Enrichment: Journal of Management, 12 (4) (2022)

Published by: Instiute of Computer Science (IOCS)

Enrichment: Journal of Management

Journal homepage: www.enrichment.iocspublisher.org

Analysis of the Effect of Current Ratio, Debt to Equity Ratio, Return on Assets, and Company Size on Derivative Hedging Decision Making in Pharmaceutical Companies

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ARTICLE INFO

Article history:

Received Sep 02, 2022
Revised Sep 16, 2022
Accepted Okt 07, 2022

Keywords:

Derivative Hedging,
Current ratio,
Debt to Equity,
Return on assets,
Firm Size

ABSTRACT

This study aims to examine the effect of current ratio, debt to equity ratio, return on assets, and firm size on derivative hedging decision making in pharmaceutical companies listed on IDX 2010-2019. The population of this study is 11 companies. Purposive sampling is used as a sampling technique and obtained 10 companies as samples. The data collection technique is carried out by documentation study of Financial Statements and Notes to the Financial Statements in Annual Report 2010-2019 of each sample company obtained from the IDX website (idx.co.id) and the websites of each sample company. The data analysis technique used is logistic regression. The results of this study indicate that there is no significant effect of current ratio, debt to equity, and return on assets on derivative hedging decision making and there is positive and significant effect of firm size on derivative hedging decision making. Therefore, if firm size (total assets) is relatively higher compared to other pharmaceutical companies, the company should consider doing derivative hedging more because the company is more likely to experience financial distress from the higher exchange rate risk received.

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INTRODUCTION

The year 2020 is a tough year for all countries in the world due to the emergence of the COVID-19 virus which is spreading very quickly. In Indonesia alone, the total cases reached 586,842 cases with a total death toll of 18,000 people. Indonesia seeks to prevent the wider spread of the virus by implementing regulations from the WHO and from its own country in the form of health protocols and regulations. This pandemic encourages people to care more about health by maintaining a healthy and clean lifestyle to avoid COVID-19. It is not uncommon for people to consume drugs related to COVID-19 in the form of promotive, preventive, and curative products which make the role of the pharmaceutical industry very much needed (Kardoko, 2020). The value of pharmaceutical production in Indonesia has reached USD4.7 billion or equivalent to 27% of the total pharmaceutical

market in the Southeast Asian region (Ministry of Industry of the Republic of Indonesia, 2017). For the domestic market, the Indonesian pharmaceutical industry is able to provide 70% of drug needs. Pharmaceutical companies in Indonesia have been able to produce medicines for health, but not with the raw materials. Most of the pharmaceutical raw materials are still imported from other countries. This is due to several factors, namely the lack of companies that produce medicinal raw materials in Indonesia, the inability to compete with Indonesian pharmaceutical companies in the production of medicinal raw materials on a global scale, the low quality of human resources, and the inadequate availability of laboratories and technology (Dharmiyanti, N. M. D., & Darmayanti, N. P. A., 2020).

Imports of raw materials for drugs and pharmaceuticals in Indonesia have increased drastically from 2008-2019. Although it experienced a decline, it did not affect the decrease in dependence on importing medicinal raw materials from other countries. The President of the Republic of Indonesia Joko Widodo said that more than 90% of medicinal raw materials in Indonesia still rely on imports (CNN Indonesia, 2020). Based on data from the Ministry of Industry, the countries that import the most medicinal raw materials in Indonesia are China, India, and the European region (BKPM, 2016). China is still the largest supplier of raw materials for Indonesia's medicinal needs, which is around Rp. 6.84 trillion (60%), India is in second place, Rp. 3.42 trillion (30%), and Europe is Rp. 1.4 trillion (10%). However, in the era of the COVID-19 pandemic, the pharmaceutical industry was affected by the obstruction of the supply of national pharmaceutical raw materials due to the lockdown that occurred in countries importing the raw materials of the drug. This obstacle has made the pharmaceutical industry to consider importing medicinal raw materials from other countries as an alternative.

