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Firm Perspective on Bankruptcy Signals in Hedging Decisions

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A B S T R A C T

The Fed's tapering off policy has resulted in capital outflows in developing countries, including Indonesia. The Rupiah exchange rate against the US Dollar is volatile and often weakens daily. Indonesia is still struggling to minimize imports and maximize exports which impacts exchange rate risk and causes financial distress when they have high foreign debt. The main objective of this study is to empirically test the effect of financial distress on hedging decisions and the possibility of differences in financial distress between companies that hedge and those that do not hedge. The research sample is all companies in the sector listed on the Indonesia Stock Exchange (IDX) for the period 2011-2016, totaling 428 observations. The analysis technique uses logistic regression and different tests with the Mann-Whitney and Kruskal Wallis Test. The results of this study indicate that financial distress has no significant effect on hedging decisions and there are no differences in financial distress between companies that hedge and those that do not hedge. Company complexity has a significant effect on hedging decisions. This study also proves that there is no difference in hedging decisions between companies that indicate financial distress and those that do not.

Keywords: Bankruptcy Signals, Financial Distress, Hedging

1. Introduction

The Fed's tapering off policy has an impact on capital outflows in emerging market countries such as Indonesia. The instability of the rupiah against the US dollar affects the decline in economic levels if dependence on imported raw materials and foreign debt continues to grow without being followed by an increase in exports. Van Agtmael [1] defines emerging markets as countries with low to medium economic levels based on per capita income.

Unstable changes in exchange rates can affect the financial stability of a country and company so management and stakeholders need to pay attention to how the company manages its finances. All parties involved in a company certainly want the company to survive, develop, and produce good performance in the short and long term. However, not a few companies experience financial turmoil and must survive in difficult conditions. The financial difficulties faced by a company indicate that the company is experiencing financial distress [2]. Financial distress is one of the symptoms that leads to company bankruptcy and liquidation.

Companies in Indonesia are spread across nine sectors based on data from the Indonesia Stock Exchange (IDX). The nine sectors are agriculture, mining, basic industry and chemicals, various industries, consumer goods industry, property, infrastructure, finance, and trade and investment. The Indonesia Stock Exchange always monitors and evaluates the performance and development of a listed public company. The Indonesia Stock Exchange will give warnings, suspensions, and even expel companies that are in poor financial condition. One of them is a company in the field of telecommunications services, namely PT Bakrie Telecom, Tbk. The Indonesia Stock Exchange has temporarily suspended the company's trading in the stock market since May 2019. This company has been suspended in 2017. The IDX did this due to the condition of the company's assets, which since 2010 have plunged by almost half to Rp 738.95 M from Rp 12.35 trillion at the end of 2010. This total asset was followed by the company's total debt which continued to more than double from Rp 7.16 trillion in 2010 to Rp 15.82 trillion at the end of September 2018. This condition caused the company's equity value to record a negative 6 consecutive years since 2013 (www.cnbcindonesia.com).

Financial distress is an indicator of a company's financial decline. If the company does not immediately handle its financial distress conditions, the company can go bankrupt and liquidate. A company experiencing financial distress usually has negative operating profit, net profit, and book value of equity [3]. Companies with a high level of leverage will be more at risk of experiencing financial distress. Hedging is one way to reduce and protect a company against possible risks that occur and bankruptcy conditions. Géczy, Minton [4] explained in their research that companies with a high level of leverage will be more likely to use derivative instruments as a way to avoid costs arising from financial distress.

Hedging is commonly done by companies that trade internationally to hedge risks due to changes in exchange rates so that the company can still maintain profits from investments or international trade activities. A subsidiary of PT Bakrie & Brothers, PT Bakrie Telecom, was recorded to be experiencing financial distress due to increasing debt until in 2009 the company recorded a loss of Rp. 14.2 billion. This loss caused the cellular phone operator company that owns the Esia trademark to only make a net profit of Rp 5.73 M. Therefore, PT Bakrie decided to hedge all of its US dollar denominated

debt with a value of approximately 145 million US dollars (www.cnbcindonesia.com). However, hedging decisions do not always result in profits because if at a certain period, it turns out that the value of the US dollar weakens against the value of the rupiah, it causes exchange rate losses.

