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FACTORS AFFECTING TOBIN'S Q COAL MINING COMPANY REGISTERED IN INDONESIA STOCK EXCHANGE

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ABSTRACT

The purpose of this study is to examine the effect of capital structure (debt to asset ratio and debt to equity ratio), economic value added, and coal reserves towards Tobin's Q, as a proxy of firms' value, of coal companies listed on the Indonesia Stock Exchange (IDX). This study also aims to examine the contribution of Tobin's Q towards sectoral stock index price of coal production companies. From a total population of 23 companies, this study took a sample of 16 coal production companies using purposive sampling method. The data used is collected from the companies audited financial statements and annual reports in IDX's website from 2009 to 2014. The results of multiple linear regression analysis show that there is significant impact of economic value added, coal reserves and profitability dummy towards Tobin's Q. Furthermore, the results of linear regression analysis show that there is significant impact of Tobin's Q towards sectoral stock index price of coal production companies. Based on the results of this study, the financial decision makers in coal production companies are advised to use economic value added, availability of coal reserves and profitability in improving firm value reflected in its share price.

Keywords: capital structure, coal reserves, economic value added, Tobin's Q

ABSTRAK

Tujuan dari penelitian ini adalah mengkaji pengaruh struktur modal (rasio utang terhadap aset dan rasio utang terhadap ekuitas), economic value added, dan cadangan batubara terhadap Tobin's Q, sebagai proksi nilai perusahaan, perusahaan batubara yang tercatat di Bursa Efek Indonesia (BEI). Penelitian ini juga bertujuan mengkaji kontribusi Tobin's Q terhadap indeks harga saham sektoral perusahaan batubara produksi. Dari keseluruhan jumlah populasi sebanyak 23 perusahaan, penelitian ini mencakup 16 perusahaan batubara produksi yang dipilih menggunakan metode purposive sampling. Hasil dari analisis regresi linier berganda menunjukkan terdapat pengaruh signifikan dari economic value added, cadangan batubara dan dummy profitabilitas terhadap Tobin's Q. Hasil analisis regresi linier sederhana menunjukkan terdapat pengaruh signifikan Tobin's Q terhadap indeks harga saham sektoral perusahaan batubara produksi. Berdasarkan hasil penelitian ini, pembuat keputusan keuangan di perusahaan batubara produksi disarankan untuk menggunakan economic value added, ketersediaan cadangan batubara dan profitabilitas dalam memperbaiki nilai perusahaan yang tercermin pada harga saham perusahaan.

Kata kunci: struktur modal, cadangan batubara, economic value added, Tobin's Q

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INTRODUCTION

The purpose of a company management is to maximize the benefit from every investment trusted by the stakeholders of the company especially the owner of the share giving it to the management to be managed. The management of company has tried to use all the resources available in the company to produce performance that can boost the value of the company thoroughly. The economic condition that keeps changing has caused the performance of the company that cannot be predicted easily. A company handling general mining has got affected by the fluctuation of the commodity price. Moreover, the government provision that banned the export of a raw mining production. Even though coal mining company has not got the effect of export banning, coal mining company that has arrived at the production stage faces the tendency of coal decreasing price in world market.

The decrease of coal price occurring from 2011 to 2014 that reached more than 40% has affected the performance of coal mining company handling the production of coal. The price of coal is significantly affected by the demand of coal which related to the global economy growth which conditioned the availability of electricity power and the need of iron to the construction work. Furthermore, the oversupply of coal from several countries has made the price of coal keep decreasing. Moreover, from the finance report of mining company handling the production of coal listed in Indonesia stock exchange showed that the finance performance reflected from the price of companies' share has experienced drastic decrease seen from the share market capitalization value. The development of coal price and the share market capitalization of production Coal Company is presented in Table 1.

The changes of share price seemed affected the index of sectoral share price when the share market price was compared with the initial share price. The volatility of sectoral share price index of production coal mining will also affect the annualized return which will then affect the investors' decision to invest their capital at the companies with good performances and with the annualized return of investment outcome which can be more predicted. The precise measurement of company finance performance which has considered the risks of business that can affect the cash flow will result in the more reliable measurement of company value change. Besides the finance report, there are also important data which cannot be found in other industry which is the foundation to determine the value of coal mining company, i.e., coal reserve. Thus, the owner of the share can determine the decision to invest by considering not only the finance performance but also the adequate coal reserve availability, which is the asset when exploited.

