CHAPTER IV
DATA AND ANALYSIS

4.1. Data Description

In this study the type of data used is secondary data in the form of changes in BI Interest Rates and Dollar Exchange Rates taken from Bank Indonesia government website, gold prices taken from the World Gold Council, inflation data taken from the central statistical agency (BPS) website and world crude oil price data and IHSG taken from *Investing.com*. Data taken is data from 2010 to 2018 per month. So that sample of 12 x 11 years = 132 samples was used in this study.

4.2. Data Analysis

4.2.1. Descriptive Analysis

Descriptive statistics are performed to describe the value of the variables being sampled. The results of descriptive statistical calculations are presented in table 4.1:

Table 4.1 Descriptive Statistic

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Inflation Rate	132	2.41	12.14	5.4811	2.33749
BI Interest Rate	132	4.25	9.50	6.5492	1.24194
Oil Price	132	-32.62	29.71	-0.1184	9.33375
IHSG	132	-31.42	20.13	0.7893	5.71839
Dollar to Rupiah exchange rate	132	-6.96	16.55	0.3640	2.49338
Gold Price	132	-10.72	11.64	0.4074	3.84201
Valid N (listwise)	132				

Source: Appendix B

Based on the table, it can be seen that the variables of Inflation rate range between 2.41% to 12.14% with an average value of 5.4811%, the BI Rate variable

which was the sample in this study ranged from 4.25% up to 9.50% with an average value of 6.5492%. The variable change of oil prices sampled in this study ranged from -32.62% to with an average of - 0.1184%. The change in dollar to rupiah exchange rate variable which is the sample in this study ranges from -6.96% up to 16.55% with an average value of 0.3640% . The variable size of change of IHSG sampled in this study ranged from -31.42% to 20.13% with an average value of 0.7893%. The variable on change of gold price being sampled in this study ranged from -10.72% up to 11.64% with an average value of 0.4074%

4.2.2. Classic Assumption Test

4.2.2.1. Testing for Normality

Table 4.2.Normality Test Data

One-Sample Kolmogorov-Smirnov Test

		Standardized Residual
N		132
Normal Parameters[a,b]	Mean	0.0000000
	Std. Deviation	0.98073037
Most Extreme Differences	Absolute	0.064
	Positive	0.064
	Negative	-0.042
Test Statistic		0.064
Asymp. Sig. (2-tailed)		0.200[c,d]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Source: Appendix C

From table 4.2. above, It can be seen that the value of Asymp. Sig. (2-tailed) is 0.200 which is greater than the required alpha value of 0.05. Thus it can be said that from the Kolmogorov-Smirnov test results it can be said that this data is normal.

4.2.2.2. Heteroscedasticity Test

Heteroscedasticity test is intended to test whether in the regression model variance and residual inequalities occur one observation to another observation. If the residual variance from one observation to another observation remains, then it is called homoskedastic and if it is different it is called heteroscedasticity. A good regression model is homocedasticity or heteroscedasticity does not occur.

Testing heteroscedasticity of research data can be done using statistical tests such as White Test, Park Test, Glejser Test, etc. This study uses the Glejser Test. The Glejser test is done by looking at the sig value. each independent variable in a regression study with a residual value must be greater than 0.05. As for the Glejser Test results shown in Table 4.3 as follows:

Table 4.3. Heteroscedasticity test Glejser

Model	t	Sig.
(Constant)	0.969	0.334
INF	1.041	0.300
BI	0.529	0.598
OP	-0.914	0.363
IHSG	-0.073	0.942
DR	-0.703	0.483

a. Dependent Variable: ABS_RES

Source: Appendix C

From Table 4.3 above, the probability value (sig.) Obtained from each independent variable in this study has a value greater than the required alpha value of 0.05 so that it can be concluded that each independent variable in this study did not experience the problem of heteroscedasticity.

4.2.2.3. Multicollinearity Test

Multicollinearity test aims to test whether the regression model found a high or perfect correlation between independent / independent variables (Imam Ghozali, 2009; 25). To find out whether multicollinearity occurs in a regression model can be seen from the value of VIF (Variance Inflation Factor). Regression

is free from multicollinearity problems if the VIF value is <10. Based on the test assumption of multicollinearity with SPSS, the output is as follows:

Table 4.4. Multicollinierity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	INF	0.401	2.492
	BI	0.431	2.323
	OP	0.861	1.162
	IHSG	0.727	1.375
	DR	0.737	1.357

a. Dependent Variable: GP

Source: Appendix C

The results obtained that all independent variables have a VIF number <10. Seeing the results of VIF on all research variables which is <10, then the research data are classified as no multicollinearity disturbances in the regression model.

