

## ANALYSIS OF FACTORS INFLUENCING NON-OIL AND GAS EXPORTS IN CENTRAL JAVA JANUARY 2015 - JULY 2019

**Khairani Pambudhi Utami<sup>1)</sup>, Vita Kartika Sari<sup>2)</sup>, Faiza Husnayeni Nahar<sup>3)</sup>**

<sup>1</sup>Faculty of Economics and Business, Sebelas Maret University  
email: [utamikhairani@gmail.com](mailto:utamikhairani@gmail.com)

<sup>2</sup>Faculty of Economics and Business, Sebelas Maret University  
email: [vita.kartika@staff.uns.ac.id](mailto:vita.kartika@staff.uns.ac.id)

<sup>3</sup>Universidad de Granada - Spain  
email: [faizahusnayeni@correo.ugr.es](mailto:faizahusnayeni@correo.ugr.es)

### **Abstract**

*The purpose of this research are 1) To find out the effect of inflation on non-oil exports in Central Java in January 2015 - July 2019, 2) To find out the effect of foreign exchange rates on non-oil exports in Central Java in January 2015 - July 2019, 3) To find out the effect of BI rate on non-oil exports in Central Java in January 2015 - July 2019. The data used in this study are quantitative data in this research of time series data on non-oil and gas exports in Central Java, Central Java inflation, USD foreign exchange rates against rupiah, and BI Rate in 2015 - July 2019 obtained through each institution's official website. The data analysis used is multiple linear regression, which is used to determine the effect of the independent variable on the dependent variable. From the research results on factors affecting non-oil exports in Central Java, the conclusion is that inflation, foreign exchange rates, and the BI rate partially affected non-oil and gas exports in Central Java from January 2015 to July 2019. Simultaneously, inflation and the BI rate negatively affected non-oil exports in Central Java in January 2015 to July 2019, and foreign exchange rates positively affected non-oil and gas exports in Central Java from January 2015 to July 2019.*

**Keywords:** Export; Inflation; Exchange Rates; BI Rate

**JEL classification:** E0, E31

### **1. INTRODUCTION**

Export activities are carried out to meet the needs of a country, and this occurs due to the dissimilarity of the natural resources owned and the dissimilarity of the ability to manage these natural resources. Developed countries rely on their economic strength in industry and agriculture with high technology, while the economies of developing countries that have not yet mastered high technology still rely on abundant natural resources, so cooperation between countries is needed in realizing export and import activities (Sasono, 2012: 31).

According to Wiratno (2019) export trade activities in Indonesia play a very important role in the economy and business because this activity can increase the country's income and foreign exchange. In Indonesia, the main source of foreign exchange to date is the export of goods consisting of exports of agricultural products, forest products, mining products, and industrial products, while the income from other sectors such as services and tourism, is still very small (Amir MS, 2005 : 16).

According to Jokowi in Lingga (2019) in Indonesia, export and investment activities are still relied upon to improve the economy because these two activities are a foundation in the Indonesian economy. These activities must be continuously supported to impact the country

positively. According to data from the BPS (Central Statistics Agency), exports in Indonesia have continually increased over the last four years, namely from 2015-2018, exports that are superior to Indonesia are non-oil and gas exports compared to oil and gas exports.

Central Java was targeted for the rate of economic growth in Indonesia, this was discussed by the Indonesian president at a limited cabinet meeting. According to him, great potential can be developed from the export-oriented industrial sector and tourism. In May 2019, Central Java's exports continued to increase, even from the non-oil and gas sector. Central Java's balance experienced a surplus of 37.86 million USD (Manaf, 2019). Central Java's export value was recorded by the Central Java Statistics Agency in July 2019 which experienced a significant increase. The increase has been driven by the non-oil and gas sector, where the production of apparel and wood goods is the most significant contributor to exports in Central Java. The non-oil and gas sector itself experienced an increase in export figures from December 2018 of 670.90 million USD then increased in January 2019 to 760.59 million USD (Manaf, 2019).

According to Praditya (2019), during President Joko Widodo's leadership, inflation in Indonesia was stable. With stable inflation in Indonesia, this has caused a weakening in the household consumption sector and non-oil and gas exports, but instead increased import activity. In addition to Indonesia's inflation which was recorded as stable, inflation in Central Java was also recorded as stable. In 2015, Indonesia was experiencing a decline in the rupiah exchange rate against the USD, which made the export value high in Central Java. Three commodity groups are the highest contributors to export value in Central Java, namely textiles and textile goods, wood and wood products, and various factory products (Nurchamim, 2015).

