Determinants of Hedging Decisions in State-Owned and Private Manufacturing Firms on the IDX

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ABSTRACT: The purpose of this study is to examine the determinants of hedging decisions in state-owned and private manufacturing firms on the IDX. Based on the previous research from Mediana & Muharam (2016), several determinant factors of hedging decisions were identified, namely liquidity, leverage, firm size, profitability and public ownership. The analytical method used is logistic regression analysis using a sample of 175 state-owned and private manufacturing firms from 2018-2020. The results of the analysis show that only liquidity and firm size have a significant influence on hedging decisions, which are negative and positive, respectively. The implication that can be taken is that when the firm makes a hedging decision, the firm needs to reduce liquidity or invest in working capital. On the other hand the firm needs to increase firm size through its fixed asset investment activities. Result of this study supports the optimal hedge ratio theory of Carter (2003).

KEYWORDS: Liquidity, Leverage, Firm Size, Profitability, Public Ownership, Hedging

I. INTRODUCTION

Firms in Indonesia have two sources of financing namely external and internal funds. Both sources of financing have costs or what is commonly known as the cost of capital. External financing capital costs in the form of interest and internal financing capital costs in the form of dividends. In choosing a source of financing, the firm must balance the financing sources used so that the cost of capital that appears is minimal so that the profits obtained by the firm are maximized. This is the principle that forms the basis of the science of financial management.

From financial management emerged working capital management which looks more at the firm's short-term operational activities. Basically, working capital management helps firms in determining short-term investment policies by looking at how many net current assets the firm has. This is what gave rise to the simple concept of hedging. Hedging in working capital is an activity to match the cash flows generated by the firm's assets according to the maturity date of the financing source used to fund the investment. With this simple concept, a conclusion can be drawn in making investment decisions that long-term investment projects should not be financed with short-term financing sources.

Over time, firms continue to grow and no longer only carry out operational activities nationally, but also reach international markets. Starting from export-import activities to seeking financing sources from international investors. With the development of the firm's business activities to the international market, the firm also develops its level of financial management in order to minimize the cost of capital that arises due to external financing sources from these international investors. This is where the more complex hedging emerges, hedging is used to manage exchange rate risk due to external financing in foreign currencies that can be affected by exchange rate fluctuations. Hedging facilities in the form of derivative instruments also take various forms, there are forwards, futures, options and swaps.

Se this explanation, prior to 1997, in Indonesia alone many private firms obtained short-term foreign loans and were not hedged against exchange rate fluctuations. Then in early 1998, Indonesia experienced a monetary crisis which resulted in the value of the Rupiah depreciating very high against the United States Dollar (US Dollar). It can be seen in Figure 1.1 that the value of the Rupiah depreciated by approximately 250% at its highest point compared to at the beginning of January 1998. It was noted that from the total foreign debt as of March 1998 which reached 138 billion US Dollars, around 72.5 billion US Dollars was private debt of which two thirds are short-term (approximately US$20 billion due in 1998). Meanwhile, foreign exchange reserves were only about 14.44 billion US dollars. This caused many firms in Indonesia that did not perform hedging to go bankrupt during the

monetary crisis because they were unable to pay off their short-term obligations with very high values due to the depreciation of the Rupiah.

Exchange rate volatility due to macroeconomic factors can affect the going concern principle in a firm that has foreign exchange obligations. The tendency of the Rupiah to depreciate against the US Dollar is also one of the trends that need to be considered if the firm has foreign exchange obligations where in March 2020 the exchange rate of the Rupiah against the US Dollar had touched the figure of Rap. 16,600.00 per one US Dollar. From various previous studies, it is suspected that there are several factors that can influence hedging decision making. Then the authors took several determinant factors of hedging decision to be retested, namely leverage, liquidity, firm size, profitability and public ownership based on studies of Median & Mahakam (2016), Firmansyah & Purnama (2020) and many more.

