

THE INFLUENCE OF USING DERIVATIVES FOR HEDGING ON THE VALUE OF FIRMS IN THE MINING SECTOR LISTED IN THE INDONESIAN STOCK EXCHANGE

Ni KadekDiahDwiSartikaYanti¹,LuhGede Sri Artini²

^{1,2}Faculty of Economics and Business, Udayana University (UNUD), Bali, Indonesia

ABSTRACT: Firms are continuously expected to create strategies and manage their risks in order to achieve the firm's main goal, which is to maximize firm value or maximize shareholder welfare. Derivatives for hedging is one of the ways to improve firm value. In addition to derivatives for hedging, there are other important factors which may influence firm value and must be controlled, namely profitability and investment growth. The purpose of this study is to determine the influence of using derivatives for hedging on the value of firms in the mining sector listed in the Indonesian Stock Exchange (IDX) over the years of 2016 – 2018. Simultaneously, profitability and investment growth in this study are the control variables in this study.

There are 48 firms as the population in this study, in which are mining sector firms listed in the Indonesian Stock Exchange (IDX) over the years of 2016–2018. 17 firms were selected as sample using the purposive sampling method. The data collection was conducted using the non-participant observation method. The data analysis technique used was the regression analysis.

Based on the results, the derivatives for hedging was found to have a positive and significant influence on the firm's value, while profitability and investment growth were controlled, thus did not influence firm value..

Keywords: firm value, derivatives, hedging, profitability, investment growth, foreign exchange exposure

I. INTRODUCTION

In the current globalization era, the world economy has experienced a great development. This development has led to the increase in international trade conducted between various countries. This international trade has provide opportunities for firms to reach a wider market more effectively and efficiently. Madura (2018:10) stated that international trade is one of the most frequently used methods by firms to penetrate the international market through exports and imports. Afza and Atia (2011:409) explained that the increase in globalization has encouraged many firms to expand their business across geographical barriers to gain greater profit, competitive advantages, and better economies of scale.

Madura (2018:10) explained that firms expansion by entering the international market through exports and imports is a strategy to improve firm value because it provides the opportunity to increase the firm's cash flow. Griffin and Pustay (2015:178) stated that exports and imports are activities conducted in international trade which involve more than one country and different currencies. The more frequent firms trade in different currencies, the greater their risk or exposure to foreign currencies. Mamplata et al. (2014:5470) stated that firms that are involved in foreign currency transactions are inherently exposed to foreign currency risks.

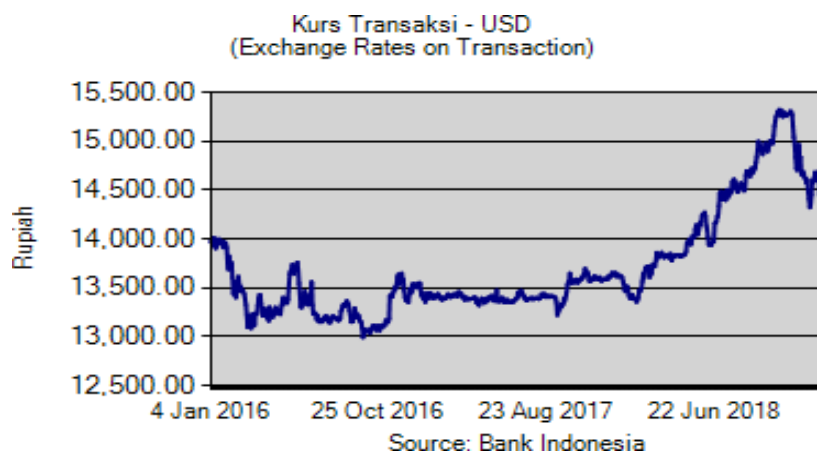
Pawlowski (2013:155) explained that the operations of international business firms are exposed to various risks. Similarly, Bartram (2006:547) revealed that international trade has a large risk which is due to foreign currency fluctuation. The unexpected fluctuations in foreign currency value may affect sales, price, and the profit of exporters and importers. The change in foreign currency value is one of the main risks for firms involved in international trade. Similarly, Maniar (2016:41) stated that the export activity of firms may be interrupted by the fluctuation in exchange rate which may not favor the firm. Foreign currency risk exposure does not only affect international firms, but may also affect national firms. Dominguez and Linda (2006:190) explained that national firms may also be affected by the exchange rate when they are involved or trade with foreign firms.

