Oil and Gas Companies and Their Fair Value: Evidence from Indonesia Stock Exchange

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Abstract: State revenues in crude petroleum and natural gas production sub-sector are still high, so the public still wants to invest its shares. There needs to be a valuation analysis in estimating the fair price of shares based on fundamental data. The purpose of this study was to analyze the valuation of shares in oil and gas companies MEDC, ENRG, and ELSA, using the DCF-FCFF method and control it using the RV PER-PBV method. In this study, there are three scenarios: pessimistic, moderate and optimistic using historical data from 2013-2017 as the basis for projections for 2018-2022. Comparing the results of the market share fair value on January 2, 2019, the DCF-FCFF method concluded that the condition was pessimistic: MEDC-ENRG (overvalued), ELSA (undervalued); moderate: MEDC-ENRG-ELSA (undervalued); optimistic: MEDC-ENRG-ELSA (undervalued). The RV PER-PBV method shows that the value of MEDC-ENRG-ELSA is still within the IDX market range Q1-2018. Recommendations for investors are to buy stocks in undervalued conditions and sell them in overvalued conditions, while for further researchers research can be done in other sectors besides the oil and gas sector and more assumption data are used for the validity of data analysis.

1 INTRODUCTION

Industrial companies that are engaged in the crude petroleum and natural gas production sector or which we are often familiar with in the oil and gas sector are still one of the biggest contributors to state revenues. State revenues in the oil and gas sub-sector in 2018 to the first semester were US $ 3.5 billion higher when compared to the same period last year, which was recorded at US $ 17.3 billion or greater than the same period last year which was US $ 13, 8 billion, as reported by www.industri.business.com online media, so that public interest is still high to invest its shares in the oil and gas sector. Oil and gas exploration and production have been enlivened by foreign and local companies, but the increase in world oil prices does not necessarily increase stock prices in the capital market. Based on the purposive sampling criteria of the closing stock price summary data of oil and gas companies listed on the Indonesia Stock Exchange (IDX) until the end of Quarter-2 2018, there were three companies with large revenue values but experienced a significant and fluctuating decline in stock prices, namely PT. Medco Energi International (MEDC) Tbk, PT. Energi Mega Persada (ENRG) Tbk and PT. Elnusa (ELSA) Tbk.

Stocks are one component of financial instruments that have high-risk high return characteristics. Stock prices can always fluctuate at any time due to various factors and information circulating on the exchange. The movement of the price of a stock in the short term cannot be ascertained precisely, Neaxie and Hendrawan (2017). Based on JCI data (Jakarta Composite Index) on the IDX (Indonesia Stock Exchange) from January 2013 to June 2018, presented as follows:

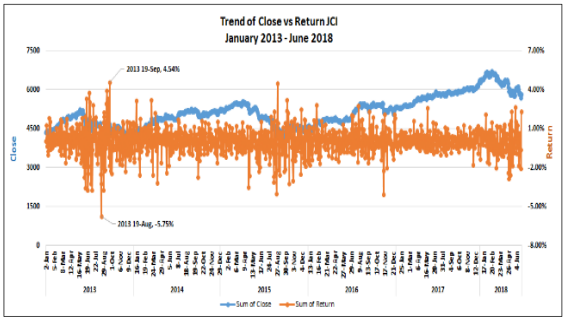

Figure 1.1: Trend of Close Price vs Return, Jakarta Composite Index (JCI). Source: Processed.

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Based on the graph in Figure 1.1, it shows that the JCI has seen an increasing trend in the period of January 2013 to June 2018, although in the middle period, some points have fluctuated and the closing price trend tends to strengthen. Then if we look deeper based on the return value of the period, there are several high yield points, with the highest value of 4.54% on September 19, 2013 and the lowest yield, which is -5.75 % occurred on August 19, 2013, this shows the risks and returns of an investment instrument.

The following is a review of the movement of the stock vs return closing price in the three oil and gas sub-sector companies with the largest revenue value, namely PT. Medco Energi Internasional, PT. Energi Mega Persada and PT. Elnusa

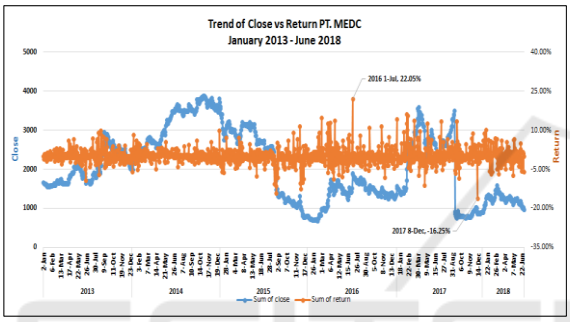

Figure 1.2: Close Price vs. Return Trend, PT. Medco Energi Internasional. Source: Processed.

