

## **ANALYSIS OF FACTORS AFFECTING OUTPUT OF MANUFACTURING INDUSTRY SECTOR IN CENTRAL JAVA**

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### **ABSTRACT**

This study aims to analyze the influence of the District Minimum Wage, Labor, and Number of Business Units on the GRDP of the industrial sector in Central Java in 2014-2018. The data used is panel data consisting of time series data for 2014–2018 and cross-sections of 35 districts and cities in Central Java. The analytical tool used is panel data regression, namely the Fixed Effect Model (FEM). The results of the study show that the number of business units has a negative and significant effect on the GRDP of the industrial sector in region Central Java in 2014-2018. Meanwhile, labor force and city minimum wages have had a positive and significant effect on the GRDP of the industrial sector in Central Java in 2014-2018. With this research, it is hoped that the regional government will facilitate the process of managing a business license, because it will be encouraging entrepreneurs to establishing industrial units. The number of industrial units will increase the volume of production and ultimately increase the GRDP of the manufacturing industry sector and will eventually absorb labor in the sector.

**Keywords:** *City Minimum Wage, Labor, and Number of Business Units*

### **INTRODUCTION**

The industry has a role as a "leading" sector, industry plays a role as a trigger for the development of other business fields, the presence of the industrial sector provides opportunities for residents to gather and increase consumption of food and services, residents who gather in one area increase demand in several business sectors so that along with industrial development, demand increases both in terms of industry and its supporters will increase (Purnomo, 2008).

Industrial growth in Central Java is currently quite good, it can be seen from several new industrial areas that will encourage increased the industrial investment, that way the ruler of Central Java has prepared several strategies to encourage industrial competitiveness in Central Java. First, inclusive industrial regional

development. In this case, the provincial government encourages the regions to initiate industrial areas with an orientation towards export-oriented industries as well as import substitution. Second, empowering small and medium-sized industries through process assistance to promotion and marketing and even training to become exporters. Third, the procurement of industrial needs continues to rely on the small business sector and utilization of economic resources

The industrial sector considered strategic is the manufacturing industry. Industry processing is seen as a driver or driver of the economy. As in general, developing countries, have abundant natural resources, on the other hand Indonesia has a very high population or workforce. The processing industry sector is a medium to take advantage of natural resources and will be able to absorb a large workforce. The main role of the industrial sector is to provide employment, the main motor for the creation of added value in the economy, the fulfillment of basic needs of the people, increasing and equalizing people's income, as well as a source of foreign exchange.

## **LITERATURE REVIEW**

### **Industry Theory**

Strategic sectoral development policies are development policies in the industrial sector. This sector is seen as a sector that has a high level of productivity, so that its superiority will get high added value. Therefore, the goal of creating community economic welfare can be realized more quickly by developing this sector. (Muhammad, 2016)

The role of the industrial sector in economic development in various countries is very important because the industrial sector has several leading sectors in terms of accelerated development. For example, the growth of the industrial sector is very rapid and stimulates the growth of the agricultural sector to provide raw materials for an industry. These industries also allow the development of the service sector.

According to the Central Statistics Agency (CSA) industry is a unit/production unit located in a certain place that carries out economic activities, aiming to change an item mechanically, chemically, or by hand so that it becomes a new object/goods/product with a higher value, and its nature is closer to the end consumer.

From the above understanding it can be concluded that industry is a skill and perseverance in human activities in certain fields carried out to produce goods or services that aim to create added value. The industrial sector is also used as a benchmark for the progress and prosperity of a country. Industrial growth is one of the factors for the economic growth of a region.

### **Manufacturing Theory**

The processing industry or manufacturing, is all economic activities that produce goods and services that are not classified as the main product. explanation of primary products are the processed results of the first raw goods produced from processed or natural, primary products have a selling value because they are basic daily needs. According to the Ministry of Industry and Trade, industry is an economic activity that processes raw materials, semi-finished goods or finished goods, so that it becomes goods with a higher selling value. According to the Central Statistics Agency (2003), industry profit oriented business. Located in a particular building or location and has its own administrative record of production and cost structure. The term industry has two meanings. First, industry can mean the association of similar companies. In this context, the name of the cosmetics industry, for example, means that the diversity of companies that produce cosmetic products. Second, this industry can also refer to the economic sector where there are productive activities that process raw materials into finished goods or semi -finished goods. Processing activities themselves can be in the form of electricity or manual.

