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Effectiveness of Hedging Strategy in Reducing Foreign Currency Risk : A Comparative Study of Food and Beverage Companies in Singapore, Indonesia, Malaysia

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Abstrac : This study aims to analyze the effectiveness of hedging strategies in reducing foreign exchange risk in food and beverage companies in Singapore, Indonesia, and Malaysia. Using a quantitative approach with a comparative descriptive design, this study involved 30 companies involved in international trade and have implemented hedging strategies. Derivative instruments, such as futures contracts. The results of the regression test show that the hedge ratio (h) value of 0.887 indicates a significant relationship between changes in futures values and changes in spot values, and hedge effectiveness of 87%, which shows the ability of futures contracts to reduce exchange rate volatility. The R Square value of 0.760 indicates that hedging strategies can explain about 76% of the variation in spot value changes. However, factors such as exchange rate fluctuations and monetary policy can affect the effectiveness of hedging in each country, which causes differences in results between Singapore, Indonesia, and Malaysia. This study concludes that although hedging strategies using futures contracts are effective, companies must adjust their strategies to different economic and market conditions in each country to ensure optimal protection against foreign exchange risk.

Keywords : Hedging Strategy, Foreign Exchange Risk.

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1. Introduction

Significant fluctuations in currency exchange rates can have a negative impact on company operations, especially for multinational companies in the food and beverage sector [1].ASEAN countries face exchange rate instability due to global and local economic influences, which can disrupt price stability and product demand [2]. Research by Rita Saragih et al (2024) shows that exchange rate volatility has a positive relationship with international trade, because the certainty of prices that emerge can affect business decisions and company profitability. To reduce the risk of changes in exchange rates, companies often use hedging instruments, although this step can increase operational costs. Therefore, a deep understanding of exchange rate volatility is crucial for companies in the ASEAN region to maintain their competitiveness and operational continuity.

food and beverage industry, which is highly dependent on imported raw materials and export markets, faces a high level of exposure to exchange rate fluctuations. This dependence has the potential to affect the company's production costs and profitability[3]. Research by Michael et al (2015) shows that companies in this sector often face difficulties in managing currency risk, especially when the exchange rate experiences sharp fluctuations influenced by global and local economic factors. Therefore, the implementation of effective risk management strategies, including the use of hedging

instruments, is very important to protect profit margins and maintain the continuity of company operations amid market uncertainty.

Singapore, Indonesia, and Malaysia have different economic and monetary policies, which significantly affect the stability of each country's exchange rate. Economic policy includes actions taken by the government to manage the economy, such as setting the state budget, taxation system, and establishing regulations. Meanwhile, monetary policy focuses on controlling the amount of money in circulation and setting interest rates by the central bank to influence economic stability. The use of hedging instruments in the food and beverage sector in Southeast Asia, especially in Indonesia, is increasingly important in response to exchange rate fluctuations that can affect the company's financial stability. Dependence on imported raw materials and export markets increases exposure to foreign exchange risk, so these companies have begun to utilize various hedging instruments such as forward contracts, futures, swaps, and foreign exchange options. Research by Indrati (2023) shows that factors such as profitability, use of fixed assets, and company size affect financial performance, which encourages the adoption of hedging instruments to maintain company value in unstable market conditions. In addition, a study by Erfan (2021) emphasizes the importance of risk management in improving operational efficiency and financial decision making. This shows that hedging not only functions to protect assets, but also as a strategic tool in managing corporate finances amidst global market challenges.

In this context, a comparative study of food and beverage companies in Singapore, Indonesia, and Malaysia is relevant to understand how the effectiveness of hedging strategies is influenced by the economic and monetary policies of each country. This study is expected to provide deeper insights into best practices in managing foreign exchange risk in the food and beverage sector, as well as serve as a guide for companies in facing global challenges.

Research Problem

In the face of significant currency exchange rate fluctuations, food and beverage companies in the ASEAN region, including Singapore, Indonesia, and Malaysia, often implement hedging strategies to protect themselves from foreign exchange risk. However, the effectiveness of this strategy can vary based on differences in economic and monetary policies in each country. Based on this, the formulation of the problem that arises is "How effective is the hedging strategy in reducing the foreign exchange risk faced by food and beverage companies in Singapore, Indonesia, and Malaysia, considering the differences in economic and monetary policies of each country?"

