) and Triki (2005) said that company size has a negative effect on hedging decisions.

Other factor that is predicted to have an influence on hedging decisions is profitability. According to Sartono's (2001:477) explanation that the company's ability to maximize profits from various sources that become the company's operations can be referred to as the profitability ratio. When there is an increase in the ability to earn profits, there is a tendency for company management to protect each transaction by hedging. Companies that have high profits are easier for business expansion, but any market changes will provide risks for the company's transactions. The researcher chose Basic Earning Power (BEP) as a proxy for profitability on the grounds that BEP will provide an overview of the profit ratio when it has not been deducted by interest and taxes. Previous studies that examined the relationship between profitability and hedging decision making also gave different results. Research by Saraswati and Suryantini (2019), Hadinata and Hardianti (2018), and Jiwandhana and Triaryati (2016) states that profitability has a positive effect on hedging decisions. Meanwhile, research by Kurniawan and Asandimitra (2018), and Candradewi and Rahyuda (2018) says that profitability has a negative effect on hedging decisions.

The next factor that is predicted to have an influence on hedging decisions is liquidity. According to the definition described by Brigham and Houston (2010:134) that the liquidity ratio can be interpreted as the relationship of how much the company's current assets to the company's current debt. When current assets are greater than debt, the company is said to be liquid. High liquidity indicates the adequacy of the company in terms of reserve funds to deal with risks, so they tend not to use hedging policies. Current Ratio (CR) was chosen by the researcher as a proxy for liquidity, where current assets are divided by current liabilities. Previous studies that examined the relationship between liquidity and hedging decision making also gave different results. Research by Astyrianti and Sudiartha (2017), Hardanto (2012), and Clark and Judge (2005) say that liquidity has a positive effect on hedging decisions. Meanwhile, research by Aslikan and Rokhmi (2017), Guniarti (2014), Chaundry et al (2014), and Ameer (2010) said that liquidity has a negative effect on hedging decisions.

The researcher chose a manufacturing sector company listed on the Bursa Efek Indonesia as the object of research. The selection of objects is based on the high number of international transactions carried out by manufacturing companies, so that they are likely to experience risks from fluctuations in foreign exchange rates. The operational activity of manufacturing companies is the production of goods that are not ready to use to be ready to use. In the production process, manufacturing companies require significant costs, coupled with the need for raw materials, which often involve the intervention of other countries. This study focuses on raising some rationale in the shareholder value maximization paradigm, so that the theoretical review only examines this paradigm. The rationale raised is the proposition of reducing transaction costs in relation to the risk of financial distress, underinvestment problems, and asset substitution problems.

## **Literature Review**

The rationale that drives or underlies a company to implement a hedging policy is financial distress. There are two indicators that can be raised in the rationale of financial distress, namely the leverage ratio and the profitability ratio. Second, the rationale that drives or underlies a company to implement a hedging policy is the underinvestment problem. The researcher chose firm size as an indicator for the rationale for the underinvestment problem. Third, the rationale that drives or underlies a company to implement a hedging policy is the asset substitution problem. Researchers choose liquidity as an indicator for the rationale for the asset substitution problem.

### **Leverage and Hedging Decisions**

Leverage is defined as a ratio to calculate or measure the extent to which the company is able to manage its funding through debt. In this study, the calculation of leverage is carried out using the Debt to Equity Ratio (DER), which is the ratio used to see how far the use of equity is to the company's long-term debt. When there is an increase in DER, it means that the proportion of equity funds used is greater. Research by Saraswati and Suryantini (2019), Hadinata and Hardianti (2018), Ariani and Sudiartha (2017) and Dewi and Purnawati (2016) shows that leverage has a positive effect on hedging decisions. This means that when the level of the leverage ratio is getting bigger, the tendency to use hedging policies will also increase. Based on the description above, the hypothesis on this variable is:

H1: Leverage has a positive influence on hedging decisions.

### **Company Size and Hedging Decisions**

Company size is defined as the classification or classification of companies based on the total number of assets recorded. Calculation of company size is carried out using the natural logarithm of total assets (LnTA). Research conducted by Saraswati and Suryantini (2019), Megawati et al. (2016), and Guniarti (2014) get the results that the relationship between firm size and hedging decisions is significantly positive. This means that when the size of the company gets bigger, the tendency to use hedging policies will also increase. Based on the explanation above, the hypothesis on this variable is:

H2: Firm size has a positive effect on hedging decisions.