From the graph in Figure 1.2, shows that the trend of closing prices of MEDC shares in the past five years (2013-2018) experienced a fairly volatile movement, where there was a close price increase in early 2013 - late 2014 and in Q1 and Quarter -2 of 2017. The rest throughout the years 2015-2016 and the end of 2017 to Quarter 2 of 2018 MEDC's share price have decreased significantly. Likewise, the movement of the return value experienced a very volatile trend where the highest return value of 22.05% occurred on July 1, 2016, while the lowest yield value occurred on December 8, 2017, with a value of -16.25%.

While in Figure 1.3, it can be seen that the closing trend of the closing price of ENRG shares is quite volatile and has decreased from the 3rd Quarter and 4th Quarter of 2013 and continues to slow down at the end of semester 1 of 2015. Then tends to be stable until Q2 2017 but the stock price is far below the level of the previous period's price. The closing price of the stock had experienced an increase in the spike in July 2017 and an increase in the period around Q1 2018. Related to the return value of ENRG shares for the past five years also experienced volatile movements, as well as stable trends from the 4th quarter of 2015 to the end The 2nd Quarter of 2017. The yield trend experienced the highest point that occurred on October 23, 2017, with a value of 29.42% and the lowest return value of -28.47% on July 28, 2017.

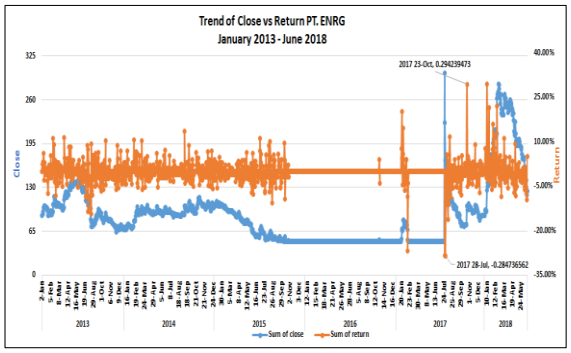

Figure 1.3: Close Price vs. Return Trend, PT. Energi Mega Persada. Source: Processed.

In Figure Graph 1.4 shows the movement trend of closing prices of ELSA shares over the last five years experiencing several periods of incline and decline, where there was an increase around the initial period of 2013 to Q2 2014 and Quarter-1 & Quarter-2 Year 2016, as well as the Quarter-3 period 2017 to Quarter-1 of 2018, the remaining decrease occurs in the period in several current periods, namely around the 3rd Quarter of 2014 to the 4th Quarter of 2015 and the 3rd Quarter of 2016 to the 3rd Quarter In 2017. The movement of ELSA stock value also looks very volatile with the highest value of 21.96% on September 13, 2017, and the lowest value occurred on August 24, 2015, with a value of -12.85%.

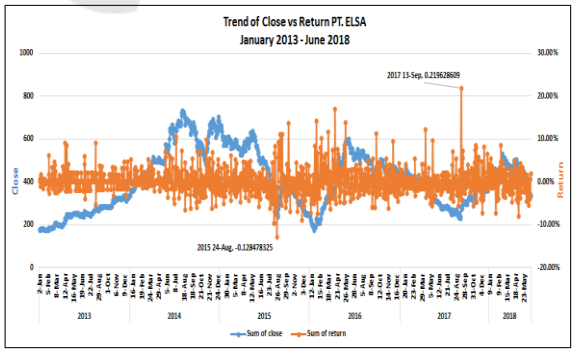

Figure 1.4: Close Price vs. Return Trend, PT. Elnusa. Source: Processed.

Based on some graphs, it can be concluded that the growth of shares of oil and gas companies in Indonesia in the past five years (2013-2018)

experienced a fairly volatile movement. But this is still below the average growth rate of the Jakarta Composite Index (JCI) which tends to increase. In assessing a company, valuation is needed. Future cash flow or future cash flows that will be received greatly affect the value of an investment instrument from the company. In the world of investment, the valuation of an asset is very important because errors in the valuation of assets will affect the return generated.

Every stock price always fluctuates due to several factors circulating in the stock exchange, Damodaran (2016) suggests that company value (Value of the Firm) is an investor's perception of the success rate of a company which is often associated with the company's stock price, even though the stock price what is on the market does not necessarily reflect the true price of the company, so fundamental analysis of the value of the company is needed.

Based on the background described earlier, the research questions in this study are as follows:

a. What is the intrinsic value of shares in MEDC, ENRG and ELSA companies in the Indonesia Stock Exchange using the Discounted Cash Flow method with the Flow to Firm Free Cash (FCFF) approach, and Relative Valuation through the Price to Earning Ratio (PER) and Price Book Value approaches (PBV) in a pessimistic condition for 2018?
b. What is the intrinsic value of shares in MEDC, ENRG and ELSA companies in the Indonesia Stock Exchange using the Discounted Cash Flow method with the Flow to Firm Free Cash (FCFF) approach, and Relative Valuation through the Price to Earning Ratio (PER) approach and Price Book Value (PBV) in moderate conditions for 2018?
c. What is the intrinsic value of shares in MEDC, ENRG and ELSA companies in the Indonesia Stock Exchange using the Discounted Cash Flow method with the Flow to Firm Free Cash (FCFF) approach, and Relative Valuation through the Price to Earning Ratio (PER) and Price Book Value approaches (PBV) in optimistic conditions for 2018?
d. How to recommend investors to the intrinsic value of shares in MEDC, ENRG and ELSA companies as a basis for making decisions to sell, buy or hold these shares in investing in 2018?