II. HYPOTHESIS DEVELOPMENT

The increasing leverage of a firm can increase the credit risk of the firm so that firm management will tend to hedge to manage credit risk that may occur. Moreover, these obligations arise from outside parties with different currencies so that exchange rate risk can also arise. Therefore, firms tend to hedge to minimize the economic impact of these risks if they occur. Increased liquidity of a firm can show the firm's ability to pay off its short-term obligations so that firm management tends not to need to hedge because current assets owned by the firm can already meet its short-term obligations. If risks arise such as credit risk, interest rates or exchange rates, management believes that the firm will not experience financial distress due to the current assets owned to cover these risks. Firms also tend not to require additional external funds because they have current assets that can be used for operational purposes. Large firms generally have a broad market share even to the international market. These international transactions can give rise to foreign exchange exposure so that large firms will tend to hedge to manage exchange rate risk. Increased profitability of a firm can encourage the firm to continue to develop its business. Therefore, the firm's management tends to hedge to minimize the risks that may arise during the firm's business development. Firms with high public ownership tend to hedge. This is because management wants to give a signal to the public that the firm's management can manage the risks that may arise properly so that the firm's financial performance can tend to increase steadily. Based on the signal shown, the public can give a positive sentiment to the firm and then it can have an impact on one of them, namely the increase in the value of the firm's shares. Based on that previous explanation; this study can formulate hypothesis development as follow:

H1. Hedging decisions will be influenced by specific factors i.e. Leverage, liquidity; firm size; profitability and public ownership

III. RESEARCH METHODS

III.1. Data

The firms studied in this study are all state-owned and private manufacturing sector firms listed on the Indonesia Stock Exchange in 2018 - 2020 with a total of 181 firms. The sample used in this study was selected using a purposive sampling technique, namely a sample selection technique with predetermined criteria. The following are the criteria for selecting the sample in this study as follow:

  1. State-owned & private manufacturing sector firms listed on the IDX in 2018 – 2020;
  2. The firm has issued audited financial statements for 2018 – 2020

III.2. Hypothesis Testing With Binary Logit

This research was conducted using a logit regression model because the dependent variable in the model is a binary variable (dichotomy variable). In addition, according to Januarti (2002), the logit regression model has a better classification level than other models and is not sensitive to the number of samples that are not the same in frequency.Kuncoro (2001) in Hardanto (2012) and Sudiarta & Setyawan (2022) says that logit regression has several advantages over other analytical techniques, namely:

a) No classical assumption test is needed even though there are several independent variables in the research model. This is because the logit regression does not have normality and heteroscedasticity assumptions on the independent variables.
b) Logit regression can process independent variables with various properties (continuous, district or dichotomous).
c) Logit regression does not require the limitations of the independent variables.
d) Logit regression does not require the independent variable to be in the form of an interval.

In general, the logit regression model can be stated as follows:

$$Li = Log\ \frac{Pi}{1-Pi} = bo + \sum_{j=1}^{k} b_j\ X_{ij} \qquad \textbf{(1)}$$

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where:

L_i = Dependent variable [value can only be between 0 and 1]

P_i = Probability

X_{ij} = Independent variable

From the general model, the equation for the research model related to hedging decisions can be formulated as follows:

$$L_i = Log \frac{P_i}{1 - P_i} = b_0 + b_1 X_1 + b_2 X_2 + \ldots\ldots + b_6 X_6 + u_i$$

Where:

Li = Hedging decision of firm i

X1 = Leverage

X2 = Liquidity

X3 = Firm size

X4 = Profitability

X5 = Public ownership

In determining the values of 1 and 0 as hedging decisions, the researcher looks at the notes on the audited financial statements published by each firm on the IDX.

IV. RESEARCH RESULTS AND DISCUSSION

IV.1. Descriptive Statistical Analysis

The following are the results of descriptive statistical analysis in the form of sample mean, maximum value, minimum value, standard deviation, value of skewness and value of kurtosis based on the sample used:

Table 1. Descriptive Statistical Analysis Results

Component	L_i	X_1	X_2	X_3	X_4	X_5
Mean	0,080000	2,952152	3,163172	23,30994	0,354603	0,229522
Median	0,000000	0,828698	1,556500	25,68950	0,032974	0,195595
Maximum	1,000000	786,9311	303,2819	32,45446	193,7273	0,771562
Minimum	0,000000	-6,553189	0,024222	11,91423	-7,846570	0,000000
Std. Dev.	0,271552	34,46482	16,05079	5,234576	8,480178	0,159962
Skewness	3,096281	22,49208	16,48782	-0,393110	22,64596	0,602792
Kurtosis	10,58696	511,9416	284,8758	1,809528	516,9648	2,580141
Jarque-Bera	2098,025	5710362,	1761842,	44,52365	5823370,	35,64997
Probability	0,000000	0,000000	0,000000	0,000000	0,000000	0,000000
Sum	42,00000	1549,880	1660,665	12237,72	186,1663	120,4989
Sum Sq. Dev.	38,64000	622419,8	134997,0	14358,01	37682,63	13,40803
Observations	525	525	525	525	525	525

Source: data analysis (2022)

Table 1 above shows the minimum, maximum, average, standard deviation, skewness and kurtosis values of the variables studied. From these results it can be seen:

a) In the first independent variable, namely leverage (X_1) shows that X_1 has a minimum value of -6.553189 and a maximum value of 786.9311 with an average value of 2.952152 and a standard deviation of 34.46482.

b) In the second independent variable, namely liquidity (X_2) shows that X_2 has a minimum value of 0.024222 and a maximum value of 303.2819 with an average value of 3.163172 and a standard deviation of 16.05079.

c) In the third independent variable, namely firm size (X_3) shows that X_3 has a minimum value of 11.91423 and a maximum value of 32.45446 with an average value of 23.30994 and a standard deviation of 5.234576.

d) In the fourth independent variable, profitability (X_4) shows that X_4 has a minimum value of -7.846570 and a maximum value of 193.7273 with an average value of 0.354603 and a standard deviation of 8.480178.

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e) In the fifth independent variable, namely public ownership (X_5) shows that X_5 has a minimum value of 0 and a maximum value of 0, 771562 with an average value of 0.229522 and a standard deviation of 0.159962.

f) In the dependent variable, namely hedging decision (L_i) shows that L_i has a minimum value of 0 and a maximum value of 1 with an average value of 0.08 and a standard deviation of 0.271552.

IV.2. Hypothesis Testing with Binary Logit

This hypothesis testing was conducted to determine whether there was an influence between the independent variables on the dependent variable. The following are the results of hypothesis testing using the binary logit method.

Table 2. Binary Logit Result

Dependent Variable: H
Method: ML – Binary Probit (Newton-Raphson / Marquardt steps)
Date: 03/01/212 Time: 01:05
Sample: 2018 2020
Included observation: 525
Convergence achieved after 10 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.98810	0.796552	2.495770	0.0126
ZLEVERAGE	-0.004308	0.029623	-0.145426	0.8844
ZLIQUIDITY	-0.421221	0.170281	-2.473680	0.0134
ZFIRMSIZE	-0.179343	0.035602	-5.037455	0.0000
ZPROFITABILITY	-0.009922	0.053958	-0.183877	0.8541
ZPUBLIC_OWN	0.411134	1.025626	0.400862	0.6885

McFadden R-Squared	0.149147	Mean dependent var	0.080000
S.D dependent var	0.271552	S.E. of regression	0.258307
Akaike info criterion	0.497241	Sum Squared resid	34.62894
Schawrz criterion	0.545965	Log likelihood	-124.5257
Hannan-Quinn criter.	0.516320	Deviance	249.0513
Restr.deviance	292.7078	Restr. log likelihood	-146.3539
LR Statistic	43.65653	Avg. log likelihood	-0.237192
Prob(LR-statistic)	0.000000		

Obs with Dep = 0	433	Total Obs	525
Obs with Dep = 1	42		

Source: data analysis (2022)

By using the logit regression equation below:

$$L_i = Log \frac{Pi}{1 - Pi} = bo + b_1X_1 + b_2X_2 + \ldots + b_6X_6 + u_i$$

Then the logit regression equation is obtained as follows:

$L_i = 1,988010 - 0,004308\ X_1 - 0,421221\ X_2 - 0,179343\ X_3 - 0,009922\ X_4 + 0,411134\ X_5$

Where:

L_i	=	Hedging decision
X_1	=	Leverage
X_2	=	Liquidity
X_3	=	Firm size
X_4	=	Profitability
X_5	=	Public ownership

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The feasibility test of the regression model (Hosmer and Lemeshow's Test) was conducted to test the null hypothesis that the empirical data matched the model or matched (there was no difference between the model and the data) so that the regression model could be said to be feasible. The statistical value of Hosmer and Lemeshow (H-L) is 0.1770 which is greater than 0.05 so it can be concluded that the logit regression model in this study can be said to be feasible and able to predict the value of observations well.