### **Profitability and Hedging Decisions**

Profitability is defined as a measure of how capable the company's resources are to generate profits. Profitability calculations are carried out using Basic Earning Power (BEP) with the aim of knowing how much the company's ability to maximize profit before interest and taxes from all company operations with total own capital. Several previous studies have shown that profitability has a significant positive relationship to hedging decisions, including Saraswati and Suryantini (2019), Hadinata & Hardianti (2018), and Jiwandhana and Triaryati (2016). Based on this, the hypothesis for this variable is:

H3: Profitability has a significant positive effect on Hedging Decisions.

### **Liquidity and Hedging Decisions**

Liquidity is defined as a ratio that shows how capable the company's short-term obligations can be paid using current assets. In this study, the calculation of liquidity is carried out using the current ratio (CR), where current assets are divided by current liabilities. Research conducted by Hadinata and Hardianti (2018), Ariani and Sudiartha (2017), Aslikan and Rokhmi (2017), Guniarti (2014), and Ameer (2010) shows that the liquidity ratio has a significant negative effect on hedging decisions. This means that a high liquidity ratio is inversely proportional to the possibility of companies using hedging policies. Based on the explanation above, the hypotheses for this variable are:

H4: Liquidity has a significant negative effect on Hedging Decisions.

### **Methodology**

The type of this research approach is quantitative with associative research type. The population observed and used as the focus of the object are companies belonging to the manufacturing industry on the Indonesia Stock Exchange (IDX), where the entire population data has been published on the website [www.idx.go.id](http://www.idx.go.id). The sample selection process in this analysis was carried out by purposive sampling method. The purposive sampling method uses certain criteria according to research needs to carry out the sample selection process. Some of the criteria included in the sample selection process are as follows:

The company is listed on the Indonesia Stock Exchange website in the category of manufacturing company. The company has foreign exchange exposure in its operational activities. In the annual report there is information whether the company uses hedging or not.

This study uses secondary data in the form of quantitative data and qualitative data. Qualitative data is in the form of names of manufacturing companies, while quantitative data is in the form of company financial nominal which is determined as a variable measuring instrument. The research data was collected by non-participant observation, where the researcher only played an observer role and was not directly involved. This study obtained secondary data by accessing the official website of the Indonesia Stock Exchange, both financial reports and annual reports. Researchers have also collected additional information by accessing the official websites of each company.

This research uses logistic regression analysis technique. According to Rizki et al. (2015) the use of logistic regression is carried out when the type of response variable is binary. The binary nature in this context means that there are only two categories of variables, namely  $Y=1$  for the successful category, and  $Y=0$  for the failed category. In this study, a value of 1 (one) is given to company data in the category of carrying out hedging policies, while a value of 0 (zero) is given to company data in the category of not implementing hedging policies.

## Results and Discussion

The study obtained secondary data by accessing the official website of the IDX, both financial reports and annual reports. Researchers have also collected additional information by accessing the official websites of each company. Based on the population of manufacturing companies listed on the Indonesia Stock Exchange as many as 180, obtained 22 samples of companies. The results of the descriptive statistical analysis of this study will be presented in the following table:

Table 1. Descriptive Statistics

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Dev.</b>
<b>DER</b>	132	0.102	8.848	1.44923	1.543680
<b>LnTA</b>	132	18.334	23.956	20.18053	1.329152
<b>BEP</b>	132	-0.163	0.456	0.07318	0.096463
<b>CR</b>	132	0.094	9.222	1.93688	1.360589
<b>Hedging</b>	132	0	1	0.55	0.499

Source: SPSS Output (2020)

Based on table 1, the Debt to Equity Ratio (DER) has a data distribution that is not good. The minimum value is at 0.102, while the maximum value is at 8.848, so the average is 1.44923. The cause of the poor distribution of the data is because the average value is below the standard deviation value, where the standard deviation value for DER is 1.543680. Furthermore, the natural logarithm of Total Assets (LnTA) has a good data distribution. The minimum value is 18,334, while the maximum value is 23,956, so the average is 23.956. The reason the data distribution is called good is because the average value is above the standard deviation value, where the standard deviation value for LnTA is 1.360589. Other results show that Basic Earning Power (BEP) has a poor distribution of data. The minimum value is at -0.163, while the maximum value is at 0.456, so the average is 0.07318. The cause of the poor distribution of the data is because the average value is below the standard deviation value, where the standard deviation value for BEP is 0.096463. Lastly, Current Ratio (CR) has a good data distribution. The minimum value is at 0.094, while the maximum value is at 9.222, so the average is 1.93688. The reason the data distribution is called good is because the average value is above the standard deviation value, where the standard deviation value for CR is 1.169741.

