Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 7, July 2021: 10152 - 10159

Research Article

Analysis Of The Effect Of Capital Structure And Intellectual Capital On Intrinsic Value In Mining Companies Listed On The Indonesia Stock Exchange (Idx)

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Abstract:

Indonesia is one of the countries with high mineral and mining potential because it is located in the area of the geological phenomenon "ring of fire". The Indonesian mining sector is one of the supporting sectors for economic development which acts as a provider of energy resources that are indispensable for the country's economic growth. Indonesia is a country that has abundant natural resources, including in the mining sector. This study aims to analyze the effect of capital structure and intellectual capital on the intrinsic value of mining companies listed on the IDX. The independent variables used in this study are the structure of capital and intellectual capital, while the dependent variable is the intrinsic value. The data used is panel data sourced from the IDX with a total of 160 mining company observations obtained from the product of the selected 16 samples of mining companies listed on the IDX and 10 years, where the data collected in this study are from 2009 to 2018. The data analysis in this study used a panel data regression model.

The results of this study indicate that the capital structure has a positive and significant effect on intrinsic value. Intellectual capital also has a positive and significant effect on the intrinsic value of mining companies listed on the IDX. Based on the simultaneous test, the capital structure and intellectual capital together have a significant effect on intrinsic value. Among the capital structure and intellectual capital that has dominated the intrinsic value of mining companies listed on the IDX in the last 10 years is intellectual capital.

Keywords: *Capital Structure, Intellectual Capital, Intrinsic Value*

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1. Introduction

The need for energy resources continues to grow. The mining sector is one of the economic underpinnings of a country since its strategic role as the provider of energy resources is indispensable to a country's economic growth. Indonesia is a country with abundant natural resources, including the mining sector.

The mining sector requires huge investment costs, long-term, high risk, and the presence of high uncertainty makes funding problems a corporate development problem. Mining companies require huge amounts of capital to investigate natural resources in developing mining. Therefore, mining

companies go through the stock market heavily to make investments and strengthen their financial position.

Capital markets play a substantial role in the economy of a country since they have dual functions of both economy and finance function. Meanwhile, investment in stocks depends on fluctuations of stock prices in exchange, the volatility of interest rates and market, as well as the financial performance of the company. However, when investing in stocks, investors must analysis the factors that may affect the company's condition.

The fair value of the company's stock represents the growing well-being of the owner of a company. The fair value of the stock refers to the sale price that prospective buyers are willing to pay when the company is sold. Hulten and Hao (2012) see tangible assets as the main pillar for the company and intangible assets as the transformation and course of changes in the company's finances. In the case study conducted by Hulten and Hao (2012) related to intangible assets in Chinese companies,

shows a significant influence related to intangible assets in improving the performance of the company. The world is starting to realize that investment in intangible assets is a promising investment for the company's progress. Empowerment of intangible assets as one of the forces that determine the company's performance

deserving or not for attention (Corrado and Hulten, 2012). One of the approaches used in the assessment and measurement of knowledge assets is intellectual capital which has become the focus of attention in various fields, including management, information technology, sociology, and education.

accounting (Ermilia, 2010). This poses a challenge for accountants to identify, measure, and disclose them in financial statements. For example, Haryadi (2010) does not directly measure the intellectual capital of the company, but proposes a measure to assess the efficiency of added value as a result of the company's intellectual ability, namely the value added intellectual coefficient (VAICTM).

2. Literature Review

Investing in stocks is not an easy decision considering that stocks are intangible. Moreover, Stock investments also convey a high degree of risk and are accompanied by the high returns rate, investors refer it to the term "high risk-high return."

There are two main factors that being matter for investors in considering the result or return on investment in stocks, namely dividend and capital gain (Alesi et al., 2021). Hence, before investing in a particular stock, an investor needs to be proficient in calculating or estimating the intrinsic value of a company.

Intrinsic value refers to the market value of a company's equity plus the value of a debt market. Therefore, the addition of the company's total equity to the liabilities of the company can reflect the value of the company.

Y2 Intrinsic value can be measured by the free cash flow to the firm (FCFF) is projected to obtain the present value of net cash flow of the company by the method of discounted cash flow models (DCF model). Damodaran (2016) stat that FCFF formulate as follows: FCFF = EBIT (1-tax) (1-Reinvestment Rate) (2) On the Discounted Cash Flow method (DCF) model, the present value of the overall results of the projection and the terminal value at a discount rate, is the company's intrinsic value.

The capital structure is a particular ratio of debt and owner's equity as the funding source of a company. (Damodaran, 2016). The element of capital structure come from an internal source of the company and an external source or outside the company. (Safrida, 2010).

The calculation of capital structure in this research measured by using debt to equity ratio (DER), formulated as: DER = The total of debt and equity. Generally, asset used as the capital of company from tangible assets and intangible assets. Tangible assets are the assets that can be physically manifested by the five senses.