The selection of modal structure represents the measurement of permanent funding of Coal Company related to the mixture efficiency of the debt and equity instrument use within the company activity funding because the industry of coal mining is capital intensive and its investment is long term investment (Samir, 2004). Furthermore, the decision of modal structure which will be chosen is affected by the choice of company over the target of modal structure, the average of debt maturity, and the source of specific funding chosen in the certain time (Brigham, 2005). Economic value added (EVA) is used to measure the probability performance which has considered the economic profit and capital cost from the fund used by the company (Damodaran, 2001). EVA is one of performance measurement tools of company finance which directly relates to the intrinsic market value of a company. The coal reserve is used to measure the performance the continuous growth through the operational at the level of production as planned based on the proven reserve availability and probable reserve. Coal reserves are parts of coal resources designated and measured, in which they can be mined economically (SNI, 2011).

Table 1. The coal price and share market capitalization of production Coal Company from 2009 to 2014

Information	2009	2010	2011	2012	2013	2014
The matrix of coal price basic (US$)	38–76	48–99	61–128	51–103	45–89	40–78
The index of new castle coal price (US$)	72	99	121	97	85	71
Share market capitalization (Trillion IDR)	197	383	321	247	178	142

Source: Processed from the ESDM Ministry, Bloomberg, and Share Market

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Tobin's Q is used to measure the company value because this indicator has considered the market value of share and debt compared to the replacement cost from the company asset. In other words, the use of Tobin's Q is aimed to measure the ability of a company to process its asset in order to maximize the company's net wealth so that the share market value can be beneficial (Tobin, 1977). This research aimed to examine the contribution of Tobin's Q towards the sectoral share price index of a production coal company. Moreover, this research examined the effect of capital structure, economic value added, and coal reserves towards the company value (Tobin's Q).

METHODS

There were 16 companies that became the object of this research. They were listed in their share in Indonesia Stock Exchange, which were active in the exploitation of coal mining. Of the 16 companies, 13 companies have been listed in Indonesia Stock Exchange for 3 years, since December 31, 2014. While the rests have been listed for not more than 3 years so that the data observed were 78 data, which were unbalanced data panel because there were incomplete data from each data time series. This research used secondary data from the annual finance report that had been audited, annual report and report of share data and price from Indonesia Stock Exchange publication, in which the complete data were taken purposively from the whole coal mining companies as many as 23 companies listed in Indonesia Stock Exchange from 2009 to 2014. These data were downloaded from the website of IDX with its address of http://idx.co.id and website of paid IDX of www.icamel.id. The code of company share was ADRO, ARII, ATPK, BORN, BRAU, BSSR, BUMI, BYAN, GEMS, HRUM, ITMG, KKGI, MBAP, PTBA, SMMT, and TOBA. The data processing was performed by using the Excel and EView 8 series programs.

The selection of variable was carried out based on the material that will be analyzed. The independent/ free variable consists of: modal structure, i.e., debt ratio towards the asset (DAR) and debt ratio towards equity (DER), economic value added (EVA) which was obtained from the operation net profit after tax (NOPAT) which was reduced with the weighted average capital, coal reserves (proven and probable category) (CAD), and Tobin's Q-Notion (Tobin's Q counted was based on the chosen model). The independent/ free variable consists of Tobin's Q, obtained by dividing the number of share market value and debt with the asset reimbursement in which the total value of asset was used as its proxy (Tobin's Q ratio = (debt market value added by share market value)/asset reimbursement), and sectoral share price index (IHSS) from 16 companies observed. IHSS was counted by adding the number of share circulating multiplied with the closing share price each year divided with the number of share circulating multiplied with the initial share price. Tobin's Q-Notion (TBQF) was counted after the equation of Tobin's Q was obtained, which was then used as the independent variable to find out the effect towards the sectoral share price index (two-stage least square). TBQF was used to erase the problem of endogeneity because at the same time Tobin's Q became the dependent and independent variable. DPro is a profitability dummy with the assumption that a company which had profits was given 1 value, whereas the company which experienced loss was given 0 value.

