Oil Price and Earnings Management: Evidence from Crude Oil and Gas Companies in Indonesian Stock Exchange

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ABSTRACT

This research is aimed to examine the effect of oil price on earnings management in Indonesia. Research sample consist of 9 crude oil and gas companies listed in Indonesian Stock Exchange for the 2013-2018 period. Earnings management is measured by discretionary accruals. Analysis data uses regression analysis. Result shows that oil price has negative effect on upward earnings management. Since oil price determines companies' profitability, lower oil price will leads companies to engage in earnings management to achieve higher earnings.

Keywords: Oil Price, Earnings Management, Indonesian Stock Exchange
JEL Classifications: M21, M41

1. INTRODUCTION

In 2014, global market has been shocked with oil price crash. Oil price has been decreased globally. The lowest price level is in 2016 since last 10 years. Figure 1 shows global oil price volatility in last 10 years.

Oil price crash gives huge impact to the oil industry. There are fifteen big oil companies fall down and go bankrupt (Helman, 2016). It happens because companies have not enough revenues to be generated because sales price is low. This phenomenon is important to be studied because oil industry is one of the most important basic industries to support other industries as energy supplier.

Indonesia is one of oil supplier country experiences bad impact of global oil crash as well. Similar to global oil price volatility, average of national oil price has the lowest level in 2016. Graphic of Indonesian oil price can be seen in Figure 2.

Since oil price has impact on oil companies' performance, companies experience reducing of earnings when oil crash happens. Darko and Kruger (2017) find that crude oil price has

effect on accounting earnings, such as earnings per share (EPS) and return on equity (ROE). Oil companies have interest to maintain earnings because earnings are one of important information that is used by stakeholders to evaluate companies' performance.

The importance of earnings information leads oil companies to engage in earnings management, especially when there is economics recession (Roubi et al., 2015). There are some evidences that earnings management is done by oil companies. Roubi et al. (2015) find that oil companies engage in earnings management in global financial crisis in 2008. Hsiao et al. (2016) find that US oil companies engage in earnings management especially around Arab Spring event in 2011. This research is aimed to examine the effect of oil price on earnings management, especially in emerging market such as Indonesian market.

2. LITERATURE REVIEW
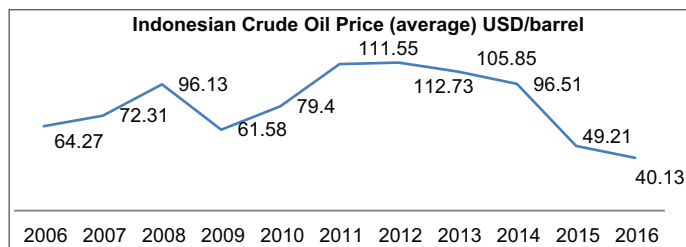
2.1. Agency Theory
Jensen and Meckling (1976) define agency theory as a contract between one or more parties (principal) that bind the other party

Figure 1: Global crude oil price
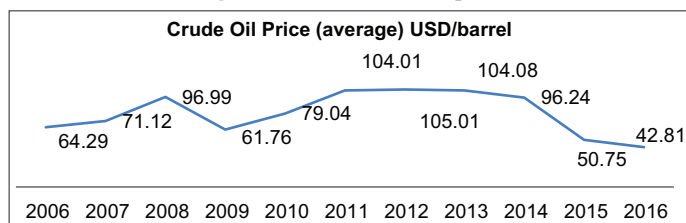
Source: World Bank (2017)

Figure 2: Indonesian crude oil price

Source: Ministry Of Energy and Mineral Resources Republic of Indonesia (2017)

(the agent) to carry out management of firm based on interests of principal, including the delegation of decision making authority to the agent. The main issue of agency theory is agency conflict. Agency conflict is come from conflict of interest between owners, as a principal, and management, as an agent. Owners have interest to maximize their wealth as well as management.

In terms of earnings information, agency conflict leads to dysfunctional behavior of management, such as earnings management. Earnings management usually refers to the efforts of firm managers or executives to manipulate the earnings figures in financial reporting (Tangjitprom, 2013). Earnings management could be bigger because of information asymmetric. Management has more information and knows better about firm's condition compares to owners. This point of view leads to earnings management as opportunist act of management based on information asymmetric for their own-interest.

