

The Influencing Factors on Decision Investment: Case Study on 5 Mining Firms in 5 Countries in South East Asia

Narumondang Bulan Siregar

Lecturer, Faculty of Economics and Business, The University of Sumatera Utara, Indonesia.
E-mail: narumondang@usu.ac.id

Silvana Fransisca Hutajulu

Student, Faculty of Economics and Business, The University of Sumatera Utara, Indonesia.
E-mail: silvanafransisca97@gmail.com

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Abstract

This research aimed is to find out the factors influencing decision-making in mining firms listed in Indonesian Stock Exchange, Bursa Malaysia, the stock Exchange of Thailand, the Philippines Stock Exchange and Singapore Exchange from 2014 to 2018.

This study employed multiple linear regression to examine independent variable influences such as cash flow, firm size, leverage and investment opportunities. Total asset growth is the metric used to calculate investment decision. Secondary data were retrieved by the audited Mining Corporation Report and Annual Reports from the Indonesian Stock Exchange, Bursa Malaysia, the Philippines Stock Exchange, the Singapore Exchange and the Stock Exchange of Thailand from 2014 to 2018 in web.idx.id, www.bursamalaysia.com.com, www.pse.com.ph, www.set.or.th and the www2.sgx.com/

The findings suggest that cash flow and firm size have a beneficial impact on investment decision-making, leverage has a detrimental influence on investment decision-making whereas acquisition incentives have little impact on investment decision-making.

Keywords

Cash Flow, Firm Size, Leverage, Investment Opportunity, Investment Decision.

Background

The ASEAN Statistics Division (ASEAN states) is one of departments in the ASEAN Economic Community. This division provides useful statistical data for the ASEAN community and even the world. The work of this division is the ASEAN Annual Statistics Book containing data from each country on several sectors such as economy, tourism,

population, health, and trading. In this report, especially in the merchandise exports, 10 commodities contribute the most to the value of ASEAN exports, which are provided as commodities mineral fuels, mineral oil, and product distillation which continuously reach the top 3 positions. From the value, the exports decrease in 2014-2016 and increase in 2017.

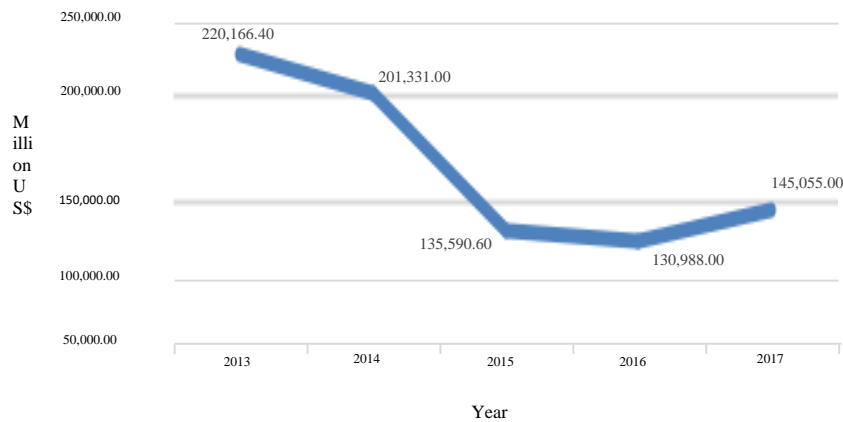


Figure 1 Export Value of ASEAN Fossil Fuels Year from 2013 to 2017

Based on the classification of mining firms, We then looked at how the price movements of the 4 major commodities from mining firms used as samples for this research, i.e. coal, oil, gold, and natural gas. The followings are the price movements of these 4 commodities.

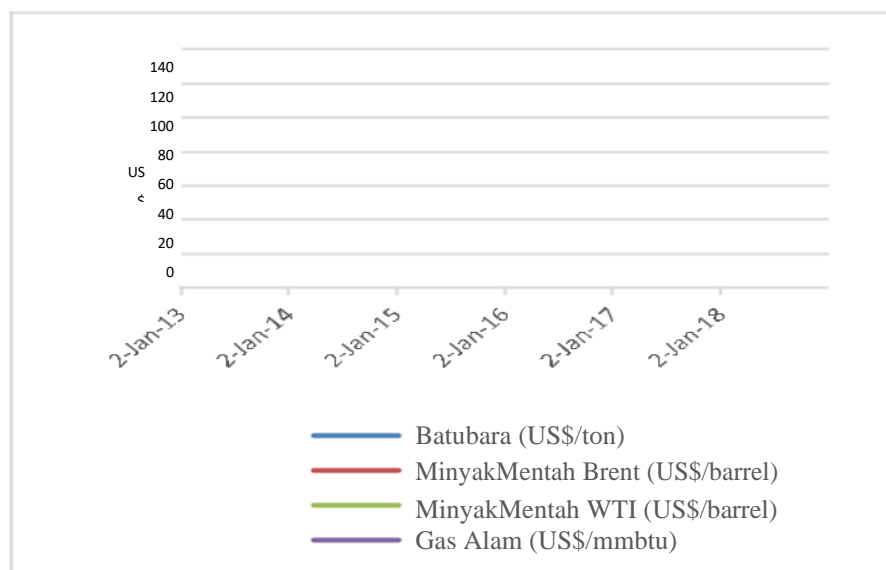


Figure 2 Prices of Fossil Fuel commodities in 2013-2018
Source: www.investing.com