In writing this research, it is expected to have benefits or uses for those who need it, including theoretically this research is expected to be used as input regarding the implementation and use of valuation theory, especially the valuation of intrinsic stock value and the projected value of shares more clearly. Become a reference and description for future research. Then there are two practical benefits, namely for the company itself, this research is expected to provide input for oil and gas sub-sector companies in increasing the value of the company through increasing performance so that the value of shares in the market can reflect its fair value, while for Investors, this research is expected to provide appropriate information for investors regarding the fair price of shares and the intrinsic value of shares that can be used to support investment decisions.

From the exposure of the phenomena that have been explained above, the purpose of this research is to look for the fair prices (intrinsic value) of the current oil and gas sub-sector companies listed on the Indonesia Stock Exchange (2013-2018) using the Discounted Cash Flow (DCF) method with the Flow to Firm (FCFF) Free Cash approach and the Relative Valuation method with Price to Earning Ratio (PER) and Price Book Value (PBV) approaches.

2 LITERATURE REVIEW

The values and conditions of a company are strongly influenced by macro conditions, among others: the political, economic, social conditions of the country where the company carries out business activities and the industrial conditions of the company. Knowing the value of an asset that will be the object of investment and what gives value to an asset is a prerequisite for making the right decision in choosing an investment for a portfolio. Rising shareholders in most developed or developing countries have caused more managers to focus on value creation as the most important company performance metric. This is evidence to show that the focus of shareholder value is not only good for shareholders but also good for the economy and other stakeholders (McKinsey, Copeland, Koller and Murrin, 2000).

According to Damodaran (2006), there are three categories of approaches in conducting business valuations of an asset, namely Discounted Cash Flow Valuation, Relative Valuation, Contingent Claim Valuation. The Discounted Cash Flow approach connects the value of a stock by looking for the present value and expected cash flow either only from dividends (Dividend Discount Models) or by looking for net cash flows in the future (Free

Cash Flow). Relative Valuation is an approach in estimating the value of shares by comparing the price of a stock that has almost the same business characteristics as paying attention to income, book value or sales, while the Contingent Claim approach was specifically developed for the valuation of options and other derivative products.

Valcic, Stumpf, and Katunar (2013) states that for business research in the oil and gas industry can be presented with a modern neuro-fuzzy approach. In this case, the author examines the shortcomings of existing methods assessment in industrial complexity and suggest contemporary models based on computer intelligence algorithms. Identification and evaluation of important factors that create and determine the value of the company in the oil and gas industry in complex calculations involving many variables.

Zhang (2015) examined the role of income and book value (BV) in equity valuation, by applying a model explanatory power method to analyze the role of accounting data and empirically test hypotheses with samples of companies registered in China between 2004 and 2010, where the results were more stable in equity valuation. In addition, these results provide references to improve the existing valuation model and establish accounting standards and provide some empirical evidence for the practical application of BV in equity valuation.

Tiwari and Singla (2015) suggested that being a developing country with a large opportunity for growth prospects, the valuation model assessment is important to have a more realistic estimate of value, where the purpose of this study is to empirically test comparative accuracy and performance explanations of discounted cash flows (DCF) and residual income model (RIM) valuation models for the Indian chemical industry and produce composite valuation models. The results of this study indicate that the Residual Income model and Composite Assessment model are superior to the discounted cash flow model and most likely the same. But because the composite value estimate considers all the bona fide information from each model, the Composite Assessment model estimation becomes more reliable.

Russel (2016) explains that the paper is to value the patents of pharmaceutical companies using discounted cash flows, and compare the value-relevance of these assets against alternative intangible asset measures such as reported intangible assets and R&D capital, which the study values pharmaceutical intangibles using three methods: an income method; the sum of unamortized R&D expenditures; the firm's reported intangible assets. Value-relevance tests use ordinary least squares regression and Vuong and Clarke tests. The results of this study are, first, the study finds that the discounted cash-flow valuation of pharmaceutical patents is value-relevant. Second, the value of pharmaceutical patents explains market value better than reported intangible assets but not R&D capital. However, the valuation of pharmaceutical patents is more consistent with the risks of R&D than the valuation of R&D capital which assumes recovery of R&D expenditure.