Several studies on financial distress and hedging provide research gaps. Research conducted by Sianturi and Pangestuti [5] and Mediana and Muharam [6] shows that financial distress has a significant negative effect on hedging decisions. However, research by Aslikan and Fuadati [7] and Krisdian and Badjra [8] provides results that financial distress has a significant positive effect on hedging. In contrast to these studies, it turns out that there is research showing that there is no significant influence between the condition of companies experiencing financial distress and the decision to hedge [9].

The purpose of this study was to examine the effect of financial distress on hedging decisions while examining the differences in hedging decisions between companies that indicate financial distress and financially healthy companies. The research sample is 428 companies listed on the IDX for the period 2011-2016. The analysis technique uses logistic regression and non-parametric difference test 2 categories, namely Mann-Whitney and 9 categories with Kruskal-Wallis. The results showed that the condition of the company's financial difficulties did not affect hedging decisions in Indonesian companies during the 2011-2016 period. Then, the results of the t-test show that there is no difference in financial distress between companies that hedge and do not hedge.

2. Theoretical Review

Hedging according to Ross, Westerfield [10] is an action taken to reduce a company's exposure to price or rate fluctuations. Exposure to exchange rate fluctuations is the extent to which a company can be affected by exchange rate fluctuations. Hedging decisions for companies are very useful in the unstable global economic situation.

The biggest risk of multinational transactions is fluctuations in foreign exchange rates [11]. Multinational companies face very significant exchange rate exposure due to delays in finalizing their trade transactions. Some of the exposure is due to the time between price approval and delivery of goods. Hence, hedging is done to minimize the risk by locking in a future price at a pre-set price [2].

Hedging provides economic benefits for producers, creditors, exporters, and consumers. Hedging is useful to protect and reduce the risk of price fluctuations, as well as a marketing tool in determining the future selling price of a product when storing a product. In addition, banks become more courageous in providing credit to companies that have hedged their commodities and consumers get relatively lower and stable prices because they have protected against risks and minimized risks due to price fluctuations. However, hedging can also provide losses that must be faced by hedgers, namely costs incurred in hedging, such as transportation costs, bank interest costs, insurance costs, and transaction costs.

Financial distress is a state of financial difficulty that is being faced by a company. Financial distress based on the definition of Platt and Platt [12] is one of the stages of decline in financial condition before experiencing bankruptcy or liquidation. The company is said to be in financial distress when the company is no longer able to pay debts that will or have matured. This reflects that the company does not have enough funds to pay it off. The company usually also has a negative net profit, reflecting an unhealthy financial condition for several years. Usually, financial distress is characterized by delays in deliveries, decreased product quality, and delays in paying bills from banks.

According to Aswath [13], the factors that cause companies to experience financial distress are more micro, namely cash flow difficulties, large amounts of debt, and losses in the company's operational activities for several years. Internal factors are not the only factors that cause financial distress, there are also external macro factors that can cause companies to experience financial distress. External factors can be in the form of government policies that increase the business burden that must be borne by companies, such as increased tax rates and increased loan interest rate policies.

Iqbal [14] examines financial distress in introducing hedging in the oil and gas industry with the results of companies that hedge showing a greater level of leverage than companies that do not hedge. This study also states that the decision to hedge is motivated by financial distress, especially in oil and gas companies. Several studies on financial distress and hedging provide research gaps. The relationship between financial distress and hedging decisions is negative [5, 6], while financial distress conditions have also been shown to increase companies' decisions to hedge [7, 8]. Based on these previous studies, the hypotheses developed in this study are:

H1: Financial distress affects hedging decisions

H2: There are differences between companies indicated by financial distress that hedge and do not hedge.