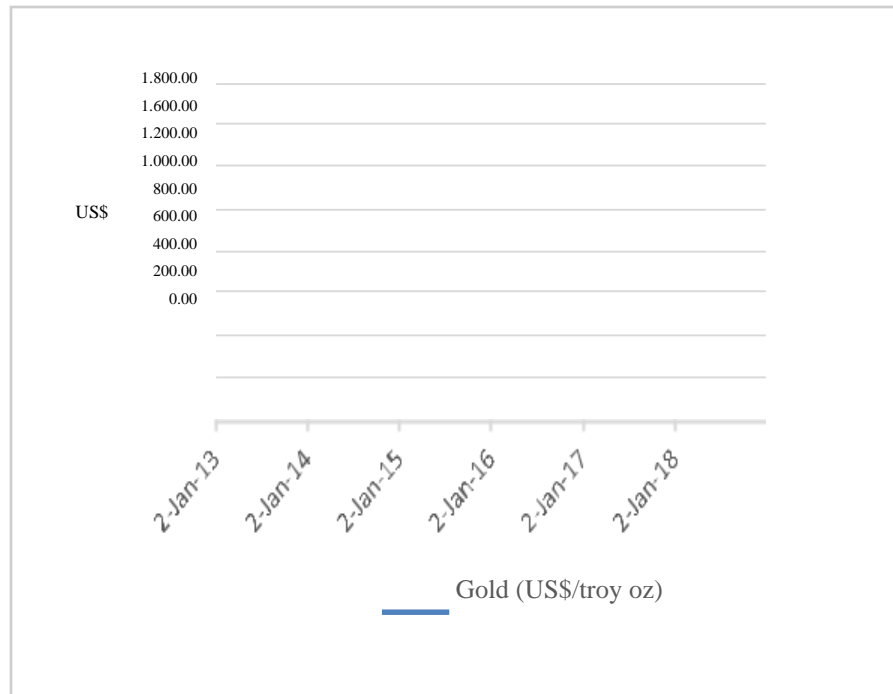


Figure 3 Prices of gold commodities in 2013-2018
Source: www.investing.com

However, although in the background we focused more on fossil fuels, namely coal, petroleum, and natural gas, researchers continued to examine firms that produce other mining materials as research samples. In figures 2 and 3, each of the commodity price movements is different in which world coal prices increased while natural gas shows a stable price movement within 6 years. In the figure, we included the price of WTI crude oil with the consideration that Indonesian oil firms use crude oil references from firms in Indonesia and Brent Oil used by firms from Malaysia or the Philippines. These oil prices show a similar price. Crude oil prices, both WTI and Brent, decreased to the lowest point in early 2016 and increased until 2018, but at the end of 2018, the prices decreased significantly. However, the overall prices of these two types of crude increased in 2016 – 2018. The last commodity is gold. Gold is in the mineral class and is the only commodity that is not energy or fossil fuels. In Figure 1.3 it can be seen that the price of gold commodities fluctuates but tends to decrease.

Even we only show figures 2 and 3 as the price movements of 4 major commodities from mining firms, we still included the firms with other commodities such as copper, nickel, and so on as research samples. The major commodities are only used as depictions in the background.

Table 1 Classification of Mining Firms' Production

| No. | Number of Firms | Productions/year |
|-----|-----------------|---------------------|
| 1 | 18 | 316.2 tons |
| 2 | 18 | 59.25 mmbbls |
| 3 | 8 | 266.400 ozs |
| 4 | 8 | 59.242.783,5 mbopds |
| 5 | 4 | 5.8 million wmts |
| 6 | 3 | 96.99 million lbs |
| 7 | 3 | 295.695 tons |

Source: Processed data (2019)

We saw that mining firms still have the opportunity of investment to expand their businesses. The first consideration is that fossil fuels always in the top three positions for commodities contributing to the export value when the export value of fossil fuel commodities increased in 2017. The second consideration is that 3 of the 4 major commodities of mining firms in ASEAN have stable prices. The third consideration is because of the daily limitation of petroleum production for OPEC members that led to the increase of world crude oil prices in 2016. Indonesia was a member of OPEC until the end of 2016 and left because Indonesia did not agree with the decision to limit daily crude oil production. It can be concluded that ASEAN 5 can maximize the amount of their production to increase profits.

Based on the research samples, we graphed investment decisions proxied in the value of fixed assets from 2013 to 2017. Figure.4 shows that the level of corporate investment decreased year by year.

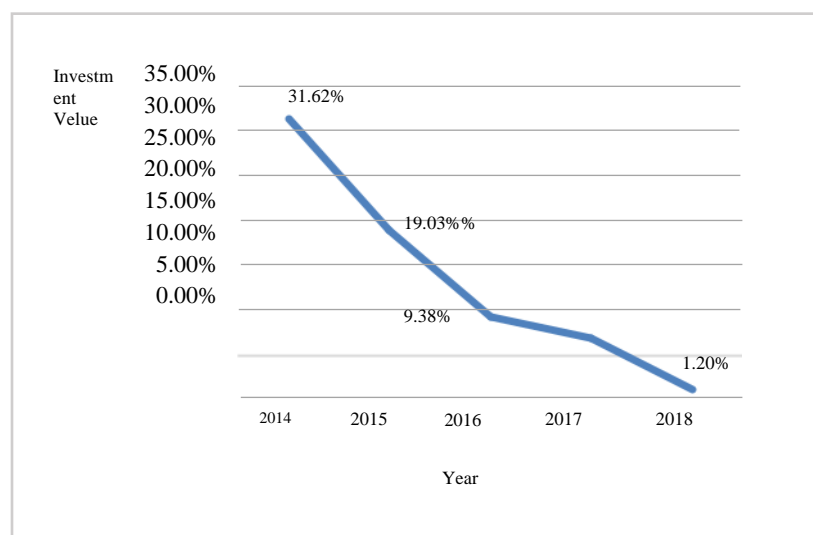


Figure 4 Investment average of mining firms in 2014-2018

Source : Processed data (2019)

We see that the increase of exports of fossil fuel commodities, the increase of commodity prices, and the unlimited production activities are factors considered by mining firms to increase their investment in the form of assets that encourage the expansion of their operational activities. However, the average investment value of mining firms decreased. The above background shows that other factors influence investment decisions.