Sim and Wright (2017) explain that historical stock prices have long been used to evaluate the future of stock returns and the risks associated with these returns. Similarly, the history of dividends has been used to evaluate the intrinsic value of a stock using, among other methods, the dividend discount model. In this chapter, the authors propose an alternative use of the dividend discount model to allow investors to assess the risks associated with certain stocks based on their dividend history. In this study using a bootstrap approach to generate future cash dividend flows, and using the Monte Carlo simulation approach to run several experiments model. This probability distribution allows an investor to compare expected returns for a group of stocks and evaluate the associated risks. With this information, investors can make investment decisions that are more appropriate when comparing several dividend-producing shares. Effective use of the dividend discount model to calculate internal returns requires the future generation of random dividends.

Neaxie and Hendrawan (2017), conducted research with the aim of estimating the fair value of shares of telecommunications companies listed on the Indonesia Stock Exchange (IDX) using the Discounted Cash Flow (DCF) method with a Flow to Firm Free Cash (FCFF) approach and Relative Assessment. The results of this study indicate that the DCF method with the FCFF approach in an optimistic scenario TLKM fair value is undervalued, the fair value of ISAT is overvalued and the EXCL fair value is undervalued. Then in the moderate scenario, the fair value of TLKM is undervalued, the fair value of ISAT is overvalued and the EXCL fair value is overvalued. Furthermore, in a pessimistic scenario, TLKM's fair value is overvalued, ISAT's fair value is overvalued and EXCL's fair value is overvalued. As for using the relative valuation with the PER approach, TLKM's fair value is undervalued, ISAT's fair value is overvalued and EXCL's fair value is considered undervalued. Then

with the PBV approach, TLKM's fair value is overvalued, ISAT's fair value is overvalued and EXCL's fair value is undervalued. Furthermore, with multiple EBITDA approaches, TLKM fair value is overvalued, ISAT fair value is considered undervalued and EXCL fair value is considered undervalued.

Augustyniak, Laszek, Olszewski, and Waszczuk, (2018) explain that the study aims to describe the method of valuation of property applied in Poland. The valuation method is explained and assessed critically, indicated by potential problems. Loan risk analysis is analyzed on data about non-performing loans (NPL). The Polish valuation method is in line with international methods, but there are several risks, such as a small number of transactions, the subjective behavior of the assessor. A low NPL ratio indicates that the assessment works correctly.

Zemba and Hendrawan (2018) stated that in his research explained that the business investment opportunity of the health sub-sector in Indonesia is still wide open, because the capacity of all hospitals in Indonesia is only able to serve 3.25% of the total potential patients, there is still a 96.75% potential market that equivalent to 9,501,350 customers. Some companies that invest in the health care business in Indonesia, there are MIKA, SAMA, SILO, and SRAJ, all of which will be evaluated using DCF and Relative Assessment. This research is intended to search the fair value of the company. This assessment reveals how well each company makes more money in the future. Valid for all companies, especially those in services such as hospitals, good ratings are very sensitive, once customers are exposed to a large scale to an event that decreases the company's rating then to restore fair prices takes a long time. Can be seen in a hospital whose value is undervalued.

2.1 Discounted Cash Flow with the FCFF approach

Discounted Cash Flow Valuation is to find the value of an asset based on the cash flow that will be generated in the future, where with the FCFF approach, cash is available to the capital provider or company funds, namely shareholders and bonds after the company conducts operations and investment activities. According to Damodaran (2006) said that Free Cash Flow to Firm (FCFF) is all the sum of all cash flow for all company owners.

The following formulas from FCFF are as follows:

$$\mathbf{FCFF} = \mathbf{(EBIT(1 - Tax)) + Depreciation - Capex - Change\ of\ Working\ capital} \quad (2.1)$$

Determining the discount rate requires an in-depth analysis of the company's financing structure and current market conditions. Neaxie and Hendrawan, (2017) suggest that the discount rate is the expected return by investors and creditors on funds invested in the company. The discount rate used for FCFF discounts is called the weighted average cost of capital (WACC). The company value will be obtained with the following formula :

$$\mathbf{Value\ of\ the\ Firm} = \sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1+WACC)^t} \quad (2.2)$$

Where :
FCFF = Free Cash Flow to Firm
WACC = Weighted average cost

After determining the present value of the cash flows obtained from the time period and certain scenarios and also from the terminal value discounted for the present value. Then the two present values are then added together to give the company value or equity value. The formula used to calculate the value of a company using the Flow to Firm Free Cash, whose growth has stabilized in a given year, and after that it grows constant at the perpetual growth rate of "g", which is as follows:

Value of the Firm :

$$\sum_{t=1}^{t=\infty} \frac{FCFF_t}{(1+WACC)^t} + \frac{TV}{(1+WACC)^n} \quad (2.3)$$

$$\mathbf{TV = FCFF_{n+1} / (WACC - g)} \quad (2.4)$$

Where :
FCFF = Free Cash Flow to Firm
WACC = Weighted average cost
TV = Terminal Value

Terminal Value (TV) is the present value of all future cash flows obtained after a period of time determined by scenario analysis which is easier to predict by assuming a constant growth rate for a period of time, where the perpetual growth rate is symbolized by g. The cost of capital or the overall capital cost of a company reflects the cost combination of all funding sources used by the company. Furthermore, the overall capital cost is called the Weighted Average Cost of Capital (WACC). According to Damodaran (2006) explained that Cost of Capital is generally calculated based on a weighted average, or in financial terminology often referred to as a balanced average

capital cost, WACC is the average after-tax cost of each source of capital used by a company to finance a project. WACC is one of the important factors in the calculation using the Discounted Cash Flow (DCF) model. Minor changes to the WACC will result in major changes in company value. The WACC is calculated by weighting the source of capital according to the company's financial structure and then multiplying them at their expense.