The object of this research consisting of 16 companies of production coal mining which started from 2009 to 2014 will form panel data. The regression analysis with the use of panel data was known with the regression analysis of panel data. The panel data regression was the development from linear regression with the method of OLS consisting of specificity from the data type side and its analysis purpose. From the data type side, panel data regression had some characteristics (type) of cross section dan time series data. The characteristic of cross section data was shown by data consisting of more than one entity, while the characteristic of time series data was shown by every entity which had more than one period of observation.

It could be seen from the data analysis that panel data were useful to know the economic effects that were not inseparable among entities within some periods. This could be obtained from the use of cross section or time series data separately. There were some characteristics of bound variable from each entity or there were other variables affecting aside from the model which were actually observed its effects. Using the panel data regression would be effective because linear regression could not do that. There were 2 benefits obtained by using panel data. The first benefit was that the panel data was the combination of two data, namely cross section and time series data that could be able to supply more data so that this could produce bigger degree of freedom. The next was that combining the data

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information from cross section and time series data could overcome the problem occurring when there was a problem of variable removal.

To determine the most appropriate model for this research, the measurement of model which was based on the Panel Least Squares, Fixed Effect Model (FEM) and Random Effect Model (REM) was performed first. After obtaining the result of PLS, FEM and REM, panel regression model selection was then carried out through the test of Hausman, Chow and Lagrange Multiplier (LM test) in order to determine the best model used in this research.

Because there were 2 dependent variables which would be examined individually, two models of analysis were then used, namely, panel data regression analysis and linear regression analysis as follows:

Model 1: $TBQ_{it} = \alpha + \beta_1 DAR_{it} + \beta_2 DER_{it} + \beta_3 EVA_{it} + \beta_4 CAD_{it} + \beta_5 DPro_{it} + \varepsilon_{it}$

Model 2: $IHSS_{it} = \beta_0 + \beta_1 TBQ_{it} + e_{it}$

Explanation:

α	:	Constants (constant number which describes the average value of Y if all the value of independent variable X is equal to 0)
β	:	coefficient of regression (decribes the effect of X towards Y)
ε	:	error /remaining /deviation
i	:	1,2,3,…,16
t	:	1,2,3,…,6

TBQ (TBQF) is the value of estimation (estimated value/fitted) Tobin's Q obtained from estimation of Model 1. Hypothesis is the temporary answer towards the formula of this research problem. Hypothesis proposed in this research was:

H1: DAR, DER, EVA, CAD and DPro simultaneously affect the Tobin's Q of production coal mining company
H2: DAR partially affects the Tobin's Q of production coal mining company
H3: DER partially affects the Tobin's Q of production coal mining company
H4: EVA partially affects the Tobin's Q of production coal mining company
H5: CAD partially affects the Tobin's Q of production coal mining company
H6: DPro partially affects the Tobin's Q of production coal mining company
H7: TBQF affects the price index of sectoral share of production coal mining company

The weariness of world economy happening in 2011 and continued in 2014 had affected various aspects of economy and industry including the coal mining industry in Indonesia. Indonesia relied significantly on which its coal production export encountered pressure from the decrease of coal price which caused the amount of coal sold became fewer, which eventually this could influence the decrease of company performance. The contribution of Coal Company listed in Indonesia Stock Exchange towards the Indonesia coal production dominantly affected. This made the optimal sale of coal hampered so that the performance decreased. This was reflected from the decrease of share price. Share market capitalization of mining company has drastically decreased compared to the share market capitalization in 2011. This research focused on the influence of modal structure, EVA and coal reserves towards Tobin's Q of coal mining company listed in Indonesia Stock Exchange. Moreover, this could obtain the related description. This research also examined the contribution of Tobin's Q towards the sectoral share price index of production coal mining company. The framework of this research is completely presented in Figure 1.

RESULTS

The Effect of Modal Structure (Ratio of Debt Towards The Asset and Ratio of Debt Towards The Equity), Economic Value Added, and Coal Reserves Towards Tobin's Q

The result of the data process (panel data regression analysis) produced descriptive statistics showing that the production coal mining company listed in Indonesia Stock Exchange had relatively low leverage in which the equity had more roles in the funding of company investment and operational compared with the funding from the debt. Ratio of Tobin's above number 1 showed that the share market price of the company was higher than that of company book price. The descriptive statistics result of this research is completely presented in Table 2.

