

Panel Method in Hedging: Evidence from The Indonesian Agricultural Sector

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Abstract

Hedging is a derivative instrument in the form of actions used to minimize risks due to fluctuations in foreign currencies, interest rates, and commodity prices. This study aims to analyze the factors that influence hedging in agricultural sector companies using the panel data method in the form of quarterly from 7 companies from 2013 to 2019. The study results show growth opportunity, financial distress, debt, leverage, firm size, liquidity, profitability, and dividend payout ratio significantly influence the use of hedging. This study's results indicate that agricultural sector companies as a whole use hedging to protect against future risk exposures. Besides, it is necessary to know the factors that influence making decisions using hedging. This study recommends that companies increase export productivity balanced with appropriate hedging policies to improve company performance.

Keywords: *hedging; agriculture; data panel; risk; fluctuation*

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INTRODUCTION

An imbalance between demand and supply for foreign currencies creates exchange rate risk (Guzman, Ocampo, & Stiglitz, 2018; Sinyakov & Yudaeva, 2016). Hedging is one of the derivative instruments in the form of actions used to minimize risks due to fluctuations in foreign currencies, interest rates, and commodity prices (Álvarez-Díez, Alfaro-Cid, & Fernández-Blanco, 2016). Derivative instruments that are often used for hedging purposes are options, swaps, forwards, and futures. Hedging with derivative instruments is very useful for companies conducting transactions with foreign currencies (Guniarti, 2015). Hedging can minimize a variety of risks, not only credit risk and fluctuations in foreign currencies, but also reduce the risk of stock volatility and commodity price risk (Suryani & Fathoni, 2017).

Hedging with derivative instruments is very useful for companies conducting transactions in foreign currencies (Trang, 2018). Derivative financial markets bring together those who want to protect their assets from the risk of loss due to price changes with those willing to bear the risk of price changes (Bezzina & Grima, 2012). Increased volatility in international markets has driven the use of derivative instruments in controlling financial risks (Ghosh, 2017). Risk control is carried out to reduce various kinds of risks faced, such as exchange rates, commodity price movements, interest rates, and stock prices (Chockalingam, Dabadghao, & Soetekouw, 2018).

Fluctuations in the rupiah's exchange rate against the dollar from 2013-2019 (Figure 1),

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where there were a weakening and strengthening of the rupiah against the dollar. The highest weakening of the rupiah against the dollar occurred between 2017 and 2018, where the rupiah was 13,616 per USD at the selling rate and 13,480 per USD at the buying rate, meanwhile in 2018 soared to 14,615 per USD at the selling rate and 14,146 per USD at the buying rate. The weakening of the rupiah against the dollar will rise higher will result in depreciation and will affect the company's debt, which will grow so that it can cause financial difficulties. With a hedge, of course, it will give the company have the opportunity to grow in the future (Hacklin, Björkdahl, & Wallin, 2018).

