

# MACROECONOMIC INDICATORS AND ITS IMPACT ON FINANCIAL DISTRESS IN OIL AND GAS INDUSTRY (A STUDY FROM INDONESIA)

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## ABSTRACT

Macroeconomics has the aggregate economic problems as a whole of the market system include socio-economic, such as national income, inflation rates, interest rates, exchange rates, price levels, and others that can be impacted on various business activities. The main address study is to explore the impact of macroeconomic indicators on financial distress in oil and gas industries with a case study in Indonesia. These indicators refer to the companies studied such as exchange rate, world oil price, and inflation rate. In the meantime, the financial distress calculates by the Altman Z-score model. The key findings clearly point out that all indicators have an effect on financial distress. In turn, the results also can enable corporate leaders and policymakers to develop future policies that focus on macroeconomic indicators and financial distress in those industries. Likewise, this study may contribute and comply with the related literature referring to the issues.

**Keywords:** Exchange rate, world oil price, inflation rate, financial distress

## INTRODUCTION

Globally, all business is affected by macroeconomics, including in several years, the oil and gas industry is a prominent business which can be snapping on the global or macroeconomic. Most of the world's economic positioning is highly depends on producing petroleum. The World Bank (2019) shows that throughout 2017 the contribution of those products to the global Gross Domestic Product percentage is 2.39% and from natural gas products at 0.46%. For a long time, the fluctuation of these demands are moving in line with global economic conditions (CASI. 2019). On the other hand, oil and gas market mourning cannot be separated from the influence of that macroeconomic factors caused by the uncertainty of geopolitical problems. These problems are relating to the economy include diplomacy and security, global business, financial markets, market uncertainty, commodity prices, exchange rate fluctuation, and civil and labor disruptions (EY. 2014). In 2008, Indonesia was announced and submitted a letter about resigning as a member of OPEC (Organization Petroleum Exporting Countries), because of consideration that this country became as an oil importer or unable to provide the production quota since 2003. But in 2014, Indonesia became a member again, and in 2016 was came out due to OPEC's policy to reduce Indonesia's oil production by 37,000 barrels per day to stop the decline in oil price. Although Indonesia leaves and became an OPEC membership, the oil and gas industry has contributed to the state revenue significantly, even though the current production in 2018 was tended to decline compared to the achievement in 2017 (Directorate General of Oil and Gas. 2019). Regarding the macroeconomic disruption, then the company will experience the financial disruption continuously and can be increased the risks in liabilities payments. The likelihood of that happening is important information for all stakeholders, especially management, investors, and creditors. There are various variables that enable influence the financial distress in oil and gas companies as a global

and multi-dimensions business. Those indicators assumed can be affected by that financial disruption such as exchange rate, world oil price, inflation rate, interest rate, besides economic growth that is not discussed in this paper.

For a long time, there are some macroeconomic indicators directly or indirectly that can be affected by the company's financial condition according to some variables using in this study. In accordance to Sutriani (2014) studied that say the exchange rate is the price of a country's currency exchanged with another foreign currency in which that is the result of the interaction, by floating of that system, the exchange rate of the IDR will be fluctuated in any time and will become a risk to the company's financial performance include in gas and oil. Quoting to Muchlas, et.al (2015), the exchange rate affects the flow of capital or investment and international trade where transactions coincide with different currencies, and it can affect the oil and gas industries. In general, various companies had different experiences within the impact of changes in the factors. (Opod. CR. 2015). Furthermore, the fluctuation of global oil prices can affect the economic activity in many cases, including the market demand and supply for petroleum. Rosidini, et.al. (2017) stated that the global economic growth stimulates world oil demand by indicating the fluctuation of world oil prices. The impact of that has made a reduction in state revenues, they concluded that there is 35% of oil and gas companies in over the world are at risk of bankruptcy. In Indonesia, it was decreased from IDR 304 trillion in 2014 to IDR 173 trillion in 2015 (Triyantoro, et.al. 2018). In accordance with that disruption subsequently can be impacted by the companies' financial health. Meanwhile, according to the Central Bank of Indonesia states that the average inflation rate in Indonesia for the same period was average at 5.42% which is greater than the global average inflation based on IMF data. This rate can measure by using an indicator in Consumer Price Index model (Central Bank Indonesia. 2018). More ever, the consequence of that can be decreased the people's purchasing power involving petroleum demand. Hence, in this context inflation also give influence for companies and industries and their own financial condition.