According to Victoria (2019) on 19 September 2019 BI (Bank Indonesia will cut the reference interest rate or BI rate, this is done for price stability that occurs due to developments in the inflation rate and the rupiah exchange rate. The controlled inflation rate and the rupiah exchange rate cause a decrease in the rate of imports is greater than the decline in the rate of exports.

The researcher compiled the research hypothesis as follows:

- H1: The inflation variable is thought to have a negative effect on the increase in non-oil and gas exports in Central Java.
- H2: The foreign exchange rate variable is thought to positively affect the increase in non-oil and gas exports in Central Java.
- H3: The BI Rate variable has a negative effect on the increase in non-oil and gas exports in Central Java

## 2. RESEARCH METHOD

This study uses a quantitative approach, which is research using data in the form of numbers and analysis using statistical tests with dependent and independent variables. This study aims to test and provide results regarding the significance of the analysis of the influence of inflation, foreign exchange rates, WPI (Whole Trading Price Index), and BIRate on non-oil and gas exports. This research took data from non-oil and gas exports, Central Java inflation, the USD exchange rate against the rupiah, and BI rate Indonesia.

The source of data used in this research is secondary data. Secondary data is data in the form of variables that have been collected and compiled previously by other parties, usually data obtained from a company, various internet websites, public libraries, and educational institutions, purchased from companies that are specialized in presenting secondary data (Hermawan, 2005:

168). The data used are Central Java non-oil and gas exports, Central Java inflation, the USD exchange rate against the rupiah, and BIRate in 2015 - July 2019, which was obtained through each institution's official website.

The data analysis technique used in this study uses time series data. The time series data used is data from January 2015 to July 2019. The analytical tool used in this study is the SPSS 23 application.

Multiple linear regression aims to determine the effect of the independent variables on the dependent variable. The regression equation that will be used in this study is as follows:

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + e_{it}$$

### 3. RESULTS AND DISCUSSION

#### 3.1 Results

The following will explain the results of the descriptive statistical analysis in this study:

**Table 1**  
**Results of Descriptive Statistics**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Sum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Variance</b>
Ekspor	55	287.30	775.03	27825.64	505.9207	100.53828	10107.947
Inflasi	55	2.48	7.26	236.73	4.3042	1.42561	2.032
Kurs	55	12625	15227	752580	13683.27	552.762	305545.276
BI rate	55	4.25	7.75	320.00	5.8182	1.20036	1.441
Valid N (listwise)	55						

Source: data processed

In non-oil and gas export variables, it can be seen that the value of N or the amount of data studied is 55 samples. The minimum value or lowest value generated is 287.30. The maximum value or the largest value generated is 287.30. The sum value or the total value of exports is 27825.64. The mean value or average value produced is equal to 505.9207. The resulting standard deviation value is 100.53828. Variance amount produced is 10107,947.

In the inflation variable, it can be seen that the value of N or the amount of data studied is 55 samples. The minimum value or lowest value produced is 2.48. The maximum value or the highest value generated is 7.26. The sum value or the total value of exports is 236.73. The mean value or average value produced is equal to 4.3042. The resulting standard deviation value is 1.42561. The variance result is 2.032.

The foreign exchange rate variable shows that the value of N or the amount of data studied is 55 samples. The minimum value or lowest value generated is 12625. The maximum value or largest value generated is 15227. The sum value or the total value of exports is 752580. The mean value or average value generated is 13683.27. The resulting standard deviation value is 552.762. Variance the resulting amount is 305545.276.

The BI variable rate shows that the value of N or the amount of data studied amounted to 55 samples. The minimum value or lowest value generated is 4.25. The maximum value or the largest value generated is 7.75. The sum value or the total value of exports is 320.00. The mean value or average value produced is 5.8182. The resulting standard deviation value is 1.20036. The variance produced is equal to 1.441.

### Multiple Linier Regression

Multiple regression analysis aims to determine the influence between inflation, foreign exchange rates, and BI rate on non-oil and gas exports in Central Java. The following are the results of the regression equation obtained:

**Table 2**  
**Results of Multiple Regression Analysis**

Model	Unstandardized_Coefficients		Standardized_Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-269.424	285.479		-.944	.350
INFLASII	-27.686	7.568	-.393	-	.001
1 KURS	.074	.020	.409	3.658	.000
BIRATE	-22.269	9.747	-.229	3.816	.000
				-	.027
				2.285	

a. Dependent Variable: EXPOR

Source: Output SPSS 23

Based on the table above, it can be seen that the regression model obtained using the SPSS 23 application is as follows:

$$Y = -269,424 - 27,686X_1 + 0,74x_2 - 22,269X_3 +$$

It is known that a constant of -269.424 means that if there are no independent variables (inflation, foreign exchange rates, BIRate), then the non-oil and gas export value of Central Java is -269.424.