H3: There are differences in hedging decisions between companies that indicate financial distress and those that do not indicate financial distress.

3. Research Methodology

Sampling in this research uses purposive sampling by determining sample criteria. The research sample is all companies listed on the IDX for the period 2011-2016. The initial data amounted to 533 to 428 companies. There are 3 methodologies used in this study, namely (a) Logistic regression to analyze hypothesis 1, (b) 2-category non-parametric test (Mann-Whitney U) to analyze hypothesis 2, and (c) 9-category non-parametric test (Kruskal-Wallis) to analyze hypothesis 3. The regression model to test the first hypothesis is as follows:

$$Ln\left(\frac{p}{1-p}\right) = a + \beta 1FD + \beta 2CR + \beta 3DER + \beta 4FZ + \beta 5MBVE + \beta 6ICR + \beta 7CR.DER + \beta 8CR.FZ + \beta 9CR.MBVE + \beta 10CR.ICR + \beta 11DER.FZ + \beta 12DER.MBVE + \beta 13DER.ICR + \beta 14FZ.MBVE + \beta 15FZ.ICR + \beta 16MBVE.ICR + \epsilon \quad (1)$$

The dependent variable in this study is hedging. Measurement of hedging using the dummy method. If the company applies hedging with one or more derivative instruments, it is given a value of 1 and vice versa, if the company does not use derivative instruments as a hedging decision, it is given a value of 0. The independent variable in this study is financial distress. The measurement of financial distress (FD) uses B-Sherrod's Failure which can be formulated as follows [15]::

$$Z = 17X_1 + 9X_2 + 3{,}5X_3 + 20X_4 + 1{,}2X_5 + 0{,}1X_6 \quad (2)$$

X_1 = net operation capital / total assets

X_2 = current liquid assets / total assets

X_3 = total equity / total assets

X_4 = net income before income tax / total assets

X_5 = total assets / total liabilities

X_6 = total equity / total fixed assets.

Based on the B-Sherrod's Failure model, there are 5 categories in classifying the condition of the company shown in Table 1.

Table 1 - Risk Level Criteria

Category	Risk Level	Z
1	The company is not insolvent	Z>25
2	There is a small chance that the company is exposed to the risk of bankruptcy	25≥Z>5
3	It is difficult to predict the risk of company bankruptcy	20≥Z>5
4	The company is significantly exposed to the risk of bankruptcy	5≥Z>-5
5	The company is at risk of bankruptcy	Z≤-5

Source: Arkan [15]

After calculating financial distress, it will be classified according to each category. Companies with a value of Z>25, 25 Z>5, and 20 Z>5 are not classified as financial distress, so they will be given a value of 0. Conversely, companies that have a value of 5 Z>-5 and Z -5 are classified as financial distress and will be given a value of 1.

Financial performance ratios are used as control variables to evaluate the financial position of a company and determine whether the company's finances are in a healthy condition or not, such as the assessment of financial distress where the components of the independent variables used are financial ratios with several indicator groupings from the regression results. Table 2 shows the operational definition of control variables which will then be interacted with one another to support the logistic regression model used in this study and as a factor that strengthens or weakens the relationship between the independent variable and the dependent variable.

Table 2 – Control Variable

Ratio	Measurement	Formula and Definitions
Liquidity Ratio	Current ratio (CR)	$\frac{Current\_Assets}{Current\_Liabilities}$ The company's ability to meet short-term obligations with current assets [16]
Leverage Ratio	Debt to equity ratio (DER)	$\frac{Total\_Liabilities}{Total\_Equity}$ Equity financing of debt [17]
Growth Ratio	Market to book value of equity (MBVE)	$\frac{Shares\ outstanding \times Closing\_price}{Total\_Equity}$ Measures the company's ability to maintain its position in the industry and general economic development [17]