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Related to the partial correlation, based on the correlation analysis, DAR variable had significant correlation towards TBQ with negative correlation coefficient of -0,346123, EVA variable with positive correlation coefficient of 0,384391, and Profitability Dummy Variable (DPro) with positive correlation coefficient of 0,372658 with each value of probability which was smaller than that of alpha (α) 5%. CAD and DER variables had bigger probability value than those of alpha (α) so that it can be concluded that there was no significant correlation between those variables and TBQ. Furthermore, it can also be concluded that with alpha (α) 5%, there was significantly positive correlation between TBQF and IHSS with the number of correlation of 0,238065 and the probability number of 0,0358, which meant that the relation between TBQF and IHSS was the same meaning that when TBQF experienced an increase, this would also increase the IHSS. The analysis of correlation coefficient is completely presented in Table 3.

Based on the test of Hausman with H0: REM and H1: FEM, if obtained Prob (1,000) or more than alpha 5%, H0 could be accepted. This meant that based on the test of model Hausman, REM was chosen. Based on the test of Chow with H0: PLS and H1: FEM, if obtained Prob (0,1737) or more than alpha 5%, H0 could be accepted. This meant that based on model Chow test, PLS was chosen. Based on the test of LM with H0: PLS and H1: REM, if obtained Probe (0,4769) or more than alpha 5%, H0 could be accepted. This meant that based on test of model LM, PLS was chosen. Based on the three tests above, Chow and LM tests showed that PLS was the model chosen. Therefore, PLS was the best model for this research. The estimation result of PLS model is presented in Table 4.

The value of R-squared in PLS model which related to the variable affecting TBQ of 0,2067 indicated that the 20,67% of TBQ variable measurement could be explained by the variables of DAR, DER, EVA, CAD and DPro. While the rest of 79,33% was affected by other variables. Other factors influencing Tobin's Q, were the structure of investor ownership, in this case the ownership from the institution which invested to the open company (Woidtke, 2002), the ownership of company share which was concentrated on some parties, such as, the ownership of share by family (Shahab, 2012), the reliable management of company (Herawaty, 2008), and the interest rates on loans (Andati, 2012).

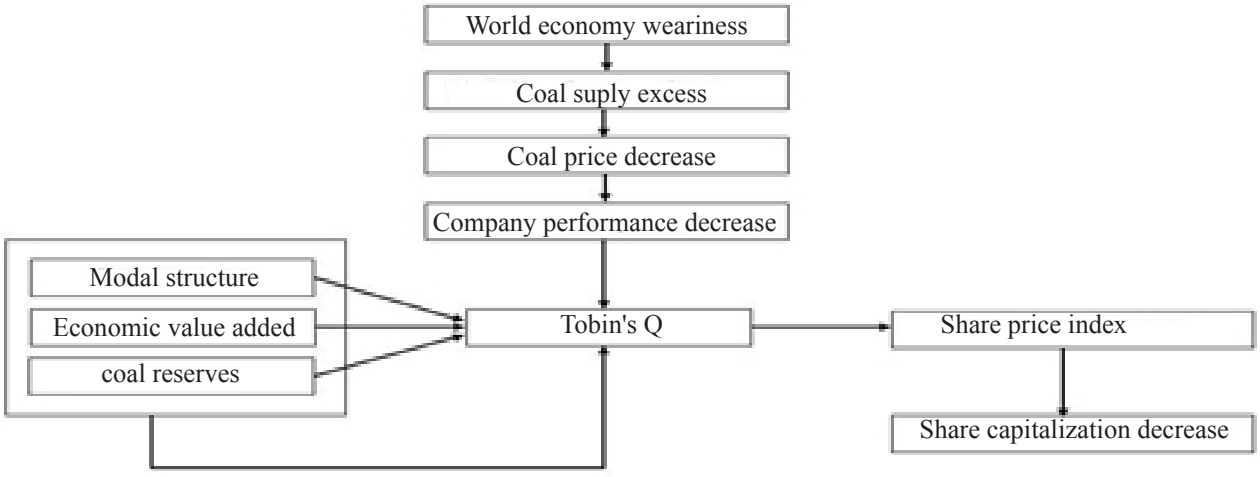

Figure 1. Framework of the research

Table 2. Research descriptive statistics

	TBQ	CAD	DAR	DER	EVA	DPro	TBQF	IHSS
Mean	2,598	617.220	0,509	0,861	-0,725	0,731	2,599	192,820
Median	1,965	280.800	0,440	0,705	-0,088	1,000	2,925	188,350
Maximum	7,780	4359.000	1,520	44,410	3,500	1,000	3,790	283,330
Minimum	0,780	34.380	0,140	-43,340	-9,378	0,000	-0,040	114,430
Std. Dev.	1,766	826.725	0,277	8,138	2,186	0,446	0,803	59,342
Observations	78	78	78	78	78	78	78	78