The inflation coefficient value is -27.686, meaning that if the inflation variable increases by 1%, the value of non-oil and gas exports will increase by -27.686. The foreign exchange rate coefficient is 0.74, meaning that if the foreign exchange rate variable increases by 1%, the value of Central Java's non-oil and gas exports will increase by 0.74. The BI coefficient value rate equal to -22.269 means that if the BI variable rate increases by 1%, the value of Central Java's non-oil and gas exports will increase by -22,269.

### Classical Assumption Test Multicollinearity

The multicollinearity test is used to see whether or not there is a correlation between the independent variables in the multiple linear regression model. It can be seen from the tolerance value > 0.10 and the VIF value < 10 to indicate the absence of multicollinearity. The following will explain the results of the multicollinearity test that has been carried out:

**Table 3**  
**Result of Multikolinearity Test**

Coefficients <sup>a</sup>		Collinearity_Statistic	
Modell		Tolerance	VIF
	(Constant)		
1	INFLASI	.874	1.145
	KURS	.874	1.145
	BIRATE	1.000	1.000

a. Dependent Variable: EKSPOR

Source: Output SPSS 23

It was explained that the results of the multicollinearity test were based on valuetolerance for all independent variables in this study is greater than 0.10 while the VIF value for all independent variables is less than 10. It can be concluded that there is no multicollinearity between independent variables in the multiple linear regression model.

#### Heterskedastisity Test

The Heteroscedasticity Test is used to see if there are differences in variance from the residuals of one observation to another. The heteroscedasticity test that will be used in this study is the Glejser test. To find out that heteroscedasticity does not occur by looking at the significance value, that is, if the significant value is > 0.05. The following will explain the results of the heteroscedasticity test conducted in this study:

**Table 4**  
**Heteroskedastisity Test**

Model	Unstandardized_Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-171.550	181.957		-.943	.350
1	INFLASI	4.824	-.125	-.867	.390
	KURS	.017	.194	1.347	.184
	BIRATE	2.443	.053	.393	.696

a. Dependent Variable: AbsRes

Sumber: Outuput SPSS 23

The results of the heteroscedasticity test obtained using the SPSS 23 application show that the significance value of each independent variable in this study was greater than 0.05. It can be concluded that there is no heteroscedasticity between the independent variables in the multiple linear regression model

### Normality Test

The normality test aims to test whether the regression model is normally distributed or not. The normality test that will be used in this study is the Kolmogorov Smirnov test. To see if the data used is normally distributed, that is, by looking at the significance value  $> 0.05$ . The following will explain the results of the normality test that was carried out in this study:

**Tabl 5**  
**Normality Test**

<i>One_Sample_Kolmogorov_Smirnov_Test</i>		
		<i>Unstandardized Residual</i>
N		55
<i>Normal Parameters<sup>a,b</sup></i>	<i>Mean</i>	.0000000
	<i>Std. Deviation</i>	72.01918223
<i>Most Extreme Differences</i>	<i>Absolute</i>	.097
	<i>Positive</i>	.097
	<i>Negative</i>	-.086
<i>Test Statistic</i>		.097
<i>Asymp. Sig. (2-tailed)</i>		.200 <sup>c,d</sup>
<i>a. Test distribution is Normal.</i>		
<i>b. Calculated from data.</i>		
<i>c. Lilliefors Significance Correction.</i>		
<i>d. This is a lower bound of the true significance.</i>		

Sumber: output\_spss\_23

The results of the normality test obtained using the SPSS 23 application show that the significance value is 0.200, which means greater than 0.05. It can be concluded that the data tested in this study are normally distributed

### Autokrelation Test

The autocorrelation test is used to see the form of interference or in other words to see whether there is a strong positive or negative correlation in multiple linear regression. The autocorrelation test that will be used in this study is the Durbin-Watson test. For the basis of decision making in the Durbin-Watson test, that is, if the value of  $du < d \text{ count} < 4-du$ . The following describes the Durbin-Watson test that was conducted in this research:

**Table 6**  
**Autokorelation Test**

<i>Model_Summary<sup>b</sup></i>					
<b>Model</b>	<b>R</b>	<b>R _square</b>	<b>Adjusted_R_Square</b>	<b>Std._Error_of _the_Estimate</b>	<b>Durbin- Watson</b>
1	.698 <sup>a</sup>	.487	.457	74.10713	2.415