Recently, some oil and gas industry companies operating in Indonesia have been going public or listed on the capital market Indonesian Exchange (IDX). So, these companies must be able to maintain the public trust. However, all management, investors, and stakeholders are wanted to the company in a good performance, well future prospects, and established business. Most of the financial information such as financial ratios can use to assess the company's financial performance in predicting the future of stock price trends (Setyawati, et.al. 2018). More ever, it can use to determine the companies' financial distress. To anticipate the emergence of bankruptcy, it is necessary to develop a system that can be provided the early warning for the occurrence of financial distress (Darmawan. 2017).

Based on the explanation given above, this research focuses on influencing macroeconomic indicators contextual on financial distress and contributes to the existing literature by conducting observations from the Indonesian perspective who produces the gas and oil. Therefore, this study is investigating, which, if any, those factors influencing financial performance dimensions in the existing companies in Indonesia. Whereas previous literature has contributed to the development of financial distress research, this study attempts to complement the extant literature by examining the macroeconomic behavior, for the like exchange rate, world price oil, and inflation rate. In the local context, this study wants to examine these factors including the influences on financial distress in petroleum companies in Indonesia. The identification of these variables is necessary for

authorities and managers in anticipating the future developmental dynamics and the better overall policies. Subsequently, all the management, investors, creditors, and stakeholders can assess and estimate the company's future prospects and their relationship with these characteristic factors.

The development of this article is structured as follows. The first section briefly presents a review of the existing literature. Then, it refers to an in-depth analysis of the literature framework as a starting point of the analysis dimensions that constitute to the framing of the research model includes the description of the instruments used in gathering all data or information, and it explains the whole results that were obtained in this research. Finally, preparing the relevant conclusion and describing the other aspects as a consideration in future studies.

## LITERATUR REVIEW

The macro-economy is a part of economics that studies the aggregate economic issues as a whole of the market system include socio-economic such as state expenditure, national income, inflation rates, interest rates, exchange rates, price levels, and others. And macroeconomic is an external factor of the company that can be affected on financial distress where all of the indicators are in a broader scope. In the outlook of Muchlas, et al. (2015), mentions that the exchange rate is an exchange between two different currencies in which the values of that two currencies are dissimilar. Consequently, it is very significant in making the purchasing decision of some goods across the countries according to their own currency (Nurhidayah, et. al. 2017). Afterward, the world oil price is the value determined by the fluctuating world oil markets in a certain time. There are many indicators that can influence price undulation. According to Muttaqiena (2015) that stated there are several factors that can impact the inconstancy of policies' behavior the organization Petroleum Exporting Countries, the situation of oil-producing countries, and global oil demand. Hanafiah, et.al. (2015) states that the crude oil price can be measured by the spot price of the world oil market in which the benchmark of that price used the West Texas Intermediate (WTI). As the conclusion of Gumilang, et.al. (2014), says that the predetermined price of WTI is the highest price between Brent Blend and OPEC because the quality of that oil is containing of low sulfur fuel-usable ingredients. Meanwhile, the tendency of rising prices the goods and services are going continuously and it can weaken the purchasing power also declined the national income (Langi, et.al. 2014). Furthermore, based on the Central Bank of Indonesia, reveals that the low and stable of inflation is a prerequisite for sustainable economic growth that ultimately provides benefits for improving people's welfare (BI. 2018). The importance of controlling inflation is in accordance with the consideration of an unstable or negative impact on the socio-economic conditions included the inflation rate. As it is known, the inflation rate will affect people's purchasing power and will be affected by oil demand.