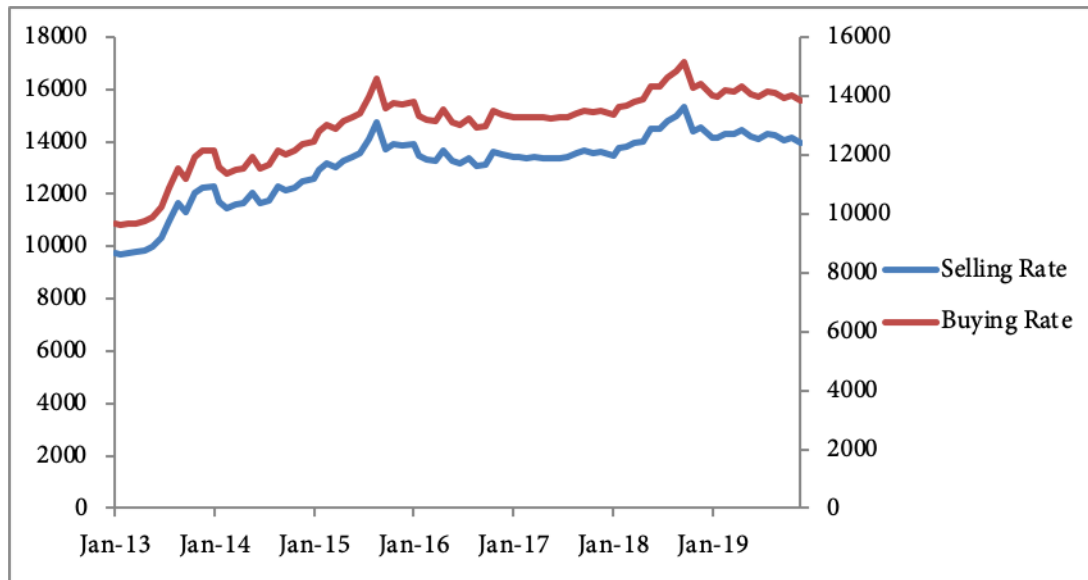


Figure 1. Rupiah exchange rate against the dollar
(Source: Bank Indonesia, 2019)

Indonesia is known as an agricultural country, but the national needs in the agricultural sector continue to import until now (Agus & Widi, 2018). The foreign debt of the agricultural sector has increased, resulting in an agrarian trade balance deficit (Kyrkilis & Simeon, 2015). The deficiency becomes a burden borne by the government to pay its obligations (Goryunov, Kotlikoff, & Sinelnikov-Murylev, 2015). The strategy used by agricultural sector companies is the use of hedging that is useful for dealing with the risk of bankruptcy due to increasing debt (Doms, Hirschauer, Marz, & Boettcher, 2018; Zheng, Xu, & Wang, 2011).

The agricultural sector has a vital role in national development, including as a source of foreign exchange for the country, contributing GDP, employment, industrial raw materials, sources of food and nutrition, as well as encouraging the movement of other real economic sectors (Devaux, Torero, Donovan, & Horton, 2018; Siami-Namini & Hudson, 2019). Along with its development, companies engaged in the agricultural industry will expand their business by entering into international markets (Amanor & Chichava, 2016; Graeub et al., 2016; Liu, Hertel, Taheripour, Zhu, & Ringler, 2014). The company will be faced with transactions using foreign exchange where operations will be affected by exchange rate fluctuations (Fernandez-Perez, Fuertes, & Miffre, 2017; Prasad & Suprabha, 2015).

Several studies have been conducted to determine the factors that influence hedging activities, such as Sasmita and Hartono (2019), Saraswati and Suryantini (2019) in manufacturing companies, Mo, Suvankulov, and Griffiths (2019), Wang, Geng, and Meng (2019) in oil companies, Aragon, Martin, and Shi (2019) in the stock market, Brav, Jiang, Ma, and Tian (2018) in shares in the United States, Ayuningtyas, Warsini, and Mirati (2019) in non-financial companies, Seng and Thaker (2018) in companies in Malaysia, Giraldo-Prieto, Uribe, Bermejo, & Herrera (2017),

Gupta (2017) in financial companies, Livingstone and Ngugi (2017), Agarwal, Arisoy, and Naik (2017), Mediana and Muharam (2016) in energy companies.

Considering that the agricultural sector's contribution is so substantial, this research focuses on agricultural sector companies. This study also adds variables that are thought to influence the hedging of the agricultural sector. Considering the vital role of the farming sector, for this reason, this research is essential. This study will broadly analyze what factors influence hedging using panel data with relatively many observations. The agricultural sector has a large amount of foreign exchange debt. It has relatively high amounts of export-import transactions, so the agriculture sector is exposed to the risk of exposure, which could threaten the value of the company. The use of hedging is required for non-bank companies to reduce market risk exposure in terms of assets and liabilities. This agricultural sector is one of the non-bank companies with foreign debt in the form of foreign exchange, so it is required to use hedging to reduce these risks.

This research can contribute, first, to find out the factors that influence hedging decisions. Second, provide information and an overview of growth opportunity, financial distress, debt, leverage, firm size, liquidity, and profitability in agricultural companies. Third, it can be used as a reference by stakeholders in making hedging decisions. Fourth, be additional information and recommendations in developing further research.