2.2. Earnings Management
Earnings management is alternatives used to manipulate reported earnings to fulfill certain purposes. There are two ways to understands earnings management. First, earnings management as management opportunist behavior in maximizes their utilities in terms of face contract of compensation, debt, and political cost (Scott, 2014). Second, earnings management as an efficient contract perspective, which is earnings management gives management flexibility to protect themselves and the company in terms of anticipates unexpected events for the benefits of related parties (Scott, 2014). Earnings management is one of the important issues in financial reporting because it is related to information quality of earnings (Dechow and Schrand, 2004). In Indonesia, researches of earnings management are significant research because it have contribution of 18 percent of all accounting and finance research in National Symposium of Accounting as well as of 45.7 percent of all published research in big five accounting journal (*Jurnal Akuntansi dan Auditing Indonesia, Jurnal Akuntansi, Jurnal Riset Akuntansi*

Indonesia, Akuntabilitas, Jurnal Akuntansi dan Keuangan from 2000 until 2009 (Suhardianto and Harymawan, 2011).

2.3. Hypothesis Development
Beside companies' factors, macro-economic condition also motivates managers to engage in earnings management. In context of crude oil and gas industry, volatility of oil price condition leads to earnings management practice. When global oil price falls down, it will leads to fall of oil price in regional and country level as well. When oil price decreased, oil companies generate lower sales or revenue. Lower sales or revenue leads to lower earnings. Since earnings is one of most important indicators to evaluate companies' performance, companies tends to provide higher earnings, even oil price condition does not support companies to achieve higher earnings. When it happens, companies are more likely to engage in opportunist act, such as earnings management. Companies will manage earnings higher than it should be because companies experience lower revenues. This explanation shows that lower oil price leads to higher earnings management to achieve higher earnings. Hall (1993) find that oil price has effect on earnings management behavior. Hsiao et al. (2016) also find oil price determinant event, such as Arab Spring event leads to earnings management behavior.

H_a: Oil price has negative effect on upward earnings management

3. RESEARH METHOD

3.1. Sample
Research sample are companies that listed in Indonesian Stock Exchange in 2013-2018. Companies includes in crude oil and gas industry. Sample can be seen in Table 1.

3.2. Variable
Research variable consists of dependent variable, independent variable, and control variables. Dependent variable is earnings management. Earnings management is measured by discretionary accruals. Discretionary accruals is estimated by Jones (1991) model modified by Dechow et al. (1995) as follow.

$$\frac{TA_t}{Assets_{t-1}} = b_0 + b_1 \frac{1}{Assets_{t-1}} + b_2 \frac{\Delta Sales_t - \Delta Rec_t}{Assets_{t-1}} + b_3 \frac{PPE_t}{Assets_{t-1}} \tag{1}$$

Where TA_t is total accruals period t, $\Delta Sales_t$ is change of sales period t, ΔRec_t is change of receivable period t, PPE_t is gross value of fixed assets, and $Assets_t$ is total assets of period t−1. Data can be accessed from financial statement in Indonesian Stock Exchange.

Independent variable is oil price. Oil price is measured by average of oil price per barrel in USD. Data is accessed in Indonesian Bureau Statistics and World Bank website.

Control variables are auditor quality and size of companies. High auditor quality can reduce level of earnings management (Ching et al., 2015). High auditor quality can be seen in Big 4 auditor affiliation. Auditor quality is dummy variable where score 1 if auditor is affiliated with Big 4 and score 0 if otherwise. Based on

political cost explanation, bigger companies try to reduce public attention by managing earnings level downward (Watts and Zimmerman, 1990). Size of companies is measured by logarithm of total assets.

3.3. Analysis Method

Hypothesis is tested by regression analysis. In order to ensure that regression model is valid, this research preforms normality, heteroscedasticity, autocorrelation, and multicollinearity as well. Regression model is as follow.

$$DA = a + b_1 PRICE + b_2 BIG + b_3 SIZE \quad (2)$$

Where DA is discretionary accruals, PRICE is oil price, BIG is auditor quality, and SIZE is size of companies.