Hanafi (2016:62) stated that the fluctuations in exchange rate is caused by the changing demand and supply of the currency, resulting in the exchange rate risk which may have a bad impact on the

firm if it is not carefully managed. Indonesia currently use an exchange rate system which fluctuates following the demand and supply of foreign currencies and is not intervened by the government. In the figure below, the movement in exchange rate of USD to IDR from 2016 to 2018 is displayed. The USD is selected as the research object as the USD is a very influential currency.

Figure 1 Exchange Rate to USD 2016-2018. (Source : Bank Indonesia)

The graph in Figure 1 shows the exchange rate of USD to IDR over the span of three years, from January 2016 until December 2018. Based on Figure 1., it can be observed that the exchange rate of USD to IDR on January 2016 is IDR 14.000 per 1 USD. Afterwards, on October 2016 the exchange rate dropped to IDR 13.000, on June 2018 it increased to IDR 15.300, and at the end of the 2018, it dropped again.



With the exchange rate fluctuation phenomena, there is an inherent risk for firms that are involved in international trade. Therefore, international finance management needs to be implemented in order to minimize, manage, and transform it into an opportunity to generate more profit.

Omar et al. (2017:80) stated that one of the most important elements in business strategy and financial policy is the firm's risk management. Jiwadhana and Artini (2019:4) stated that Indonesia is a developing country which is exposed to exchange rate risks, and that hedging is one of the ways to minimize the risk due to fluctuating foreign currencies.

Firms that conduct international trade through exports and imports may implement the hedging technique to manage their foreign currency risk exposure. Aabo (2010:41) stated that foreign currency risk management generally involves hedging. Oliveira (2012:614) stated that one of the ways to protect the firm's cash flow from currency depreciation is by hedging. Wong (2006:2) stated that the financial market is incomplete without hedging instruments directly related to the currencies used in trades.

Hedging has a purpose to minimize the loss incurred due to exchange rate fluctuation. Chincarini (2007:34) stated that in currency hedging, firms may choose the full hedging approach, partial hedging, or not hedging at all. Clark and Salma (2010:186) explained that the use of derivatives are more effective in managing Euro currency risk exposure, in which the risk exposure is minimized six times better than without using derivatives.

Madura (2018:141) stated that there are three techniques used in foreign currency hedging, namely future hedging, forward hedging, and currency option hedging. Before choosing a hedging technique, the firm must first compare the cash flows resulted by each hedging technique. Similarly, Chan et al. (2003:26) revealed that in currency risk hedging, exporters used several currency derivatives, namely forward, future, swap and option.

This study examines the Mining Sector of the Indonesian Stock Exchange from 2016 to 2018, specifically the raw oil and coal industry. The mining sector was selected as the research object because, based on the data from Bank Indonesia from 2016 to 2018, the fall in the world economy was followed by the fall in world trade volume, leading to the fall in price of commodity. When the world commodity price fell, in line with the weakening world economy, there was a different trend for the price of raw oil and coal. In the figure below is the graphic displaying the raw oil and coal price trend from 2016 to 2018.