The Influence of Growth Opportunity to the Hedging

Astyrianti and Sudiartha (2017) conducted a study to determine the implications of leverage, growth opportunities, dividend policy, and liquidity for hedging decision PT Unilever Tbk. The results of this study indicate that advantage, growth opportunities, and cash have significant positive implications. In contrast, dividend policy has negative impacts on the use of derivative instruments as hedging decision making. Annisa and Puryandani (2017) conducted a study to determine the effect of growth opportunities, company size, and dividend policy on hedging decisions in manufacturing companies. The results of this study indicate that dividend policy, company size has a positive effect. At the same time, growth opportunities harm hedging decisions.

H₁: The value of growth opportunity affected to the hedging agricultural sector

The Influence of Financial Distress to the Hedging

Ayuningtyas et al. (2019) conducted research aiming to determine how the influence of decision making on the use of hedging uses derivative instruments in non-financial companies. This study's results indicate that leverage, liquidity, financial distress, and growth opportunity have a positive effect. At the same time, exchange rate fluctuations have a negative and significant impact on hedging decision making using derivative instruments. Gupta (2017) conducted a study to find out financial problems such as financing and investment in companies against the use of hedging with derivatives in commercial companies. The results of this study indicate that hedging can reduce several costs, such as agency costs, distress costs, and costs of debt, and can minimize company losses.

H₂: The value of financial distress affected to the hedging agricultural sector

The Influence of Debt to the Hedging

Seng and Thaker (2018) conducted a study to analyze the main determinants of hedging use in Malaysian companies. This study's results indicate that debt, investment growth, and liquidity significantly and positively influence the use of hedging. Meanwhile, Managerial ownership is significantly unfavorable for hedging in companies in Malaysia. Sutarja and Cholid (2017) conducted a study that aims to determine the effect of debt to equity ratio, interest coverage ratio, managerial ownership, and market to book value on hedging decisions in trading, service, and investment companies. This study's results indicate that the debt to equity ratio and interest

coverage ratio has a positive effect on hedging decisions. At the same time, managerial ownership and market to book value do not affect hedging policies with derivative instruments.

H₃: The value of debt affected to the hedging agricultural sector

The Influence of Leverage to the Hedging

Franzoni and Giannetti (2019) conducted a study to analyze commercial affiliates that influence managers' capital, risk-taking, and hedging performance. The results of this study indicate that age, leverage, ROA, long size, monthly volatility, beta, equity hedge, costs, and benefits of the FCAHF (Financial Conglomerate-Affiliated Hedge Fund) on hedging have a significant influence on company performance and stable funding. Pitangga and Puryandani (2019) determine the importance of profitability, leverage, and growth opportunities for companies on hedging activities in 19 state-owned enterprise companies. The analysis results found that profitability and leverage variables have a significant positive effect on hedging activities. In contrast, the opportunity to grow the company has a positive but not significant impact on hedging activities.

H₄: The value of leverage affected to the hedging agricultural sector

The Influence of Firm Size to the Hedging

Saraswati and Suryantini (2019) conducted a study to explain the effects of leverage, firm size, and profitability on manufacturing companies' hedging decisions. This study's results indicate that leverage, firm size, and profitability have a positive and significant effect on hedging decisions using derivative instruments. Sasmita and Hartono (2019) examine the factors that influence hedging in manufacturing companies in Indonesia. The results showed that company size, profitability, and leverage had a positive effect on Indonesian manufacturing companies' hedging decisions. And liquidity, financial distress negatively affects the hedging decisions of Indonesian manufacturing companies.

H₅: The value of firm size affected to the hedging agricultural sector

The Influence of Liquidity to the Hedging

Livingstone and Ngugi (2017) conducted a study to analyze the impact of liquidity ratios, growth options, long-term debt ratios, cash flow volatility on the use of hedging in companies listed on the NSE (Nairobi Security Exchange). This study's results indicate that liquidity ratio, growth options, and cash flow volatility have a positive and significant effect on the use of hedging. Goklas and Wahyudi (2016) conducted a study aimed to determine the impact of liquidity, managerial ownership, dividend policy, leverage, cash flow volatility, growth opportunity, and company size on non-financial companies. This study's results indicate that liquidity and cash flow volatility has a positive effect on hedging policies. While managerial ownership, growth opportunity, and leverage have no impact on hedging policies.