The McFadden R-Squared coefficient of determination is used to measure the ability of the existing model to explain the dependent variable. It can be seen that the coefficient of determination of the McFadden R-Squared research model is 0.149147 so it can be concluded that the independent variables (leverage, liquidity, firm size, profitability and public ownership) used in this research model can explain the dependent variables (hedging decision)) as much as 14.91% while the rest is explained by other independent variables outside the research model. Likelihood Ratio (LR) statistical test was conducted to test whether all independent variables simultaneously affect the dependent variable.Iit can be seen that the value of Prob (LR statistic) is 0.000000 which is smaller than 0.05 so it can be concluded that all independent variables (leverage, liquidity, firm size, profitability and public ownership) in this research model are simultaneously affect the dependent variable (hedging decisions).

From table 2 which shows the results of the Z statistic test above, it can be concluded as follows:

a) Leverage variable with a probability value of 0.8844 which is greater than 0.05 so that it can be interpreted that H1 is rejected. This means, based on the statistical Z test, in this research model leverage does not have a significant effect on hedging decisions.

b) Liquidity variable with a probability value of 0.0134, where the value is smaller than 0.05 so that it can be interpreted that H2 is not rejected. This means, based on the statistical Z test, in this research model liquidity has a significant influence on hedging decisions.

c) Firm size variable with a probability value of 0.0000 which the value is smaller than 0.05 so it can be interpreted that H3 is not rejected. This means, based on the statistical Z test, in this research model firm size has a significant influence on hedging decisions.

d) Profitability variable with a probability value of 0.8541 which is greater than 0.05 so that it can be interpreted that H4 is rejected. This means, based on the statistical Z test, in this research model profitability does not have a significant effect on hedging decisions.

e) The public ownership variable with a probability value of 0.6885 which is greater than 0.05 so that it can be interpreted that H5 is rejected. This means, based on the statistical Z test, in this research model public ownership does not have a significant effect on hedging decisions.

IV.3. Discussion of Research Results

Based on the results of the research above, it can be seen that of the five independent variables tested using binary logit, there are two variables that have a significant influence on hedging decisions, namely liquidity and firm size and three other independent variables, namely leverage, profitability, and public ownership does not have a significant effect on hedging decisions. For the test results of the leverage variable, it is found that leverage does not have a significant effect on hedging decisions. The results of this study are in accordance with research from Jiwandhana and Triaryati (2016) and Bodroastuti, Ekayana and Ratnasari (2019) and Anniyati, Hermanto and Hidayati (2020) which found that leverage had no significant effect on hedging decisions. Leverage does not have a significant effect on hedging decisions because the firm under study has a debt that is not dominated by foreign exchange debt or in other words, the firm under study has more domestic debt than foreign debt, so there is no need to hedge the exposure or to make a foreign exchange transaction. The results of this study contradict the results of research by Prabawati and Damayanti (2019) and Ayuningtyas, Warsini and Mirati (2019) which found that leverage has a positive and significant effect on hedging decisions.

The other findings is that liquidity has a significant negative effect on hedging decisions. The results of this study are in accordance with research from Ariani and Sudiartha (2017) and Hidayah and Prasetiono (2016) who found that liquidity has a significant negative influence on hedging decisions. Liquidity has a significant negative effect on hedging decisions because the firm under study has a high level of liquidity. The higher the firm's liquidity, the firm does not need external financing sources to carry out its operational activities so that the risk of the firm being exposed to foreign exchange exposure is less because the firm does not have a lot of foreign currency debt. Because the risk is small, the firm does not need to hedge. The results of this study contradict the results of research by Prabawati and Damayanti (2019) and Bodroastuti, Paranita and Ratnasari (2019) which found that liquidity does not have a significant influence on hedging decisions.

