

Analysis of the Effect of Liquidity and Solvency on Hedging Decisions

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Abstract

This study aims to determine the effect of liquidity (current ratio), solvability (debt to equity ratio) on hedging decisions in mining companies in the Indonesia Stock Exchange 2016-2019 period using binary logistic regression. The total population in this study were 41 mining companies listed on the Indonesia Stock Exchange in the 2016-2019 period. The type of data used is secondary data obtained from the Indonesia Stock Exchange (IDX).

Simultaneous significant test results seen from the Omnibus Test of Model table that there is an influence of liquidity and solvability on hedging decisions, while partially, the variable liquidity (current ratio) has a significant effect, while solvability (debt to equity ratio) has no effect on hedging decisions.

Keywords: *hedging decision, leverage, liquidity*

INTRODUCTION

Assessing currency values from the perspective of currencies from other countries using the concept of exchange rates or exchange rates (MM Hanafi & Halim, 2009). Currency exchange rates can be said to be the number of national or domestic currencies that must be issued in order to obtain one unit of foreign currency. Exchange rate risk will arise due to exchange rate uncertainty that occurs due to fluctuations in exchange rate from imbalances in the supply and demand of a foreign currency (Griffin, Ricky, Pustay, & W, 2005). Uncertainty about changes in currency values can have an impact on sales, prices, exporters and importers' profits. This is a major risk for companies involved in multinational transactions.

Basically, multinational trade encourages increased competition and fluctuations in market prices that increase business uncertainty or risk in maintaining business. Changes in foreign currency values resulting from fluctuations in foreign exchange rates can be seen in Figure 1



The existence of movements in the rupiah exchange rate that may have an impact on disadvantages, given that Indonesia's foreign debt, which is dominated by the US dollar, is increasing. International trade activities that use foreign currencies in export and import transactions so that companies have the risk of being affected by foreign exchange

exposure. When the IDR has decreased or it can be said that the USD has been appreciated, it will have an impact on the high price of imported goods and result in expensive prices of goods as well (Mishikin, 2008).

Accounting exposure, economic exposure, transaction exposure, foreign exchange exposure are the exposures that will be faced by multinational trading companies (M. Hanafi, 2009). Exposure as the level of cash flows that is affected by changes in exchange rates (Paranita, 2011). The biggest risk faced by multinational companies is foreign currency exposure (Dumas, 1978; Levi, 1990; Shapiro, 1975) (Shapiro, 1975) in (Du & Hu, 2012) suggested that changes in foreign currency could affect a company's cash flow. Given the negative impact of the risk of foreign exchange rate fluctuations and safeguarding the interests of shareholders, multinational companies need to anticipate by implementing hedging policies with foreign currency derivative instruments (Paranita, 2011). Empirically, the liquidity ratio variable has an effect on hedging decisions in accordance with the research (Ahmad, Mardiyati, & Nashrin, 2015; Livingstone & Ngugi, 2017; Mediana & Muharam, 2016) and the solvency ratio has an effect on hedging decisions in accordance with the research results (Chaudhry, Mehmood, & Mehmood, 2014; Mediana & Muharam, 2016).

Based on the results of this study, the authors try to analyze how these two ratios affect hedging decisions in mining companies for the 2016-2019 period.

LITERATURE REVIEW

Corporate risk management, particularly hedging activities, has become an essential strategy for firms seeking to mitigate exposure to financial risks arising from fluctuations in currency, interest rates, or commodity prices. The primary objective of hedging is to reduce cash flow volatility and the probability of financial distress, thereby safeguarding firm value and investment opportunities (Smith & Stulz, 1985). Hedging decisions are influenced by a wide range of firm-specific characteristics, among which liquidity and solvency represent critical determinants.

Liquidity refers to a firm's ability to meet its short-term obligations and finance operational needs without relying excessively on external capital. Firms with strong liquidity positions are better equipped to fund derivative contracts, meet margin requirements, and absorb the costs associated with hedging (Minton & Schrand, 1999). In this context, liquidity is viewed as an enabling factor for risk management practices. However, an alternative perspective suggests that firms with high levels of liquidity may rely on internal cash reserves as a form of "self-insurance," thereby reducing the need to engage in costly hedging activities (Bates, Kahle, & Stulz, 2009). Consequently, the relationship between liquidity and hedging remains theoretically ambiguous and context-dependent.

Solvency, which is closely related to leverage, reflects the firm's long-term financial stability and its ability to meet debt obligations. High leverage increases the risk of financial distress, thereby providing stronger incentives for firms to hedge in order to stabilize cash flows and reduce default probability (Nance, Smith, & Smithson, 1993). Creditors and rating agencies may also impose explicit or implicit pressure on highly indebted firms to adopt hedging strategies, particularly to preserve debt-servicing capacity and creditworthiness. Thus, solvency is generally expected to be negatively

associated with hedging risk—that is, lower solvency (or higher leverage) is associated with greater hedging activity.