### Assessing the Regression Model

A good model is indicated by the results of the Hosmer and Lemeshow's goodness of fit test whose value is more than 0.05. When the value is more than 0.05, it cannot reject H<sub>0</sub>, so it can be interpreted that the model has a good match with the observation data.

Table 2. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	9.511	8	0.301

Source: SPSS Output (2020)

Table 2 shows the results of the Hosmer and Lemeshow Test on the SPSS analysis tool that the resulting chi-square value is 9.511, while the resulting significance is 0.301. The significance value is above the significance level, so it can be concluded that there is a match between the data and the model.

### Assessing the Overall Model (Overall Model Fit)

The test uses likelihood statistics, where the likelihood log here is similar to the "sum of square error" in multiple regression testing. A good regression model is characterized by a decrease in the log likelihood value.

Table 3. Block 0: Beginning Block

Iteration		-2 Log likelihood	Coefficients Constant
Step 0	1	181.503	0.212
	2	181.503	0.213

Source: SPSS Output (2020)

Table 4. Block 1 : Method = Enter

Iteration	-2 likelihood	L Coefficients					
		Constant	DER	LnTA	BEP	CR	
Step 1	1	139.590	-12.172	0.360	0.572	6.341	-0.077
	2	136.381	-16.401	0.532	0.766	8.581	-0.057
	3	136.254	-17.398	0.583	0.811	9.053	-0.046
	4	136.254	-17.445	0.586	0.813	9.073	-0.046
	5	136.254	-17.445	0.586	0.813	9.073	-0.046

Source: SPSS Output (2020)

Table 3 and Table 4 show the results that the log likelihood in block 1 has decreased in value from the log likelihood in block 0. The log likelihood value which was originally 181,503 in block 0, then changed to a smaller number in the log likelihood block 1 of 136,254. Based on this explanation, it can be interpreted that this regression model is a good model.

### Coefficient of Determination (Nagelkerke R Square)

Nagelkerke R Square is defined as a measure that aims to see how far the control of the predictor variable is on the response variable.

Table 5. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	136.254 <sup>a</sup>	0.290	0.388

Source: SPSS Output (2020)

Table 5 shows the results of the Nagelkerke's R Square test on the SPSS analysis tool that the value obtained is 0.388, meaning that the model is able to provide strength or an influence of 38.8% on the

response variable. The percentage of power of 38.8% is divided into four predictor variables, namely leverage, firm size, profitability, and liquidity. While the percentage of 61.2% cannot be explained by the model, or in other words explained by other factors outside the model.

### Logistics Regression Model

This stage aims to see how far the control that can be given by the predictor variables to the response variables individually. The test was carried out with a significance level of 5% ( $\alpha = 0.05$ ), so that the following test criteria were formed:

1. When Sig. < 0.05, then H<sub>0</sub> is accepted and H<sub>A</sub> is rejected.
2. When Sig. > 0.05, then H<sub>0</sub> is rejected and H<sub>A</sub> is accepted.

Table 6. Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
<b>Step 1<sup>a</sup></b>	DER	0.586	0.218	7.226	1	0.007	1.797
	LnTA	0.813	0.203	15.975	1	0.000	2.254
	BEP	9.073	2.551	12.648	1	0.000	8718.027
	CR	-0.046	0.170	0.072	1	0.788	0.955
	Constant	-17.445	4.205	17.213	1	0.000	0.000

Source: SPSS Output (2020)

Based on the output of the SPSS software in table 6, the results of the logistic regression equation are shown as follows:

$$\ln \frac{p}{1-p} = -17.445 + 0.586 (\text{DER}) + 0.813 (\text{LnTA}) + 9.073 (\text{BEP}) + -0.046 (\text{CR})$$

Based on the test results data shown in table 6, it can be seen that the wald value generated by DER is 7.226 with a significance of 0.007, and a positive regression coefficient of 0.586. The magnitude of the resulting significance value is still below the significance level so that the first predictor variable (leverage) is able to have an influence on the response variable. Thus, the first proposed hypothesis is **accepted**. Furthermore, the wald value generated by LnTA is 15,975 with a significance of 0.000, and a positive regression coefficient of 0.813. The magnitude of the resulting significance value is still below the significance level so that the second predictor variable (firm size) is able to have an influence on the response variable. Thus, the second hypothesis proposed is **accepted**. Other results show that the wald value generated by BEP is 12,648 with a significance of 0.000, and a positive regression coefficient of 9.073. The magnitude of the resulting significance value is still below the significance level so that the third predictor variable (profitability) is able to have an influence on the response variable. Thus, the third hypothesis proposed is **accepted**. Finally, the wald value generated by CR is 0.072 with a significance of 0.788, and a negative regression coefficient of 0.046. The magnitude of the resulting significance value is above the significance level so that the fourth predictor variable (liquidity) has no effect on the response variable. Thus, the fourth hypothesis proposed is **rejected**.