4.2.2.4. Linearity Test

Linearity test aims to determine whether two variables have a linear relationship or not significantly. This test is usually used as a prerequisite in correlation analysis or linear regression. If the value of Deviation from linearity sig. > 0.05, then there is a significant linear relationship between the independent variable and the dependent variable.

a. Gold Price to Inflation rate

Table 4.5.1. Linearity Test Gold Price to Inflation Rate

			Sig.
GP * INF	Between Groups	(Combined)	0.434
		Linearity	0.400
		Deviation from Linearity	0.431

Source: Appendix C

From the calculation results table above, it can be seen that the Deviation from linearity Sig. value is 0.431 > 0.05. It can be concluded

that there is there is a significant linear relationship between the independent variable and the dependent variable.

b. Gold Price to BI rate

Table 4.5.2. Linearity Test Gold Price to BI rate

			Sig.
GP * BI	Between Groups	(Combined)	0.402
		Linearity	0.289
		Deviation from Linearity	0.406

Source: Appendix C

From the calculation results table above, it can be seen that the Deviation from linearity Sig. value is 0.406 > 0.05. It can be concluded that there is there is a significant linear relationship between the independent variable and the dependent variable.

c. Gold Price to Oil Price

Table 4.5.3. Linearity Test Gold Price to Oil Price

			Sig.
GP * OP	Between Groups	(Combined)	0.193
		Linearity	0.309
		Deviation from Linearity	0.192

Source: Appendix C

From the calculation results table above, it can be seen that the Deviation from linearity Sig. value is 0.192 > 0.05. It can be concluded that there is there is a significant linear relationship between the independent variable and the dependent variable.

d. Gold Price to IHSG

Table 4.5.4. Linearity Test Gold Price to IHSG

			Sig.
GP * IHSG	Between Groups	(Combined)	0.647
		Linearity	0.472
		Deviation from Linearity	0.645

Source: Appendix C

From the calculation results table above, it can be seen that the Deviation from linearity Sig. value is 0.643 > 0.05. It can be concluded that there is there is a significant linear relationship between the independent variable and the dependent variable.

e. Gold Price to Dollar to Rupiah

Table 4.5.5. Linearity Test Gold Price to Dollar to Rupiah exchange rate

			Sig.
GP * DR	Between Groups	(Combined)	0.800
		Linearity	0.014
		Deviation from Linearity	0.860

Source: Appendix C

From the calculation results table above, it can be seen that the Deviation from linearity Sig. value is 0.860 > 0.05. It can be concluded that there is there is a significant linear relationship between the independent variable and the dependent variable.

4.2.3. Multiple Linear Regression Analysis

4.2.3.1. F Test

The F statistical test basically shows whether all the independent variables included in the model have a joint / simultaneous influence on the dependent variable (Imam Ghozali, 2009; 16). The following results of Test F which are processed using SPSS are presented in table 4.6:

Table 4.6. F Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	211.011	5	42.202	3.087	0.012[b]
	Residual	1722.685	126	13.672		
	Total	1933.696	131			

a. Dependent Variable: Gold Price

b. Predictors: (Constant), Dollar to Rupiah exchange rate, BI Rate, OIl Price, IHSG, Inflation Rate

Source: Appendix C

From the F test table can be seen, the significance value is 0,012 and the calculated F value is 3.087. Significant value smaller than 0.05 (0,000> 0.05) indicates there is influence of BI interest rates, inflation rate, IHSG, oil prices and dollar to rupiah exchange rate against the price of gold in Indonesia together.