The second term industry is often referred to as the manufacturing industry sector (manufacturing) as one of the production sectors or business in the calculation of national income in accordance with the production approach (Dumairy, 1997). The processing industry is all production activities that aim to improve quality and services. The production process can be done mechanically, chemically or other processes using simple tools and machines. The process can Conducted by industrial companies, agricultural companies, mining and other companies. Services that show it such as repairs and maintenance of engines, ships, trains and aircraft are also included in the industrial sector (Central Statistics Agency, 1990). In general, the manufacturing industry in Indonesia is grouped into small, household, medium and large industries. Whose grouping is based on the number of workers in accordance with the definition of Central Statistics Agency (CSA). In addition, grouping is also based on the capital owned. In this study the industrial group that became the object of research was a small, medium and large processing industry based on the number of workers owned. By CSA the number of workers 5-19 people included in the small industry, the number of workers 20-99 people included in the moderate industrial group and the number of workers is more than 100 people entering large industrial groups. Industrial services that are closely related to the manufacturing industry are: (Irsan Azhary Saleh, 1985: 106)

- A. Technical services that support the construction of production anstallation. Fabric, or the manufacture of production equipment that is ready to produce services that can be sold (transportation), namely the construction of industrial projects, design services, factory design services (ship factory design, aircraft, trains, cars) and factories and construction service factories.
- B. Engineering services that support the manufacture of production equipment or machinery, namely the design and engineering of machinery or factory equipment.

- C. Engineering services that support the manufacture of basic construction materials, for example industrial research services, material or goods quality testing services, measuring equipment calibration services

### **The Role of the Manufacturing Industry Sector in the Economy**

The role of the manufacturing sector cannot be separated from national economic growth. The manufacturing sector has been the backbone of the national economy since 1991, in addition to meeting the needs of the domestic market, the non-oil and gas processing industry also has a good foreign market share. From year to year the manufacturing sector has always experienced positive growth (Arif Muhammad and Jaunita, 2016).

### **Policies in the Industrial Sector**

In the economic field, the crisis resulted in a decline in business performance in various business sectors and was especially felt in the industrial sector. This is because in general large industries are not oriented towards the use of domestic raw materials and semi-finished materials. The decline in the private sector also has an impact on increasing Termination of Employment. The Indonesian economy and the real conditions after the economic crisis will become factors driving the growth of the industrial sector. After the economic crisis, the growth of the industrial sector was still slightly lower than before the crisis. Efforts to accelerate development, build economic independence, distribute development and its results throughout the region by providing opportunities for regions to regulate and manage all potential resources they have, have been carried out with the issuance of Law no. 22 of 1999 concerning Regional Government which was later revised into Law no. 32 of 2004 and Law no. 25 of 1999 concerning Financial Balance between the Central Government and Regional Governments which was later revised by the government and the DPR to become Law no. 33 of 2004. All concerned and interested parties have an obligation to actively participate in the regulations/regulations that have been made in order to achieve optimal results so that these regulations/regulations are not in vain (Miki and Kunto, 2018).

### **The development of the manufacturing industry in Indonesia**

Indonesia's manufacturing industry is able to contribute 20.27% to the ASEAN economy, currently Indonesia has made a transition from the commodity industry model to processing, the government as a supporter is also encouraging this change by issuing regulations and relaxing investment in the manufacturing sector. The manufacturing industry is considered more productive and can have a broad effect so as to increase the added value of raw materials, multiply labor, produce the largest source of foreign income, and

the largest tax and customs contributors. The Ministry of Industry also noted several sectors that have a percentage of performance above gross domestic product nationally, including the 9.94% base metal industry, the textile and clothing industry by 7.53%, and the transportation equipment industry is 6.33%. This incident was influenced by an increase in demand which pushed production to increase as well. Indonesian manufacturing was also developed in other countries such as Vietnam and the Philippines. This will certainly encourage national economic growth and increase competitiveness domestically, regionally and globally. Another difference possessed by the Indonesian economy is its strength in the domestic market with a percentage of 80% and the rest is an export market, another case with Singapore and Vietnam whose economic system is mostly oriented towards export activities.

The government develops the manufacturing industry by making downstream policies, this policy is able to increase the income factor and the amount of income from the customs and tax sector, this policy also has an impact on the stability of raw material supplies and increases the value of goods, the policy requires cooperation from related parties to achieve maximum implementation. Indonesia's MVA for Asena reached 4.5% and was ranked the highest among ASEAN countries. Meanwhile, for the world ranking, Indonesia is ranked 9th in terms of MVA value contribution. The reason for this achievement is Indonesia's participation in the one trillion dollar group which only belongs to Indonesia among ASEAN countries

### **Previous research results**

On the island of Java during the 2010-2016 period, Desy (2020) found that The provincial UMR has a significant negative impact on the level of employment with a contribution of 87.4% to employment. From the theory and one of the previous studies, this research must be conducted to calculate the direction and magnitude of the influence of district minimum wages, the number of business units and labor affects the GRDP of the manufacturing industry sector in Central Java. The findings of this study can be used as a reference for policy makers in Central Java to develop their manufacturing industry. On the academic side, this research is expected to enrich the treasures of libraries in the development of the processing industry, especially in Central Java.