### Discussion

The first hypothesis states that leverage is said to have a positive and significant influence on hedging decisions. The test results show that this hypothesis is accepted. Debt to Equity Ratio (DER) provides an overview of the comparison of the company's long-term liabilities with capital. Long-term liabilities are in the form of long-term debts given by creditors. The higher the DER value, it means that the company's total liabilities are getting higher. If the liability is disproportionate, it can cause risks in the transaction. The risk will be even greater when the company operates across countries, the company will have a dependence on outside parties (creditors), so that it is faced with fluctuations in foreign exchange rates. When faced with fluctuations in foreign exchange rates, it can increase the probability of needing to

use hedging. The results of this study can be concluded that leverage has a significant positive effect on hedging decisions. This study supports the results of research conducted by Saraswati and Suryantini (2019), Hadinata and Hardianti (2018), Ariani and Sudiarta (2017) and Dewi and Purnawati (2016).

The second hypothesis states that the size of the company is said to have a positive and significant influence on the determination of hedging decisions. The test results show that this hypothesis is accepted. Larger company sizes tend to get more attention from various parties, so they will pay more attention to any small changes in operational activities. When a large company conducts cross-border transactions, it will involve various types of currencies, so it has the potential to experience the risk of fluctuations in foreign exchange rates. Therefore, the company requires a more stringent risk management in the form of a hedging policy to protect the company from fluctuations in foreign exchange rates. The results of this study can be concluded that the size of the company has a significant positive effect on hedging decisions. This study supports the results of research conducted by Saraswati and Suryantini (2019), Megawati et al. (2016), and Guniarti (2014).

The third hypothesis states that firm size is said to have a positive and significant influence on hedging decisions. The test results show that this hypothesis is accepted. Basic Earning Power (BEP) is used to find out how much the company's ability to maximize profit before interest and taxes from all company operations with total own capital. When profit can be maximized, the company will get ease of expansion, so the risk in each transaction will be higher. When the risks faced increase, a risk management system is needed. Hedging is an important tool that provides protection for multinational companies against changes in foreign exchange rates. The results of this study can be concluded that profitability has a significant positive effect on hedging decisions. This study supports the results of research conducted by Saraswati and Suryantini (2019), Hadinata & Hardianti (2018), and Jiwandhana and Triaryati (2016).

The fourth hypothesis states that liquidity is said to have a positive and significant influence on the determination of hedging decisions. The test results show that this hypothesis is rejected. Current Ratio (CR) shows the financial ratio determined by comparing current assets (current assets) with current liabilities (current liabilities). Companies that have a high level of CR are said to be increasingly able to meet their short-term obligations. When the company is able to meet its short-term obligations, it can avoid financial problems, thereby reducing the level of need for hedging policies. This study shows that liquidity has no significant negative effect, so it does not affect hedging decisions in manufacturing companies on the Indonesia Stock Exchange. Based on the results of the regression test, the current ratio has a negative regression coefficient value, but the resulting significance is more than the significance level used. From this explanation, it can be interpreted that the liquidity variable has a negative but not significant effect. When there is an increase in the liquidity ratio, there is a decrease in the probability of using hedging but not significantly, and vice versa.

## **Conclusions**

Based on the results of the logistic regression analysis, it was found that the leverage variable proxied by the Debt to Equity Ratio (DER) had a significant positive effect on hedging decisions in manufacturing companies on the Indonesia Stock Exchange. Firm size variable calculated by the natural logarithm of total assets (LnTA) has a significant positive effect on hedging decisions in manufacturing companies on the Indonesia Stock Exchange. The profitability variable as proxied by Basic Earning Power (BEP) has a significant positive effect on hedging decisions in manufacturing companies on the Indonesia Stock Exchange. The liquidity variable as proxied by the Current Ratio (CR) has a negative but not significant effect, so it does not affect hedging decisions in manufacturing companies listed on the Indonesia Stock Exchange.

This study has several limitations, namely only using a sample of 22 manufacturing companies, so that it is less representative of the company as a whole. In addition, on the basis of the rationale of the asset



substitution problem, this study has not found factors that can influence hedging decisions. Based on the explanation and some limitations of this study, it is recommended that the next researcher increase the number of samples and expand the scope of the research not only to manufacturing companies. In addition, the next researcher can add other variables such as foreign liabilities to total sales

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