

THE IMPACT OF CHANGES IN EXTERNAL AND INTERNAL FACTORS ON FINANCIAL PERFORMANCE AND STOCK RETURNS OF COAL COMPANIES

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Abstract: *This study aimed to investigate the impact of external and internal factors on financial performance and stock return of coal companies listed in the Indonesia stock exchange. The simultaneous equations model was constructed and estimated using the 2SLS (Two-Stage Least Squares) method. The annual data panel of seven coal mining companies from 2012 up to 2017 were utilized. The results of the model validation showed that 76.92% of the variables have U-Theil values below 0.5 and 23.1%, the values are above 0.5, which means that the predictive values of endogenous variables were good enough for simulation models. Based on the modeling and simulation results, we concluded that coal prices, the rupiah exchange rate, China's GDP were external factors that influence the amount of coal export sales. The exchange rate of the dollar against the rupiah was an external factor that has a dominant impact on the value of MVA and the stock returns. Coal price was external factors that have a dominant impact on financial performance (EBIT, PAT, and EVA). Reduction of revenue costs, operational costs, and general administration was an internal factor that could be carried out to reduce the impact on financial performance in case of changes in external factors, but this did not affect the stock return and MVA.*

Keywords: *Coal, EBIT, EVA, MVA, Return*

Abstrak: Penelitian ini bertujuan mengetahui dampak perubahan faktor eksternal dan internal terhadap kinerja keuangan dan return saham perusahaan batu bara yang terdaftar di bursa efek Indonesia. Model persamaan simultan dibangun dan diestimasi menggunakan metode 2SLS (*Two Stage Least Squares*). Data panel tujuh perusahaan pertambangan batu bara tahun 2012–2017 digunakan pada penelitian ini. Hasil validasi model yang dibangun menunjukkan bahwa 76,92% dari variabel mempunyai nilai U-Theil dibawah 0,5 dan 23,1% nilainya diatas 0,5, yang berarti bahwa nilai prediksi variabel endogen cukup baik digunakan untuk simulasi model. Berdasarkan pemodelan dan hasil simulasi dapat disimpulkan bahwa harga batu bara, nilai tukar rupiah, GDP Tiongkok merupakan faktor-faktor eksternal yang memengaruhi jumlah penjualan batu bara ekspor. Nilai tukar dollar terhadap rupiah merupakan faktor eksternal yang berdampak dominan terhadap nilai MVA dan nilai return saham. Harga batu bara merupakan faktor eksternal yang berdampak dominan terhadap kinerja keuangan (EBIT, PAT dan EVA). Pengurangan biaya pendapatan, biaya operasional dan administrasi umum merupakan satu-satunya faktor internal yang bisa dilakukan untuk mengurangi dampak terhadap kinerja keuangan jika terjadi perubahan faktor eksternal, namun hal itu tidak berdampak terhadap *return* saham dan MVA.

Kata kunci: Batu bara, EBIT, EVA, MVA, Return

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INTRODUCTION

Approximately 20% of annual global coal trade is exported from Indonesia. Interestingly, Indonesia's coal export volume is projected to increase, along with the rising price of coal and oil in global trade. However, Indonesian coal mining companies must abide by the government rule of National Law No.4/ 2009 about Mineral and Coal Mining with a quota to ensure enough energy supply for the domestic market. Thus, they are not allowed to export 100% of the total mining products for global trade.

The government policy that has arranged coal mining regulation is a national policy that sets a target goal of the national energy mix for Indonesia 2025, which is 25% of crude oil, 30% of coal, and the rest of other renewable energy. In Joko Widodo-Jusuf Kalla's administration, this national program policy sets to build and improve a 35,000-Mega Watt power plant capacity for increasing domestic sales of coals and facilitating coal mining companies. Hence, coal demand tends to increase and lead coal mining to become a strategic business.