H₆: The value of liquidity affected to the hedging agricultural sector

The Influence of Profitability to the Hedging

Sasmita and Hartono (2019) conducted a study to analyze the factors influencing the hedging decisions of manufacturing companies. The results of this study indicate that company size, profitability, leverage have a positive effect on hedging decisions. While liquidity, financial distress negatively affects hedging decisions. Brav et al. (2018) conducted a study aimed at finding out the company's innovations using hedging registered at the NBER (National Bureau of Economic Research) consisting of tobin_q, sales growth, leverage, dividend, profitability, cash variables. The results of this study indicate that corporate innovation tends to be targeted by hedging. Significant hedging is very influential in a highly competitive industry, so hedging benefits innovative company activities over a long period.

H₇: The value of profitability affected to the hedging agricultural sector

The Influence of Dividend Payout Ratio to the Hedging

Damanik and Muharam (2015) researched the impact of equity ratio variables, growth opportunity, dividend policy, company size, liquidity, and institutional ownership in Indonesian banking companies. This study's results indicate that equity ratio, dividend policy, company size, and institutional ownership have a significant positive effect on hedging, while growth opportunity harms hedging. Tang (2019) shows that sales growth, leverage, dividends, profitability, and cash have a significant effect on the use of hedging, which can benefit innovative company activities in the long run.

H₈: The value of profitability affected to the hedging agricultural sector

The Influence of Managerial Ownership to the Hedging

Bodroastuti, Paranita, and Ratnasari (2019) conducted a study to analyze the factors influencing company hedging policies in manufacturing companies. The results of this study indicate that growth opportunity has a negative effect. In contrast, liquidity, firm size, financial distress, leverage, and managerial ownership have a positive impact on corporate hedging policies. Seng and Thaker (2018) show that debt is significant and positive towards Malaysian companies' hedging practices. Managerial ownership, investment growth, and liquidity have a substantial and adverse effect on Malaysian companies' hedging practices.

H₉: The value of managerial ownership affected to the hedging agricultural sector

METHODS

This study is sourced from financial statements of agricultural sector companies that use hedging with quarterly data from 2013 to 2019. The data used in this study are data on Growth Opportunity (GO), Financial Distress (FD), Debt (DE), Leverage (LV), Firm Size (FZ), Liquidity (LQ), Profitability (PR), Dividend Payout Ratio (DR), Managerial Ownership (MO), Hedging (HD). This study consisted of seven companies and used panel data.

$$HD_{it} = \alpha_0 + \beta_1 GO_{it} + \beta_2 FD_{it} + \beta_3 DE_{it} + \beta_4 LV_{it} + \beta_5 FZ_{it} + \beta_6 LQ_{it} + \beta_7 PR_{it} + \beta_8 DR_{it} + \beta_9 MO_{it} + \epsilon_{it}$$

Where i and j indicate the company and time, the growth opportunity is used to measure a company's future (Giraldo-Prieto et al., 2017; Widyagoca & Lestari, 2016).

Growth Opportunity= Market Value of Equity/Book Value of Equity

Financial distress is measured by the Altman Z Score, which predicts whether a company is bankrupt (Bodroastuti et al., 2019). Classification of the interpretation of the Z-score if the Z-Score > 3.00 companies are considered safe/right / avoid the risk of bankruptcy; 2.70 ≤ Z-score < 2.99 there is a company's financial condition that requires special attention; 1.80 ≤ Z-score < 2.70 companies have the possibility of experiencing financial distress for the next two years; Z < 1.80 = bankruptcy potential.