Very high dependence on imported raw materials makes the pharmaceutical industry in Indonesia very vulnerable to exchange rate risk. MNC companies (multinational companies) can cause debts and receivables in foreign currencies because not all transactions that occur can be done in cash (Astyrianti, N. N., & Sudiartha, G. M., 2017). These debts and receivables in foreign currencies expose the company to exchange rate risk. If the company's income and purchases in foreign currencies are not balanced in terms of amount or timing, the company will face exchange rate risk (PT Pyridam Farma Tbk., 2019). Exchange rate risk can be broadly defined as the risk that affects the company's performance from exchange rate fluctuations (Madura, J., 2018). The exchange rate is the price of a country's currency expressed in the currency of another country (Ramdhan, D., & Indrajaya, D., 2019). Exchange rate risk can cause losses for companies that carry out export, import, and foreign trade transactions because their cash flows will be directly affected by exchange rate fluctuations (Madura, J., 2018).. In the import of raw materials, the weakening of the rupiah exchange rate against foreign currencies can make the price of imported raw materials more expensive, thereby increasing production costs. This loss can have a broad impact, ranging from a decrease in profit, a decrease in earnings per share, a decrease in share prices, to a decrease in the number of investors which can result in the company losing funding sources (Madura, J., 2018). On the other hand, revenues from export activities can increase when the rupiah exchange rate weakens. The balance between exports and imports occurs when pharmaceutical companies also export local raw materials. Meanwhile, pharmaceutical companies in Indonesia, although 90% of their raw materials are imported, 10% of their local raw materials cannot be exported (BKPM, 2016).

The COVID-19 pandemic has caused the economy to decline globally, resulting in a decline in Indonesian exports (Thomas, V. F., 2020). Exports in January 2020 were recorded at US$13.63 billion. It had increased in February-March 2020 to US$14 billion, then fell again in April 2020 to

US$12.16 billion and continued to worsen in May 2020 to US$10.53 billion, which is the lowest amount since 2016. This condition shows demand against the rupiah decreased so that the rupiah exchange rate per US dollar depreciated.

The COVID-19 pandemic has also increased the risk of global uncertainty so that investors' incentives to invest in financial instruments in Indonesia have decreased (Supriyatna, I., & Djailani, M. F., 2020). As of the first quarter of 2020, it was recorded that foreign capital outflows from Indonesia reached Rp. 148.5 trillion, or almost three times greater than the capital outflows that occurred during the 2008 financial crisis and the 2013 taper tantrum. decreased so that the exchange rate of the rupiah per US dollar reached its lowest level in history, which was Rp. 16,741 as of April 2, 2020.

There is a close relationship between interest rates, inflation, and exchange rates (Indrajaya, D., 2022; Madura, J., 2018). Exchange rate fluctuations occur due to fluctuations in demand and supply of currencies. If demand exceeds supply, then the value of the currency will tend to rise. If supply exceeds demand, the value of the currency will tend to fall. In Indonesia, rising inflation causes exports to decline and imports to increase, resulting in a decrease in demand for the rupiah currency and causing the rupiah exchange rate to depreciate. In addition, the increase in interest rates in Indonesia encourages foreign investors to invest in financial instruments in Indonesia because they are attracted by higher returns, so that the demand for the rupiah currency increases and causes the rupiah exchange rate to appreciate (Bank Indonesia, 2020a). However, the positive impact of higher interest rates is less significant if domestic inflation is much higher than in other countries or there are other factors driving the depreciation of the rupiah.

The level of uncertainty is greater if the movement of fluctuations is higher (Sofia & Yuneline, 2019). Based on Figure 1.2, fluctuations in the exchange rate of the rupiah against the US dollar tend to depreciate. The rupiah exchange rate per US dollar on January 4, 2010 was Rp. 9,330 and on June 5, 2020, it reached Rp. 14,100 (Bank Indonesia, 2020b).. The highest depreciation of the rupiah per US dollar occurred on April 2, 2020, which was Rp. 16,741. The exchange rate that continues to depreciate is a risk for Indonesian pharmaceutical companies, which more than 90% of their medicinal raw materials still rely on imports because more rupiah is needed to pay for these imports. If the company fails to manage this exchange rate risk, the company can incur substantial losses and even result in destruction (Mahasari, A. A. K. R., & Rahyuda, H., 2020). Companies often decide to face risks when they see the benefits behind the risks taken (Hanafi, 2016). For this reason, companies that carry out international trade must optimize risk management activities so that the company can survive or minimize the risks that may be faced.