WACC = (Composition of Equity*rate of equity) + ((Composition of Debt*rate of debt)*(1-tax)) (2.5)

2.2 Relative valuation with PER and PBV approaches

Relative Valuation is one of the most commonly used valuation methods by comparing companies that are similar or with the industry in which the company is located. Market prices are obtained by relative valuation, as a result of using real data during the analysis. The tool used to do Relative Valuation is multiples. One form of multiples is price multiples, where the main component of price multiple is the market price. Some examples of price multiples include Price Earning Ratio (PER), Price Book Value (PBV), Multiple EBITDA.

According to Damodaran (2006), the advantages of the Relative Valuation model are also weaknesses. First, ease in Relative Valuation can be put together, pulling together some similar groups of companies, can also produce inconsistent estimates of value where key variables such as risk, growth, or potential cash flows are ignored. Second, the fact that multiples reflect the market atmosphere also illustrates that using the Relative Valuation method to value an asset can produce a value that is too high when the market overestimates similar companies or vice versa is too low when the market underestimates similar companies. Third, there is room for bias in all valuation methods, the lack of transparency regarding the underlying assumptions in the relative valuation method makes it vulnerable the manipulation.

2.2.1 Approach to Price Earning Ratio (PER)

Another alternative in valuation to calculate the intrinsic value of a stock or fundamental value is to use the profit value of the company (earnings). Estimates of the intrinsic value of shares in company analysis can be done using two important information components of the company, namely earnings per share and earnings multiplier or in other words the expected function of EPS and the amount of PER of the company's shares are the intrinsic value of a stock. The formula for determining the intrinsic value of stock through Price Earning Ratio is as follows (Copeland, 2000):

Po = Estimation EPS x PER (2.6)

Where :
Po = Intrinsic Value of Shares
EPS = Earning Per Share
PER = Price Earning Ratio

2.2.2 Approach to Price to Book Value (PBV)

One alternative approach to determine the value of a stock with the Relative Valuation method is to use the relationship between stock market prices and book value per share. Theoretically, the market value of stock must describe the value of the book. The formula for Price Book Value (PBV), namely:

PBV = Po/BV (2.7)

Where :
Po = Stock Price (Equity Value)
BV = Book Value of Equity

2.3 Framework of Thinking

The best solution to anticipate uncertainty about changes in stock prices is to conduct a fundamental analysis of valuing the intrinsic value of the stock. In analyzing this valuation based on the assumptions and projections of the company's conditions in the future. This research is limited by using company historical data from 2013 to 2017 as a basis for projections. Next, the projection is done to determine the future cash flow and its present value.

According to Neaxie and Hendrawan (2017), the analysis of stock valuation calculations using the Discounted Cash Flow (DCF) method requires assumptions and projections to determine the condition of the company to generate free cash flows in the future and then calculate the present value. Determination of assumptions and projections needs to be adjusted to certain scenarios because of uncertainty about the condition of the company in the future. So on this basis, this study uses three scenario conditions, namely optimistic conditions, moderate conditions, and pessimistic conditions. An optimistic condition is a condition that is considered as the highest growth condition of the company and

seen from the difference in industry growth and the target of company management (above the industry growth average). Moderate conditions are conditions where the most likely to occur is seen from the fundamental conditions of the company (the most likely conditions). Whereas the pessimistic condition is the condition where the condition of the company is the worst. The final process of valuation with the Discounted Cash Flow (DCF) method is to obtain equity value or as an intrinsic value of the company which then gets intrinsic value per share in each condition scenario. The research framework is presented in Figure 2.1 below:

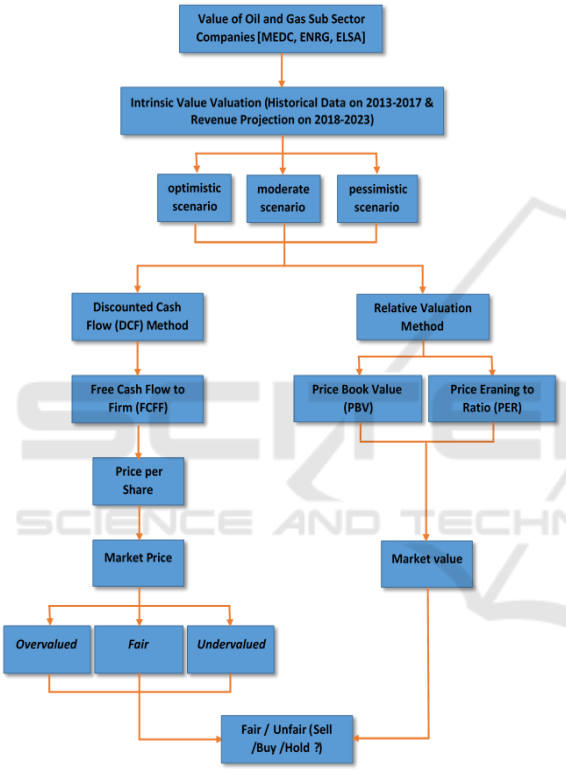

Figure 2.1: Framework of Thinking.