Some studies have investigated the relationship between EVA, MVA, and financial ratios. Huda et al. (2015) analyzed stock performance using Three models of regression equation with EVA, MVA, and financial ratio as independent variables and stock returns as a dependent variable. This study confirmed previous research findings that EVA, PBV, TATO, and DER could be used for stock return prediction. In addition, Ginting and Erward (2013) examine the effect of changes in operating income, Net Profit Margin (NPM), Price Earning Ratio (PER), and Price to Book Value (PBV) on stock returns. The research finding shows that simultaneous changes in operating income, Net Profit Margin (NPM), Price Earning Ratio (PER), and Price to Book Value (PBV) have a significant effect on stock returns. Kanahalli and Ravindra (2017) assert that EVA value is negatively influenced by the determinants of capital structure (DER). Pandya (2016) contends that DER and interest cover ratio significantly influence MVA. In addition, Babak et al. (2014) reveals the relationship of EVA, MVA, and stock returns using simple linear correlations and conclude that EVA and MVA have a strong positive correlation, whereas weak correlations are found between EVA and stock returns and between MVA and stock returns.

Moreover, Kumar and Subramanyam (2017) assert that EVA has a greater influence on stock returns than of MVA, which is different from another previous study by Ismail (2006) that confirms a weak relationship between EVA and stock returns, while pointing firm size for its more significant influence on the stock returns. Meanwhile, Ikbar and Dewi (2015) and Yusbardini (2017) reveal a positive relationship between stock returns and EVA; whereas Ali et al. (2018) assert that EVA has a negative relationship with MVA. Using traditional accounting measures, Habibollah (2016) contends that MVA is better in predicting stock returns. Considering the effect of crude oil prices on stock markets, Ghorbel and Boujelbene (2012) examine the relationship between stock price volatility and stock returns using models of BEKK-GARCH and DCC-GARCH and reveal strong empirical evidence that oil prices influence the stock market.

By using the event study, Aydogan and Berk (2015), investigate the influence of oil prices on stock returns. This research finding confirms a previous study by Bachmeier and Griffin (2006) that oil, coal, gas market correlates with stock prices. Another study by Elyasiani et al. (2011) shows a positive relationship between oil prices and stock returns. Studies by Hasan and Ronald (2015) also analyze stock returns of coal companies in both developed and developing countries through Arbitrage Pricing Theory (APT) and shows that 1% increase in oil prices will positively affect stock return of coal companies by 0.06-0.2%; and 1% increase in coal prices will positively influence stock returns of coal companies by approximately 0.22-0.3%. Dennis et al. (2018) show a positive relationship between oil prices and stock returns in Indonesia.

The studies mentioned above clearly use an approach that disregards the related external and internal variables as interconnected systems. They narrowly put concern on a relationship between one variable to another variable separately without considering all variables as a whole system. The system approach has been introduced by Rezwan et al. (2018) to examine the impact of both external and internal factors of financial flexibility. Harahap et al. (2018) has employed a systems approach to investigate the impacts of both policies and macroeconomic variables on tax revenues and tax rates. This approach allows researchers to observe the impact of changes among variables exhaustively. Therefore, this study employs the system approach in Indonesia coal companies. Based on the problems, the

objectives of study are as follows: To analyze factors that influence the financial performance of companies and stock returns and to analyze the impacts of external and internal factors on the company's financial performance and stock returns.

METHODS

The study employs a quantitative approach to describe either facts or phenomena from data statistics and show the relationship between the related variables using the econometric model. An analysis used to answer the first research objectives is the financial modeling of coal companies, while for the second objective is a simulation of impacts of both external and internal factors. The data sampling includes panel data from statements of comprehensive income, financial statements, cash flow reports, and notes to financial statements issued by coal companies that are enlisted in the Indonesia Stock Exchange (IDX) 2012-2017. The seven companies are PT Resources Alam Indonesia (KGGI), PT Adaro Energy Tbk (ADRO), PT Tambang Bukit Asam Tbk (PTBA), PT Indo Tambang Raya Megah Tbk (ITMG), PT Bayan Resources Tbk (BYAN), PT Harum Energy (HRUM), and PT Golden Energy Mines Tbk (GEMS). Any supporting data were retrieved from ww.idx.co.id, ww.bi.go.id, www.bps.go.id, www.worldbank.go.id. The estimation model used in the study is 2SLS (Two-Stage Least Square). Based on the results of the analysis, model identification is over-identified. The model can be estimated using the Two-Stage Least Squares (2SLS) with software of Statistical Analysis System / Econometric Time Series (SAS / ETS) version 9.4.