Figure 2 Raw Oil and Coal Price Trend from 2016-2018 (Source : Bank Indonesia)

The market price of stocks reflects the firm's future potentials or how investors evaluate the value of equity owned by the firm as a whole. The firm's value is reflected through its stock price. The higher the stock price, the wealthier the stockholders are (Ngatemin et al., 2018:93). From Figure 2, it can be observed that there was an increasing trend for the price of raw oil and coal from 2016 to 2018. The increase in commodity prices leads to the increase in stock price and the increase in firm value. Thus, the mining sector, specifically the raw oil and coal firms are selected as the research objects. The growth in the usage of hedging, specifically in the mining sector of IDX from 2016 to 2018 is still very minimum. In the graph below, the growth in the usage of derivatives for hedging in the mining sector of IDX from 2016 to 2018 is displayed.

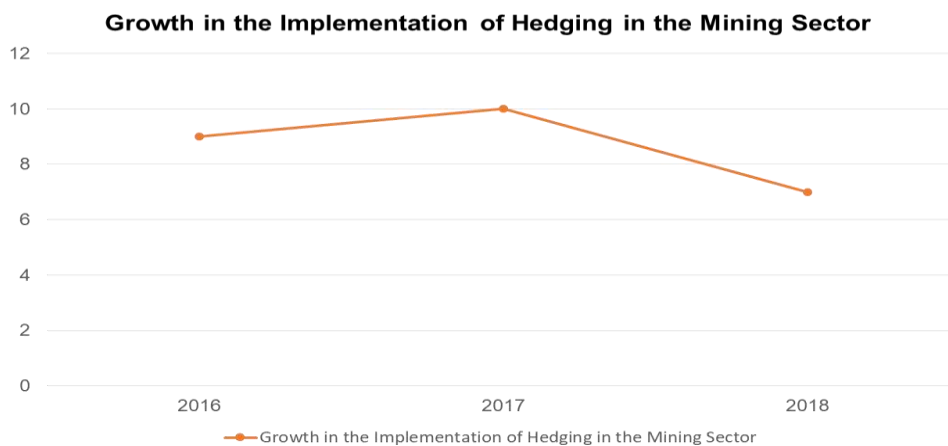


Figure 3 Growth in the Implementation of Hedging in the Mining Sector (Source : Bank Indonesia, Computed Data)

Based on the graph, it can be observed that the usage of derivatives for hedging in the mining sector firms listed in the IDX from 2016 to 2018 is still very low. There is an increase in the usage of derivatives for hedging from 2016 to 2017, from 9 firms to 10 firms. However, in 2018 there was a decrease in which only 6 firms used derivatives for hedging or foreign currency risk management. Thus, one of the reasons this research was conducted is because the usage of hedging derivatives is still very low in the mining sector of IDX from 2016 to 2018.

Brigham and Daves (2019:11) argued that firms are continuously demanded to create strategies to manage the firm's cash flow in order to achieve the firm's main goal, namely to maximize firm value or maximize the shareholders wealth. Firm value is an indicator of the market's perception regarding the firm's achievement and is an important concept to investors. Firms are said to be able to maximize shareholder wealth when share price, thus firm value is maximized. Maximizing shareholder wealth is an important goal which must be achieved by the firm's management.

Alam and Amit (2018:137) explained that one of ratios that can proxy firm value is the Tobin's Q. Tobin's Q is

defined as the ratio of the firm's market value to the replacement value of its assets. This study utilize the simplified version of the Tobin's Q which was also used in a study conducted by Alam and Amit (2018:137).

The derivatives for hedging reduce the exposure of foreign currency risks and produce beneficial effects on firm value through tax, financial difficulties and risk management reluctance (Smith and Stulz, 1985:403). In another study, it was stated that derivatives for hedging may increase shareholder wealth, hence firm value (Afza and Atia, 2011:409). Other studies revealed that hedging has a positive and significant influence on firm value because the use of derivatives for hedging is able to improve firm value. (Smithson and Simkins, 2005:15; Carter et al., 2006:32; and Aretz et al., 2007:445). Alam and Amit (2018:149) stated that the implementation of hedging is able to reduce the volatility of firm value and able to provide additional value for the firm. The study by Fok et al. (1997:572) stated that hedging is an important activity for the firm because in addition to minimizing risk, hedging is also able to improve firm value.