Literature Review and Hypothesis

Pecking Order Theory

Pecking Order Theory reveals the level of manager's preference in taking the source of funds to finance company activities (Myers and Majluf, 1984). There are two sources of funding for firms, i.e. internal and external fundings. Internal funding is the company's funds remaining after taxes and also the distribution of dividends. Internal funding is easier to use because it is the company's own funds. Management who understands the most about the company's condition will naturally allocate internal funding. If internal funding is insufficient, external funding will be used as an alternative. External funding is categorized into two, i.e. through the issuance of bonds and new shares.

Investment

Tandelilin (2010) states that investments are commitments to funds or other resources currently made to benefit in the future. The term investment may be associated with different activities. Common investment activities include investment in real assets (machinery, land, buildings, or gold), as well as financial assets (stocks, bonds, or deposits).

Investment Decision

Investment decisions are decisions about what assets will be managed by the company. Investment decisions directly affect the amount of investment rentability and the company's cash flow in the future (Martono and Harjito, 2001). Investment decision that is as important as spending decisions is made by top management. Investment decision must be along with consideration of the benefits in the future. The expected return on investment decisions will be greater than the cost of capital investment. A good investment decision will earn more money than making a good decision. It can be concluded from the above statement that the available funds must be used to support investment decisions (Myers, 1984).

- **Cash Flow**

The cash balance statement is cash inflows and outflows. The currency consists of cash on hand and deposits on demand. The cash equivalents are very liquid, short-term assets which can instantly be cash in a fixed sum with negligible risk of changing value (PSAK: 2-IAI, 2011).

Large businesses have more opportunities to raise firms' valuation, as they have greater exposure than small firms to external sources of funding. Firms with large assets have the opportunity to get higher profits but with higher risk as well. Firms with greater profit opportunities will attract potential investors to provide funds (Ernawati and Widayawati, 2015).

- **Firm Size**

Business size is a scale which can be explained by various means, such as stock market value, total, assets, and others (Prasetyorini, 2013). Large firms have more opportunities to raise company equity, because they have greater exposure than smaller businesses to external funding sources. (Ernawati and Widayawati, 2015). Firms with large assets have the opportunity to get higher profits but with higher risk as well. Firms with greater profit opportunities will attract potential investors to provide funds.

- **Leverage**

Solvency ratio is the ratio used for the measurement of the debt finance of a company's assets, in other words how much debt the company bears compared to its assets (Kasmir (2012: 151).

The use of too-much debt will endanger the company because the company will be in extreme leverage. Then, the company will be trapped in high debt and is difficult to pay it off. However, the use of high debt to finance assets also provides an opportunity for firms to increase their profits by obtaining external funding to finance new assets.

Investment Opportunity

Investment opportunity illustrates the extent of investment opportunities for a company (Jogiyanto, 2010). Regarding investment opportunities, we use Tobin's q proxy. Tobin's q is a ratio for measuring firm performance ratios such as return on assets and profit margins. However, in Tobin's q, the company's market value will be difficult to apply

unless the company trades its shares. According to Wolfe (2003), Tobin's q is a statistic showing the firm value from the investors' perspective.

Conceptual Framework

Based on the theories and the previous researches, the relationship between the variables of this study can be described as in the following conceptual framework.

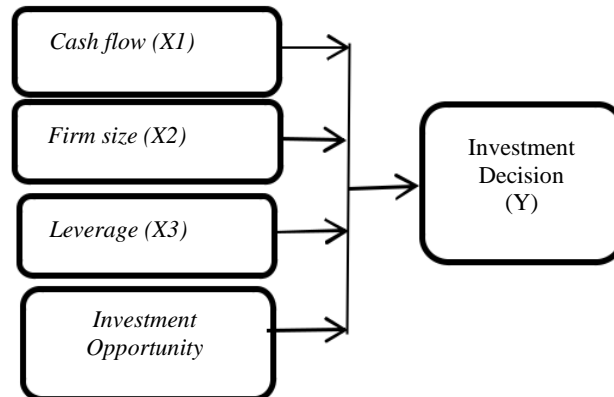


Figure 5 Conceptual Framework

The Effect of Cash Flow on Investment Decision

Cash flow is a reflection of a company's internal funding sources. Based on the pecking order theory, management tends to use internal funds first in investment. This is also supported by the existence of information asymmetry between company management and shareholders. Besides, firms must spend capital costs in obtaining external funding to reduce the number of internal company funds so that it will be more effective if the company's internal funds are directly used for investment. Thus, it can be concluded that cash flow affects investment decisions.

The Effect of Firm Size on Investment Decision

Firm size is a classification of firms based on the company's assets. Based on a certain level of assets, firms can be categorized as large, medium, or small firms. Large firms can conduct greater production activities and have the opportunity to obtain higher profits which will then attract positive responses from investors to invest and get dividends on their investments. Therefore, the firm size helps the company to obtain external funding in terms of capital.

The Effect of Leverage on Investment Decision

Leverage is the ratio of total debt to total assets. This ratio can describe how much the company's assets are funded by debt. In company, the management receives funding from internal and external sources. Debt is one of the company's external funding. Gordon (1984) concluded that, "firms prefer to use funds in the following order: 1) retained earnings and depreciation, 2) debt, and 3) issuing shares. Tax savings encourage firms to use debt".

The Effect of Investment Opportunity on Investment Decision

Investment opportunities can influence investment decisions. The high investment opportunities results in increased investment. The Tobin q proxy ratio was used for calculating investment opportunities. Tobin q is the ratio used from the point of view of the investor to see the firm interest. The measure used is the total asset market value relative to the total asset's book value (Phan Dinh Nguyen, and Phan Thi Anh Dong, 2013).