Model Specifications

Financial models for coal companies are established using a recursive equation system that include stages of model specifications consisting of: (1) the determination of dependent variables and explanatory variables in the equation, (2) theoretical hypotheses or expectations about sign and magnitude of the parameter estimation of each variable in the equation, and lastly, (3) determining the mathematical form of each equation according to Koutsoyiannis (1977). Econometrics offers particular views based on economic rules, applying mathematical statistics to economic data to provide empirical support

for a model established from mathematical economics and yields numerical results. See in the appendix section, the detail of the econometric equation model and its hypothesis.

Simulation Scenario

Changes in both external and internal factors are estimated by considering some points in the following: (1) The existing historical values which appear in average values, maximum and minimum values. Thus, the average percent increase is laid on a range or outside of the maximum and minimum value. (2) workable government policies (3) Emerging discourse. The simulation scenario is performed to observe the impact of external and internal factors on stock returns. The external factors in this simulation are international coal prices, domestic coal prices, the IDR exchange rate against the USD; whereas, internal factors are costs of income, operational, general and administrative expenses. The simulations on financial performance and stock returns of coal companies are carried out within the following scenario:

- Simulation 1 : International coal prices fell by 15%
- Simulation 2 : International coal prices fell by 15%
- Simulation 3 : The rupiah exchange rate against the dollar depreciates by 10%
- Simulation 4 : Bank Indonesia interest rises up to 10%
- Simulation 5 : Export tax increases from 1.5% to 3%
- Simulation 6 : Revenue and operational and general and administrative costs are reduced by 20%
- Simulation 7 : International coal prices fell by 15%, the value of the rupiah depreciated 10%, BI interest rates rise up to 10%, revenue costs, operating costs and costs, general administration fell by 20%

Based on the above statement of problems and research objectives, a conceptual framework is arranged and presented in Figure 2.