Several previous studies have shown different results. Among others, the research by Jin and Jorion (2006:915) revealed that hedging does not positively influence firm value. The research by Khediri (2010:72) and Belghitaret al. (2013:24) also revealed that the usage of derivatives for hedging does not have any positive influence on firm value.

The inconsistency in previous research results is one of the motivation to re-examine the influence of using derivatives for hedging on firm value. Many firms do not report the usage of derivatives for hedging as their way of managing foreign currency risk. In this study, the usage of derivatives for hedging is examined as a dummy variable.

Alam and Amit (2018:137) stated that, in addition to the use of derivatives for hedging, there are several factors that are able to influence firm value, among others is profitability which is a strong determinant of firm value, thus must be controlled. Harmono (2018:110)

stated that profitability has a causal relationship with firm value. The causal relationship can be seen when a firm is evaluated based on its profitability. When the performance is good, it will have a positive impact on the investor's decision to invest in the firm. Brigham and Daves (2019:293) explained that profitability is the result of a number of policies and financial

decisions, in which the ratio examined shows how effective the firm's operations are. There are several proxies to measure profitability, among others is the Return on Invested Capital (ROIC) which is used to determine the ability of the firm to use the available capital in profitable investments. Previous studies state that ROIC has a positive and significant relationship with firm value which is measured using Tobin's Q (Allayannis and Weston, 2001:252; Khediri, 2010:64; Belghitaret al., 2013:20; dan Alam and Amit, 2018:137). Thus, profitability is included as one of the control variables in this study.

Future investment opportunity is also able to influence firm value (Myers, 1977:170). Firms that use hedging tend to have greater investment opportunities in line with their high investment growth (Froot et al., 1993:1655; and Geczy et al., 1997:1350). Firms that

implement hedging measures have a greater investment opportunity because investors view this as an added value, motivating them to invest more, resulting in a greater investment opportunity for the firm. Therefore, it is important to control investment growth. The capital expenditure ratio can be used as proxy for investment growth. Amit and Alam (2018:138)

stated that capital expenditure has a positive relationship with firm value, in which Tobin's Q is used as its proxy. Thus, investment growth is the control variable in this study. Khediri

(2010:65) stated that profitability and investment growth are important driving factors for firm value, thus profitability and investment growth are determined to be the control variables in this study. By controlling the profitability and investment growth variables, the influence of derivatives for hedging on firm value can be more accurately examined. The use of derivatives for hedging is one of the methods in foreign currency risk management which is also used in strategies to improve the firm's value. The use of derivative for hedging improves the firm's value because the use of derivative for hedging is viewed as an added value by investor. The added value may result in the increase in stock price, which is in line

with the high profitability and investment growth. Thus, this study will determine the influence of use of derivatives for hedging on firm value, while keeping profitability and investment growth as the controlled variables.

II. LITERATURE REVIEW

The concept underlying this study is international financial management. International financial management is very important to firms that are directly and indirectly involved in foreign trade because these firms must be able to determine the effects of exchange rate fluctuation, foreign interest rate, human resource cost, and inflation on their firm and their competitors. Therefore, the characteristics of a country's economy may affect cost of production and pricing policies. Firms may be involved in international trade through export or import activities. The main purpose of firms' involvement in international trade is to maximize their firm value. With international trade, firms would have the opportunity to expand. International trade has allowed firms to

reach wider markets more effectively and efficiently. By being involved in international trade, firms will have to deal with different currencies which increases their exposure to foreign currency risk. Firms can minimize foreign currency exposure by applying risk management such as using hedging derivatives. The usage of hedging derivatives as a form of risk management is one of the ways to increase firm value, thus is in line with the maximization of shareholder wealth. There are two control variables in this study, namely profitability and investment growth. These factors must be controlled because these are important driving factors of firm value. Control variables are displayed in the model equation, but is not displayed in the conceptual framework.