Debt to Asset Ratio is used to measure the extent to which a company's assets are financed with debt and some of the debt burden borne by the company compared to its assets (Gupta, 2017; Seng & Thaker, 2018).

$$DAR = (\text{Total Debt}) / (\text{Total Asset}) \times 100\%$$

Leverage uses a debt-equity ratio indicator used to measure a company's ability to pay off debt (Franzoni & Giannetti, 2019).

$$\text{DER} = (\text{Total debt}) / \text{Equity} \times 100\%$$

Firm size uses the company scale as seen from the company's total assets at the end of the year (Sasmita & Hartono, 2019).

$$\text{Firm size} = \text{total asset}$$

Liquidity uses the current ratio indicator, which is used to measure a company's ability to pay its short-term debt (Livingstone & Ngugi, 2017).

$$\text{Current Ratio} = (\text{Current Assets}) / (\text{Current Liabilities})$$

Profitability uses the return on asset indicator, which is used to measure its ability to generate profits (Brav et al., 2018).

$$\text{Return on asset} = (\text{earning before interest and tax}) / (\text{Total assets}) \times 100\%$$

The dividend payout ratio is used to measure the percentage level of profit divided into dividends (Annisa & Puryandani, 2017).

$$\text{Dividend payout ratio} = (\text{Dividend}) / (\text{Earning after tax})$$

Managerial ownership is used to see shares owned by company management, including the board of commissioners and directors, who are actively involved in corporate decision making (Goklas & Wahyudi, 2016; Sutarja & Cholid, 2017).

$$\text{Managerial Ownership} = (\text{Total Managerial Shares}) / (\text{Number of shares outstanding})$$

In this study, to determine the best model using the panel data method, several tests can be done, namely the chow test, this test is to determine whether the common effect model or the fixed effect model is the most appropriate to be used in estimating panel data. Furthermore, the Hausman test is used to select whether the fixed effect model or random effect model is the most appropriate to use. After obtaining the best model, then the processed data must be free from autocorrelation, multicollinearity, heteroscedasticity, and normally distributed data.

RESULTS AND DISCUSSION

Overall, all companies analyzed using hedging. Growth Opportunity (GO) has an average of 3.71 percent, with growth reaching 9.88 percent. The increase is found in the company Tunas Baru Lampung Tbk (TBLA), which puts forward the distributor of agricultural-based consumer products in Indonesia in oil palm, pineapple, and sugar cane plantations. The lowest growth was at 0.80 percent, where the increase occurred in the Bakrie Sumatra Plantations Tbk (UNSP) company, prioritizing oil palm and rubber plantations. The company has a risk management opportunity for growth opportunities of 2.40 percent.

Financial Distress (FD) has an average of 3.62 percent which falls into the category of safe from bankruptcy with a maximum value of 9.90 percent in the Salim Inomas Pratama Tbk (SIMP) company which emphasizes on sugar cane, cocoa, oil palm, and tea plantations and minimum values by 0.90 percent in the company Bisi International Tbk (BISI) which prioritizes hybrid seed producers for corn, rice, horticulture, and fertilizer. This sector company has a financial condition that requires special attention of 2.40 percent.

Debt (DE) has an average of 4.71 percent, with a maximum value of 9.70 percent, where the company can manage its debt well. The highest value was found in the Bakrie Sumatra Plantations Tbk (UNSP) company, prioritizing oil palm and rubber plantations. The minimum amount of 1.03 percent in the company Bisi International Tbk (BISI). The company is faced with short-term debt risk that encourages companies to use hedging by 2.29 percent.

Leverage (LV) has an average of 3.71 percent. Agricultural sector companies can manage funds to the company's assets reaching 9.99 percent found in the company Sampoerna Agro Tbk (SGRO), which is engaged in oil palm and rubber plantations. The company is faced with debt risk and foreign exchange rate fluctuations of 2.72 percent.