Research Method

This study is causal research in association. In the case of cause-associative studies, two or more variables are correlated (Erlina, 2008). This study aimed to find out the influence of cash flow, firm size, leverage, and investment opportunities on investment decisions.

The work was conducted in Indonesia, Malaysia, the Philippines Stock Exchange, Singapore Exchange, and Thailand, by collecting data from the Web pages of each stock exchange as financial statements. This research took a comparison of the period 2014-2018 with respect to the last year. The study consisted of 91 firms listed on the Indonesian stock exchange between 2014 and 2018. In this study, the sampling technique was targeted with the following criteria.

Table 2 Sampling Criteria

| Criteria | Total |
|---|-------------------------|
| Mining firms listed in the Indonesian Stock Exchange,, the Philippines Stock Exchange, Singapore Exchange, Bursa Malaysia and the Stock Exchange of Thailand in 2014-2018 | 91 |
| Indonesian Stock Exchange, the Philippine Stock Exchange, Singapore Exchange, Bursa Malaysia and the The Stock Exchange of Singapore, and mining firms are not consistent in their 2014-2018 annual financial reports | 25 |
| The financial statement period does not end by December 31 | 5 |
| The company does not have any related variables in this study | 3 |
| The samples meeting the requirements | 58 |
| Number of observations × 5 years | 290 Observations |

Operational Definitions and Measurement Scale for Research Variables

Investment decisions can be interpreted as an increase in total assets year by year.

$$\text{TAG} = \frac{\text{Total Asset}_t - \text{Total Asset}_{t-1}}{\text{Total Asset}_{t-1}}$$

Cash flow is the inflow and outflow of cash or cash equivalents (PSAK: 2-IAI, 2011). Cash flow is a source of internal funding for the company. Cash flow in this study is defined as operating cash flow. Operating cash flow is used to pay bills to check the quality of the company's profits. If a company's report records profits but has a negative cash flow then it may be calculated using aggressive accounting techniques. Cash flow is determined by the cash flow ratio at the beginning of the cycle to net fixed assets or capital stocks (Chau et al., 2008).

$$\text{OCF} = \frac{\text{Operating Cash Flow}}{\text{Capital Stock}}$$

Firm size is measured by total company assets. This measurement is carried out so that investors can see the potential of the company in earning profits from its assets to provide funds as capital. Thus, it means that firm size helps the company in investment decisions.

$$\text{Size} = \text{Ln} (\text{Total Asset})$$

Leverage shows how much the company's assets are funded by debt. This ratio is also used to see the company's solvency to settle its long-term debt.

$$\text{Leverage} = \frac{\text{Total Debt}}{\text{Asset}}$$

Tobin's q investment incentive is the market value ratio of total assets to the book value of total assets. Debt plus share prices is the total market value of the assets computed by the number of shares traded plus value of assets per share plus the number of untraded shares. The larger the investment potential, the greater the investment.

$$\text{Tobin's } q = \frac{\text{Market value of total asset}}{\text{Book value of total asset}}$$

Results and Discussions

Descriptive Statistical Analysis

Table 3 Descriptive Statistics

| | INV | OCF | SIZE | DAR | Q |
|--------------|-----------|-----------|-----------|----------|----------|
| Mean | 0.015082 | 1.720898 | 19.91301 | 0.509709 | 6.725585 |
| Median | 0.014695 | 0.569246 | 19.91158 | 0.419896 | 0.999435 |
| Maximum | 0.294832 | 16.02623 | 22.67782 | 2.347385 | 366.1147 |
| Minimum | -0.282581 | -3.210406 | 17.27845 | 0.017861 | 0.020805 |
| Std. Dev. | 0.116893 | 3.070316 | 1.229147 | 0.395099 | 36.65294 |
| Skewness | -0.040993 | 2.599090 | -0.092477 | 2.721904 | 8.176812 |
| Kurtosis | 3.010345 | 10.40640 | 2.473808 | 12.16311 | 74.77551 |
| Jarque-Bera | 0.038411 | 460.5519 | 1.749859 | 638.9871 | 30482.80 |
| Probability | 0.980978 | 0.000000 | 0.416891 | 0.000000 | 0.000000 |
| Sum | 2.036095 | 232.3212 | 2688.256 | 68.81070 | 907.9540 |
| Sum Sq. Dev. | 1.830971 | 1263.197 | 202.4476 | 20.91782 | 180020.7 |
| Observations | 135 | 135 | 135 | 135 | 135 |

Source: Eviews Output, 2019

1. In table 3, there are 135 units of analysis obtained from a total of 27 firms as research samples in the 5-year observation period (27×5).
2. Investment decision (INV) has a mean value of 0.015082. The minimum value is -0.282581, the maximum value is 0.294832, and the standard deviation is 0.116893.
3. Cash flow (OCF) has a mean value of 1.720898. The minimum value is -3.210406, the maximum value is 16.02623, and the standard deviation value is 3.070316.
4. Firm size (SIZE) has a mean value of 19.91301. The minimum value is 17.27845, the maximum value is 22.67782, and the standard deviation is 1.229147.
5. Leverage (DAR) has a mean value of 0.509709. The minimum value is 0.017861, the maximum value is 2.334385, and the standard deviation is 0.395099.
6. Investment opportunity (Q) has a mean value of 6.725585. The minimum value is 0.020805, the maximum value is 366.1147, and the standard deviation value is 36.65294.

Panel Data Regression Analysis

Panel Data Regression Analysis was performed to find the best regression model to use. The Chow test was used to determine the best model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). The hypothesis is as follows:

- a. H_0 : The CEM model is better than the FEM model.
- b. H_1 : The FEM model is better than the CEM model.

If the probability is <significant (0.05) then H0 is rejected and H1 is accepted.