Research Objective

1. Analyzing the effectiveness of hedging strategies in reducing foreign exchange risks faced by food and beverage companies in Singapore, Indonesia, and Malaysia.

2. Providing strategic recommendations that can increase the efficiency of using hedging instruments to protect the financial stability of companies in the food and beverage sector in the ASEAN region.

2. Theoretical Framework

Foreign Exchange Risk

Foreign exchange (forex) risk refers to the potential loss due to fluctuations in the exchange rate of a country's currency against another currency. The exchange rate, which is the market price of a domestic currency against a foreign currency, plays an important role in international transactions. This risk often arises in cross-border trade, investment, or other financial transactions involving foreign currencies[4] . According to Fahmi (2010), the impact of changes in exchange rates on profit or loss can be seen through several aspects, namely, net assets recorded in the initial balance sheet, other profits or losses that have been recorded in the financial statements, differences in exchange rates on credit in the form of foreign currency, transactions that generate profits or losses, and assets and liabilities recorded in the closing balance sheet. Foreign exchange risk is a major concern for companies operating in the global market, because exchange rate instability can affect their financial stability, profitability, and competitiveness in the international market. Therefore, comprehensive risk management is needed to maintain business continuity amidst the dynamics of the foreign exchange market.

Hedging Strategy

Hedging strategy is a method used in risk management to protect companies from currency exchange rate fluctuations. The main objective of this strategy is to reduce the impact of financial risk caused by market volatility[5]. Among the commonly used hedging instruments are forward contracts, which are agreements to buy or sell a currency at a specific time in the future at a previously agreed exchange rate[6]. In addition, currency swaps allow companies to exchange interest or principal payments in two different currencies, thereby reducing currency risk in international loans[7]. Another instrument is options , which give the holder the right to buy or sell a currency at a specific value without obligation, providing flexibility in risk management[8]. Futures contracts, as standard contracts on the exchange, are also used to secure currency exchange rates at a specific time in the future, which is very useful for multinational companies in their risk management[9].

Hedging Effectiveness

The effectiveness of hedging strategies in reducing foreign exchange risk has been the subject of attention in various studies, which show their impact on the stability of cash flows and net income of companies. Research shows that hedging can reduce cash flow volatility through the use of instruments such as forward contracts and currency swaps, which function to protect exchange rates in international transactions[10]. In addition, the effectiveness of hedging strategies is influenced by several important factors, including the costs associated with implementing the strategy, the accuracy of exchange rate predictions, and the level of global market volatility that tends to fluctuate[11]. Further research also shows that companies that consistently implement hedging strategies are able to maintain their financial stability better than companies that do not use the strategy.

Food and Beverage Industry

The food and beverage industry in Southeast Asia, especially in Singapore, Indonesia, and Malaysia, plays a very important role in the regional economy, contributing significantly to GDP and job creation[12]. The industry's dependence on international trade and raw material imports makes companies in this sector highly vulnerable to currency exchange rate fluctuations[13]. In addition, the high demand for exported food and beverage products and production costs influenced by international raw material prices further exacerbate foreign exchange risks. With increasing interactions in international trade, this industry is increasingly exposed to potential losses due to unexpected exchange rate changes, thus requiring appropriate risk mitigation strategies such as hedging[15].

3. Methods

This study uses a quantitative approach with a comparative descriptive design to analyze the effectiveness of hedging strategies in reducing foreign exchange risk in food and beverage companies in Singapore, Indonesia, and Malaysia. The sample of this study consisted of 30 companies involved in international trade and have implemented hedging strategies. Data analysis was carried out using descriptive statistical techniques, comparative tests, and multiple linear regressions conducted with the help of SPSS software to measure the relationship between hedging strategies and reducing foreign exchange risk volatility. This study aims to provide insight into the implementation of hedging strategies in three countries and their impact on the company's financial performance. Spot and Futures in the context of this study refer to foreign exchange rates (forex). In this case, USD/EUR is a currency pair that shows the exchange rate between the United States Dollar (USD) and the Euro (EUR). The relationship between ΔSt (change in the spot exchange rate) and ΔFt (change in the futures exchange rate) is measured through the hedge ratio to see the effectiveness of the hedging strategy. The framework of this study is as follows:

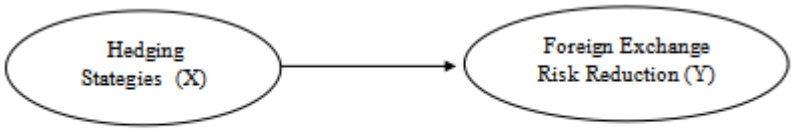

Figure 1 framework of thinking.