Interest Coverage Ratio (ICR)	$\frac{\text{Earning\_before\_interest\_and\_tax\_(EBIT)}}{\text{Interest expense}}$ The company's ability to bear interest expenses, the higher the ICR indicates a low financial distress cost.
Firm Size (FZ)	$Ln(Total\_Asset)$ The higher the size of the company, the more operational activities will increase [5]

4. Results and Discussion

The first hypothesis was tested with logistic regression. Before the main test is carried out, first test the ability of the independent variables to explain the dependent variable using the Omnibus Tests of Model Coefficient, and test the accuracy of the model using the Hosmer and Lemeshow Test. The test results in Table 3 show a significance value of 0.000 <0.050 so it can be concluded that variable X can influence variable Y. Then, Table 4 shows the Nagelkerke R Square value of 0.241 and Cox & Snell R Square of 0.154 which means that the ability of variable X to explain variable Y is 24.1% and there are 75.9% other factors outside the model that explain the dependent variable. Table 5 shows a significance value of 0.208> 0.05, so it is concluded that the equation model used can explain the relationship between variable X and variable Y.

Table 3 – Omnibus Tests of Model Coefficient

Description	Chi-Square	Sig
Step	349.816	0.000
Block	349.816	0.000
Model	349.816	0.000

Table 4 – Nagelkerke R Square dan Cox & Snell R Square

-2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
1774.758	0.154	0.241

Table 5 – Hosmer and Lemeshow Test

Chi-Square	Sig
10.890	0.208

The logistic regression results in Table 6 show that financial distress has a significance level of more than 0.050, namely 0.325 so that the results show that there is no effect of financial distress on hedging decisions. These results are in line with the research of Nuzul and Lautania [9] who found no relationship between financial distress and hedging activities in non-financial companies in Indonesia. The control variable used in this study is one variable with a significance level of 0.000 which indicates that company size affects the company's decision to make hedging decisions. CR_DER, DER_FZ, DER_ICR, and FZ_ICR show a significant relationship to hedging decisions.

Table 6 – Results of Logistic Regression Analysis

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Constant	.944	.273	11.978	1	.001***	2.569
FD	.250	.254	.968	1	.325	1.284
CR	.014	.018	.612	1	.434	1.014
DER	-.009	.013	.437	1	.509	.991
FZ	-.101	.012	68.533	1	.000***	.904
MBVE	.001	.004	.094	1	.759	1.001
ICR	.000	.000	.209	1	.648	1.000
CR_DER	.322	.082	15.520	1	.000***	1.379
CR_FZ	-.045	.041	1.219	1	.270	.956

CR_MBVE	.025	.044	.326	1	.568	1.026
CR_ICR	-.002	.037	.002	1	.964	.998
DER_FZ	.197	.029	46.612	1	.000***	1.217
DER_MBVE	-.055	.043	1.620	1	.203	.946
DER_ICR	-.069	.033	4.211	1	.040**	.934
FZ_MBVE	.030	.022	1.884	1	.170	1.031
FZ_ICR	-.050	.014	12.485	1	.000***	.951
MBVE_ICR	.014	.026	.319	1	.572	1.015

***,**,* significant at 1%, 5%, and 10% level

Table 7 – Mann-Whitney Test

Variable	Z	Sig
Financial Distress	-0.272	0.785

Table 8 – Kruskal-Wallis Test

Variable	Chi-Square	Sig
Hedging	10.401	0.109

The second hypothesis was tested with the Mann-Whitney Test with a significance value of 0.785> 0.050 so that H2 was rejected, namely that there was no difference in financial distress between companies that hedged and did not hedge. Furthermore, the third hypothesis was tested using the Kruskal-Wallis Test by grouping by company sector. There are nine sectors tested with a significance level of 0.109> 0.050 so H3 is rejected. The results of this study indicate that there is no difference in hedging decisions between companies that indicate and do not indicate financial distress.