The interaction between liquidity and solvency further complicates the decision-making process. Firms with both high leverage and sufficient liquidity are most likely to engage in hedging, as they simultaneously face heightened distress risk and possess the resources to manage such risks. Conversely, highly leveraged firms with poor liquidity may lack the means to implement hedging despite strong incentives. This interaction underscores the importance of examining liquidity and solvency not only as independent determinants but also as complementary drivers of hedging behavior.

THEORETICAL FRAMEWORK

The theoretical foundation for examining the effect of liquidity and solvency on hedging decisions is grounded in corporate risk management theory. Firms are assumed to pursue hedging strategies primarily to maximize shareholder value by minimizing the costs of financial distress, ensuring investment continuity, and reducing agency costs between managers, shareholders, and creditors (Froot, Scharfstein, & Stein, 1993). Within this framework, liquidity and solvency emerge as pivotal variables that influence managerial choices regarding hedging.

Liquidity reflects the firm's capacity to finance derivative transactions and meet collateral obligations, thereby enhancing its ability to engage in risk management practices. From a facilitation perspective, higher liquidity is hypothesized to increase hedging activity. However, consistent with the substitution hypothesis, firms with abundant liquidity may instead rely on internal reserves to mitigate risks, thereby reducing the incentive to hedge. This dual perspective necessitates empirical investigation to determine the dominant effect in specific contexts.

Solvency, on the other hand, captures the extent of leverage and long-term financial stability. The trade-off theory suggests that firms with lower solvency (i.e., higher leverage) face greater exposure to financial distress, creating stronger incentives to hedge. This aligns with the financial distress hypothesis, which predicts a positive relationship between leverage and hedging intensity. Moreover, creditor monitoring and covenant restrictions may further reinforce hedging behavior in highly indebted firms.

Based on these arguments, the study proposes the following hypotheses, H1: Liquidity has a significant effect on hedging decisions. H1a (Facilitation Hypothesis): Higher liquidity increases the likelihood of hedging. H1b (Substitution Hypothesis): Higher liquidity decreases the likelihood of hedging. H2: Lower solvency (higher leverage) is positively associated with hedging decisions. H3: Liquidity moderates the effect of solvency on hedging, such that the positive relationship between low solvency and hedging is stronger in firms with high liquidity.

These hypotheses provide the foundation for the empirical model, which seeks to test the direct and interactive effects of liquidity and solvency on hedging behavior.

PREVIOUS RESEARCH

Empirical studies examining the determinants of hedging behavior have produced mixed results, particularly regarding the role of liquidity. Minton and Schrand (1999) find that firms with higher levels of cash flow and liquidity are more likely to hedge, supporting the

view that liquidity enables firms to absorb the costs of derivatives usage. Similarly, Allayannis and Weston (2001) document that liquidity provides firms with the flexibility to adopt hedging strategies, particularly in foreign exchange exposure. In contrast, Bates et al. (2009) argue that firms with excess liquidity may substitute hedging with cash holdings, effectively reducing their reliance on financial derivatives.

The relationship between solvency and hedging has been more consistently established in the literature. Nance et al. (1993) and Haushalter (2000) report that firms with higher leverage are more likely to hedge, driven by the need to reduce earnings volatility and avoid financial distress. Studies conducted in emerging markets (Bartram, Brown, & Fehle, 2009) also confirm the positive association between leverage and hedging, although the magnitude of this effect varies across institutional settings. These findings underscore the importance of solvency as a primary determinant of hedging behavior.

Recent studies have also explored the interaction between liquidity and solvency. For instance, Lins, Servaes, and Tufano (2010) show that firms with both strong liquidity positions and high leverage are more active in risk management, as they possess both the incentive and the capacity to hedge. Conversely, leveraged firms with poor liquidity may face financial constraints that limit their ability to engage in hedging, even when the incentives are strong.

In sum, previous research indicates that while solvency consistently exhibits a positive relationship with hedging decisions, the effect of liquidity remains ambiguous, varying by market conditions, industry characteristics, and the specific risk exposures under consideration. This ambiguity highlights the need for further empirical research that explicitly examines the joint effect of liquidity and solvency, particularly in contexts where access to derivative markets may be limited or costly.