Table 4. Chow Test Results

| Redundant Fixed Effects Tests | | | |
|--------------------------------------|-----------|---------|--------|
| Equation: Untitled | | | |
| Test cross-section fixed effects | | | |
| Effects Test | Statistic | d.f. | Prob. |
| Cross-section F | 2.529874 | -26,104 | 0.0005 |
| Cross-section Chi-square | 66.162597 | 26 | 0 |

Based on the above results of the Chow test, it can be seen that the probability value is 0.0000. Because the probability value <0.05, it means that H0 is rejected and H1 is accepted. In other words, the estimation model used is FEM.

The Hausman test was carried out to determine the best regression model between the Random Effect Model (REM) and the Fixed Effect Model (FEM). The hypothesis is as follows:

- a. H0: REM model is better than FEM model.
- b. H1: FEM model is better than REM model.

If the probability is <significant (0.05) then H0 is rejected and H1 is accepted.

The following Table 5 shows the results of Hausman test using Eviews 10. It can be seen that the probability in Table 5 is 0.0000, which means that H1 is accepted. In other words, the FEM model is better than REM.

Table 5 Hausman Test Results

Correlated Random Effects - Hausman Test

Equation: Untitled

| Test cross-section random effects | | | |
|--|--------------------------|---------------------|--------------|
| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
| Cross-section random | 37.814421 | 4 | 0.0000 |
| Source: <i>Eviews</i> Output, 2019 | | | |

Normality Test

Normality test was done to find out whether the residual values of the data are normally distributed. Normality test was done before the classical assumption test. In this study, normality test was conducted by analyzing the histogram and jarque-bera.

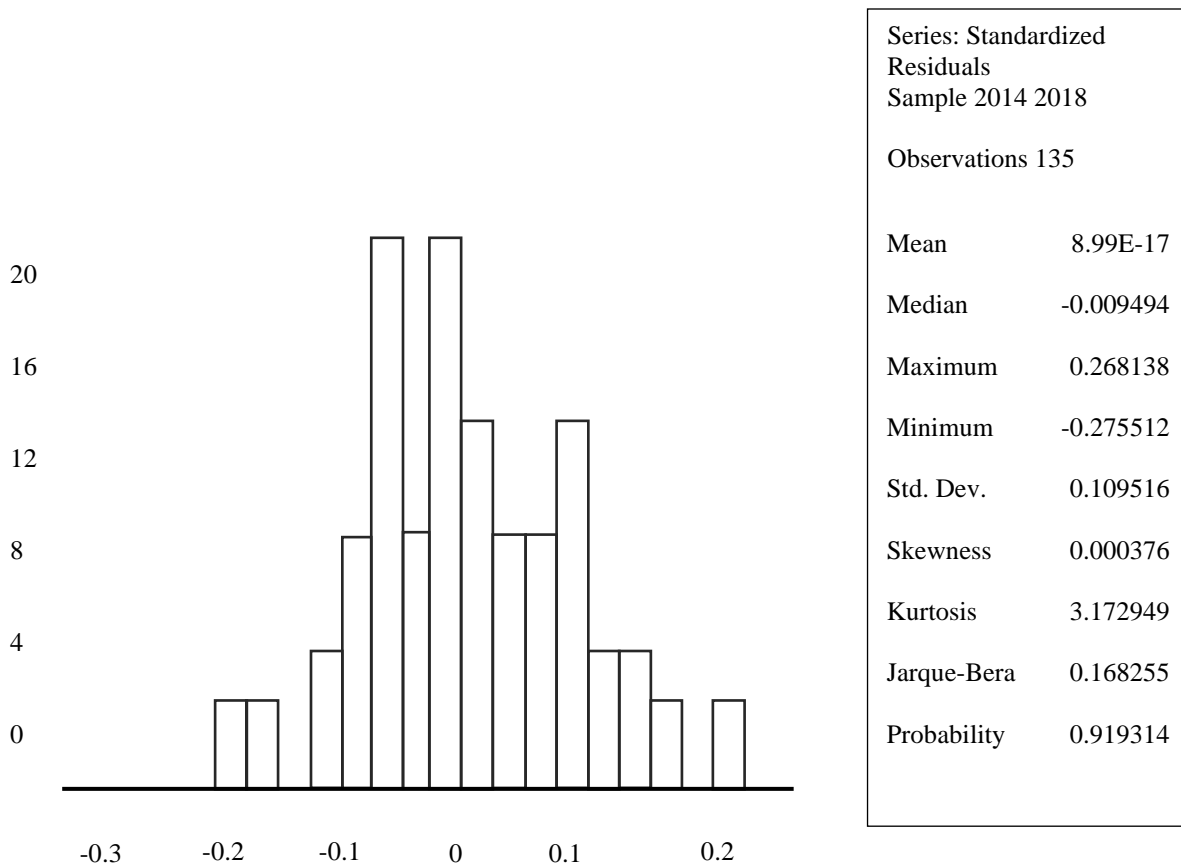


Figure 6 Histogram

In figure 6, the histogram shows that the research data are normally distributed, this can be seen from the form of a bell-shaped graph that does not deviate to the left or right in the above regression equation. Therefore, it can be concluded that the regression model has met the normality assumption and the regression model is suitable to use in this study.

The second thing that further ensures that the data is the probability of jarque-bera having a value > 0.05. It can be seen that the probability is 0.919314 which indicates that the data are normally distributed.

Classical Assumption Test

Autocorelation Test

The autocorrelation test is intended to test whether there is a confusing error t in the regression model with an error in the t-1 period. Autocorrelation was conducted through the Durbin-Watson test in (DW-Test).