4.2.3.2. t-Test

Hypothesis testing is conducted to determine whether there is a significant influence between the independent variables: firm size, complexity, solvability, audit committee and KAP size on audit delay. The following results of the t test are presented in table 4.7:

Table 4.7. t-Test

Model		t	Sig.
1	(Constant)	-1.665	0.098
	Inflation Rate	-1.779	0.078
	BI Rate	2.285	0.024
	OIl Price	0.287	0.775
	IHSG	-0.925	0.357
	Dollar to Rupiah exchange rate	-2.726	0.007

a. Dependent Variable: Gold Price

Source: Appendix C

a. Effect of variable inflation on the price of gold

Because t count is smaller than t table which is -1.779 smaller than at 1.978 and has a significance level of 0.78 which is greater than 0.05, then H1 is rejected, this means inflation rate has no significant effect on the price of gold in Indonesia with the probability of 0.05, but using the probability of 0.10 the variable is accepted as the significance level is lesser than 0.1 thus H1 is still acceptable.

b. The effect of variable Bank Indonesia interest rates on the price of gold

Because t count is greater than t table which is 2.285 greater than 1.978 and has a significance level of 0.024 which is smaller than 0.05, this means that BI Interest rates have a significant influence on the price of gold in Indonesia. This means that H2 is accepted

c. The effect of variable oil prices on the price of gold

Because t count is smaller than t table which is 0.287 greater than 1.978 and has a significance level of 0.775 which is greater than 0.05, this means oil prices have no significant effect on the price of gold in Indonesia. This means that H3 is rejected.

d. The effect of variable oil prices on the price of gold

Because t count is smaller than t table which is -0.925 greater than 1.978 and has a significance level of 0.357 which is greater than 0.05, this means oil prices have no significant effect on the price of gold in Indonesia. This means that H4 is rejected.

e. The effect of the dollar exchange rate variable on the price of gold

Because t count is smaller than t table which is -2.726 smaller than 1.978 and has a significance level of 0.007 which is lesser than 0.05, this means that the dollar exchange rate has significant effect on the change of price of gold in Indonesia. This means that H5 is accepted.

4.2.3.3. Determination Coefficient Analysis

The coefficient of determination essentially measures how far the model's ability to explain the variation of the dependent variable. R^2 value is between 0 and 1 ($0 \leq R^2 \leq 1$). The purpose of calculating the coefficient of determination is to determine the effect of independent variables on the dependent variable. If the process of obtaining a high R^2 value is good, but if the value of R^2 is low does not mean the regression model is bad (Imam Ghozali, 2009; 15). The value of R^2 in this study can be seen in table 4.8:

Tabel 4.8

Output Determination Coefficient

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.330[a]	.109	.074	3.69758

a. Predictors: (Constant), Inflation, BI Rate, Oil Price, IHSG, Dollar to Rupiah Exchange Rate

b. Dependent Variable: Gold Price

Source: Appendix C

The coefficient of determination (R^2) is 0.074 This means that the variance in change of Bank Indonesia interest rates, Inflation rate, the ollar to rupiah exchange rate, oil prices and IHSG can explain the change in gold price of 7.4%. While the rest is equal to 100% - 7.4% = 92.6% explained by other factors besides the variables studied above.

4.2.3.4. Regression Equation

This study analyzes Indonesian bank interest rates, inflation, the dollar exchange rate, oil prices and gold demand for gold prices in Indonesia. The results of the regression equation can be seen in table 4.9:

Tabel 4.9. Regression Equation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.198	1.920		-1.665	.098
	Inflation Rate	-.388	.218	-.236	-1.779	.078
	BI Rate	.906	.396	.293	2.285	.024
	Oil Price	.011	.037	.026	.287	.775
	IHSG	-.061	.066	-.091	-.925	.357
	Dollar to Rupiah exchange rate	-.412	.151	-.267	-2.726	.007

a. Dependent Variable: Gold Price

Source: Appendix C

From the table the results of multiple linear regression are as follows:Y = -3.198 – 0.388 X1 + 0.906 X2 + 0.011 X3 - 0,061 X4 - 0.412 X5.

And the discussion of the regression model can be explained that:

a. The regression coefficient of the Inflation rate - 0,388 means that if the inflation rate rise of 1% will cause a decrease in gold price by 0.388%, the note is if another variable is constant.

b. The BI Interest rate regression coefficient of 0.906 means that if BI Interest rate rises by 1% it will cause an increase in the gold prices of 0.906% with a note if another variable is constant.

c. The regression coefficient of change in oil price is 0.011 which means that if the changes in oil price increase by 1% it will cause an increase the gold price of 0.11 % with a note if another variable is constant.

d. The regression coefficient of change in IHSG is -0.061 which means that if the changes in IHSG increase by 1% it will cause the gold price decrease by 0.061 % with a note if another variable is constant.

e. The regression coefficient on the change dollar to rupiah exchange rate of -0.412 means that if the change in dollar to rupiah exchange rate rises by 1% it will cause the gold price will decrease by 0.412% with a note if another variable is constant.

