FINANCIAL PERFORMANCE KEY VALUE SITUATION BY CRUDE OIL PRICE FLUCTUATION

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Abstract
Crude oil price always plays a major role in International oil companies(IOCs). Shareholders of IOCs are affected directly by crude oil price fluctuation and it's important to know how to appraise effects of crude oil price on quality of earnings which is the adjusted index to evaluate each company's financial situation. Quality of earning is a financial factor, which could support financial performance, so evaluating this factor by crude oil price and appraise correlation between them could clarify business model behavior while the market upraises or downward. The key value which should appraise in IOCs business model is financial performance which has significant dependency with quality of earning (Campbell R. Harvey, 2012). Furthermore, as our data is collected from New York Stock exchange (NYSE) and OTC market stock exchange (OTCMKTS), required data were arranged based on GAAP financial standard. Objectives of this research are Evaluating financial performance as a key value in IOCs by appraising crude oil price effects on quality of earning in NYSE and OTCMKTS stock exchange companies' oil and gas sector. Methodology of this research is using Pearson correlation coefficient and regression to test quantitative data which is derived from stock exchange.

Keywords: oil price, business model, international oil companies, key value, financial performance, quality of earning, financial health

JEL Classification: C51, D22, L71

Introduction

Business model and business model innovation have various definition in which industry or firm is considered. One of the earliest definition of business model which was proposed by Tapscott, Ticoll, and Lowy (2000), concentrate on supply chain and delivery channel that includes supplier and distributors, infrastructure and commerce service providers and finally customers as the most crucial object which receive value. Later, another aspect of business model was introduced by Rappa (2003), which focused on revenue generating and

importance of its position in firm's value chain. These models comprehensive definition could be derived from developed business model by Osterwalder et al. (2010), which consider a typology that classify business model elements into nine building blocks, namely value proposition, customer segments, channels, customer relationships, revenue streams, cost structure, key resources, key activities and key partnerships. This article objective is evaluating business model from its financial aspect which is revenue stream and could be appraise by quality of earning index that could achieve from firm's financial statement. Financial performance of each company has correlation by quality of earnings ratio (Campbell R. Harvey, 2012), this correlation is because quality of earning is a pure financial ratio and illustrates whether earning of a company is manipulated or not. This index is a financial index to support financial performance of each company and omit any effects which comes from investing or financing activity to appraise the rate of companies' primary business activity on its earning. Quality of assets is also one of crucial factors which could support financial performance but in this article's scope is quality of earning and its correlation by crude oil price.

There are many specialists which have define the earnings quality but until now there is no definition with a large acceptance. This concept has many faces such as earning persistence, smooth earnings, magnitude of accruals, income- increasing accruals, absolute value of discretionary or abnormal accruals, and the extent to which accruals map into cash flows (Eliwa et al., 2016) Dichev et al., 2013, Dechow et al., 2010). In this article, we rely on Libbet et al.(2009), to achieve quality of earning ratio based on cash from operating activity. The quality of earnings ratio measures the portion of income that was generated in cash.

Crude oil price fluctuation, push International Oil Companies(IOCs) to adjust their business activities to constantly deliver desire value to their customers and keep or develop their revenue stream based on market situation. IOCs' financial statement evaluation could route us to find out financial aspect of business model situation while crude oil fluctuated even downward or upraise. Our target market niche is IOC's which are in stock market and we could be derived their financial statements from their stock market. Our selected time series is 10 years to cover both downward and upraise situation. As figure1 illustrated, in this period, crude oil experienced the high peak around $140 and the least price around $30, therefore all probable conditions has happened on this market and IOCs had to adjust their business to deliver value to their customers and their shareholders.

Figure no. 1. last 10 years' Brent crude oil price

Source: macrotrends.com

Methodology

The required data which should evaluate in this article to illustrate financial performance as a business model key value, have chosen based on its definition which is generating revenue by using assets and fundamental business activity without manipulating financial situation, like using companies share repository to inflate non-operational revenue and then generate profit margin. Quality of earning omits any artificial profits which could create by inflation or any other assets than primary assets (Campbell R. Harvey, 2012). It could also evaluate financial health of a company which is not in the scope of this article. Therefore, the best factors to measure could be considered as quality of earning which could be measured by operating income or cash flow from operations. To obtain precise value for quality of earning, quality of earnings ratio could be utilized. According to the text book "Financial Accounting" by Robert Libby, Patricia A. Libby, and Daniel G. Short, (McGraw-hill 2009), This ratio can achieve by (Cash from Operation / Net Income), where cash from operation, comes from annual cash flow statement and net income, comes from annual income statement. This ratio shows cash income and total income correlation. A ratio less than one reveals a low earnings quality; that is, the company may be overstating its true earnings. A ratio greater than 1 is indicative of the company's strong ability to finance its business activities through its operating cash flow (Libby et al., 2009).