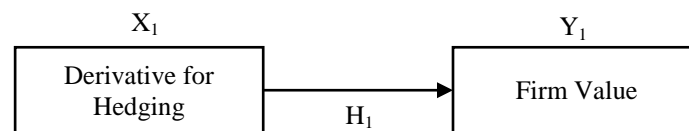


Figure 4 Conceptual Framework

Research Hypothesis

H₁ : The Usage of Derivatives for Hedging has a positive influence on Firm Value.

III. METHODOLOGY

The population in this study is the firms in the mining sector listed in the Indonesian Stock Exchange (IDX) over the years of 2016 to 2018. There are 48 firms in the population and the total number of sample is 17 firms, which were selected using the purposive sampling method. The data collection was conducted using the non-participant observation method. The data analysis technique used is the regression analysis.

The Independent Variable (X)

The independent variable in this research is the use of derivatives for hedging by the oil firms and coal firms listed in the IDX from 2016 until 2018. Hedging derivatives are used by firm's to minimize the risk related to foreign exchange fluctuation which may harm the firm. The derivative instruments are options, forward, future, and swap. Qualitative data regarding the use of derivatives are obtained from the annual report of the mining sector firms, and are represented in a nominal scale as a dummy variable in this study. Firms that use derivative instruments in their hedging activities are denoted with the value of 1, while firms that do not use derivatives in their hedging activities are denoted with the value of 0.

Dependent Variable (Y)

The dependent variable in this study is the firm value of oil and coal firms (mining sector) listed in the IDX over the years of 2016 – 2018. Firm value, with Tobin's Q as its proxy, is defined as the ratio of market value to asset replacement value. In this study, a simplified version of Tobin's Q is adopted in line with previous studies conducted by Alam and Amit (2018:137). Tobin's Q is calculated by summing market value and total debt (total liability deducted by total equity), and afterwards dividing it by total asset. Market value is obtained by multiplying stock price with the total outstanding stocks over the year, in which this data can be obtained from the annual report of each firm. Tobin's Q ratio is used as the proxy for firm value because it is viewed as the most suitable measurement and is highly related to the independent variable and the control variables, namely profitability and investment growth..

Control Variable (X_t)

The purpose of control variables is to control the influence of certain independent variables on the dependent variable. The control variables in this study are profitability and investment growth of the oil and coal firms listed in the IDX over the years of 2016 to 2018. **Profitability**. Consistent with the research conducted by Alam and Amit (2018:137), return on invested capital (ROIC) is used to evaluate how well the firm is able utilize their available capital for profitable investments. ROIC is calculated by dividing NOPAT by operating capital. NOPAT is the after-tax operational income in which the data can be obtained from the annual report of each firm. Afterwards the EBIT (1- Tax Rate) can be calculated. Operating capital is calculated by summing NOWC and long-term operating assets. NOWC is calculated by summing cash, account receivables, and inventory, deducted by the sum of total debt and unpaid expenses (accruals). The ROIC ratio is used as a proxy for the firm's profitability because it calculates the actual amount of capital available for investments and is very useful in determining whether an investment is profitable.

Investment Growth. Firm value is influenced by future investment opportunities. Firms that perform hedging

tend to have greater investment opportunities as these firms have a high degree of investment growth. The capital expenditure (CAP-EX) ratio is used as a proxy for investment growth (Alam and Amit, 2018:138). CAP-EX can be determined by evaluating the capital expenditure values shown in each firm’s annual report. The capital expenditure (CAP-EX) ratio is used as a proxy for firm’s investment growth because CAP-EX budget is generally determined based on the profit generated by the firm, in which this profit is reinvested by the firm. Thus, investment growth can be determined by calculating the capital expenditure ratio as its proxy. As capital expenditure allocation may vary greatly with firm size, the ratio is rationalized to minimize the bias in data computation. Thus, in the CAP-EX ratio, the capital expenditure value is rationalized by the firm’s sales value. The regression equation in this study is used to examine the influence of the use of hedging derivatives on firm value with profitability and investment growth as the control variables. The regression equation is as follows:

$$\ln(x) = b_0 + b_1 \text{Derivatif} + b_2 \text{ROIC} + b_3 \text{CAP-EX} + e \dots\dots\dots (1)$$