Table 6 Uji Autokorelasi Durbin-Watson

Correlation on disturber
 Dependent Variable: INV
 Method: Panel Least Squares
 Date: 12/11/19 Time: 23:58
 Sample (adjusted): 2015 2018
 Periods included: 4 period
 Cross-sections included: 27
 Total panel (balanced) observations: 108
 Measurement Convergence not achieved after 500 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | -1.095524 | 5.22568 | -0.209642 | 0.8345 |
| OCF | 0.00871 | 0.005868 | 1.484187 | 0.1419 |
| SIZE | 0.054664 | 0.26314 | 0.207737 | 0.836 |
| DAR | -0.019433 | 0.169744 | -0.114486 | 0.9092 |
| Q | 0.000788 | 0.001498 | 0.525826 | 0.6005 |
| AR(1) | -0.103726 | 0.256506 | -0.404379 | 0.6871 |

| | | | |
|--------------------|-------------------------|---------------------------|-------------------------|
| R-squared | 0.4627070.358578 | Mean dependent var | 0.0.015082006866 |
| Adjusted R-squared | 0.3077190.096945 | S.D. dependent var | 0.0.116893114177 |
| S.E. of regression | 0 | Akaike info criterion | -1.624504 |
| S.E. of regression | 97259.1085 | Akaike info criterion | -1.36291 |
| Sum squared resid | 0.9837680.894717 | Schwarz criterion | -1.525571 |
| Log likelihood | 140.6540105.5971 | Hannan-Quinn-criter. | -2.394084 |
| F-statistic | 2.9854331.370538 | Durbin-Watson-statstat | 1.1.864789701033 |
| Prob(F-statistic) | 0.000021.134698 | | |
| | | | |
| Inverted AR Roots | -0.1 | | |

Source: *Eviews output results, 2019*

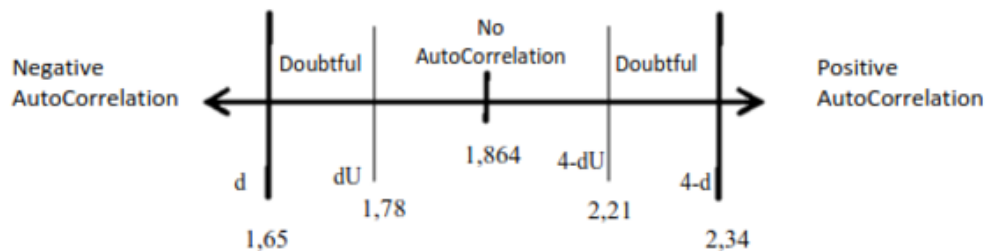


Figure 7 Durbin-Watson line graph

So from the Durbin Watson table, the lower critical value (dL) is 1.6584 and the upper critical value (dU) is 1.7802. Table 6 shows that the value of $D-W(d)$ is 1.864789. Then, these values were compared. There are no autocorrelation problems because the Durbin-Watson value is 1.864789.

Multicollinearity Test

The aim of the multi-linearity test is to check whether in the regression model there is a connection among independent variables. There should be no connection between the positive variables / independent variables in a strong regression model.

Table 7 Multicollinearity Test Result

| | OCF | SIZE | DAR | Q |
|------|---------------|---------------|---------------|---------------|
| OCF | 1 | 0.29688214... | -0.0477831... | -0.0736333... |
| SIZE | 0.29688214... | 1 | 0.10438938... | -0.1372013... |
| DAR | -0.0477831... | 0.10438938... | 1 | 0.00920274... |
| Q | -0.0736333... | -0.1372013... | 0.00920274... | 1 |

Source: Eviews Output, 2019

The existence of multicollinearity can be calculated from each independent variable's correlation coefficient. When the coefficient of correlation between each variable is greater than 0.8, multi-colonality is the outcome. Table 7 reveals that there is no coefficient of correlation greater than 0.8 for each component. The independent variables cannot be proven to be multi-colelinear.

Heteroscedasticity Test

The heteroscedasticity test is designed to check if there is an disproportionate variance from residuals of one measurement to the other in the regression model named heterozedasticity. Table 8 displays the following test findings using Eviews.

Research variables are not heteroscedasticity if the probability that each independent variable has a value $> \alpha$ (5%). It can be seen that in table 8 there are no variables that have a probability value below 0.05 so it concludes that there is no heteroscedasticity.

Table 8. Heteroscedasticity Test Results

| Dependent Variable: RESABS | | | | | |
|--|----------|-------------|------------|-------------|--------|
| Method: Panel Least Squares | | | | | |
| Date: 12/12/19 | | Time: 00:34 | | | |
| Sample: 2014 2018 | | | | | |
| Periods included: 5 | | | | | |
| Cross-sections included: 27 | | | | | |
| Total panel (balanced) observations: 135 | | | | | |
| | Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| | C | -0.400077 | 0.808309 | -0.494955 | 0.6217 |
| | OCF | -0.001479 | 0.002006 | -0.736923 | 0.4628 |
| | SIZE | 0.02448 | 0.040422 | 0.6056 | 0.5461 |
| | DAR | -0.035843 | 0.047408 | -0.756053 | 0.4513 |
| | Q | -0.000105 | 0.000183 | -0.575608 | 0.5661 |