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Table 3. Correlation coefficient analysis

	Correlation							
(Probability)	TBQ	CAD	DAR	DER	EVA	DPro	IHSS	TBQF
TBQ	1,000000							

CAD	-0,072778	1,000000						
	(0,5266)	-----						
DAR	-0,346123	0,332577	1,000000					
	(0,0019)	(0,0029)	-----					
DER	-9,87E-05	-0,191873	-0,036903	1,000000				
	(0,9993)	(0,0924)	(0,7484)	-----				
EVA	0,384391	-0,389456	-0,632788	0,058619	1,000000			
	(0,0005)	(0,0004)	(0,0000)	(0,6102)	-----			
DPro	0,372658	-0,075802	-0,517345	0,037717	0,446325	1,000000		
	(0,0008)	(0,5095)	(0,0000)	(0,7430)	(0,0000)	-----		
IHSS							1,000000	

TBQF							0,238065	1,000000
							(0,0358)	-----

Table 4. Panel model result

Variable	PLS	
	Coefficient	Prob.
CAD	0,000157	0,0925
DAR	- 0,62706	0,4125
DER	- 0,00276	0,7780
EVA	0,20688	0,0005
DPro	0,84398	0,0400
C	2,3563	0,0001
R-squared	0,2067	
Adjusted R-squared	0,1517	
F-statistic	3,7531	
Prob(F-stat)	0,0045	

Based on test-F performed, this was used to see the model simultaneously with the assumption of H0: $\beta0=\beta1=\beta2=\beta3=\beta4=\beta5=0$ and H1: Minimally, there was one i in which $\beta i\neq0$, it was obtained F value of 3,7531 with the prob value (0,0045) or smaller than alpha (α) 5%, so that H0 was rejected, which meant that the regression model was simultaneously appropriate. This could be concluded that the five independent variables (DAR, DER, EVA, CAD and DPro) simultaneously showed the significant effects on the dependent variables (TBQ).

Based on the Test-T or each independent variable effect towards TBQ, it could be obtained that CAD, EVA, and DPro had probability value respectively 0,0925; 0,0005; and 0,0400 which was smaller than that of alpha 5–10%, meaning that CAD, EVA, and DPro partially significantly affected the TBQ. From the T test, it could be seen that DAR didn't significantly affect TBQ so that using the formula to form TBQ with an assumption that DAR did not affect TBQ. This made the share price become the factors affecting TBQ, not to mention CAD, EVA and DPro.

CAD significantly affected TBQ because CAD would be converted into coal that could be sold when produced. Therefore, this could yield finance performance. The finance performance in the form of net profit affected the company share price (Fadhilah, 2011). Moreover the CAD book value was lower than the market value when the coal reserves has been produced. This was in line with the research result that concluded that the growth of production was the prominent contributor in forming the mining company value not to mention the level of profitability and efficiency of the cost (Krinks, 2010). Even though the period of observation was done in 6 years, the company that became the object of this research did not perform reevaluation over the number of coal reserves although the decrease of sale price in that period affected the mining economy (Baurens, 2010).

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EVA affected positively the TBQ because EVA explained about the creation of company value if the company could produce the yield that was bigger than the capital cost and this was in line with the research which concluded that EVA had a significant effect towards the Fortune company market value of 1000 either individually or in industry group (Lefkowitz, 1999). Bacidore et al. (1997) concluded that there was a significant relation between EVA and yield of share as the creator of share market price because the share yield was the main indicator of the company finance ability to create the added value for the investor.

The increase of EVA of a company also affected the increase of share yield and the level of share investment return (Huda et al. 2015). Furthermore, as seen in Table 2, the companies observed had a low leverage (under number 1) which meant that the company funding relied more on the equity of shareholders and this would cause the number of EVA higher because the average capital cost of the company with the assumption of debt capita cost was higher than the equity capital cost which then became lower.