3 RESEARCH METHODOLOGY

The type of research used is verification research with quantitative methods that aim to explain the existing phenomena by using numbers, namely valuation to obtain the intrinsic value of shares of companies engaged in the oil and gas sub-sector business in Indonesia which is listed on the Indonesia Stock Exchange with research variables used in this study is the intrinsic value of shares based on the fundamental value of the company. Then the variables will be calculated using the Discounted Cash Flow method FCFF approach and Relative Valuation with the PER and PBV technique approaches.

The population taken is all shares of the oil and gas sub-sector company on the IDX, while the data sample uses a purposive sampling technique which is the three major oil and gas sub-sector companies that have the largest market value listed on the JCI index and still have active transactions until 2018, namely Medco Energi Internasional, Tbk (MEDC); PT. Energi Mega Persada, Tbk (ENRG); and PT. Elnusa, Tbk (ELSA). The data source in this study uses secondary data, namely five-year historical data in the form of annual reports and financial reports which are object research sourced from IDX.com, the investment world, and the object's official website research.

Research procedures are steps or sequences that must be passed or worked on in a study. This needs to be done in order to be able to answer the research questions and research objectives achieved. The research procedures that need to be carried out are as follows:

a. Defining and formulating problems (related to phenomena and defining variables in the formulation of the problem)
b. Conduct library studies (theories that support research and also refer to references from previous studies)
c. Determine the research model and design (what models and methodologies will be used in the study)
d. Collecting the company's secondary data (in the form of historical data on financial statements and company annual reports)
e. Processing and presenting information (historical processing data as a projection basis, which is processed by mathematical formulation)
f. Analyze and interpret data (analyze results data that has been processed based on literature)
g. Conclusions and suggestions (conclusions from the results of data analysis research that has been done, and provide recommendations on recommendations based on the conclusions)

The research method is an attempt to find, develop and test the truth of a knowledge, which business is carried out using scientific methods. The data analysis method is the most important thing in the study. Without data analysis, the validity of a study is still in doubt. Because with data analysis, the research will produce accurate research results. Determining the method of analyzing data in a study is a mandatory thing, and its determination is based

on the type of research conducted. The results of the study are strongly influenced by an analytical method. If the method used is in accordance with the object of research, the results will be acceptable. Whereas if it is not appropriate, then the research is considered to be a failure. Therefore, when conducting a study, you must consider the object of research and determine the method to be used in data analysis. Data analysis can be said as an ongoing process in research, with initial analysis informing data that is then collected. In this study, the author will use the Discounted Cash Flow method with the Flow to the Firm Free Cash (FCFF) approach and the Relative Valuation method with the Price Earning to Ratio (PER) and Price Book Value (PBV) approaches.

4 RESEARCH AND DISCUSSION

4.1 Intrinsic Value using Discounted Cash Flow - FCFF

Historical data used in this study is from the company's financial statements for 2013-2017 which will serve as the basis for calculating the free cash flow. The projection for obtaining free cash flow to the firm is based on the calculation of the historical averages of 2013 - 2017 which are locked as the basis for projections for 2018-2022. where the spread growth results for MEDC companies are 5.55%, ENRG has 1.92%, and ELSA is 5.26% with historical industry growth of 1.12%. In the calculation of the spread of the company's historical growth, the difference between the average historical growth of the company and the historical average growth of the industry, where spread growth results for MEDC companies are 5.55%, ENRG has 1.92% and ELSA worth 5.26% with historical growth amounting to 1.12%.

In the Sales Projection analysis, the value of industrial growth will be projected first for 2018-2022, as the basis for other projected components such as EBIT and FCFF projection. The type of projection used is the type of single moving averages, which is a projection method carried out by taking a group of values of observations, looking for the average value as a forecast for the period to come, and using the following formula:

$$\mathbf{M_t = F_{t+1} = \frac{Y_t + Y_{t-1} + Y_{t-2} + \ldots + Y_{t-n+1}}{n}} \qquad (4.1)$$

Where :
Mt = period moving average t
Ft + 1 = year period forecast t + 1
Yt = Actual value for year period t
n = number of moving average limits

From the results of the forecasting analysis, the industry average growth value of 5.38% is obtained, which will then be used as the reference basis for calculating each company's projected growth (MEDC, ENRG, ELSA) according to the calculation scheme in optimistic, moderate or pessimistic scenarios.