Table 1. Descriptive statistics

Description	Obs.	Mean	Maximum	Minimum	Std.Deviation
HD	196	1.00	1.00	1.00	0.00
GO	196	3.71	9.88	0.80	2.40
FD	196	3.62	9.90	0.90	2.40
DE	196	4.71	9.70	1.03	2.29
LV	196	3.71	9.99	1.03	2.72
FZ	196	3.14	9.80	1.04	2.20
LQ	196	3.68	9.86	1.00	2.97
PR	196	3.82	9.91	1.00	2.41
DR	196	3.52	9.90	1.00	2.41
MO	196	3.94	9.70	0.30	2.57

Firm Size (FZ) has an average of 3.14%. The extensive expansion of agricultural sector companies reached 9.80 percent found in the company Tunas Baru Lampung Tbk (TBLA), which prioritizes distributors of agricultural-based consumer products in Indonesia in the areas of oil palm, pineapple, and sugar cane plantations. The company is faced with a high level of sales risk due to its size of 2.20 percent.

Liquidity (LQ) has an average of 3.68 percent. Agricultural sector companies can manage their short-term obligations by reaching 9.86 percent, which is found in the Bakrie Sumatra Plantations Tbk (UNSP) company, prioritizing oil palm and rubber plantations. The company is faced with liquidity risk in paying short-term obligations of 2.97 percent.

Profitability (PR) has an average of 3.82 percent. Agricultural sector companies can manage company profits reaching 9.91 percent found in the company Salim Inomas Pratama (SIMP), which puts forward in the field of agribusiness in seed breeding, cultivation, and processing of oil palm. The company is faced with profitability risk, which can reduce the value of the company's profit by 2.41 percent.

Dividend Payout Ratio (DR) has an average of 3.52 percent. Agricultural sector companies can manage dividends reaching 9.90 percent found in the company Sinar Mas Agro Tbk (SMAR), which puts forward in the field of oil palm plantations and processing fresh fruit bunches. The company is faced with high-profit risk, which results in difficulty in the dividend distribution of 2.41 percent.

Managerial ownership (MO) has an average of 3.94 percent. Agricultural sector companies have high institutional ownership and a considerable influence on company management decisions reaching 9.70 percent found in the company Bisi International Tbk (BISI), which puts forward the hybrid seed producers for corn, rice, horticulture, and fertilizer. The company is faced with a legal risk to the investment protection of 2.57 percent.

The results of selecting the best model that have been carried out show that this study uses a fixed-effect model, and the data of this study are free from autocorrelation, multicollinearity, heteroscedasticity, and normally distributed data.

$$HD_{it} = 62.14506 + 0.00587GO_{it} + 0.013859FD_{it} - 0.009511DE_{it} - 0.019268LV_{it} + 0.005174FZ_{it} - 0.011617LQ_{it} - 0.000548PR_{it} + 0.005217DR_{it} + 0.007194MO_{it} + \varepsilon_{it}$$

Growth Opportunity (GO) significantly influences the use of hedging. These results indicate that an increase in Growth Opportunity will increase the use of hedging in agricultural companies. When the condition of Growth Opportunity improves, the use of hedging will be higher. On the contrary, if the state of Growth Opportunity decreases, the use of hedging will decrease. Agricultural development has been proven to have contributed to encouraging economic growth both in the short and long term (Devaux et al., 2018; Pham & Riedel, 2019). Also, the agricultural inflation rate has declined even lower than the general inflation rate.

Table 2. Panel Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HD	62.14506	15.70146	3.957916	0.0000
GO	0.005870	0.011845	0.495554	0.0459
FD	0.013859	0.012719	1.089654	0.0287
DE	-0.009511	0.016605	-0.572755	0.0000
LV	-0.019268	0.017075	-1.128477	0.0119
FZ	0.005174	0.019048	0.271653	0.0000
LQ	-0.011617	0.011765	-0.987438	0.0000
PR	-0.000548	0.011838	-0.046312	0.0095
DR	0.005217	0.012280	0.424871	0.0002
MO	0.007194	0.015134	0.475365	0.9902

The flat rate of food inflation indicates adequate availability due to the increasing production of agricultural foodstuffs (Sasmal, 2015). To maintain agricultural products' productivity, it is necessary to anticipate crop failures caused by natural disasters such as floods and drought by providing insurance programs to farmers covering 1 million hectares of land per year. Farmers who have insured their agricultural land, if affected by natural disasters, floods, and droughts, can be replaced (Prakash, Tek, & Ritika, 2020).