(Source: Processed by the author, 2024)

4. Results

1) Hedging Strategy

Table. 1 Use of *Hedging Strategy*

Hedging Strategy	Indonesia		Singapore		Malaysia	
	N	%	N	%	N	%
Forward	6	20.00%	2	6.67%	6	20.00%
Fulture	1	3.33%	0	0.00%	0	0.00%
Option	6	20.00%	16	53.33%	6	20.00%
Swap	9	30.00%	13	43.33%	1	3.33%
Etc	8	26.67%	0	0.00%	17	56.67%
Total Hedging Strategy	30	100%	30	100%	30	100%

Source: Processed Company Report, 2024

The table below illustrates the use of various hedging strategies by companies listed in Indonesia, Singapore, and Malaysia. In Indonesia, the forward strategy is the main choice with 20% of companies using it, while in Singapore it is only 6.67% and Malaysia is also 20%. This shows that companies in Indonesia and Malaysia are more likely to use the forward strategy than Singapore. Meanwhile, the use of futures strategies is almost non-existent in Singapore and Malaysia, with Indonesia only recording 3.33%. In the options category, Singapore is the country that adopts it the most, with 53.33% of companies using options as a hedging strategy. In Indonesia and Malaysia, this figure is lower at 20%, indicating a greater preference for other strategies in both countries.

Swap strategies also show marked differences between countries. In Singapore, 43.33% of companies use swaps, making it a popular strategy there. Indonesia follows with 30%, while Malaysia only records 3.33% for swap usage. Finally, in the miscellaneous strategy category, Malaysia stands out with 56.67% of companies choosing this option, significantly higher than Singapore and Indonesia, which only recorded 0% and 26.67%, respectively. Overall, companies in Singapore prefer options and swap strategies, while companies in Indonesia and Malaysia tend to use a wider variety of hedging strategies, indicating different approaches to managing financial risk in each country.

2) *Hedging Effectiveness*

Table 2 Descriptive Statistics *of Spot* and *Futures*

	N Statistics	Minimum Statistics	Maximum Statistics	Sum Statistics	Mean		Std. Deviation	Variance Statistics
					Statistics	Std. Error		
Spot	1300	1	12325	14030100	60,271	60,271	2173.112	4722415.6
Future	1300	1	12309	14079793	58,573	58,573	2111.877	4460024.1
Valid N (listwise)	1300							

Source: Processed daily data, SPSS, 2024.

The descriptive statistics table above illustrates daily spot and future data analyzed using SPSS to measure hedging effectiveness. The data consists of 1,300 observations, with almost the same minimum and maximum values between spot and future (1 and around 12,300, respectively). The total value (sum) for spot reaches 14,030,100, slightly lower than the future which recorded 14,079,793. The average value (mean) shows that the spot price is slightly higher, namely 60.271, compared to the future price which is at 58.573. This shows a small but significant difference between the two data, which can reflect the characteristics of spot and future price movements in the market.

The standard deviation (std. deviation) for spot is 2,173.112, while for future it is 2,111.877, indicating that spot price fluctuations are slightly larger than futures. The variance also reflects this result, with values of 4,722,415.6 for spot and 4,460,024.1 for futures, indicating that spot prices have slightly larger variations than futures. In conclusion, although there are small differences in the average and variation of prices between spot and futures, this analysis indicates that future price movements are quite close to spot prices. This may be an indication that hedging strategies using futures contracts may be effective in reducing market risk. Further interpretation requires additional analysis, such as correlation and hedging model testing.

3) Classical Assumption Test

Normality Test

Table 3 Normality Test

Test Statistics	0.334
Asymp.Sig	0,000

Source: Processed daily data, SPSS, 2024.