In the optimistic scenario, the calculation of the company's growth projection is the sum of the value of industry growth projection coupled with the historical growth spread and subsequently added another half of the historical growth spread. As for MEDC companies, the value of the calculation results for growth projections in the optimistic scenario is 13.71%, ENRG is 8.26%, and ELSA has 13.26%.

For the moderate scenario, the calculation of the company's growth projection obtained from the sum of the growth value of industry projections is added by the historical growth industry spread only, so that MEDC companies value the moderate scenario growth projection of 10.93%, ENRG has 7.30% and ELSA worth 10.64 %.

Whereas in the pessimistic scenario, the calculation of the company's growth projection is assumed to be the same as the value of the growth industry projection, so that for the three MEDC, ENRG companies, ELSA growth projection in the pessimistic scenario is 5.38%.

Furthermore, the value of the growth projection will be the basis for determining other projected values for EBIT, Depreciation, and Amortization, Capex and Networking Capital parameters which will then produce FCFF values, Value Terminals, Enterprise Value, Equity Value, Fair Value and EAT value (net income). Through the results of processing and analyzing the overall data of stock valuations using the Discounted Cash Flow method, the fair value of shares for each company is obtained, as presented in Table 4.1 as follows:

Table 4.1: Value of Fair Price Calculation Results Company Shares DCF-FCFF method.

Firm	Scenario	Fair value	Price per 2-Jan-2019	Condition
MEDC	Pessimistic	344	720	overvalued
	Moderate	740	720	undervalued
	Optimistic	962	720	undervalued
ENRG	Pessimistic	16	50	overvalued
	Moderate	59	50	undervalued
	Optimistic	81	50	undervalued
ELSA	Pessimistic	368	336	undervalued
	Moderate	434	336	undervalued
	Optimistic	470	336	undervalued

Based on Table 4.1, it is known that MEDC's stock price on January 2, 2019, is IDR 720, which means that MEDC's price condition compared to its fair price (intrinsic value) uses the Discounted Cash Flow method on pessimistic growth (5.38%) is overvalued, moderate (10, 93%) are undervalued, and optimistic (13.71%) are undervalued. This means that MEDC is in a good performance and fundamental performance and can show significant growth, so MEDC still has the potential to rise and reach its fair value because most MEDC valuation results show undervalued. As an investment decision, MEDC shares with fundamental conditions and good growth can be purchased by prospective investors in accordance with the calculated intrinsic value

Then in the ENRG company, the market share price per January 2, 2019, is IDR 50, which means that ENRG's share price compared to its intrinsic value using the Discounted Cash Flow method on pessimistic growth (5.38%) is overvalued, moderate (7.30%) at undervalued, and optimistic (8.26%) is undervalued. This indicates that ENRG in performance and fun performance is quite good and shows significant growth, and ENRG shares still have the potential to rise and reach its fair value. As an investment decision, ENRG shares can be purchased by prospective investors in accordance with the target value of the fair price that has been calculated.

Furthermore, for ELSA's company, the market share price per January 2, 2019, is IDR 336, then this means that ELSA stock prices, when compared to the fair price using the Discounted Cash Flow method on pessimistic growth (5.38%) are undervalued, moderate (10.64%) under conditions that are undervalued, and optimistic (13.26%) which means undervalued. This shows that ELSA is in a good performance and fundamental performance, as well as showing good growth as well, so ELSA shares still have the potential to rise and reach its fair value. As an investment decision, ELSA shares can be purchased by prospective investors in accordance with the calculated fair price value.

4.2 Intrinsic Value using Relative Valuation – PER and PBV

In addition to using the Discounted Cash Flow method with the Free Cash Flow to Firm (FCFF) approach, the valuation calculation is also done by the Relative Valuation method with the PER and PBV approaches. Based on the results of calculation, processing, and analysis of overall stock valuation data using the Relative Valuation PER and PBV approach, intrinsic value is obtained for the three oil and gas companies MEDC, ENRG, and ELSA using a pessimistic, moderate and optimistic scenario, which are presented in Table 4.2 and range values the PER-PBV ratio in IDX Q1-2018 market is presented in Table 4.3 below:

Table 4.2: Value of Intrinsic Calculation Results Company with RV-PER and PBV method.

Firm	Scenario	Intrinsic value PER	Intrinsic value PBV
MEDC	Pessimistic	2.42	4.35
	Moderate	5.22	9.36
	Optimistic	6.78	12.15
ENRG	Pessimistic	0.13	1.76
	Moderate	0.46	6.41
	Optimistic	0.63	8.83
ELSA	Pessimistic	6.59	0.88
	Moderate	7.78	1.04
	Optimistic	8.43	1.12

Table 4.3: Value of the oil and gas sector PER-PBV Range Ratio in Market IDX Q1-2018.