Financial distress is a condition in which the company is unable to pay the matured liabilities (Oktarina. 2018). This condition can be caused by financial failure when the company possesses the high fixed costs, illiquid assets, and vulnerable sensitive to the economic recession, thus making the company prone to financial pressure or possibility bankruptcy (Khaliq, et.al. 2014). According to Brigham & Daves (2003) stated that financial distress begins when a company cannot meet the payment schedule or when predicted the prevision of cash flows is unable to cover the obligations. This case can occur because the company is facing a decline in revenues (Nurhayati, et al. 2017. According to Willy (2011), a model Altman Z-score is a multivariate analysis model that can be

predicted the bankruptcy of companies with a level of accuracy and precision relatively trustworthy. This model has an accuracy at 95% when using one-year data before the bankruptcy. (Willy, (2011) in Arif Darmawan, et al. (2018). In various circumstances, financial distress can be predicted before the company is reliving the liquidation, and the company that got that distress will not always go bankrupt (Binh & Duck. 2018). Ogden et al. (2003) in Afriyeni (2017), addressed that there are several potential factors that can lead to bankruptcy including from internal and external environments. Internal factors directly impact on financial distress such as operating risk from corporate leverage, while external factors like an economic crisis can fabricate that problems as well or a condition where the company stops all the business activities legally. Then, Altman Z-score is a modification model to calculate financial distress and can be concluded by adjusting the industry fields and company specifications.

Some previous studies had conducted in accordance with the effects of macroeconomic indicators on financial distress. As Darmawan (2017) studies on 137 companies in Indonesia, revealed that there was a significant negative relationship between corporate governance and financial distress. Nevertheless, macroeconomic variables such as inflation, exchange rates, and interest rates have not affected the level of financial distress. In research of Oktarina (2018) on several manufacturing companies listed on IDX showed that the inflation rate, exchange rate, total assets turnover, and net income to total assets ratio have a significant negative effect on financial distress. Hafeez & Kar (2018) conducted a study related to the relationship between macroeconomic indicators to the possibility of financial distress in 294 Indian companies included in the BSE 500 index as an index that consists of 500 companies' shares in India. It revealed that there is a significant negative relationship between the likelihood company's financial distress and macroeconomic indicators. According to the study of Rosdini & Nautika (2017) that concluded there is a significant effect of world oil prices on the bankruptcy possibility (financial distress) in oil and gas industry companies listed in IDX, Australian Securities Exchange (ASX), and Singapore Exchange (SGX). Then, Rohiman & Damayanti (2019) examined the effect of inflation, exchange rates, and interest rates on financial distress by using Altman Z-Score. This study was conducted using monthly data from January 2013 to December 2017 with a sample of 27 in all sub-sectors of companies listed on the IDX. The results of this study are the inflation rate does not significantly influence on financial distress, the exchange rate has a significant positive effect on financial distress. Nazlioglu, et.al. (2015), examined that there is a significant effect of world oil price on financial distress in Cleveland financial stress index, 1991-2014 period. And Setyawati & Amalia (2018), conducted a study as the role of current ratio, operating cash flow, and inflation rate in predicting financial distress in the sector of consumer goods industry listed on IDX in the 2011-2015 periods. The results of this study founded that the current ratio, operating cash flow, and inflation have a positive effect on the likelihood of financial distress. However, the significant influence is only due to operating cash flow. While the effect of the current ratio and inflation rate is not significant. Thereupon, in the study of Binh & Duc (2018), revealed that there is a significant positive effect of the global crisis on financial distress in 800 companies listed on the Vietnam stock exchange, in 2003 - 2016 years. While, Nurhidayah & Rizqiyah (2017), revealed that the current ratio, return on investment, net profit margin, and inflation rate have a significant positive in predicting financial distress, while the exchange rate is not significant in influencing financial distress.