4.3. Discussion

The analysis that taken from the normality test, the researcher get that the data is normal and can be continued in the analysis on the multiple linear regression. From the multiple linear regression, researchers able to find the result that Inflation rate, BI Interest rate, Oil Price, IHSG, and Dollar to Rupiah exchange rate able to affect the gold price change. The result from the determinant coefficient analysis researcher found that the variables that the researchers use able to explain with the amount of 7.4% of the change in gold price, where the other percentage came from other variables for example gold demand.

Analysis on the individual independent variable to dependent variable on each own, based on the research that have been concluded, the result shows that BI Interest rate and Dollar to Rupiah Exchange rate to have the significance effect to the change on the gold price, thus conclude that H2 and H5 is accepted. The other variables such as Inflation rate, Oil Price and IHSG have no significance effect to change the gold price, thus H1, H3, and H4 is rejected. Inflation rate has an exception as usually the research using financial data would use the probability

of 0.1, H1 can be accepted but has less significance effect on the gold price change. But because this research uses 0.05 as the probability, thus H1 is rejected.

From the multiple linear regression we can see that BI Interest rate have a coefficient regression of 0.906, which mean if the BI interest rate increase by 1% it will increase the gold price in the amount of 0.906%. This result is supported by Suharto (2013: 120), stated that if interest rates were likely to fall, gold would be easily seen by buyers and prices would increase. And the based on the data the Interest rate comes from the Indonesia interest rate where gold price come from the world gold price, thus the effect of the gold price from the Interest rate come from the global economy, where we make a condition if the global economy is down, Indonesia as a developing country has a would increase the interest rate to maintain the currency value, and the global economy affect the gold price to increase as Gold as the commodity is affected by the world economy to be used as a safer investment.

From the Dollar to rupiah exchange rate result, the researcher found a negative relationship between gold and dollar to rupiah exchange rate. This supported by the theories, Suharto (2013: 32) there are 2 causes if the US $ weakens, the price of gold tends to increase. First, because the fall of the US $ currency will make the price of gold cheaper in other currencies, resulting in an increase in demand for gold. This increase in demand has triggered the strengthening of the value of gold. Second, if the value of US $ weakens this will encourage investors to look for other investment instruments outside of US $. So that the demand for gold has increased and the price tends to soar upwards. The weakening of the domestic exchange rate against foreign currencies (such as the Rupiah against the US Dollar) has a negative effect on the price of gold. This is because if the exchange rate continues to strengthen, we will get a lower value to get gold in rupiah, so the demand for gold increases and triggers soaring gold prices. Thus theoretically, a currency exchange rate has a negative relationship with the price of gold.

Inflation rate, IHSG and Oil Price does not have a significance effect on th change of gold price from this research as it has a probability more than 0.05, but if the probability used on this research is 0.1, then can be include as part of the

variable that have a significance effect to the change of gold price. And from the result inflation rate has a negative relationship to gold price. The reason for this are based on research conducted by Siti Nurulhuda Ibrahim, Nurul Izzat Kamaruddin and Rahayu Hasan (2014) research in Malaysia, there was a negative relationship between the inflation rate and the price of gold. This means that if the inflation rate increases, then the price of gold will decline. This result is supported by research conducted by Laurence E. Blose (2010), that changes in inflation rates will cause a direct change in the price of gold.

As for the Oil price and IHSG, to have no significance effect to change the gold price as for reason based on the behaviour investor in Indonesia. Investor in Indonesia separate their investment into two type, safe investment and risky investment, thus gold is being put in the save investment have no effect with the risk investment such as stock and oil price. But if we see from the result of the coefficient Oil price has a positive relationship with the gold price because as oil price goes up it will cause the commodities price to goes up thus increase the gold price. As for IHSG the negative relation because Gold encouraged investors to switch markets when the stock transaction is sluggish.