Table 3 shows the results of the normality test with a *Test Statistic value* of 0.334 and an *Asymp. Sig* (p-value) of 0.000. Based on these results, the data can be stated as not normally distributed. This is because the *Asymp. Sig value* is less than the commonly used significance level, which is 0.05. The opinion of Jefrey M. Wooldridge in his book, *Introductory Econometrics: A Modern Approach* (2018), is often associated with the discussion that the assumption of normality in data is not always a critical issue, especially for estimation in regression analysis. Wooldridge states that non-normal data distribution will not affect the accuracy of parameter estimation, as long as the sample size is large enough. This is related to *the Central Limit Theorem* , which states that the sample mean of any distribution will approach a normal distribution when the sample size is large enough. However, he did not explicitly mention that 20 data were definitely enough. In many cases, small sample sizes can pose risks such as inaccurate estimates or lack of statistical test power, so “large enough” usually refers to a sample size of at least 30, or more, depending on the complexity of the model and the distribution of the data.

Multicollinearity Test

Table 4 Multicollinearity Test

			Stand Coefficient	t	Sig	Collinearity Statistics	
	B	Std. Error				Tolerance	VIF
C	1074,333	154,275		6,964	0,000		
F	0.897	0.14	0.872	64,177	0,000	1,000	1,000

Source: Processed daily data, SPSS, 2024.

The results of the multicollinearity test in Table 4 show that there is no multicollinearity problem in the regression model, as indicated by the *Tolerance value* of 1,000 and *the Variance Inflation Factor* (VIF) of 1,000, which are within the acceptable threshold (Tolerance ≥ 0.10 and VIF ≤ 10). In addition, the independent variable F has a regression coefficient of 0.897 with a *t-statistic value of* 64.177 and *a p-value of* 0.000, indicating that this variable is statistically significant (*p-value* <0.05). The constant value (C) is also significant, with *a p-value of* 0.000 and a value of 1074.333. Therefore, this regression model is considered valid in terms of the multicollinearity assumption, and the F variable contributes significantly to explaining the dependent variable.

Hesteroscidity Test

Test Statistics	0.359
Asymp.Sig	0,000

Source: Processed daily data, SPSS, 2024.

The results of the heteroscedasticity test in Table 5 show a *Test Statistic value* of 0.359 and an *Asymp. Sig.* value of 0.000. An *Asymp. Sig. value* smaller than 0.05 indicates an indication of a heteroscedasticity problem in the model. Heteroscedasticity indicates that the error variance is not constant, which can affect the accuracy of the regression parameter estimates, although it still produces unbiased coefficients. However, according to Gujarati and Porter (2009) in the book "Basic Econometrics", heteroscedasticity is not a serious problem if the sample used is large enough, because the Ordinary Least Squares (OLS) estimation method still produces unbiased estimates, although its efficiency decreases. In addition, Jeffrey M. Wooldridge (2018) in "Introductory Econometrics: A Modern Approach" also explains that with large samples, parameter estimates can still be considered reliable because the Gauss-Markov assumptions tend to apply asymptotically.

Autocorrelation Test

Table.6 Autocorrelation Test

R	0.872
R Square	0.760
Adjusted R Square	0.760
Std Error of the Est	1064,189
R square Change	0.760
F Change	4118,708
Df1	1
Df2	1298
Sig. F Change	0,000
Durbin- Watson	1,461

Source: Processed daily data, SPSS, 2024.

Based on the results of the Autocorrelation Test in Table 6, the Durbin-Watson value of 1.461 indicates the possibility of positive autocorrelation, because ideally the Durbin-Watson value is close to 2 to indicate no autocorrelation. Meanwhile, the R Square value of 0.760 indicates that 76% of the variability of the dependent variable can be explained by the independent variable, with a statistically significant model based on the Sig. F Change value of 0.000 ($p < 0.05$). However, further evaluation of the autocorrelation is needed, because if it is significant, the model may need improvement, such as adding other independent variables or using a more complex regression model. Overall, the model has a strong correlation and explains most of the data variability with a fairly low error rate.

4) Regression Test

Table.7 Regression Test

Regression Test	$\Delta St = c + h\ \Delta Ft + e$
	Coefficient
h	0.887
R	0.872
R Square	0.760

Source: Processed daily data, SPSS, 2024.