The intellectual capital in this research measured by VAITCTM consist of physical capital (VACA), human capital (VAHU), and capital structure (STVA). Formula and stage of calculation VAICTM were stage one, calculating the value added (VA). Value Added is calculated as the difference between output and input. VA is also stated as value created efficiency which is the additional value as the effect of tangible assets influence that reflected as intellectual capital. VA = Out – In,

where;

Out = Output: the total selling and other income.

In = Input; the selling expenses and other expenses.

3. Method

This study used a quantitative approach by testing the causal correlation of measurable variable research (parametric). Causal research can be defined as a research method that is used to determine the cause-and-effect relationship between two variables or more in a different period.

This study aimed to inspect the impact of capital structure, intellectual capital on the intrinsic value of mining companies listed in the Indonesia Stock Exchange (IDX) in the 2009 - 2018 period. The dimensions of time and observation used in this study are time series and cross-sectional, which involves some time with many samples.

The population of this study is registered mining companies in the Indonesia Stock Exchange in the 2009-2018 period.

Table 1. The List of Companies

No.	Code	List of Companies
1.	ADRO	PT. Adaro Energy Tbk.
2.	ARII	PT. Atlas Resources Tbk.
3.	ATPK	PT. Bara Jaya Internasional Tbk.
4.	BORN	PT. Borneo Lumbung Energi & Metal Tbk.
5.	BOSS	PT. Borneo Olah Sarana Sukses Tbk.
6.	BRAU	PT. Berau Coal Energy Tbk.
7.	BRMS	PT. Bumi Resources Minerals Tbk.
8.	BSSR	PT. Baramulti Sukses Sarana Tbk.
9.	BYAN	PT. Bayan Resources Tbk.
10.	DEWA	PT. Darma Henwa Tbk.
11.	DOID	PT. Delta Dunia Makmur Tbk.
12.	DSSA	PT. Dian Swastatika Sentosa Tbk.
13.	FIRE	PT. Alfa Energy Mines Tbk.
14.	GEMS	PT. Golden Energy Mines Tbk.
15.	GTBO	PT. Garda Tujuh Buana Tbk.
16.	HRUM	PT. Harum Energy Tbk.
17.	INDY	PT. Indika Energy Tbk.
18.	ITMG	PT. Indo Tambangraya Megah Tbk.
19.	KKGI	PT. Resource Alam Indonesia Tbk.
20.	MBAP	PT. Mitrabara Adiperdana Tbk.

21.	MYOH	PT. Samindo Resources Tbk.
22.	PKPK	PT. Perdana Karya Perkasa Tbk.
23.	PTBA	PT. Bukit Asam Tbk.
24.	PTRO	PT. Petrosea Tbk.
25.	SMMT	PT. Golden Eagle Energy Tbk.
26.	SMRU	PT. SMR Utama Tbk.
27.	TOBA	PT. Toba Bara Sejahtera Tbk.

3.1. Data Analysis

The data analysis technique in this research is descriptive analysis. The following are the steps of data analysis in this study:

1. Capital structure (X_1)

Capital structure is measured by *the debt-to-equity ratio* (DER).

$\boldsymbol{DER}$= Total Liabilities: Total Equity

2. Intellectual Capital (X_2)

Intellectual Capital is measured by VAICTM consists of *physical capital* (VACA), *human capital* (VAHU), dan *structural capital* (STVA). The formulation and calculation stage VAICTM are as follows:

First stage. $\boldsymbol{VA} = \boldsymbol{Out} - \boldsymbol{In}$

Second stage. $\boldsymbol{VACA}=\boldsymbol{VACE}$

Third stage. $\boldsymbol{VAHU}=\boldsymbol{VAHC}$

The fourth stage, calculating Structural Capital Value Added (STVA).

$\boldsymbol{STVA}=\boldsymbol{SC}/\boldsymbol{VA}$

Fifth stage. VAIC is the sum of the 3 previous components, namely VACA, VAHU, and STVA.

4. Result

Three methods can be used for panel data in research, namely Regression model *Common Effect* (CE), Fixed Effect (FE) and Random Effect (RE). To determine the best estimation model in the study, *the Chow test*, *Hausman test*, and *Lagrange Multiplier*.

Chow Test

A Chow test is carried out to determine the most appropriate *fixed-effe*ct or *common effect* model used in estimating panel data.

This test aims to determine the best model between both fixed effect and common effect. The hypothesis used in this chow test are as follows:

H0: the best estimation model used is the fixed effect

H1: Hence, the best estimation model used is a common effect

If the probability is ≥ 0.05, then H0 is accepted, which means the *common effect* (*pool least square*) model will be used. But, if the probability score is < 0,05, then H1 is accepted, which means a *fixed*

effect will be used. The following are the test result to determine whether the best estimation is fixed effect (FE) or common effect (CE) by using Chow test show in Table 2.

Table 2. Fixed Effects Tests

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.632001	(15,431)	0.0000
Cross-section Chi-square	72.110202	15	0.0000

Source: Research results, (2020).