Based on Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standard (IFRS), there are three main sector in cash flow statement which reports overall cash flow from any activity of a company. They are Cash from operating activity, cash from financing and cash from investing which as their name obviously portray their objectives, cash from investing and financing are non-operating income which generated by a company rather than its primary business activities. The reason of choosing quality of earning factor, as its definition state, is that this factor illustrates revenue from operation which comes from companies' primary business activity and any financial manipulation is not involve in this factor. Therefore, we could assume that quality of earning is a pure factor to show real firm's business activity and could support our research regarding effects of crude oil price fluctuation on IOCs financial performance to enrich our research results.

IOCs which their fundamental data has been used in this article are in New York Stock Exchange (NYSE) and OTC market stock exchange (OTCMKTS). Both stock markets are in the United States and all extracted data are in USD currency to appraise precise results. Following is the list of companies with their activity field and other fundamental information.

Table no. 1: International oil and gas companies which their financial data has used in the article

Companies	Base Country	Stock Market	Sector	Index
BP	UK	NYSE	International Integrated Oil and Gas	BP
CGG	France	NYSE	Oil and Gas Field Services	CGG
Chevron	USA	NYSE	International Integrated Oil and Gas	CVX
Conocophilips	USA	NYSE	International Integrated Oil and Gas	COP
Eni S.P.A	Italy	NYSE	International Integrated Oil and Gas	E
ENSCO	UK	NYSE	International Oil and Gas drilling	ESV
Exxon	USA	NYSE	International Integrated Oil and Gas	XOM
Gazprom	Russia	OTCMKTS	International	OGZPY
			Integrated Oil and Gas	
Lukoil	Russia	OTCMKTS	International Integrated Oil and Gas	LUKOY
Noble Corporation	UK	NYSE	International Oil and Gas drilling	NE
Schlumberger	USA	NYSE	Oil and Gas Field Services	SLB
Royal Dutch Shell	UK	NYSE	International Integrated Oil and Gas	RDS.A
Statoil	Norway	NYSE	International Integrated Oil and Gas	STO
Total SA	France	NYSE	International Integrated Oil and Gas	TOT
Transocean	Switzerland	NYSE	International Oil and Gas drilling	RIG
Weatherford	USA	NYSE	Oil and Gas Field Machines and Equipment	WFT

Source: NYSE and OTCMKTS

For our test, fundamental financial data has extracted from NYSE and OTCMKTS via amigobulls.com website. As we mentioned earlier, cash from operating activity from cash flow statement and net income from income statement were extracted in a 10-year time series which has split in four quarters each. The time series has started from 1st quarter of 2007 to 3rd quarter of 2016. Although at the time which we have done this article, 4th

quarter of 2016 is also should be reported by companies, some companies like CGG, Eni, Gazprom, Lukoil and Transocean has not reported their 4th quarter of 2016 yet. Therefore, the end of the time series is 3rd quarter of 2016. All financial statements support, Generally Accepted Accounting Principles (GAAP), which is the standard of reporting financial statement and ruled by the U.S. Securities and Exchange Commission (SEC) [Online] Available from: http://www.sec.gov/rules/concept/34-42430.htm [Accessed since: 18 February 2000]. 10-year of Brent Crude Oil prices in each quarter since 2007 has extracted from federal reserve economic data [Online] Available from: https://fred.stlouisfed.org [Accessed: 18 February 2017]

Crude oil price is considered as independent variable and operating income as dependent variable which rely on crude oil price and Pearson correlation coefficient is using to evaluate correlation between variables as both variables are quantitative.

$$r = \frac{\sum XY - \frac{(\sum X)(\sum Y)}{n}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{n}\right)\left(\sum Y^2 - \frac{(\sum Y)^2}{n}\right)}}$$

Where X is crude oil price, Y is quality of earning, r is Pearson correlation coefficient factor.

Regression test is also used to show us with which degree we could predict statistic performance. $\hat{y} = b0 + b1x$, where y is quality of earning, x is crude oil price and b0 and b1 are calculated as $b0 = y - b1 * x$ and $b1 = \Sigma [(xi - x) (yi - y)] / \Sigma [(xi - x)2]$.

IBM SPSS tool was selected to evaluate results, as it provides a simple, easy to follow, and non-mathematical approach to understanding and using quantitative methods and statistics. (Burns, R.P.& Burns, R., 2008).

Analysis

Both of crude oil price and quality of earning ration are quantitative, so the required test is Pearson Correlation Coefficient and has done by IBM SPSS version 22. As we need two series of data to run the test and make a conclusion, we should achieve normalize quality of earning data to use it as dependent variable while crude oil price uses as independent variable. Hypothesis of this test are as follows. H_0: Crude Oil price and quality of earning are dependent

H_1: Crude Oil price and quality of earning are independent

First, all achieved data from Cash flow statements and income statements of selected companies' financial statements were imported in SPSS and as a separate variable, quality of earning was calculated by dividing cash flow from operation activity to net income. The ratio shows the rate of primary activity of each company to net income which comes from all types of activity of a firm.

Second, Pearson Correlation coefficient test has done on mean of both crude oil price in 39 quarter from 1st quarter 2007 to 3rd quarter 2016. Following are the table of descriptive statistics of research variable which are crude oil price and quality of earnings ratio. It shows that crude oil price has $87.36 range and has a minimum $33.84 price while its maximum was $121.20.