One way to minimize exchange rate risk is to hedge. Hedging is an action to reduce or eliminate the risk of loss from exchange rate fluctuations (Nyamweya, L. N., & Ali, I., 2016). Minimized risk is in the form of certainty in calculating cash flows and determining HPP. In insurance, compensation is provided by the insurance company, while in hedging, compensation is provided by another party (counter party) who sells derivative contracts. So, it can be seen that the hedging principle is covering the loss of the initial asset position with the gain from the position of the hedging instrument.

There are many techniques used to hedge. One of the most frequently used is to sell and buy derivative instruments (Mahasari, A. A. K. R., & Rahyuda, H., 2020). Several researchers have conducted studies on the determinants of decision making Derivative hedging using internal factors

in the form of the company's financial condition including liquidity, leverage, profitability, and company size.

The results of the study (Astyrianti, N. N., & Sudiartha, G. M., 2017) state that when the company's current ratio is high but is dominated by unsold inventory and bad debts, the company is increasingly unable to meet its short-term obligations. The company will also need more external funds so that the exchange rate risk encourages companies to carry out derivative hedging. This is contrary to the results of research (Mahasari, A. A. K. R., & Rahyuda, H., 2020) which states that when the company's current ratio is high, the company is increasingly able to use internal funds rather than external funds for operations so that the low exchange rate risk tends to make the company not involved in derivative hedging.

Then there are research results (Astyrianti, N. N., & Sudiartha, G. M., 2017) which state that when the company's debt to equity ratio is high and this large debt is dominated in foreign currencies, companies increasingly need protection from exchange rate risk, thus encouraging companies to undertake derivative hedging. This statement is supported by the results of research by Widjaja & Santoso (2018). This is contrary to the results of research (Mahasari, A. A. K. R., & Rahyuda, H., 2020) which states that when the company's debt to equity ratio is high and this large debt is dominated in local currency, the company does not need protection from exchange rate risk so that the company tends not to be involved in derivative hedging. (Zahid, P. F., Zulqernain, N. S., & Ahmad, N., 2016) states that when the company's return on assets is high, the company's tendency to expand its business will be faster so that the higher exchange rate risk encourages companies to do derivative hedging. (Mahasari, A. A. K. R., & Rahyuda, H., 2020) states that when the total assets of the company are large, the company has wider operational activities to foreign countries so that the higher exchange rate risk encourages companies to perform derivative hedging.

RESEARCH METHOD

Research Method

This study uses quantitative methods, namely research methods based on the philosophy of positivism, used to examine certain populations or samples, data collection using research instruments, data analysis is quantitative/statistical, with the aim of testing established hypotheses (Sugiyono, 2018). The causal relationship referred to in this study is the influence of the independent variables, namely the current ratio, debt to equity ratio, return on assets, and company size on the dependent variable, namely the decision making of derivative hedging in pharmaceutical companies listed on the BEI for the 2010-2019 period.

Population, Sample, and Sampling Technique

The population in this study are all pharmaceutical companies listed on the IDX. Sampling in this study was conducted by purposive sampling technique, namely the technique of determining the sample with certain considerations or criteria. The sampling criteria in this study are as follows:

a. Pharmaceutical companies that have exchange rate risk from export and import activities, ownership of assets and liabilities in foreign currencies, or ownership of overseas subsidiaries whose information can be seen in the Notes to Financial Statements in the company's 2019 Annual Report.

b. Pharmaceutical companies that display the data needed to obtain CR, DER, ROA, and company size in the Financial Statements, as well as derivative hedging decisions in the Notes to Financial Statements in the 2010-2019 company Annual Reports.

Based on the above criteria, a sample of 10 pharmaceutical companies was obtained as follows.