Annotation:

- b0 = Constant
- x = Firm Value
- Derivatif = Dummy Variable, in which the value 1 is given for firms that used derivatives for hedging, while 0 is given to firms that do not use derivatives for hedging.
- ROIC = Return On Invested Capital as the proxy for Profitability.
- CAP-EX = Capital Expenditure Ratio as the proxy for Investment Growth
- e = Error

IV. RESEARCH RESULT

The descriptive statistics analysis result in this study is shown in Table 1.

Table 1 Descriptive Statistics Test Result

	N	Minimum	Maximum	Mean	Std, Deviation
TOBINS’Q (ln)	51	7.045	10.590	8.826	.786
DERIVATIVE	51	0.000	1.000	.350	.483
ROIC	51	-.895	.736	.131	.244
CAPEX	51	.005	2.235	.150	.317

Source: Appendix 2

Table 1. shows the descriptive statistics analysis results of all the variables. The minimum value of Tobin’s Q, which is the proxy for firm value, was found in Astrindo Nusantara Infrastruktur, Ltd with a value of 7,045 in 2018. The maximum Tobin’s Q value is 10,590 which was Bayan Resources, Ltd Tobin’s Q value in 2017.

The derivative (X) variable is measured as a dummy variable, in which the minimum value is 0.000 and the maximum value is 1.000. The average value of the derivative variable is 8.826, and the standard deviation is 0.786.

ROIC was used as the proxy for profitability, one of the control variables in this study. The minimum value is -0.899 which was found in Bayan Resources, Ltd in 2016, while the maximum value is 0.736 which was found in Delta Dunia Makmur, Ltd in 2017. The average value of ROIC is 0.131 and the standard deviation is 0.244.

CAP-EX was used as the proxy for investment growth, the other control variable in this study. The minimum value is 0.005 which was found in Astrindo Nusantara Infrastruktur, Ltd in 2018 and the maximum value is 2.235 which was found in Surya Esa Perkasa, Ltd in 2017. The average value of CAP-EX is 0.150 and the standard deviation is 0.317.

Table 2 F Test Results

F	Sig.
3,228	0,031

Source: Appendix 4

Table 3 Regression Analysis Results

Unstandardized Coefficients			Standardized Coefficients		
Model	B	Std. Error	Beta	T	Sig.
1 (Constant)	8.705	.149		58.479	0.000
Derivative	.580	.223	.356	2.606	0.012
ROIC	.201	.432	.062	.465	0.644
CAP-EX	-.735	.339	-.296	-2.164	0.036

Source: Appendix 4

Based on the regression test results shown in Table 3., the regression equation is formed as follows:

$$\text{Ln}(Q) = 8,705 + 0,580 \text{ Derivatif} + 0,201 \text{ ROIC} - 0,735 \text{ CAP-EX.}$$

The results of the regression equation analysis are as follows:

- 1) The constant value is 8.705, which means that if all other independent variables are held constant, firm value will be increased by 8.705.
- 2) The regression coefficient of the derivative (X) variable is 0.580, which means that the value of firms that use derivatives for hedging (D=1) will be higher by 0.580 than firms that do not use derivatives for hedging (D=0).
- 3) The regression coefficient of the profitability variable is 0.201, which means that an increase in profitability by one unit would increase firm value by 0.201.
- 4) The regression coefficient of the investment growth variable is -0.735, which means that an increase in investment growth by one unit would decrease firm value by 0.735.