Based on the output result of the Chow test Table 2 above showed that the *prob. cross-section chi-square score* 0,0000 < 0,05, which means the null hypotheses (H0) is accepted. Based on the result on the table, Chow test states that a better estimation model is the fixed effect (FE) than the common effect (CE).

Hausman Test

After doing Chow Test and determining the best estimation is fixed effect, then the next stage is accomplishing the Hausman Test to re-test the better model between fixed effect and random effect. The hypotheses used in Hausman Test are following as:

H0: the best estimation model used is the *Random Effect* (RE).

H1: the best estimation model used is the *Fixed Effect* (FE).

The following are the test result to determine whether the best estimation is the *Random Effect* (RE) or *Fixed Effect* (FE) by using Hausman test.

Table 3. Random Effects - Hausman Test

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	5.303167	2	0.1711

Source: Research results, 2020

Based on Table 3, it can be seen that the *P-Value Cross-section* score is greater than 0.05, in which 0.1711 (0.0705 > 0.05). Therefore, H0 is accepted, which means the best method to used is the *Random Effect* (RE) than *Fixed Effect* (FE). Since based on Chow Test results can be seen that the best model is *Fixed Effect* (FE) rather than *Common Effect* (CE), and the Hausman Test results showed that *Random Effect* (RE) rather than *Fixed Effect* (FE). Accordingly, the advanced test, Lagrange Multiplier is needed to determine the better model between *Random Effect* (RE) and *Common Effect* (CE).

Lagrange Multiplier Test

To assure whether the best estimation method is the random effect or common effect, so Lagrange Multiplier Test is carried out. Lagrange Multiplier test is a statistic test to select whether *Common Effect model* or *Random Effect model* is appropriate to be used in panel data regression *(*Gujarati, 2012). Testing is carried out with the following hypotheses:

1. H0: so, the best estimation model used is the *Common effect* (CE)

2. H1: so, the best estimation model used is the *Random effect* (RE)

The following are the testing result of Lagrange Multiplier test to determine whether the best estimation is the *common effect* or *random effect:*

Table 4. Breusch-Pagan Test

Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	42.41332 (0.0000)	1.487891 (0.2564)	31.23160 (0.0000)

Source: results of data processing by Eviews 9

It can be seen that the score of *P Value Cross-section* Breusch-Pagan is less than 0.05, which is 0.000 (0.000 < 0.05). Accordingly, H1 is accepted, which means the best method to be used in this study is the *Random Effect (RE)*. Since based on the selection of estimation method comprehended that the result of appropriate estimation method selection for the panel data regression equation in this study is a *random effect*, it is unnecessary to test the classical assumption on the data used (Gujarati, 2012)

Table 5. Random Effects Test

Dependent Variable: Y
Method: Panel EGLS (Cross-section random effects)
Date: 26/07/21 Time: 18:31
Sample: 2009 2018
Periods included: 10
Cross-sections included: 16
Total panel (balanced) observations: 160
Wansbeek and Kapteyn estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.143421	0.422921	4.181501	0.0008

X1	0.325646	0.095266	3.418276	0.0009
X2	0.731855	0.273001	2.680774	0.0081

Effects Specification		
	S.D.	Rho
Cross-section random	0.770864	0.3179
Idiosyncratic random	1.129186	0.6821

Weighted Statistics			
R-squared	0.104213	Mean dependent var	0.798204
Adjusted R-squared	0.094106	S.D. dependent var	1.189571
S.E. of regression	1.129576	Sum squared resid	199.2957
F-statistic	9.252378	Durbin-Watson stat	1.397243
Prob(F-statistic)	0.000158		

Unweighted Statistics			
R-squared	0.024103	Mean dependent var	1.851000
Sum squared resid	279.0249	Durbin-Watson stat	0.997849

Based on Table 5 above, the equation of linear regression model of panel data with *random effect* (RE) can be obtained as follows:

$$\boldsymbol{Y = 1,143 + 0,325X1 + 0,731X2}$$

Where,

Y : Intrinsic value

X_1 : Capital structure

X_2 : Intellectual Capital

Based on the regression equation, it can be explained as follows:

1. The constant value of 1.143 indicates that if the value of capital structure and intellectual capital is constant, then the intrinsic value is 1.143.
2. The capital structure has a coefficient value of 0.325 which is positive. This value can be interpreted that if the capital structure increases, the intrinsic value will also increase.
3. Intellectual capital has a coefficient value of 0.731 which is positive. This value can be interpreted that if intellectual capital increases, the intrinsic value will also increase.

5. Conclusion

1. The capital structure has a positive and significant impact on intrinsic value to mining companies listed in the Indonesia stock exchange (IDX);
2. Intellectual capital positively and significantly impacts the intrinsic value of mining companies listed in the Indonesia stock exchange. (IDX);
3. Capital structure and intellectual capital simultaneously have a significant impact on mining companies listed in the Indonesia stock exchange. (IDX)

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