So that it can draw a temporary conclusion, as follows.

### **Hypothesis**

Thus it can be concluded that the first hypothesis is:

H<sub>1</sub>: DMW variable (District Minimum Wage) increase the GRDP of the manufacturing industry sector in Central Java

H<sub>2</sub>: Labor affect the GRDP of the manufacturing sector in Central Java

H<sub>3</sub>: Variable The number of business units lower the GRDP of the manufacturing sector in Central Java

## **METHODOLOGY**

The data that will be used in this study is secondary data in the form of panel data in the form of annual data for a period of 5 years, namely from 2014 to 2018, and cross section data from 35 districts/cities in Central Java Province. Data will be taken from various publication of the Central Java Statistics Agency.

### **Research Tools and Models**

The analytical tool that will be used in this study is panel data regression analysis with the following econometric model:

$$GRDP_{it} = \beta_0 + \beta_1 LABOR_{it} + \beta_2 DMW_{it} + \beta_3 NBU_{it} + e_{it}$$

Where:

GRDP : GRDP of the Processing Industry Sector in Central Java

$\beta_0$  : Constant

DMW : District Minimum Wage

LABOR: Processing Industry Sector Workers in Central Java

NBU : Number of Business Units

$\beta_1 \dots \beta_4$  : Regression coefficient of independent variables

i : Data Cross Section

t : Time Series data

e : Error team

### **Panel Data Estimation Method**

Panel data according to Gujarati (2003) is a cross-sectional data (individual/sector) arranged based on time series. There are three approaches to calculating panel data models, namely the best modeling test, this test includes 2 tests, namely the Chow and Hausman tests, these two tests are intended to choose the best method between ordinary PLS, Fixed effect Model (FEM) and random effect model (REM), the three models are assessed based on the Chow and Hausman tests, the model that passes will be used as an estimator research regression model.

### **Statistical Test**

#### **1. Chow test**

The Chow test is intended to choose the best model between FEM or ordinary PLS.

##### **a. Hypothesis formulation**

$H_0$  : PLS is the best model

$H_a$  : FEM PLS is the best model

b. hypothesis acceptance criteria

$H_0 = p > 0,05$

$H_a = p < 0,05$

## 2. Hausman test

The Hausman test is intended to select the best estimator model between FEM and REM

a. Hypothesis formulation

$H_0$  : REM is the best model

$H_a$  : FEM is the best model

b. hypothesis acceptance criteria

$H_0 = p > 0,05$

$H_a = p < 0,05$

## RESULTS

The number of business units has a significant negative effect on the growth of the manufacturing industry's GRDP. According to the Department of Industry, Business Unit is the number of operating processing industry companies, which are calculated in business units. In general, the growth of business units of a sector in an area will add a contribution to the GRDP.

The workforce has a positive effect on GRDP because the increase in labor will reduce unemployment so that it helps a district or city to get even greater income, thus making an area more advanced because income becomes greater.

Regency minimum wages have a positive effect on GRDP because the greater wages obtained will reduce the poverty level of population in an area so that we can meet the daily needs, so that the economy of an area will increase due to the absence of poverty or cases of hunger, so the GRDP will be Increase.

### Reporting Research Results

Model selection test

#### 1. Chow Test (Likelihood Test Ratio)

The Chow test is a test of selecting the best model between FEM and ordinary PLS. if the test results state that  $H_a$  is accepted, namely the FEM model, then the next test will be carried out with the Hausman test, this test chooses the best model between FEM and REM. The results of the chow test are as follows:

Table 1 Estimation Chow Test Panel Data

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2180.795049	(34,137)	0.0000
Cross-section Chi-square	1101.742314	34	0.0000

*Sumber: Output Eviews 10*

Prob. Cross-section F obtained a value of 0.0000, so the model chosen was FEM because this value was below the criterion level, namely  $\alpha$  5%, ( $0.0000 < 0.05$ ).

## 2. Hausman test

The Hausman test is intended to choose the best estimator model between FEM and REM.