Hypothesis Testing

Table 9. Statistical Value of F Test, T Test, and Coefficient of Determination

| | | | | | |
|---|---------------|--|-----------------------|---|------------------|
| Dependent Variable: INV | | | | | |
| Method: Panel Least Squares | | | | | |
| Date: 12/11/19 Time: 22:21 | | | | | |
| Dependent Variable: INV | | | | | |
| Sample: 2014 2018 | | | | | |
| Method: Panel Least Squares | | | | | |
| Periods included: 5 | | | | | |
| Date: 12/11/19 Time: 23:58 | | | | | |
| Cross-sections included: 27 | | | | | |
| Sample (adjusted): | | 2015 2018 | | | |
| Total Periods panel (balanced) included:4 | | observations: 135 | | | |
| | | Cross -sections included: 27 | | | |
| | | Total panel (balanced) observations: 108 | | | |
| | | Variable | | Coefficient | Std. Error |
| | | Convergence not ach | | after 50 | 0 iterations |
| C | | | -7.254656 | 1.611908 | -4.500664 |
| Variable | | | Coefficient | Std. Error | t-Statistic |
| OCF | | | 0.011848 | 0.004001 | 2.961307 |
| SIZE | C | | -1.095524 | 5.22568 | -0.209642 |
| | | | 0.370603 | 0.080608 | 4.597576 |
| | OCF | | 0.00871 | 0.005868 | 1.484187 |
| DAR | | | -0.261194 | 0.094539 | -2.762814 |
| Q | SIZE | | 0.054664 | 0.26314 | 0.207737 |
| | DAR | | 0.000395 | 0.000365 | 1.082743 |
| | | | -0.019433 | 0.169744 | -0.114486 |
| | Q | | 0.000788 | 0.001498 | 0.525826 |
| | AR(1) | Effects-0.103726 | Specification0.256506 | | -0.404379 |
| | | Effects Specification | | | |
| Cross-section fixed (dummy variables) | | | | | |
| Cross -section fixed (dummy variables) | | | | | |
| R-squared | | | 0.462707 | Mean dependent var | 0.015082 |
| R-squared | | | 0.358578 | Mean | var |
| Adjusted R-squared | | | 0.307719 | S.D. dependent var | 0.116893 |
| Adjusted R-squared | | | 0.096945 | S.D. dependent var | 0.114177 |
| S.E. of regression | | | 0.097259 | Akaike info criterion | -1.624504 |
| S.E. of regression | | | 0.108502 | Akaike info criterion | -1.36291 |
| Sum squared resid | | | 0.983768 | Schwarz criterion | -0.957367 |
| Sum squared resid | | | 0.894717 | Schwarz criterion | -0.568204 |
| Log likelihood | Loglikelihood | 140.105.59716540 | | Hannan Hannan-Quinn-Quinn-criter. criter. | -- |
| F-statistic | F-statistic | 2.9854331.370538 | | Durbin-Watson-stat | 1.1.864789701033 |
| Prob(F-statistic) | | 0.134698 | | | |
| Prob(F-statistic) | | 0.000021 | | | |
| Inverted AR Roots | | -0.1 | | | |
| Source: <i>Eviews Output Results</i> , 2019 | | | | | |

Coefficient of Determination (R^2)

The determination coefficient indicates how much the independent variable can describe the variance of the dependent. If the value R-Square is close to 1, the model is strong. If it is close to 0, it means the model is weak. The following is the results of the determination coefficient.

In table 9, it can be seen that the value of R^2 is 0.307719. It indicates that the influence of cash flow, firm size, leverage, and investment decisions is 30.77%. While the remaining 69.23% is influenced by other factors not observed in this study.

Simultaneous Significance Test (F-Test)

F-test tries to see how the independent variables influence the dependent variable at the same time in a regression model. The effect of simultaneous independent variables is calculated by the probability value (F-statistics) and the F-statistics value. The probability value (F-statistics) and F-table are:

1. Probability value (F-statistics) is 0.000021 (<0.05) indicates that the independent variables have a simultaneous effect.

2. That the value of F-count (2.985433) is higher than F-table (2.44) indicates that the independent variable has a simultaneous effect. The F-table value can be seen in table 3.10. F-table value was determined by the following calculation:

Df1 = number of independent variables = 4

Df2 = number of observations - (independent variables + dependent variables) = 135 - (1+4) = 130

Significant Test of Individual Parameters

T-Test

There are two ways to see the influence of independent variables, i.e from the significance or T-count of each independent variable.

The significance of the independent variable must be lower than 0.05 to be said as having a significant effect. T-count value of each independent variable was compared by determining the t-table value as follows:

Pr = 5% or 0,05 (probability)

df = number of observations – number of research variables = 135 - 5 = 130, then it was obtained t-table value of 1.65666 which would be compared with the t value of each independent variable to find out whether it has a partial effect on the dependent variable.

The Testing Results of Cash Flow on Investment Decision

The independent cash flow component has a coefficient value of 0,011848, which is positive. It results in the positive effect of cash flow (OCF) on investment decisions. The variable's OCF value is 0.0038, i.e. < 0.05 and the value of t > t table (2.961307 > 1.6566). This means that the variable cash flow (OCF) has a substantial impact on investment decisions at a significant 5 % level. The hypothesis is therefore accepted.

The Testing Results of Firm Size on Investment Decision

The value of the group size is 0.370603, which is positive. This means that the size of firm (SIZE) has a positive influence on investment decision. The variable's probability (SIZE) value is 0.0000, that is < 0.05 and the t count > t table (4.597576 > 1.6566). It shows that the size of the firm (Price) significantly influences the investment decision at 5% level. The hypothesis is therefore accepted.

The Testing Results of Leverage on Investment Decision

The leverage coefficient value is 0.261194, which is negative. Leverage (DAR) has a negative impact on investment decisions. The variable's DAR value is 0.0068, i.e. < 0.05 and t count value < t of the variable (-2.762814 > -1.66566). It shows that leverage (DAR) has a significant impact at a 5% level on investment decision. The theory is therefore accepted.

The Testing Results of Investment Opportunity on Investment Decision

The coefficient value of the investment probability is positive at 0.000395. This means that the investment opportunity (Q) has a positive influence on the decision of investment. The probability value of the variable is 0.2814, i.e.>0.05 and t count < t table value (1.082743 < 1.6566). It shows that the investment opportunity (Q) does not have a significant 5 percent influence on investment decision. The hypothesis is therefore declined.