Financial Distress (FD) has a significant effect on the use of hedging. The calculation results show a low number. Then the company is included in companies that have the possibility of bankruptcy. Assuming a fixed investment policy, hedging can reduce the present value of the costs of financial difficulties. As a result, hedging increases shareholder wealth because it reduces the expected amount of direct bankruptcy costs. Hedging can also be used to solve various problems related to cash flow, such as financial difficulties and underinvestment issues (Ayturk, Gurbuz, & Yanik, 2016; Cai, Zeng, Lee, & Ozkan, 2016). If Financial Distress increases, the use of hedging will increase. Production problems are related to capacity issues, farmer productivity, farmer incentives, inaccurate data that causes import policy problems (Bellotti & Rochecouste, 2014; Christiaensen, 2017; Sundrum, 2019)—at the same time, connected to distribution problems where the length of the trading system, dominant actors, and price formation controlled by several market participants (Wirtz, So, Mody, Liu, & Chun, 2019). In contrast, the price problem is in the market structure controlled by several main actors (Clapp, 2017).

Debt (DE) has a significant effect on the use of hedging. Companies will have higher debt levels when they use too much debt to finance their assets. If the debt is high, the use of hedging is also high. Conversely, if the debt level is low, the company reduces the use of hedging. For financing problems, top risk factors in the agricultural sector caused limited formal financing (Fecke, Feil, & Musshoff, 2016). As a result, farmers depend on financial resources for informal financial institutions (Abdallah, 2016). The banking sector views the agriculture sector as having a high risk, so caution is needed in analyzing the submission of agricultural finance or credit (Swamy & Dharani, 2016). There has been trauma from the banking sector overconfidence or bad credit failures in agricultural lending (Chandio, Jiang, Wei, & Guangshun, 2018). Bank Indonesia regulations concerning Prudential Banking so that banks are truly selective in providing financing to maintain banks' health. The dominance of micro-small businesses has weaknesses in management and bookkeeping.

Leverage (LV) has a significant effect on the use of hedging. Companies will have a high degree of leverage when companies use debt to finance their assets. Companies will tend to use debt in access because of the benefits of using debt. Companies face the risk of bankruptcy if they cannot fulfill obligations. Therefore, companies that have high leverage ratios tend to use more hedging. The number of available resources, including biodiversity and agricultural ecosystems, the vast potential of arable land for agriculture, the abundance of labor, the availability of innovation

and technology, and the tremendous potential of domestic and international markets can become suppliers of foodstuffs to various countries (Ciaian, Fałkowski, & Kanacs, 2012; Lanka, Khadaroo, & Böhm, 2017). With this potential, the agricultural sector has great potential to increase profits.

Firm Size (FZ) has a significant effect on the use of hedging. Increasingly large companies will tend to use hedging to protect the assets that exist in the company. Conversely, if you have a small firm size, then the company tends to use hedging is low. This is because large companies face more significant risks increasingly. This firm size affects the company's decision-making in obtaining both internal and external funding sources. Agricultural sector companies can expand their business to higher value food crops, such as vegetables and fruits (Johnson et al., 2018). Besides, diversifying agriculture with a combination of aquaculture or animal husbandry. Plants with a higher economic value promise greater profits and income than staple crops like rice and corn. The demand for vegetables and fruit will increase rapidly in the future. Increased productivity in the category of business field is a positive impact on improving regulations and policies in the agricultural sector, especially on human resources, marketing, and infrastructure, including storage, refrigeration, and so on. The reason is, although it is known as an agricultural country that produces abundant agrarian products with a variety of fruits and vegetables, the Indonesian people are considered not to be optimal in processing the wealth of natural resources provided.

Liquidity (LQ) has a significant effect on the use of hedging. The company that has high cash, the higher the purpose of hedging. Indonesia has the potential of natural resources, including abundant germplasm (mega biodiversity), which can be an additional income for the agricultural sector. Indonesia's terrestrial biodiversity is the second largest in the world after Brazil, whereas if it includes marine biodiversity, Indonesia is the number one largest in the world. This can be seen by the diverse types of agricultural commodities, food crops, horticulture, plantations, and livestock that have long been sought as sources of food and community income (Ruel, Quisumbing, & Balagamwala, 2018). Biodiversity is supported by the distribution of geographical conditions in the form of low and high plains, the abundance of sunlight and rainfall intensity that is almost evenly distributed throughout the year in some regions, as well as the diversity of soil types allows the cultivation of various kinds of plants and livestock native to the tropics, as well as introduced commodities from sub-tropical regions evenly throughout the year in Indonesia.