The Influence of Derivative for Hedging on Firm Value with Profitability and Investment Growth as the Control Variables

The regression test results in Table 2. shows that the model's significance value is

This significance value of the regression model is lower than significance level of 0.05, which means that the hedging derivative variable has a significant influence on firm value, with profitability and investment growth as the controlled variables. This result is in line with the expected result, therefore H1 is accepted. The results of the regression test shows that the use of derivatives for hedging has a positive and significant influence on the value of mining sector firms listed in IDX from 2016 to 2018, with profitability and investment growth as the controlled variables.

These research results are in line with the research conducted by Smithsonian and Simkins (2005:15), Carter et al. (2006:32), Aretz et al (2007:445), Afza and Atia (2011:409) which revealed that the use of derivatives for hedging has a positive influence on firm value. This study is also in line with the research by Alam and Amit (2018:149) which found that the use of derivatives for hedging has a positive influence on firm value, with profitability and investment growth as the control variables. This study does not support the research conducted by Jin and Jorion (2006:915), Khediri (2010:72) dan Belghitaret al., (2013:24) which stated that the use of derivatives for hedging does not have a positive and significant influence firm value, with profitability and investment growth as the control variables.

Profitability and investment growth as the control variables do not have positive and significant influence on firm value. The influence of each independent and control variables can be seen in the t test result. Greater investment growth is even observed to decrease firm value. Even when firms have a high level of profitability, if they do not make use of these investment opportunities, the high level of profitability and investment growth will be meaningless, and may even decrease firm value. In addition, if investor's only objective is to obtain dividends, the firm's profitability for long-term investment does not attract investors, which may lead to the decline in stock price and firm value.

The findings in this study is in line with the research hypothesis, which states that the use of derivatives for foreign currency hedging has a positive influence on the value of firms in the mining sector listed in IDX over years of 2016 –2018.

V. IMPLICATIONS OF RESULT

Theoretical Implications

The analysis result of this study contributes to the literature of hedging derivatives, profitability, investment growth, and firm value.

The research result provides empirical evidence that the use of derivatives for hedging, with profitability and investment growth as the control variables, has a positive influence on firm value. This means that firm value would be greater for firms that use hedging derivatives than firms that do not use derivatives for hedging.

Practical Implications

This study is expected to provide insights for firms to consider using derivatives for hedging as one of the methods to increase firm value. For investors, this study is expected to provide an explanation regarding how risk can be minimized by using derivatives for hedging, thus becomes one of their consideration in making investment decisions.

VI. SUGGESTIONS

Based on the analysis result and discussion in this study, it can be concluded that the use of derivatives for hedging has a positive and significant influence on firm value, with profitability and investment growth as the control variables. In addition, there are several suggestions that can be made based on the research results. First, firms with foreign currency exposure are recommended to use derivatives for hedging in order to minimize the exposure of risk. However, firms must still consider when to use it because investors may have different perceptions regarding this hedging method. Second, potential investors who are planning to invest in firms are suggested to analyze the firms foreign currency risk exposure and the firm's method to manage risk. Third, for future researchers studying this topic, it is recommended to examine other independent variables that are capable of influencing firm value such as the level of knowledge regarding hedging derivatives and to examine other control variables such as firm size.