*a. Predictors: (Constant), BIRATE, INFLASI, KURS*

*b. Dependent Variable: EKSPOR*

Source: Output SPSS 23

The results of the autocorrelation test obtained using the SPSS 23 application show that the Durbin Watson value or d is calculated at 2.41. Meanwhile, the du value in this study is 1.4523. Then the Durbin Watson test results are  $1.4523 < 2.415 < 4 - 1.4523$ . It can be concluded that there is no autocorrelation in research

### Uji t

The t test is used to see the effect between one independent variable (inflation, exchange rate, BI rate) individually with the dependent variable (non-oil exports). The t-test was carried out by looking at the significance value and comparing the calculated t-value with t-table. The basis for making a decision on the t test is that if the significance value is  $< 0.05$ , there is a partial effect between the independent and dependent variables. Apart from that, it can also be seen from the comparison of the calculated t value with t table if the t calculated value  $> t$  table then there is an influence between the independent and dependent variables. The t table value in this research is 1.67303. The following will explain the test that was conducted in this research:

**Table 7**  
**Uji t**

<b>Coefficients<sup>a</sup></b>					
<b>Model</b>	<i>Unstandardized_Coefficients</i>		<i>Standardized Coefficients</i>	<b>t</b>	<b>Sig.</b>
	<b>B</b>	<b>Std._Error</b>	<b>Beta</b>		
(Constant)	-269.424	285.479		-.944	.350
1 INFLASI	-27.686	7.568	-.393	-3.658	.001
KURS	.074	.020	.409	3.816	.000
BIRATE	-22.269	9.747	-.229	-2.285	.027

*a. Dependent Variable: EKSPOR*

Source: Output SPSS 23

The inflation variable has a significant value of 0.001, which means the significance value of the inflation variable is smaller than 0.05. Meanwhile, the calculated t value is -3.658, which means that the calculated t value is smaller than the t table of 1.67303. It can be concluded that the inflation variable has a negative effect on non-oil and gas exports in Central Java 2015-July 2019.

The exchange rate variable has a significance value of 0.000, meaning that the significance value for the variable is smaller than 0.05. Meanwhile, the calculated t value is 3.816 which means the t calculated value is greater than the t table of 1.67303. It can be concluded that the exchange rate variable has a positive effect on non-oil and gas exports in Central Java 2015-July 2019.

Variable BIRate has a significant value of 0.027, meaning a significant value for the BI variable rate smaller than 0.05. Meanwhile, the calculated t value is -2.285, which means the BI variable rate smaller than the t table value of 1.67303. It can be concluded that the BI variable rate has a negative effect on Central Java's non-oil and gas exports 2015-July 2019

### F Test

The F test is used to determine whether all the independent variables (inflation, exchange rates, BIRate) included in the regression model simultaneously affect the dependent variable (non-oil and gas exports). The basis for deciding on the F test is that if the significance value is  $< 0.05$  then there is a simultaneous effect of the independent variables (inflation, exchange rate, BIRate) on the dependent variable (non-oil and gas exports). Besides that, it can also be seen from the comparison of the calculated F value with F table, if the calculated F value  $> F$  table then there is an influence between the independent variable on the dependent variable. The F table value in this study was 2.77. The following will explain the F test that was conducted in this research:

**Table 8**  
**F Test**

ANOVA <sup>a</sup>						
	Model	Sum_of_Squares	df	Mean_Square	F	Sig.
1	Regression	265743.938	3	88581.313	16.130	.000 <sup>b</sup>
	Residual	280085.181	51	5491.866		
	Total	545829.119	54			
a. Dependent Variable: EKSPOR						
b. Predictors: (Constant), BIRATE, INFLASI, KURS						

Source: Output SPSS 23

Based on the results of the F test obtained using the SPSS 23 application, it can be seen that the significance value is 0.000 which means smaller than 0.05. Meanwhile, the

calculated F value is 16.130, which means it is greater than the F table value of 2.77. It can be concluded that the independent variables (inflation, exchange rate, BIRate) has a simultaneous effect on the dependent variable (non-oil and gas exports)

#### Coefficient Determination

The coefficient of determination test is used to determine the rise and fall of the dependent variable (non-oil exports), estimated by the linear influence of the independent variables (inflation, exchange rate, BIRate).