The range of PER-PBV Ratio for the Migas Sector at IDX Q1-2018				
Category	**PER**		**PBV**	
Average	Firm	22.07	Firm	2.08
The lowest	PKPK	-11.84	ARTI	0.22
The highest	ESSA	127.93	APEX	8.62

The results showed that the three oil and gas companies, namely MEDC, ENRG, and ELSA with overall scenarios both pessimistic, moderate and optimistic, possessed PER and PBV values which were still in the market ratio range PER and PBV values according to market data contained in IDX data in the Quarter-1 2018, where the lowest PER value in the company PT. Perdana Karya Perkasa Tbk. (PKPK) of -11.84 times and the highest PER value in PT. Surya Eka Perkasa Tbk. (ESSA) of 127.93 times, while for the lowest PBV value at PT. Ratu Prabu Energi Tbk. (ARTI) of 0.22 times and the highest PBV value in PT. Apexindo Pratama Tbk. (APEX) of 8.62 times.

Besides that, it shows that with the calculation results using the RV PER-PBV method which is still in line with the range market, the assumption that is built on the valuation processing analysis based on the first method, Discounted Cash Flow with the FCFF approach is fulfilled, because in the PER calculation and This PBV, one of the most important components, is the value of earnings data from one of the final results of the DCF method calculation, namely in the form of net income value or EAT (Earning After Tax).

Based on the explanation of the three scenarios, it is recommended for investors to buy ENRG shares if they use the PER approach because they are cheaper than MEDC and ELSA, and can also buy ELSA shares if they use the PBV approach because the price is cheaper than MEDC and ENRG.

5 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The results of this study indicate that the fair value of shares using the Discounted Cash Flow method in the pessimistic scenario, namely MEDC for IDR 344 under overvalued conditions, ENRG worth IDR 16 under overvalued conditions, and ELSA at IDR 368 under undervalued conditions. Then in the moderate scenario for MEDC, IDR 740 was in an undervalued condition, ENRG was IDR 59 under undervalued conditions, and ELSA was IDR 434 under undervalued conditions. Furthermore, on the optimistic scenario of IDR 962 valued at undervalued conditions, the IDR 81 ENRG was undervalued, and the IDR 470 ELSA was undervalued.

The Relative Valuation method with the PER and PBV approaches shows that with all calculation scenarios both pessimistic, moderate and optimistic, the three oil and gas companies MEDC, ENRG and ELSA have PER and PBV values that are still in the market ratio PER and PBV according to the data IDX in Quarter-1 2018, where the lowest PER value was -11.84 times in PKPK companies, and the highest PER was valued at 127.93 times for ESSA companies, while for the lowest PBV value was 0.22 times for the highest ARTI and PBV companies worth 8.62 times in the APEX company.

As an investment decision, it is theoretically recommended to buy shares under the intrinsic value, investors can buy shares if they are in an undervalued condition, where in this case for the DCF-FCFF method it is advisable to choose a moderate scenario because of the most likely conditions of the company's growth, the market condition value is close to its fair value, so the shares for MEDC, ENRG, and ELSA companies are worth buying in this condition. Then on the RV PER-PBV method with the three pessimistic, moderate and optimistic scenarios, then for the PER approach, the ENRG share price is cheaper than MEDC and ELSA, whereas in the PBV approach, ELSA stock prices are cheaper than MEDC and ENRG.

5.2 Recommendation

Based on these conclusions, the researcher makes suggestions that can be used as a reference basis for further writing, where in writing this study is expected to be able to provide benefits or can contribute to those in need, among others, theoretically, this research is expected to be an input regarding implementation and use of valuation theory, especially the assessment of the intrinsic value of shares and the clearer value of stock projections, and is expected to be a reference and illustration for future research. While practically, for the company itself, this research is expected to provide input for oil and gas sub-sector companies in increasing the value of the company through improved performance so that the value of shares in the market can reflect its fair value and investors, this research is expected to provide information to investors that stock prices are reasonable and intrinsic value of shares that can be used to support investment decisions.

In evaluating a valuation, it depends on the data and assumptions used. Appropriate data cleaning needs to be done as in other income data, interest

containing debt that does not occur overvalued, while in making projected assumptions here, the author uses the type of assumption from one single moving average projection, so the researchers can then use the projection assumption others are more complete, and it is expected that the data will be more accurate. In addition, you can also add other valuation methods such as contingent claims, discounted dividend model methods, etc.

Stock prices are always fluctuating, and the amount of sentiment information circulating in the market becomes something that is uncertain and very risky for investors. Therefore investors should pay attention to the target price, and they must also pay attention to the fundamental conditions and company performance as comparative information in making decisions. As an investment decision, it is theoretically recommended to buy shares under the intrinsic price, in this case, investors can buy shares if they are undervalued and sell them in overvalued conditions.

To maintain and increase stock prices in the market, companies must not only improve the performance of companies with income, companies must also consider the costs and expenses of companies both OPEX and CAPEX in this case the company must do a program of costs & expenses that burden the company.

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