Table 1. Population of Pharmaceutical Companies Listed on IDX

No.	Kode	Company Name
1.	DVLA	PT Darya-Varia Laboratoria Tbk.
2.	INAF	PT Indofarma (Persero) Tbk.
3.	KAEF	PT Kimia Farma (Persero) Tbk.
4.	KLBF	PT Kalbe Farma Tbk.
5.	MERK	PT Merck Tbk.
6.	PEHA	PT Phapros Tbk.
7.	PYFA	PT Pyridam Farma Tbk.
8.	SCPI	PT Merck Sharp Dohme Pharma Tbk.
9.	SIDO	PT Industri Jamu dan Farmasi Sido Muncul Tbk.
10.	TSPC	PT Tempo Scan Pacific Tbk.

Data, Data Sources, and Data Collection Techniques

Based on its nature, the data used in this study is quantitative data whose measurement data can be in the form of integers or decimals (continuous). Based on how to obtain it, researchers used secondary data, namely primary data from internal companies that had been processed (Sugiyono, 2018). Secondary data obtained in the form of information regarding CR, DER, ROA, company size, and derivative hedging decision making of each sample company from 2010-2019. Based on the time, the data used in this study is panel data, which is a combination of time series data (time series) and cross section data (one time), where the same cross section unit is measured at different times (Sugiyono, 2018). In other words, panel data is data from the same individuals observed over a certain period of time. Individuals in this study are pharmaceutical companies listed on the IDX which were observed over a ten-year period (2010-2019).

The data collection technique used is a documentation study, which is a technique used to obtain data and information from records of events that have passed which can be in the form of writing, pictures, or monumental works of someone (Sugiyono, 2016). In this study, the documentation used is in the form of Financial Statements and Notes to Financial Statements in the 2010-2019 Annual Reports of pharmaceutical companies listed on the IDX, which were obtained from the IDX website (idx.co.id) and the websites of each sample company.

Variable Operationalization

The dependent variable in this study is derivative hedging decision making. While the independent variables are the current ratio, debt to equity ratio, return on assets, and company size. These variables are described in Table 3.2.

Table 2. Variable Operationalization

Type Variable	Variable	Definition	Measurement
Dependent Variable	Decision Making Derivative Hedging (DH)	Making decisions to reduce or eliminate the risk of loss from exchange rate fluctuations by using forward contracts, futures contracts, option contracts, or swaps contracts.	Doing derivative hedging = 1 Not doing Derivative hedging = 0
Independent Variable	Current ratio (CR)	Comparison of current assets with current liabilities to calculate liquidity (how big is the company's ability to meet its short-term obligations when the date is due)	$CR = \frac{Current\ Assets}{Current\ Liabilities}$
	Debt to equity ratio (DER)	Comparison of total liabilities with total equity to calculate leverage (how much the company uses debt to increase the returns).	$DER = \frac{Total\ Liabilities}{Total\ Equity}$
	Return on assets (ROA)	Percentage of net income from total assets to calculate profitability (how much the company's ability to generate profit from his efforts).	$ROA = \frac{Net\ Income}{Total\ Assets} \times 100\%$
	Firm Size (FS)	Scale or size that describes the size small company.	$Firm\ Size\ (FS) = Ln(Total\ Assets)$

RESULT AND DISCUSSION

Test Model Fit (Model Fit) with the Log Likelihood Function

Based on Table 4.8, the value of -2 log likelihood is 100.08. This value will be compared with the value of the chi-square table (X2) at the significance level of 0.05 with a df of n – 1 where n is the number of observations. The number of observations is 100 observations so that df = n – 1 = 100 – 1 = 99. Based on the chi-square table, the significance level of 0.05 with a df of 99 has a chi-square table value of 123.22522. The value of chi-square table > -2 log likelihood (123.22522 > 100.08), then H0 is not rejected. This means that the hypothesized model is in accordance with the observation data. In other words, the model before including the variables CR, DER, ROA, and UP is able to predict hedging derivative decision making.