Table 2 Results of Hausman Test Panel Data Estimation

Test Summary	Chi-Sq.	Chi-Sq.	Prob.
	Statistic	d.f.	
Cross-section random	13.687045	3	0.0034

*Sumber: Output Eviews 10*

The p-value or probability of Chi-Square or Cross Section Random is  $0.0034 < 0.05$ , then  $H_0$  is not acceptable or means that the Fixed Effect (FEM) method is better than the Random Effect (REM) method in analyzing panel data. in this study.

Based on the results of panel data estimation to choose the best model using the Chow test and Hausman test, the best model was selected, namely the Fixed Effect Model, the estimation results are presented in Table 3.

## FEM estimation

Table 3. Panel Data Regression Estimation Results with the FEM Method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(LABOR)	0.005824	0.008236	0.707107	0.4807
LOG (DMW)	0.456186	0.014192	32.14331	0.0000
NBU	-0.000168	5.32E-05	-3.166974	0.0019



C 10.28097 0.172803 59.49548 0.0000

Sumber: Output *Eviews* 1

Based on Table 3, it shows the estimation results of the panel data regression equation obtained in this study are:

$$PDRB_{it} = 10.28097 + 0.005824 \log \text{LABOR} + 0.456186 \log \text{DMW}_{it} - 0.000168 \text{NBU}_{it} + e_{it}$$

### **Selected Model Interpretation**

Based on the results of the estimation, it shows that the regression coefficient number of labor variables is 0.005824. This shows that there is a positive influence ( $\alpha = 0.05$ ) of the labor variable on the absorption of the industrial sector GRDP in Central Java in 2014-2018. Any increase in labor by 1%, will tend to increase the GRDP of the industrial sector in Central Java by 0.005%.

Furthermore, the District Minimum Wage variable regression coefficient is 0.456186. This shows that there is a positive influence ( $\alpha = 0.05$ ) of the District Minimum Wage Variable on the Industrial Sector GRDP in Central Java in 2014-2018. Every 1% increase in the District Minimum Wage will tend to be followed by an increase in the industrial sector's GRDP by 0.456%.

While the regression coefficient of variables the number of business units is 0,000168. This shows that the number of significant negative business units ( $\alpha = 0.05$ ) against the absorption of the industrial sector GRDP in Central Java in 2014-2018. Any increase in the number of business units by 1%, will tend to reduce the GRDP of the industrial sector in Central Java by 0.016%.

### **DISCUSSION**

Knowing the factors that are thought to influence the output of the processing industry in Central Java, namely Labor, District Minimum Wage and Business Units from the results of the study show that the Fixed Effect Model (FEM) is the most appropriate panel data regression model. Based on the effect validity test, the District Minimum Wage and Labor variables have a positive effect on the Processing Industry Sector GRDP, while the number of Business Units has a significant negative effect on the Processing Industry Sector GRDP. From the results of the analysis above, the manufacturing sector has an important role in the economy in Central Java because the manufacturing sector has a role as a leading sector, meaning that the manufacturing sector has the ability to drive output growth and the manufacturing sector is able to attract other sectors in Java. Middle. This condition needs to be maintained and improved where the manufacturing industry sector is more focused and improving the economy in Central Java, with the processing industry it will spur and lift the economy in Central Java, in this case Central Java must pay more attention to and increase sector development efforts. -industrial sector.

## CONCLUSION

Based on the results of data processing and discussion that has been carried out, it can be concluded that the number of business units has a negative and significant effect on the GRDP of the industrial sector in Central Java in 2014-2018. Whereas the district labor and district minimum wage have a positive and significant effect on the GRDP of the industrial sector in Central Java in 2014-2018.

With this research, it is hoped that the government will facilitate the process of managing a permit to establish a business, because it will thus encourage entrepreneurs to establish industrial units. The large number of industrial units will increase the volume of production and ultimately increase the GRDP of the manufacturing industry sector. In addition, with the number of business units it will absorb labor in the sector so that it can reduce the number of unemployment. The government is expected to increase the absorption of labor by developing the existing industrial sector, especially in Central Java.

Based on the direct experience of researchers in this research process, there are several limitations experienced by researchers, hopefully in the future it is more attention for researchers, because this research itself has deficiencies that need to be improved in further studies. Some limitations in this study, including:

1. This research was conducted only to find out the manufacturing industry sector by district or city, not according to the industrial sector or sub-sector.
2. Limited research first causes a lack of reference in making this research.
3. This research only uses 3 independent variables, namely district minimum wages, labor, number of business units. While there are still many factors Others that can affect the GRDP of the manufacturing industry sector, so that this research does not cover the whole factors that affect the GRDP of the industrial sector.

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