4. RESULTS

4.1. Descriptive Statistics

Table 2 shows that the lowest oil price in Indonesia from 2013 to 2018 is 40.13 USD/barrels, while the highest oil price is 105.85 USD/barrels. Average of oil price in Indonesia from 2013 to 2018 is 67.90 USD/barrels with its deviation 24.49 USD/barrels. The lowest level of discretionary accruals is −0.47 means companies engage in lowest downward earnings management as 0.47 earnings relative to lagged total assets, while the highest level of discretionary accruals is 0.28 means companies engage in highest upward earnings management as 0.28 earnings relative to lagged total assets.

4.2. Preliminary Test

Table 3 shows that test of *Lilliefors*, *Glejser*, and Serial Correlation LM have significance value above 0.1 indicates that this research has normal data, no heteroscedasticity problems, and no autocorrelation problems. Test of Variance Inflation Factors shows that VIF value below 10 indicates that this research has no multicollinearity problems. Since this research has no

Table 1: Research sample

Crude oil and natural gas companies	Stock code
Apexindo Pratama Duta	APEX
Benakat Integra	BIPI
Elnusa	ELSA
Energi Mega Persada	ENRG
Medco Energi International	MEDC
Perdana Karya Perkasa	PKPK
Radiant Utama Interinsco	RUIS
Ratu Prabu Energi	ARTI
Surya Esa Perkasa	ESSA

Source: Indonesian Stock Exchange

Table 2: Descriptive statistics

	Price	DA	SIZE
Minimum	40.13	−0.47	11.11
Maximum	105.85	0.28	13.88
Mean	67.90	0.00	12.68
Standard deviation	24.49	0.16	0.70

Source: Data proceed

problems of normality, heteroscedasticity, autocorrelation, and multicollinearity; regression analysis can be performed.

4.3. Regression Test

Table 4 shows that oil price has coefficient value −0.000924 with t-statistics −1.720015 (significant in 0.10). It shows that oil price has negative effect on upward earnings management. This result is consistent with Hall (1993) and Hsiao et al. (2016) that find oil price condition has effect on earnings management behavior. When global oil price falls down, it will leads to fall of oil price in regional and country level as well. When oil price decreased, oil companies generate lower sales or revenue. Lower sales or revenue leads to lower earnings. Since earnings is one of most important indicators to evaluate companies' performance, companies tends to provide higher earnings, even oil price condition does not support companies to achieve higher earnings. When it happens, companies are more likely to engage in opportunist act, such as earnings management. Companies will manage earnings higher than it should be because companies experience lower revenues. Lower oil price leads to higher earnings management to achieve higher earnings.

4.4. Alternative Test

Economics condition of oil industry refers to oil price. Oil price condition is not only seen by magnitude value but also the changes. This research use oil price change as alternative measurement to see if it is consistent with main result. Result of alternative measurement can be seen in Table 5.

Table 3. Preliminary test

Test	Result	Notes
Lilliefors	Sig.>0.1	Data is normally distributed
Glejser	Sig.>0.1	Free of heteroscedasticity problems
Serial correlation LM test	Sig.>0.1	Free of autocorrelation problems
Variance inflation factors	VIF<10	Free of multicollinearity problems

Source: Data proceed

Table 4: Regression test

	Coefficient	t-statistics	Notes
Oil price	−0.000924	−1.720015**	Ha is accepted
Big	−0.092862	−1.196306	
Size	0.043371	1.251558	
Constant	−0.036327		
F-statistics	2.655131*		
Adj R²	0.111044		

Source: Data Proceed. *Significant in 0.05, **Significant in 0.10

Table 5: Alternative Test

	Coefficient	t-statistics	Notes
Oil price change	−0.001641	−2.551821*	Consistent with main result
Big	−0.138288	−1.834922**	
Size	0.053881	1.604631	
Constant	−0.028319		
F-statistics	3.674463*		
Adj R²	0.167947		

Source: Data Proceed. *Significant in 0.05, **Significant in 0.10

In Table 5, oil price change has coefficient value −0.006141 with t-statistics −2.551821 (significant in 0.05) shows that oil price change has negative effect on upward earnings management. Result of alternative test is consistent with main result of this research.

5. CONCLUSION

Based on analysis data, oil price has negative effect on upward earnings management. Since oil price determines companies' profitability, lower oil price will leads companies to engage in earnings management to achieve higher earnings. Limitation of this research is uses oil price in national level while final selling price is determined by companies because it is already adjusted by each company's risks of business operation. Future research is expected to use oil selling price that determined by each companies.

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