The results of this study indicate that financial distress in Indonesia does not affect company management to make hedging decisions. The results of this study are supported by the financial sector which is the sector with the smallest level of financial distress, namely 0.34% of the nine sectors but has the highest level of hedging, namely 47.28%, while the Consumer Goods Industry sector with the smallest level of hedging of the nine sectors only indicated financial distress of 1.85%. The Infrastructure, Utilities, and Transportation sector has the highest level of financial distress at 28.85% and hedging at 37.18%. The absence of the influence of the company's management decision to hedge when experiencing financial distress is because in six years the company did not experience financial distress in a row. Company management when making decisions is not only based on indications of financial distress but there are 75.9% other factors that are not independent variables or control variables of this study.

Hedging decisions made by company management are based on foreign currency transactions that can affect company finances. One of the activities that use foreign currency is export-import activities. In 2011-2016 there was no significant difference between export-import, it can be seen in Figure 1. The export-import development report from 2011 to 2016 did not cause the company to hedge because the company's management considered that its financial level did not experience external threats even though the calculation might indicate financial distress.

a)

RANGKUMAN 9 SEKTOR

NO	SEKTOR	PERUSAHAAN	TOTAL		PERSENTASE	
			FD	HG	FD	HG
1	BASIC INDUSTRY & CHEMICALS	324	14	40	4,32%	12,35%
2	CONSUMER GOODS INDUSTRY	162	3	14	1,85%	8,64%
3	INFRASTRUKTUR, UTILITAS & TRANSPORTASI	156	45	58	28,85%	37,18%
4	KEUANGAN	294	1	139	0,34%	47,28%
5	MINING	198	19	46	9,60%	23,23%
6	MISCELLANEOUS INDUSTRY	186	16	38	8,60%	20,43%
7	PERTANIAN	72	7	11	9,72%	15,28%
8	PROPERTI, REAL ESTAT & KONSTRUKSI BANGUNAN	264	6	44	2,27%	16,67%
9	TRADE, SERVICE, & INVESTMENT	444	20	39	4,50%	8,78%
	DATA	2100				
				MAX	28,85%	47,28%
				MIN	0,34%	8,64%

b)

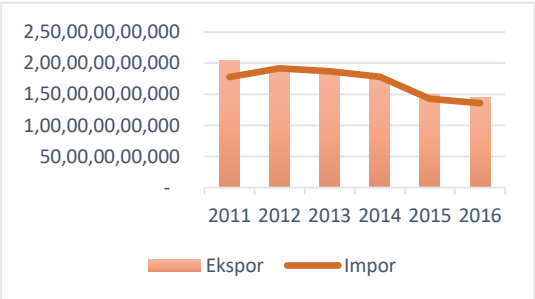

Fig. 1 - (a) Financial Distress and Hedging Summary of 9 Sectors; (b) Indonesia's Export and Import Development in 2011 - 2016

5. Conclusion

The financial distress of companies in Indonesia does not affect management decisions in making hedging decisions. Management makes hedging decisions not only by looking at the financial distress experienced by the company, but also other factors such as export and import activities that are

risky because they use foreign currencies. There was no large imbalance in export and import activities in Indonesia during the study period so the company's financial condition was in good condition despite indications of financial distress. Based on the research results, the financial distress experienced by the company did not last for 6 consecutive periods so the results showed no difference in financial distress between companies that hedged and did not hedge.

The financial sector in Indonesia experienced the lowest financial distress conditions of other sectors, but hedged the most compared to other sectors. The largest financial distress condition in Indonesia is the infrastructure, utilities and transportation sector followed by the second largest level of hedging decisions. This trend is evidenced by the results of this study that there is no difference in hedging decisions between companies indicating financial distress or not. Meanwhile, of the several control variables, only Firm Size affects the company's decision to hedge. This means that companies with operational complexity will influence hedging decision-making.

The limitation of this study is the limited control variables used in this study. Future research can add control variables to provide more consistent results and can increase the research period because the company's financial distress needs to be studied continuously.

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