DPro affected positively the TBQ because the investor gave the more judgement over the share price from the company which produced profit in its business activity as the research concluded that the investor in US capital market preferred share with more predicted profit. Because of it, the US capital market got fewer risks (Profilet, 2013). In Indonesia capital market, there was a significant effect found in the profit information towards the company share price in group of LQ 45 (Mutia, 2012).

Based on the explanation above, it can be concluded that only EVA, CAD and DPro which partially affected the TBQ. The capital structure (DAR and DER) did not affect partially the TBQ.

Examining the Contribution of Tobin's Q towards the Index of Sectoral Share Price of Production Coal Company.

The result of calculation, index amount of sectoral share price of the companies was 155, 10 (2009), 283, 33 (2010), 246, 44 (2011), 221, 60 (2012), 154, 93 (2013), and 114, 43 (2014). From IHSS, it can be seen that there was an index increase that was enough significance from 2010–2014 along with the coal price decrease in world market which was the crutch of companies' performance observed. Related to the effect of TBQF towards IHSS, after obtaining the result of TBQF, capital calculation was then performed based on the method of PLS, FEM, and REM. R-squared from PLS, FEM and REM respectively was 0,056675, 0,222554, and 0,056675. The summary of test result is presented in Table 5.

Table 5. The test result of Hausman, Chow and LM

Test- Hausman			
Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11,855574	1	0,0006
Test -Chow/ F			
Effects test	Statistic	d.f.	Prob.
Cross-section F	0,867681	(15,61)	0,6017
Test- LM			
Prob Cross Section One Sided BP (0,0644)			
Chi-square table with df=1 = 3,81			

Based on the tests conducted, the models chosen according to Hausman, Chow and LM Tests respectively were FEM, PLS, and PLS. Thus, the best model for this research was PLS because there were two tests that chose this model. The estimation result of the model is presented in Table 6.

Table 6. The result of TBQF effect model towards IHSS

Variable	PLS	
	Coefficient	Prob.
TBQF	17,60244	0,0472
C	147,0765	0,0000
R-squared	0,0567	
Adjusted R-squared	0,0443	
F-statistic	4,5661	
Prob(F-stat)	0,0358	

Based on Table 6, the use of PLS model produced Prob (0,0472) which was smaller than alpha (α) 5%. This means that TBQF significantly influenced IHSS. The change of IHSS was the investor perception towards yield of company share. This conclusion was in line with the research concluding that TBQ had positive significance towards the share yield (Arief et al. 2013). The value of R-squared on PLS which was in line with the TBQF variable effect towards IHSS was 0,056675. This indicated that 5,67% of the measurement of IHSS variable could be explained by TBQF variable. Meanwhile, the rest of 94,33% was affected by other

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variables, i.e., better practice of company management which could affect the capital cost so that this could increase the interest of investors to pay the certain premium over company share (Issarawornrawanich, 2015)

Managerial Implication

The research result focusing on the effect of EVA, CAD and DPro towards TBQ as explained before could be used by the management of the production mining company either the company which has already run its business or the company which is going to run its production activity, in which the value of mining company would very depend on the business efficiency, the availability of coal reserves and profit quality. For company management, the lower leverage could be increased to produce the increase of TBQ value and optimize the capital cost to increase the economic value added. This could also be used to make sure that the coal reserves were in adequate level. For the investors, analyzing the performance and prospect of the mining company must pay attention more on the information which was not in the finance report, like fluctuation of commodity price and company coal reserves. For regulator, considering the finance contribution of production mining company to the Nation which was relatively big, the government needed to support the sector development and gave the looseness in the acquisition of debt as well as the debt ratio which was conditioned by national banking, especially BUMN banks.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

From the research result, it can be concluded that factors affecting the Tobin's Q are economic value added, coal reserves, and profitability dummy. Tobin's Q-Notion affects significantly the index of sectoral share price of production coal mining company. When the coal is in a decreasing condition, the companies producing economic value added have the availability of adequate coal reserves; moreover, the companies can keep their profitability which can increase the value of companies reflected from the company share price.

Recommendations

For next research, it is better to use other parameters to judge production mining companies and broaden the period scope that will be examined in order to describe the business cycles precisely. Research will be very meaningful if the researcher uses financial data combination and technical data related to the mine not to mention the management style and the ownership of its share majority.

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