## RESEARCH METHOD

The scope and objective of this study are to investigate if any macroeconomic factors influence on financial distress in oil and gas industry companies listed in IDX. There are some variables using to examine if any of the influences of the currency exchange rate of IDR to USD, price of world oil, and inflation rate on financial distress. This study is a quantitative research with ex post facto approach where the object is a fact that has occurred. All data needed to be searched from each website of companies and IDX's in 2013-2017 periods in achieving the annual financial reports audited. Those data of exchange rate and inflation rate are searched from the website of the Indonesian Central Bank, whilst world oil prices data are obtained from the website of the International Monetary Fund (IMF, 2019). Determining the objects and data are using the purposive sampling method with certain considerations in accordance with the main purpose of the study. Subsequently, they are selected according to the determined qualification. Regarding the qualifications determined such as those financial statements have been audited and published which can be accessed online. Therefore, this study uses nine companies in 2013 – 2017 years as research samples. (IDX, 2019). In this study used e-views software to conduct the regression analysis to examine all panel data in which the data observed is carried out at time series and cross-sectional. Some examinations conducted sequentially are statistic descriptive, classical assumption test, regression model, determination coefficient test, and hypothesis analysis.

## RESULT AND DISCUSSION

### Variables Operationalization

All independent variables are conceived as follows; first, the exchange rate used the ratio of USD to IDR that counted by using the annual average value obtained through Bank Indonesia's publication. Then, the world oil price calculated by the average value of the annual WTI (West Texas Intermediate) which was got from the International Monetary Fund's exposes. And, the inflation rate in Indonesia was conducted by counted the average value of annual inflation that was gathered from data published by Bank Indonesia. Then, as a dependent factor financial distress was calculated by using the Altman Z-Score model within some range value (Triyanto, et.al, 2018). If the value of Z – Score less than 1.8 it means the company experiences financial distress; if the value between 1.8 up to 2.6, it is on gray area or can conclude they are experiencing in financial difficulties; and if the score more then 2.6, it means the company does not experience financial distress.

**Table 1:** The independent variables

Year	Exchange rate USD to IDR (in IDR)	World Oil Price per-USD	Inflation Rate
2013	10,562.67	97.93	6.97%
2014	11,884.50	93.13	6.42%
2015	13,457.58	48.75	6.38%
2016	13,329.83	43.23	6.53%
2017	13,398.17	50.92	6.81%

*Sources: Indonesia Bank, IMF*



## Statistic Descriptive

Statistic descriptive analysis of dependent and independent variables are framing as follows:

**Table2:**Statistics descriptive analysis

	Exchange rate	World oil price	Inflation rate	Z_SCORE
Mean	12526.55	66.79200	5.422000	4.261044
Median	13329.83	50.90000	6.380000	4.864433
Maximum	13457.58	97.93000	6.970000	8.942212
Minimum	10562.67	43.23000	3.530000	-1.827005
Std. Dev.	1156.677	23.91405	1.464695	2.465091
Observations	45	45	45	45

From the above table 2, shows where the independent variable of the exchange rate of USD to IDR has an average value of 12,526.55, however it is less than the median value of 13,329.83, or less than IDR exchange rate in 2015 – 2017. Furthermore, the world oil prices have an average value of 66.79, more than the median value of 50.90. The finding value is mostly above the 2015 – 2017 years. Meanwhile, the inflation rate has an average value of 5.42 less than a median value of 6.38. It reveals that this value is less than all of the research periods. The last variable is the Altman Z - Score has a mean value of 4.26 less than the median of 4.86, but it is more than four research years.

## Classical Assumption Tests

Before conducting some regression or hypothesis tests, Firstly, all data have been reached out through the classical assumption tests, such as normality test to ensure whether all data are in a normal distribution. Based on the results by using the Jarque Bera's test where the value of 0.968 is more than 0.05. It reveals that the residual value of the data of the exchange rates, world oil prices, inflation rates, and Altman Z-Score are normally distributed. Afterward, the multicollinearity test aims to examine the correlation between independent variables in a model. Good data do not occur correlation or multicollinearity. The finding is every independent variable has a VIF value of less than 10.00. It indicates that there is not a multicollinearity matter. Then, heteroscedasticity test aims to know if any inequality variance of regression model observation and a good regression model is if the homoscedasticity or heteroscedasticity does not occur. According to the conducted examination, the R-Squared is more than 0.05. Hence, it can be summarized that there is no heteroscedasticity