Table 3. Iteration History before inserting Independent Variables

Iteration		-2 Log Likelihood	Constant
Step 0	1	100.656	-1.200
	2	100.082	-1.377
	3	100.080	-1.386
	4	100.080	-1.386

Based on Table 4.9, the value of -2 log likelihood is 52,091. This value will be compared with the value of the chi-square table (X2) at a significance level of 0.05 with a df of n – k – 1 where n is the number of observations and k is the number of independent variables. The number of independent variables is 4 variables so that df = 100 – 4 – 1 = 95. From the chi-square table, the significance level of 0.05 with a df of 95 has a chi-square table value of 18.75161. Because the chi-square table > -2 log likelihood (118.75161 > 52.091), it does not reject H0. This means that the hypothesized model is in accordance with the observation data. In other words, the model after including the variables CR, DER, ROA, and UP is able to predict Derivative hedging decision making.

Table 4.Iteration History after inserting Independent Variables

Iteration		-2 Log likelihood	Coefficients				
			Constant	CR	DER	ROA	UP
Step 1	1	71.468	-18.343	-.078	-.003	.028	.618
	2	56.571	-37.372	-.161	-.002	.212	1.283
	3	52.596	-51.789	-.242	-.003	.465	1.785
	4	52.108	-58.239	-.303	-.010	.644	2.010
	5	52.091	-59.387	-.323	-.014	.706	2.051
	6	52.091	-59.435	-.325	-.015	.710	2.053
	7	52.091	-59.435	-.325	-.015	.710	2.053

Test Model Fit (Model Fit) with Hosmer and Lemeshow Test

Based on Table 4.10, the significance level of the model is 0.358. The value of significance level > 0.05 (0.358 > 0.05), so it does not reject H0. This means that the hypothesized model is in accordance with the observation data. In other words, the model is able to predict the decision making of derivative hedging.

Table 5. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	8.816	8	.358

Test the Overall Model Fit (Overall Model Suitability) with Omnibus Test

Based on Table 4.11, the significance level of the model is 0. Due to the significance level < 0.05 (0 < 0.05), then H0 is rejected (Ha is accepted) which means that there is a significant effect of CR, DER, ROA, and UP together on derivative hedging decisions. In other words, the hypothesized overall model corresponds to the observed data.

Table 6. Overall Model Fit (Overall Model Suitability) with Omnibus Test

		Chi-square	df	Sig.
Step 1	Step	47.989	4	.000
	Block	47.989	4	.000
	Model	47.989	4	.000

Coefficient of Determination Test with Nagelkerke R Square

Based on Table 4.12, the Nagelkerke R Square value is 0.603, which is in the range of 0.6 R2 < 0.8, so the model shows a strong independent variable contribution to the dependent variable. The contribution of CR, DER, ROA, and UP variables to the diversity of derivative hedging decision making variables is 60.3%, the remaining 39.7% is the contribution of other variables not examined in this study.

Table 7. Coefficient of Determination Test with Nagelkerke R Square

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R square
1	52.091[a]	.381	.603

Classification Matrix Test

Based on Table 4.13, the predictions of observations that do not perform derivative hedging are 80 observations (75 + 5), while the results of the observations are 75 observations with a classification accuracy of 93.8%. Then the prediction of observations using derivative hedging is 20 observations (7 + 13), while the results of the observations are 7 observations with a classification accuracy of 65%. Thus, the level of accuracy of the model in predicting the probability of making derivative hedging

decisions is 88% ((75 + 13) / 100), which means that from 100 observations, there are 88 observations that are correctly classified by the model. In other words, the research results from this model are very good because they are close to 100% accuracy.

Table 8. Classification Matrix Test

Observed			PKDH		Percentage Correct
			Not Doing Derivative Hedging	Doing Derivative Hedging	
Step 1	PKDH	Not Doing Derivative Hedging	75	5	93.8
		Doing Derivative Hedging	7	13	65.0
	Overall Percentage				88.0

CONCLUSION

Based on the results of the research and discussion that have been stated, it can be concluded that the pharmaceutical companies listed on the Indonesia Stock Exchange for the period 2010-2019: (1) There is no significant effect of the current ratio on derivative hedging decisions partially, (2) There is no significant effect of debt to equity ratio on partial hedging derivative decision making, (3) There is no significant effect of return on assets on partial hedging derivative decision making, and (4) There is a positive and significant influence of company size on partial hedging derivative decision making.

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