Firm size had a significant negative effect on hedging decisions. The results of this study are in accordance with the research of Krisdian and Badjra (2017) who found that firm size had a significant negative effect on hedging decisions. Firm size

has a significant negative effect on hedging decisions because the firms studied tend to have large asset values so they tend to use existing assets to mitigate foreign exchange exposures rather than using derivatives as a means of hedging. The results of this study contradict the results of research by Hidayah and Prasetiono (2016) and Anniyati, Hermanto and Hidayati (2020) who found that firm size had a significant positive effect on hedging decisions.

Profitability does not have a significant effect on hedging decisions. The results of this study are in accordance with research from Ariani and Sudiartha (2017) who found that profitability does not have a significant effect on hedging decisions. Profitability does not have a significant effect on hedging decisions because the firms studied have a high level of profitability so that they use internal funds resulting from operational activities to fund their needs so that the risk of foreign exchange exposure due to foreign currency debt is not so significant and the firm does not hedge score. The results of this study contradict the research results of Jiwandhana and Triaryati (2016) who found that profitability has a significant positive effect on hedging decisions.

Finally public ownership did not have a significant effect on hedging decisions. The results of this study are in accordance with research from Hidayah and Prasetiono (2016) and Amaliyah (2020) which found that public ownership does not have a significant effect on hedging decisions. Public ownership does not have a significant influence on hedging decisions, this can be because the public firms studied tend to be owned by managers more than the public so that hedging decisions are not influenced by how many shares are owned by the public because those who decide to hedge or not are firm management. The results of this study contradict the results of research by Bodroastuti, Paranita and Ratnasari (2019) and Anniyati, Hermanto and Hidayati (2020) which found that public ownership has a significant positive effect on hedging decisions.

V.   CONCLUSIONS AND SUGGESTIONS
V.1.   Conclusion
Based on the results of the analysis and discussion that have been described previously, it can be concluded as follows:
1. State-owned and private firms in the manufacturing sector studied tend not to hedge.
2. The leverage variable does not have a significant effect on hedging decisions in the firms studied.
3. This could be due to the fact that the firm under study has a debt that is not dominated by foreign exchange debt or in other words, the firm under study has more domestic debt than foreign debt, so there is no need to hedge foreign exchange exposure.
4. The liquidity variable has a significant negative effect on hedging decisions in the firms studied. This can be caused because the firm under study has a high level of liquidity. The higher the firm's liquidity, the firm does not need external financing sources to carry out its operational activities so that the risk of the firm being exposed to foreign exchange exposure is less because the firm does not have a lot of foreign currency debt. Because the risk is small, the firm does not need to hedge.
5. Firm size variable has a significant negative effect on hedging decisions in the firms studied. This could be because the firms studied tend to have large asset values, so they tend to use existing assets to mitigate foreign exchange exposures rather than using derivatives as a means of hedging.
6. The profitability variable does not have a significant effect on hedging decisions in the firms studied. This can be due to the fact that the firms studied have a high level of profitability, so they use internal funds from operational activities to fund their needs so that the risk of foreign exchange exposure due to foreign currency debt is not so significant and the firm does not hedge.
7. The public ownership variable does not have a significant effect on hedging decisions in the firms studied. This could be due to the fact that the public firms studied tend to be owned by managers more than the public, so that hedging decisions are not influenced by how many shares are owned by the public because the managerial party decides to hedge or not.

V.2.   Limitations of the Research
In this study, researchers have limitations in terms of the selection of independent variables which can be seen from the coefficient of determination test with a result of 14.91% which is relatively small even though the likelihood ratio value states that all independent variables in this study simultaneously affect the dependent variable. Therefore, other independent variables can be added for further research.

V.3.   Suggestions
Based on the results of the discussion and conclusions regarding the variables including leverage, liquidity, firm size, profitability and public ownership on hedging decisions in state-owned and private firms in the manufacturing sector, the following are suggestions that the author can give:

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1. For the management or firm stakeholders, this research is made as a means of consideration regarding hedging activities in mitigating the risks that have been described in this research.
2. For further research, it would be possible to use a wider research sample, because the wider the sector studied, the more representative the population of public firms listed on the IDX will be. Further research can also use other factors that are indicated to have an influence on hedging decision making.

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