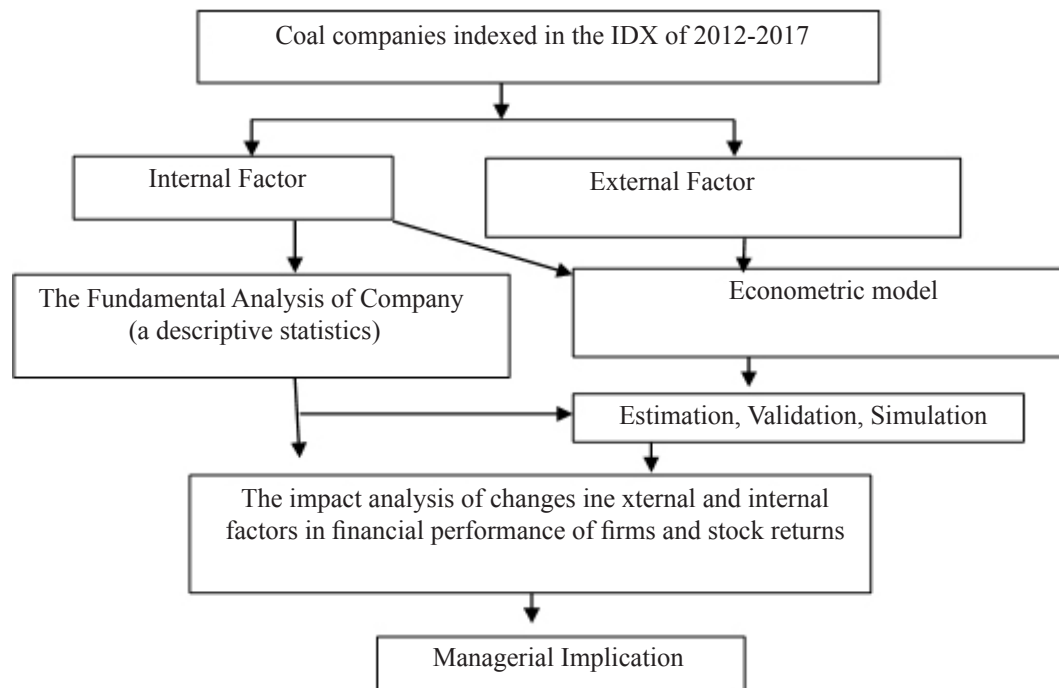


Figure 2. Conceptual framework

RESULTS

General Performance of Model Estimation Results

A study about the coal company financial model includes 13 equations that consist of seven behavioral (structural) equations and six identity equations. The model has some stages of model specification. In most cases, all explanatory variables in the equation of behavior have some indicators that meet the expectations, particularly from an economic theory perspective. The most commonly used statistical criteria in evaluating the estimation results of the Coal Company Financial Performance Model is the coefficient of determination (R^2), which is 71.40% of the behavior equation has determination coefficient (R^2) above 0.5 and 28.5% with R^2 below 0.5. The behavior equation with the largest coefficient of determination (R^2) is the average domestic price equation of 0.996. Whereas, the smallest coefficient value is the stock return of 0.325.

Model validation results

Table 1 shows the validation results of the Coal Company Financial Model; 76.92% of all variables have U-Theil values below 0.5 and 23.1% above 0.5. It shows that during the observation period from 2012 to 2017, the predictive value of endogenous variables are relatively qualified for model simulation.

Results of Scenario Simulation Model of Changes in External and Internal Factors

Simulation 1

This result occurs when the international coal prices fell by 15%, which is from 73 dollars/ton to 62 dollars/ton, which consequently lead to a decline in export sales by 16%, and a decline in the price of domestic coal by 21%. This condition results in a decline in total sales and gross profit by 31%. Even more, the companies incur losses, which are indicated by a minus value on EBIT, net income (PAT), and EVA. Similarly, MVA and stock returns plummet as well. The negative value of EVA indicates the failure of companies to increase the company owners' wealth.

Simulation 2

A simulation of scenario 2 offers different concepts from simulation 1 in which coal prices rise to 10%; that is 73 dollars/ ton to 81 dollars/ ton. The increase in international coal prices leads to an increase in the value of export sales by up to 11%. Hence, it increases the domestic price of coal by 14.29%. This condition causes an increase in total sales and gross profit by 25.7% and 25.74%. In addition, the companies could earn a profit, which is indicated by positive values of EBIT, net income (PAT), and EVA. Likewise, the value

of MVA, and stock returns have increased as well. The positive value of EVA indicates that companies are able to increase an amount of wealth for their owners.

Simulation 3

The scenario of simulation 3 shows IDR exchange rate against USD is depreciated by 10%, which is IDR12,506 (The relative exchange rate in 2012, IDR10,796) to IDR13,756/ dollar (relative real exchange rate in 2012, IDR11,872). The simulation results show that the IDR exchange rate has a major impact on the increase in sales, the company's financial performance (EBIT and PAT) and EVA. The increase in the dollar exchange rate offers an incentive for coal companies to increase sales volume. However, this increase has a negative impact on MVA and stock returns.

In Figure 1, the exchange rate (REXR) has a direct influence on the stock return, meaning that not only stock return is indirectly influenced by REXR, but also directly influenced by changes in REXR. In order to compare these variables, the following simulation is carried out to examine the indirect influence of changes in REXR on stock return by removing the REXR variable in the equation. The simulation result shows that the impact of depreciated rupiah is 10% on the company's financial performance, MVA value, and stock returns. Both indicate positive values, meaning that the stock return and MVA are influenced by changes in IDR Exchange rate in a more direct way than an indirect way.