Table no. 2: Descriptive statistics of research variables

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Oil	39	87.36	33.84	121.20	3298.45	84.5756	4.25982	26.60258	707.697
Quality of earning	39	60.11	-24.61	35.50	150.85	3.8678	1.68454	10.51997	110.670
Valid N (list wise)	39								

Source: Authors' own research from SPSS result Furthermore, each series' diagram based on time series are shown in figure 2

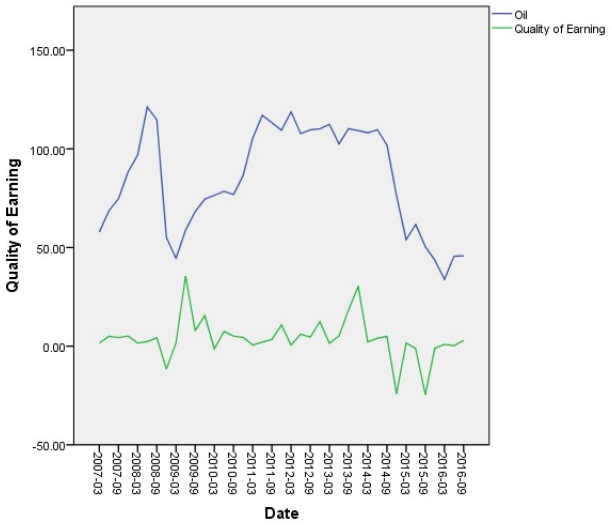

Figure no. 2: Time series of Crude oil price and Quality of Earnings ratio

Source: Authors' own research from SPSS result

Test result shows us that the *P* value is 0.131 which states that both variables are dependent. Therefore, Crude oil price and quality of earning are dependent and quality of earning could predict moderately by crude oil price with %24.6 which is regression β value.

The correlation table is shown in table 2.

Table no. 3: Pearson Correlation test result

		Oil	Mean
Oil	Pearson Correlation	1	.246
	Sig. (2-tailed)		.131
	N	39	39
Quality of Earning	Pearson Correlation	.246	1
	Sig. (2-tailed)	.131	
	N	39	39

Source: Authors' own research from SPSS result

Figure 3 is regression scatterplot which state the correlation between crude oil price and quality of earning ratio in 10 years. This plot is also state a positive correlation between crude oil price and Quality of earning even though it is not a strong correlation.

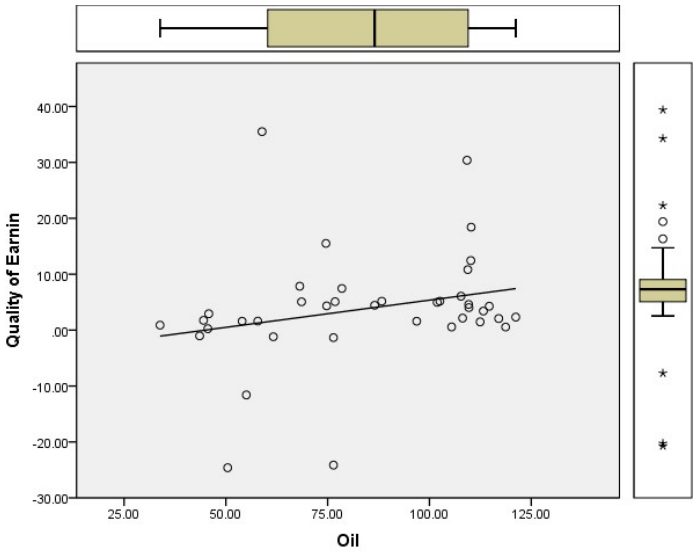

Figure no. 3. regression scatter plot of Crude oil price & Quality of earnings ratio
Source: Authors' own research from SPSS result

As quality of earning has chosen to appraise financial performance key value situation with crude oil price fluctuation, above test results, illustrated that financial performance has positive correlation with crude oil price and IOCs' financial performance has dependency to the crude oil price. It means that in the market slow down situation, IOCs have lesser financial performance and they might compensate the decline of their primary business

activity by other strategies like income from investing or income from financing. In the other hand, when the crude oil price goes up, financial performance is also growing which illustrated that IOCs are busy with their primary business than thinking to income from investing or financing.

Conclusions

Evaluating financial aspect of business model which could come from appraising related business model key value to find out its situation by financial factors is the main objective of this research. Related key value as mentioned earlier in this article, is financial performance which support financial health of a company and portray companies' financial situation with their primary business activity while omit any other activities which could be done and support earning by investing or financing. The related financial ratio that is equivalent by financial performance is the quality of earnings of each company. Financial information of sixteen companies were gathered from their financial statement and precisely, from income statement and cash flow statement, then quality of earnings ratio was calculated by dividing cash from operating activity to net income. its correlation by crude oil price was appraised by Pearson correlation coefficient algorithm and related scatter graph simultaneously. The result shows that IOCs' quality of earning has positive correlation with crude oil price which is high when crude oil price is high and IOCs are doing their primary business other than financing or investing or any non-operating activities, in the other hand IOCs' quality of earning is low when the market is low and IOCs had to compensate their lack of income by doing any non-operating activity or financing and investing.

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