METHOD

In this study, the population used is mining companies listed on the IDX, with the selected sample being 41 companies using data from 2016-2019. In this study using a logistic regression test, the first to see the economic exposure of a company can be seen with a model.

$$L = \ln\left(\frac{pt}{1-pt}\right) = b_0 + b_1CR + b_2DER + et$$

Where is the $\ln\left(\frac{pt}{1-pt}\right)$ Logs of companies making hedging decisions and do not use hedging decisions. And in the logistic regression analysis stage contains a test of the whole model The statistics used are based on the likelihood function. The likelihood L of the model is the probability that the hypothesized model describes the input data. To test the null and alternative hypotheses, L is transformed into -2 LogL (Ghozali, 2018).

Next perform the test of the coefficient of determination (Cox and Snell's R square) Is a measure that tries to imitate size R² on multiple regression which is based on the likelihood estimation technique with a maximum value of less than 1 (one) so it is difficult to interpret. Nagelkerke's R square is a modification of the Cox and Snell's coefficients to ensure that the value varies from 0 (zero) to 1 (one). This is done by dividing the Cox and Snell's values R² with the maximum value. Nagelkerke's value R² can be interpreted as a value R² on multiple regression (Ghozali, 2018).

Then perform a regression model feasibility test (Hosmer and Lemeshow's Goodness of Fit Test) testing the null hypothesis and empirical data fit or fit the model (there is no fit difference between the model and the data so that the model can be said to be fit). If the value of Hosmer and Lemeshow's Goodness-of-fit statistical test is equal to or less than 0.05, then the null hypothesis is rejected, which means that there is a significant difference between the model and its observation value. If the statistical value of Hosmer and Lemeshow's Goodness-of-fit test is greater than 0.05, then the null hypothesis cannot be rejected and it means that the model is able to predict its observation value or it can be said that the model is acceptable because it matches the observation data (Ghozali, 2018),

In testing the research hypothesis, the simultaneous model significance test was carried out (Omnibus Test of Model Coefficients) shows the significance of the logistic binary regression model obtained from the research results. If the value of Sig $< \alpha = 0.05$, it can be assumed that at least one independent variable affects the model (Pramesti, 2013) and partially test the significance of the model (Wald test). This is done the same as the t test on multiple linear regression, namely to find out whether the coefficient of the independent variable in the logit model is different from 0 or not. . From this Wald statistical test, we can find out whether the independent variable affects the dependent variable in the logistic regression model (Widarjono, 2015).

RESULTS AND DISCUSSION

Before discussing the main findings of this study, the researcher presents descriptive statistics of variables in Table 1. From the data in Table 1 it shows that the liquidity value proxied by the lowest current ratio is 0.01 while the highest value is 146.13 with an average of 3.6437 and a standard deviation of 14.64660. Meanwhile, the solvency proxied by the debt to equity ratio has the lowest value of -20.79 with the highest value of 21.19 and an average of 1.1290.

Table 1 Descriptive Statistics

Variable	Minimum	Maximum	Mean	Standard Deviation
CR	.01	146.13	3.6437	14,64660
DER	-20.79	21.19	1.1290	3.55222

Table 2 Overall Model (Overall Model Fit)

Iteration	-2 Log likelihood	Coefficients Constant
Step 0		
1	162..935	-1,220
2	161,892	-1,406
3	161,889	-1,417
4	161,889	-1,417

Table 3 Overall Model Fit Test Results

		-2 Log likelihood	Coefficients		
Iteration			Constant	CR	DER
Step 1	1	157,837	-1,020	-131	.043
	2	154,110	-, 980	-284	.050
	3	153,523	-833	-.400	.044
	4	153,497	-797	-.430	.042
	5	153,497	-795	-.431	.042
	6	153,497	-795	-.431	.042

From the data above, it shows that the model used in this study shows that the model can be used in factors that can influence hedging decisions. Or clearly the decision to hedge mining companies in Indonesia in 2016-2019, liquidity and solvency can be factors that influence it, if all these factors are together. A company's hedging decision may occur as a result of changes in currency exchange rates.

However, if partially there are factors that cannot directly influence the hedging decision, namely the debt to equity ratio. In the results of the tests carried out, the solvency ratio proxied using DER cannot affect the hedging decision with a significance level greater than what was determined (Chaudhry, Mehmood, & Mehmood, 2014; Hamali, 2016; Seng & Thas Thaker, 2018).

In contrast to company liquidity, in this study it was found that company liquidity is one of the factors in hedging decisions for mining companies in Indonesia in line with (Ahmad, Mardiyati, & Nashrin, 2015; Livingstone & Ngugi, 2017; Mediana & Muharam, 2016) states that the liquidity (current ratio) has a significant effect on hedging decisions.

CONCLUSION

Based on the results of research that has been carried out using logistic regression tests, the conclusion is that liquidity and solvency can together be factors in hedging decisions. However, only partially liquidity has a significant effect on the hedging decision, while solvency has no effect on the hedging decision.

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