Profitability (PR) has a significant effect on the use of hedging. Companies that have high profitability can continue the company's life and make it easy for companies to attract capital. To protect the company from obtaining high profitability sustainably, the company needs to use hedging. Conversely, if profitability is low, then the use of hedging will below. One of the countries in the tropical region has outstanding agricultural potential, especially for tropical agriculture (Manners & van Etten, 2018). One of Indonesia's tropical agricultural products that can become a mainstay is fresh agrarian products in fruits and vegetables. Other products that are also a mainstay are spices and biofuels. In the agricultural sector, various types of weaving are supported by different tropical climate conditions, in the field of food crops in Indonesia has superior crops such as rice, soybeans, peanuts, cassava, and various other types.

Dividend Payout Ratio (DR) has a significant effect on the use of hedging. As a country, one of the centers of food crop mega diversity in the world, with a tropical climate, can grow crops throughout the year. Various types of plants and plantations can grow and have tremendous market potential. Until now, the problem of pests and diseases is a significant challenge in agricultural cultivation compared to fertilizer and land fertility. That happens because climate change strongly supports the development of pests, pathogens, and fast-growing weeds. Therefore, the use of pesticides that are part of the integrated farming system becomes an important role. Keep in mind, the challenges of the agricultural sector at this time more and more. It starts with changes in the environment and natural resources of agriculture, mastery of science and technology, security, security and diversification of food, human resources, regulation, mechanization and modernization of agricultural systems, agricultural land area, and digitization of industries that

penetrated all sectors, to agricultural trends 4.0 (Bacco, Barsocchi, Ferro, Gotta, & Ruggeri, 2019; Mueller & Mueller, 2016; Schreinemachers, Simmons, & Wopereis, 2018).

CONCLUSION

Growth opportunity has a significant effect on the use of hedging. Increased growth opportunities lead to increased use of hedging, which means companies in the agricultural sector prioritize export-import. Financial distress has a significant effect on the use of hedging. Increased financial trouble causes increased use of hedging, which means companies in the agricultural sector prioritize the company's position from the risk of bankruptcy. Debt has a significant effect on the use of hedging. Increased debt causes increased use of hedging, which means companies in the agricultural sector prioritize the company's ability to meet both short-term and long-term obligations.

Leverage has a significant effect on the use of hedging. Increased leverage causes increased use of hedging, which means companies in the agricultural sector prioritize the ability of equity to meet all obligations. Firm size has a significant effect on the use of hedging. Increased firm size causes the purpose of hedging to increase, which means companies in the agricultural sector prioritize larger scale companies by exporting. Liquidity has a significant effect on the use of hedging. Increased liquidity causes increased use of hedging, which means companies in the agricultural sector prioritize the company's ability to pay short-term obligations. Profitability has a significant effect on the use of hedging. Increased profitability causes the purpose of hedging to increase, which means companies in the agricultural sector prioritize generating profits. The dividend payout ratio has a significant effect on the use of hedging. An increasing dividend payout ratio causes the purpose of hedging to increase, which means companies in the agricultural sector prioritize profits derived by the company for distribution to shareholders.

This study's results indicate that the agricultural sector emphasizes the use of hedging to protect from risk exposure. Policymakers need to analyze the diverse characteristics of companies to hedge more deeply because companies in Indonesia have an excellent opportunity to use hedging to protect from risks that can threaten the company's sustainability. Also, it is necessary to consider the factors that influence hedging for companies' determination to use hedging. This research only discusses external factors such as fluctuations in foreign currencies, inflation, and foreign debt. Future studies are expected to add to the external factors that influence the use of individual hedging in the agricultural sector.

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