## Regression Model

Based on Altman Z-Score model (Altman, E. I., & Drozdowska, M. I. 2017), hence the equation of panel data regression model is as follows:

$$\begin{aligned}
 \text{Z-Score} &= \alpha + \beta_1 \text{ Log exchange rate} + \beta_2 \text{ Log world oil price} + \beta_3 \text{ Inflation rate} + \varepsilon \\
 &= 55.75441 - 5,891658 \text{ Log exchange rate} + 0,794181. \text{ Log world oil price}
 \end{aligned}$$

$$+ 0,125330 \text{ inflation rate} + \varepsilon$$

The constant value is 55.754, it means when the other value of independent variables remains at 0, the Z-score is 55.754. The coefficient  $\beta_1$  shows of -5.891, it indicates that when the world oil price and inflation rate are constant, hence every unit of exchange rate increased will be reduced the Z-score of 5.891. Thence, the coefficient  $\beta_2$  of 0.794, it is explained that when the exchange rate and inflation rate are constant, so every unit of world oil price rise will be adding the Z-score of 0.794. Likewise, the coefficient  $\beta_3$  which shows at 0.125, indicates that when the exchange rate and world oil price are still zero, the increase of one unit of inflation rate will be riding the Z-score of 0.125. The coefficient  $\alpha$  is the standard error in which the effect of the independent variables not examined in this study.

### Panel Data Regression(Pooled method)

The regression analysis was conducted and the result are as follows:

**Table3:**Panel Data Regression Results

Dependent Variable: Z\_SCORE?

Method: Pooled EGLS (Period SUR)

Date: 06/24/19 Time: 21:33

Sample: 2013 2017

Included observations: 5

Cross-sections included: 9

Total pool (balanced) observations: 45

Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	55.75441	26.82557	2.078405	0.0440
LOG_KURS	-5.891658	2.743970	-2.147129	0.0377
LOG_MINYAK	0.794181	0.755582	1.051086	0.2994
INFLASI	0.125330	0.161812	0.774546	0.4431

#### Weighted Statistics

R-squared	0.185823	Mean dependent var	0.513365
Adjusted R-squared	0.126250	S.D. dependent var	2.648252
S.E. of regression	1.044464	Sum squared residual	44.72713
F-statistic	3.119209	Durbin-Watson stat	1.924950
Prob(F-statistic)	0.036260		

#### Unweighted Statistics

R-squared	0.143558	Mean dependent var	4.260444
Sum squared residual	229.0083	Durbin-Watson stat	0.557010

### Determination Coefficient Test

Based on the above table 3, it shows that the adjusted R-squared value is 0.1262 or 12.62%. This reveals that 12.62% of the financial distress conditions can be influenced by

those variables like exchange rate, world oil price, and inflation rate. While the reverse of 87.38% is influencing by other factors outside of the model.

### **Hypothesis Analysis**

From the examining of panel data regression findings, the following are prepared and interpreted them in accordance with the initial purpose of the study.

#### **The exchange rate on financial distress.**

The probability value of the exchange rate is 0.0377 in which less than 0.05 ( $p < 0.05$ ). And based on t-test results where t-value of -2.147 comparing to t-table of 2.020 less than negative value of t table (-2.02), hence there is a significant effect of the exchange rate on financial distress. And the greater the exchange rate can be affected the financial distress becomes smaller. This finding supports the previous studies by Hafeez & Kar (2018), Rohiman & Damayanti (2019), and Oktarina (2018) which stated that the exchange rate significantly affected financial distress. When more forceful the exchange rate of IDR, subsequently makes the financial distress be decreased. But it is opposite to research of Darmawan (2017), Nurhidayah & Rizqiyah (2017) which concluded that the exchange rate does not affect on financial distress significantly

The distinguish of that research results likely because of the dissimilarity or various samples used on the previous research by Oktarina (2018) that conducted on the manufacturing industry where each industrial sector has a variance behavior response on the exchange rate. When analyzing the financial statements of the petroleum industry, we can see that there are many international businesses or financial transactions that include the obligations and expenses are recorded in foreign currencies, hence the impact of the exchange rates can be impacted on the corporate's performance and financial distress as well. Likewise, when the US Dollar strengthens on IDR, so the financial distress becomes smaller and vice versa.