Discussions

The Effect of Cash Flow on Investment Decision

The cash-flow ratio has a positive value of 0.011848 with a value of 0.0038 (less than 0.05). It can thus be concluded that the influence of cash flow on investment decisions is significantly positive. The positive coefficient value indicates that an improvement in cash flow would also boost the investment decisions of the firms in terms of assets. Managers who understand more about the conditions of the firms will better understand how the cash flow of the company is allocated. In fact, it is easier to distribute internal funds, since it belongs to the firms and is much freer to handle than external funds.

This finding is consistent with Nguyen (2013) 's research that cash flows have a substantial positive influence on the investment decision on companies listed on the Vietnam stock exchange from 2006 to 2010. The findings of the Chen (2017) research also shows that cash flow has a significant positive influence on investment decisions.

The Effect of Firm Size on Investment Decision

A positive coefficient value of 0.370603 with a significance value of 0.000 that is less than 0.05 is shown in the firm size variable. It is also possible to assume that the firm size substantially influences the investment decision. The positive coefficient value indicates, the firm size would lift the firm's investment decision in terms of assets. This is consistent with the findings of Razza (2012), which indicates that firm size is significant for investment decisions of companies listed on the Pakistan stock exchange between 2004 and 2009.

The Effect of Leverage on Investment Decision

The leverage variable shows a negative 0.261194 coefficient with a 0.0068 value (less than 0.05). It can also be inferred that the debt has a major negative influence on the decision of investments. The negative coefficient value indicates that the higher the degree of leverage, the less asset-specific investment decisions. Leverage uses a debt-to-asset ratio in this study to see how big companies carry out the debt-funded.

This is consistent with Sriyuniarti (2013) and Chen (2017) research. Sriyuniarti (2013) conducted a study to determine the influence of leverage on manufacturing companies' investment decisions on the Indonesian stock exchange between 2008 and 2011. In her study, leverage is used as a corporate investment strategy by businesses that if the firm

increases its debt level as a result of the rise in free cash flow, the amount of investment would be decreased.

Therefore relying on the firm's external funds, in this case debt, is not a good choice for the firm to invest in assets. In other words, the alternative funds allocated as a corporate investment are internal funds or non-debt external funds.

The Effect of Investment Opportunity on Investment Decision

The investment potential index indicates a positive coefficient value of 0,000395 with 0.2814 significance value. It can also be inferred that the decision to invest does not influence investment opportunities. This result is in line with Anjani's (2012) work.

The large investment opportunities do not naturally make company management decide to invest. The investment incentive in this analysis was guided by Tobin's Q to see how the stock value is relative to the company's book value. The high market value of a company is reflected in the stock prices and rising sales of stocks. Own stocks are a company's external funds that can be used as capital to make investments.

Nonetheless, the findings of this analysis indicate that investment incentives do not produce substantial results for corporate investment. This can occur because of several factors. When there is a high investment opportunity, there are still many considerations for firms to invest in their businesses. The building or expanding a mine area must consider the existing regulations, as in Indonesia Law no. 4 of 2009 concerning Mineral and Coal Mining. This article states that the area of a Mining License (IUP) for a Coal Contract of Work (PKP2B) in which the contract is extended must not exceed 15,000 hectares. In opening a new mine, several things must be considered such as production waste, damage to the environment, corporate responsibility for the surrounding area. In the mining business, the most highlighted thing is the environmental damage caused by mining activity.

Conclusions

Based on the results, the conclusions of this study can be stated as follows:

1. The cash flow has a positive value of 0.011848 with a significance value of 0.0038 that is less than 0.05 ($0.0038 < 0.05$). This can also be inferred that cash flow has a significant and positive influence on investment decisions.

2. The firm size indicates a positive 0.370603 coefficient value with a 0.000 significance value that is less than 0.05 ($0.000 < 0.05$). It can also be inferred that firm size has a significant and positive influence on the investment decisions.
3. The leverage indicates a negative coefficient value of 0.261194 with a significance value of 0.0068 that is less than 0.05 ($0.0068 < 0.05$). It can also be inferred that leverage has significant and negative influence on investment decisions.
4. The investment opportunity indicates a positive coefficient value of 0.000395 with a significance value of 0.2814 that is more than 0.05 ($0.2814 > 0.05$). It can also be inferred that investment opportunity does not influence investment decisions.
5. Cash flow, firm size, leverage, and investment opportunity indicate a significance value of 0.000021 that is less than 0.05 ($0.000021 < 0.05$). It can also be inferred that cash flow, firm size, leverage, and investment opportunity simultaneously influence investment decisions.
6. The analysis of the determination coefficient is 30.77% that indicate the variable cash flow, firm size, leverage, and investment opportunities only influence investment decision at 30.77% and the rest is affected by other factors and are not included in this study.

Limitations

The limitations in this study are as follows:

1. The sample used in the study is only one sector, i.e. mining firms listed on the Indonesia, Malaysia, Philippines, Singapore, and Thailand stock exchanges.
2. The observation period is only from 2014 to 2018.
3. In terms of variables, this research are limited to cash flow, firm size, debt and investments. This research has not evaluated variables such as revenue rise, sales tax, productivity, age of companies and a variety of other variables.

Suggestions

Suggestions submitted by researchers for further research based on the analysis that has been done and based on the limitations of the researcher, include:

1. Researchers can research other industrial sectors such as manufacturing or various industrial sectors so that more countries can be included in the research. The limitation of this study occurs because several countries in Southeast Asia do not have mining firms listed on their national stock exchanges.
2. Researchers can add other variables that can influence investment decisions such as profitability, sales growth, income tax, stock returns. However, based on the findings, variables concerning the daily price of the company's stocks are quite difficult to find, and only in the past 5 years.

3. Further research can add more research period to see the right investment decisions for the long term.

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