Simulation 4

The simulation scenario 4 shows the increase in Bank Indonesia interest rates by 10% or else from an average of 6.25% through 6.825%. The simulation results show that an increase in Bank Indonesia interest rates has an impact on domestic sales up to 0.12% and has little impact on EVA, MVA, and stock returns.

Simulation 5

The simulation scenario 5 shows an increase in export taxes from 1.5% to 3%, leading to a decrease in export sales prices by 2.2% and a decrease in coal sales volume by 0.1%. Subsequently, it allows the government to use taxes for controlling export volumes. Moreover, the increase in export tax leads to a decline in the financial performance of EBIT, PAT, and EVA by 3.3%, 7.1%, and 7.6%, respectively. The increase in tax has a large impact on the financial performance of companies because most of them export a higher amount of coals for global trade rather than for domestics. Further, it leads to the decline in the MVA and the stock return of 2.2% and 2.5%, respectively.

Simulation 6

The simulation scenario 6 shows operational costs, general administration, and revenue costs fell by 20%, which bring no impact on both export sales and domestic sales. This condition can improve the financial performance of EBIT, PAT, and EVA by 1.73%, 3.7%, and 3.94%, respectively. It also has a positive impact on the value of MVA and stock returns.

Table 1. Results of financial model validation of coal company

Variable	Description	Unit	U-Theil
QX	Export coal sales	Million tons	0.1659
PXT	Prices after export levy	Dollar / ton	0
SALESX	Value of sales	Billion rupiahs	0.1904
HRGA	Domestic reference prices	Dollar/ton	0.0051
QD	Domestic coal sales	Million tons	0.3598
SALESD	value of domestic sales	Billion rupiahs	0.3502
SALEST	The total value of the company's sales	Billion rupiahs	0.1904
LB	Gross profit	Billion rupiahs	0.126
EBIT	Earning Before interest and tax	Billion rupiahs	0.3404
PAT	Profit after tax	Billion rupiahs	0.5571
EVA	Economic added value	Billion rupiahs	0.573
MVA	Market value added	Billion rupiahs	0.4479
Return	Stock Return	%	0.6315

Simulation 7

The simulation scenario 7 shows the combination of changes in both external and internal factors. In this situation, the coal price fell by 15%, the rupiah exchange rate against the dollar is depreciated by 10%, while internal factors such as revenue costs, operational costs, and general administration fell by 20%. Consequently, it leads to a positive value of the company's financial performance (EBIT, PAT, EVA, and MVA), whereas negative values are found on MVA of 85% and stock returns of 101.6 %.

Managerial Implications

When the coal prices in the international market go down and are aggravated by the depreciated IDR exchange rate to USD, it can be resolved by lowering down the revenue costs, operating costs, and general & administrative expenses to prevent financial loss. However, if coal prices continue to plummet down more than 20%, then the company's financial performance will get worse.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Coal prices, the IDR exchange rate, and GDP of China are categorized as external factors that could influence the amount of coal export sales. The domestic coal reference prices are strongly influenced by international coal prices and inflation, whereas domestic coal sales are influenced by both the average reference price and Bank Indonesia interest rates. In addition, the impact of currency depreciation on the fundamental financial performance of companies is very positive. However, due to the direct influence of Rupiah depreciation on stock returns, it turns out negatively influencing stock returns and MVA. Thus the exchange rate of Dollar against Rupiah becomes an external factor that strongly influences stock returns, whereas the international coal price is an external factor that strongly influences financial performance (EBIT, PAT, and EVA).

Recommendations

A suggestion for further studies is to develop a model that include international coal prices as an endogenous variable by taking into account the supply of global

coal demand. In addition, it is necessary to employ forecasting estimation for predicting the behavior of the company's financial performance in the future.

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