Based on the results of the regression test obtained, the calculated hedge ratio (h) value is 0.887, which indicates a fairly strong positive relationship between changes in futures value (ΔFt) and changes in spot value (ΔSt). This means that for every 1 unit increase in futures value changes, the spot value change will increase by 0.887 units. The R value of 0.872 indicates a very strong correlation between the two variables, while the R Square of 0.760 indicates that about 76% of the variation in spot value changes can be explained by changes in futures value. Using the R Square value, the hedge effectiveness is calculated at 87.0%, indicating that futures contracts can reduce exchange rate risk by up to 87.0%. This result indicates that the hedging strategy with futures contracts is quite effective in reducing the exchange rate volatility faced by the company. Although it does not reach 100%, which means perfect protection, the value of 87.0% is significant enough to mitigate most of the risks related to exchange rate fluctuations.

5. Discussion

Derivative instruments, such as futures contracts, are important tools for companies to protect their assets and cash flows from unexpected exchange rate fluctuations. In the context of food and beverage companies in Singapore, Indonesia, and Malaysia, hedging strategies are used to reduce the risk arising from currency exchange rate movements that can affect the cost of importing raw materials and revenue from exports. Based on the results of the regression test, the hedge ratio (h) value of 0.887 indicates a significant relationship between changes in futures value (ΔFt) and changes in spot value (ΔSt), indicating that companies can effectively mitigate exchange rate risk by using futures contracts.

The results of this study indicate that the R value of 0.872 and R Square of 0.760 indicate that the hedging strategy using futures contracts can explain about 76% of the variation in spot rate changes. With a hedge effectiveness value of 87%, the EUR/USD futures contract has a fairly high ability to reduce exchange rate volatility, which means that 87% of exchange rate risk can be minimized using futures contracts. Although this value does not reach 100%, which indicates perfect protection, it is still significant enough to provide effective protection for companies in facing exchange rate fluctuations.

However, it should be noted that although the hedge effectiveness of futures contracts is quite high, there are still factors that can affect the effectiveness of hedging in each country. For example, differences in exchange rate fluctuations and monetary policies can cause differences in hedging results between countries. In Indonesia, which has higher exchange rate fluctuations, hedge effectiveness can be different compared to countries such as Malaysia, where exchange rate fluctuations are more stable. Therefore, although hedging with futures contracts shows good effectiveness

overall, companies in each country may need to adjust their hedging strategies to the different economic and market conditions in each country.

In a broader context, these results suggest that the use of appropriate hedging strategies, such as futures contracts, can provide significant benefits in managing exchange rate risk. However, its effectiveness may vary based on market conditions and local currency fluctuations in each country. Therefore, companies must continue to monitor and adjust their hedging strategies to remain relevant and effective in managing the risks they face.

6. Conclusions

Based on the results of the analysis and discussion that have been carried out, it can be concluded that the hedging strategy using futures contracts has a fairly high effectiveness in reducing exchange rate risk for food and beverage companies in Singapore, Indonesia, and Malaysia. The hedge ratio value of 0.887 indicates a significant relationship between changes in futures values and changes in spot values, which allows companies to mitigate exchange rate risk effectively. In addition, with an R Square value of 0.760, around 76% of the variation in spot value changes can be explained by changes in futures values. The hedge effectiveness of 87% shows that EUR/USD futures contracts can reduce exchange rate risk by up to 87%, which is a significant level of protection although not perfect. However, the effectiveness of this hedging can be affected by differences in exchange rate fluctuations and economic conditions in each country, which causes variations in hedging results between countries. Therefore, companies need to adjust their hedging strategies to market conditions and monetary policies in force in their respective countries in order to optimally manage exchange rate risk. Overall, the results of this study emphasize the importance of using appropriate hedging strategies to mitigate the exchange rate risks faced by companies, especially in sectors that are highly influenced by exchange rate fluctuations such as the food and beverage industry.

7. **Suggestion**

Based on the results of this study, food and beverage companies in Singapore, Indonesia, and Malaysia are advised to consider using various derivative instruments, such as futures, swaps, and forward contracts, to protect against exchange rate fluctuations that cannot be fully handled by a single instrument. In addition, companies need to periodically monitor and adjust their hedging strategies according to market conditions and exchange rate volatility. Improving internal understanding of risk management and derivative instruments is essential, and companies are advised to consult with financial experts in designing more effective hedging strategies. In addition, natural hedge strategies, such as adjusting income and expenses in the same currency, can be used to reduce dependence on derivative instruments and provide more natural protection. With these steps, companies can improve the effectiveness of their hedging strategies, maintain financial stability, and mitigate exchange rate risks more optimally.

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