#### **The world oil price on financial distress.**

The probability value of world oil price is 0.2994 more than 0.05 ( $p > 0.05$ ). Regarding on t-test examined at 1.05 which is less than t-table 2.02, it addresses that there is a positive effect but not significant of world oil price on financial distress. It is not in accordance with the study of Rosdini & Nautika (2017), and Nazliogu, et al (2015) that stated there is a significant effect of world oil price on financial distress. Referring to this finding, the rising of world oil prices can make the Z-Score more increase. There are many factors that induced the distinguishing within this research like those samples conducted not just in petroleum companies but on the other sub-sector too, and each company has a unique character although in the alike period. Related to this condition, there is a broad scope of business activities such as exploration, onshore and offshore oil and gas facilities development, support services, and other business units. On the other hand, there are no boundaries in producing and selling the derivative products of oil and natural gas, therefore the impact can be less significant. More ever, when world oil prices decline, it must be anticipated by conducting some policies to overcome that. (Kurniawan .2019). It will be committed to making some efforts like diversify products even though world crude oil



prices are decline. Through this anticipation, all companies will be able to produce and survive without reducing laborers although the world crude oil prices declining.

### **The inflation rate on financial distress.**

The probability value of the variable inflation rate in Indonesia has a value of 0.443 is greater than 0.05 ( $p > 0.05$ ). Based on the t-test which the value is 0.77 less than t-table of 2.02. Thence, there is an effect but not a significant inflation rate on financial distress in all oil and gas industry companies. Based on some research findings, this study is reverse to the previous studies by Darmawan (2017), Rohiman (2019), and Setyawati & Amalia (2018) which stated that the inflation rate has no significant effects on financial distress. However, compared to the research of Oktarina (2018), Binh & Duc (2018), and Nurhidayah & Rizqiyah (2017) that showed the inflation has a significant effect on financial distress. These distinguished results are caused by differences in sample and range of inflation rates. In addition, when compared to the globally average inflation rate and comparing to the current inflation rate in Indonesia is inclined to be lower and more controlled, so the impact on companies is not too significant.

### **CONCLUSION**

This study introduces the concepts if any impact of macroeconomic indicators on the financial circumstances in particular financial distress. The data in this paper are real data from some Indonesia gas and oil companies. Within this research, all dependent variables used are the exchange rate, world oil price, and inflation rate in Indonesia, while financial distress as an independent variable. The findings are the exchange rate has a negative effect on financial distress. This is understandable for all transactions of petroleum companies that based and valued in monetary units. In this case, the depreciation of the IDR exchange rate can affect the value of companies' sales and consequently the financial performance as well. Then, the oil price has an effect on financial distress. For oil-exporting countries such as Indonesia if world oil prices declined which was triggered by the deterioration of trade, so the export prices will be decreased and can affect the companies' performance too, although a drop in that price will cause a decrease in production costs. But on the other hand, oil prices will not reduce the revenues whilst the prices are declined because they can sell more oil and its derivative products. Likewise, there is no impact on the inflation rate on financial distress. In this case, if the companies' revenues are going to rise and down as an outcome of that inflation that makes production costs be fickle. Even though sometimes the nominal cost grows faster than inflation, the real costs might start to pick up and to assist the stimulation of increasing and decreasing demand even it will not be an impact on financial condition occasionally. Pertaining to all the findings achieved, all companies that have experienced financial distress should conduct an evaluation to improve their financial performance continuously. These key findings are expected to be helpful for companies or other authorities to develop future policies that focus on macroeconomic indicators and financial distress in those industries. Also, this study may contribute and comply with the related literature regarding the issues.

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