**Table 9**  
**Coefficient Determination Test**

<i>Model Summary</i>				
<b>Model</b>	<b>R</b>	<b>R_Square</b>	<b>Adjusted_R_Square</b>	<b>Std._Error_of_the_Estimate</b>
1	.698 <sup>a</sup>	.487	.457	74.10713

a. Predictors: (Constant), BIRATE, INFLASI, KURS

Source: Output SPSS 23

Based on the results of the test for the coefficient of determination obtained using the SPSS 23 application, it can be seen that the R square value is 0.457 or 45%. This means that the contribution of the independent variables (inflation, exchange rates, BIRate) variabel dependen (expor non miigas) is 45%. And 55% other create on other models.

#### **The Influence of Inflation on Non-Oil and Gas Exports in Central Java January 2015 – July 2019**

Based on the regression test that was studied, the t test can be seen if the significance value of the inflation variable is  $0.001 < 0.05$ . Meanwhile, the resulting t-value is  $-3.658 < 1.67303$ . This means that the inflation variable has a negative effect on non-oil and gas exports in Central Java 2015-July 2019. So it can be concluded that the hypothesis which states that there is a negative effect on non-oil and gas exports in Central Java is accepted. This is in accordance with the research conducted by Larasati & Budhi (2018) which concluded that inflation did not affect exports of Indonesian footwear to China.

Inflation has a negative effect on non-oil and gas exports in Central Java because the increase in the value of inflation will cause the prices of goods in the country to increase, with the increase in the price of these goods it will have an impact on increasing production costs so that exporters are unable to meet the amount of production demanded. by the buyer. This causes the higher the inflation rate, the lower the number of non-oil and gas exports in Central Java.

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### **The Influence of Foreign Exchange Exchange Rates on Non-Oil and Gas Exports of Central Java January 2015 – July 2019**

Based on the regression test that was conducted on the t test, it can be seen that the significance value of the exchange rate variable is  $0.000 < 0.05$  yes. Meanwhile, the resulting t-count value is  $3.816 > 1.67303$ . This means that the exchange rate variable positively affects non-oil and gas exports in Central Java 2015-July 2019. So it can be concluded that the hypothesis that the foreign exchange rate positively affects non-oil and gas exports in Central Java is accepted. This is in accordance with the research conducted by Marbun (2017) which obtained the result that the exchange rate variable, or the foreign exchange rate, had a positive effect on non-oil and gas exports in Indonesia in 1970 – 2004. The same is true with the research conducted by Pramanas & Meydianawathi (2013) who obtained the result that the dollar exchange rate had a positive effect on Indonesia's non-oil and gas exports to the United States for the period 1991 – 2011.

If the value of the dollar continues to strengthen and the value of the rupiah weakens, it will have an impact on falling prices for goods to be exported, this will cause the demand for non-oil and gas exports in Central Java to increase.

### **The Influence of the BI Rate on Non-Oil and Gas Exports in Central Java January 2015 – July 2019**

Based on the regression test that has been studied, it can be seen that the significance value of the exchange rate variable is  $0.027 < 0.05$  yes. Meanwhile, the resulting t-value is  $-2.285 > 1.67303$ . This means that the exchange rate variable has a negative effect on non-oil and gas exports in Central Java 2015-July 2019. So it can be concluded that the hypothesis states that BRate negatively affects the acceptance of non-oil and gas exports in Central Java. This is in accordance with the research conducted by Pramana & Meydianawathi (2013) which obtained results when the interest rate value of credit or BRate had no effect on Indonesia's non-oil and gas exports to the United States for the period 1991 – 2011.

With increasing interest rates or BRate will have an impact on reduced working capital which will then lead to a decrease in production. Most of the business actors then try to divert their funds from the real sector to invest them in banks in deposits. This reduction in production costs will impact a decrease in the amount of production, which means that the number of exports will also decrease.

## **4. CONCLUSIONS**

Based on the results of the discussion regarding the analysis of the factors affecting non-oil and gas exports in Central Java in January 2015 - July 2019, it can be concluded as follows: 1) Inflation has a negative effect on non-oil and gas exports in Central Java. This can be seen from the t test that was conducted with a significant value of 0.001 and a calculated t value of -3.658. Which means the sig value is  $0.001 < 0.05$  and the t value is  $-3.658 < t_{table} 1.67303$ , 2) The foreign exchange rate has a positive effect on non-oil and gas exports in Central Java. This can be seen from the t-test that was conducted with a significant value of 0.000 and a calculated t-value of 3.816. This means a sig value of  $0.000 < 0.05$  and a t value of  $3.916 > t_{table} 1.67303$ , 3) the BI rate negatively affects non-oil and gas exports in Central Java. This can be seen from the t-test that was conducted with a significant value of 0.027 and a t-value of -2.285. This means the sig value is  $0.027 < 0.05$  and the t value is  $-2.285 < t_{table} 1.67303$ .

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