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Appendix 1 Sample

KODE	NAMA PERUSAHAAN
ADRO	Adaro Energy Tbk.
APEX	ApexindoPratama Duta Tbk.
ARII	Atlas Resources Tbk.
ARTI	RatuPrabuEnergiTbk
BIPI	Astrindo Nusantara InfrastrukturTbk.
BSSR	BaramultiSuksessaranaTbk.
BRMS	Bumi Resources Tbk.
BYAN	Bayan Resources Tbk.
DEWA	DarmaHenwaTbk
DOID	Delta DuniaMakmurTbk.
DSSA	Dian SwastatikaSentosaTbk
ELSA	ElnusaTbk.
ENRG	Energi Mega PersadaTbk.
ESSA	Surya Esa Perkasa Tbk.
HRUM	Harum Energy Tbk.
ITMG	Indo TambangrayaMegahTbk.
KKGI	Resource Alam Indonesia Tbk.
MBAP	MitrabaraAdiperdanaTbk.
MEDC	Medco EnergiInternasionalTbk
MYOH	Samindo Resources Tbk.
PKPK	PerdanaKarya Perkasa Tbk
PTBA	Bukit AsamTbk.
PTRO	PetroseaTbk.
RUIS	Radiant UtamaInterinscoTbk.
SMRU	SMR UtamaTbk.
TOBA	Toba Bara SejahteraTbk.
TRAM	TradaAlamMineraTbk.

Appendix 2

Descriptive Statistics

	Mean	Std. Deviation	N
TOBINSQ	8.82598	.786063	51
Derivatif	.35	.483	51
ROIC	.13133	.243550	51
Rasio CAPEX	.15008	.316806	51

Appendix 3

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		51
Normal Parameters ^{a,b}	Mean	.000000
	Std. Deviation	.71576689
Most Extreme Differences	Absolute	.086
	Positive	.086
	Negative	-.076
Kolmogorov-Smirnov Z		.613
Asymp. Sig. (2-tailed)		.846

- a. Test distribution is Normal.
- b. Calculated from data.

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Rasio CAPEX, ROIC, a Derivatif		Enter

- a. All requested variables entered.
- b. Dependent Variable: absres

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.753	.073		10.008	.000
	Derivatif	-.206	.112	-.252	-1.835	.073
	ROIC	-.438	.219	-.270	-2.003	.051
	Rasio CAPEX	-.210	.172	-.169	-1.225	.227

- a. Dependent Variable: absres

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.413a	.171	.118	.738257	.171	3.228	3	47	.031	2.046

- a. Predictors: (Constant), Rasio CAPEX, ROIC, Derivatif
- b. Dependent Variable: TOBINSQ

Appendix 4

Regression Analysis with Control Variables

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	RasioCAPEX, ROIC, a Derivatif		Enter

- a. All requested variables entered.
- b. Dependent Variable: TOBINSQ

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					Square Change	F Change	df1	df2	Sig. F Change	
1	.413 ^a	.171	.118	.738257	.171	3.228	3	47	.031	2.046

- a. Predictors: (Constant), RasioCAPEX, ROIC, Derivatif
- b. Dependent Variable: TOBINSQ

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.279	3	1.760	3.228	.031 ^a
	Residual	25.616	47	.545		
	Total	30.895	50			

- a. Predictors: (Constant), RasioCAPEX, ROIC, Derivatif
- b. Dependent Variable: TOBINSQ

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8.705	.149		58.479	.000		
	Derivatif	.580	.223	.356	2.606	.012	.945	1.059
	ROIC	.201	.432	.062	.465	.644	.982	1.018
	Rasio CAPEX	-.735	.339	-.296	-2.164	.036	.943	1.061

- a. Dependent Variable: TOBINSQ

Appendix 5

Regression Analysis without Control Variables

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Derivatif ^a		Enter

- a. All requested variables entered.
- b. Dependent Variable: TOBINSQ

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.284 ^a	.081	.062	.761384	.081	4.294	1	49	.044	2.177

- a. Predictors: (Constant), Derivatif
- b. Dependent Variable: TOBINSQ

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.489	1	2.489	4.294	.044 ^a
	Residual	28.406	49	.580		
	Total	30.895	50			

- a. Predictors: (Constant), Derivatif
- b. Dependent Variable: TOBINSQ

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	8.663	.133		65.360	.000	1.000	1.000
	Derivatif	.462	.223	.284	2.072	.044	1.000	1.000

- a. Dependent Variable: TOBINSQ