Determinants of Micro and Small Industries on Gross Regional Domestic Product (GRDP) of Processing Industry Sector in Provinces of Java Island

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Abstract. Micro and Small Industries (MSI) are part of the processing industry which is known for its labor-intensive nature and minimal capital. This research aims to examine and analyze the influence of inflation, wages, units, labor and income of micro and small industries (MSI) on the Gross Regional Domestic Product (GRDP) of Processing Industry Sector in The Provinces of Java Island. The research method used in this research is Ordinary Least Square Multiple Linear Regression and panel data. The research variables used are inflation, inflation, wages, units, labor and income of micro and small industries (MSI) which are then used as independent variables that influence the Gross Regional Domestic Product (GRDP) of Processing Industry Sector, which is used as the independent dependent variable. The research results show that inflation, wages, units, labor and income of MSI partially or simultaneously have a positive and significant effect on GRDP of processing industry sector reaching 79.91 percent.

Keywords: Micro and Small Industries, MSI, GRDP, Processing Industry Sector, Inflation, Wages, Units, Labor, Income.

1 Introduction

One of the business fields in Indonesia that contributes from the production side to economic growth is the processing industry sector.[1] In 2021, the manufacturing industry sector managed to grow by 3.39 percent. When viewed from its contribution to the value of Gross Domestic Product (GDP), the processing industry sector has a contribution of 19.25 percent, ranking first out of twenty other business fields. This contribution illustrates the important role of the manufacturing industry sector as a driving force of the economy and supporting the Indonesian economy. Micro and Small Industries (MSI) are part of the processing industry which is known for its labor-intensive nature and minimal capital. Apart from contributing to GDP, MSI also acts as a safety net for businesses affected by the financial and economic crisis.[2] The percentage of micro and small industries in Indonesia reaches 99% or in other words the industries in Indonesia are micro and small industries.

In 2021, the estimated number of MSI's units/companies in Indonesia will be 4.16 million. The distribution of MSI's units locations is centered on the island of Java, which is around 60.38 percent of the total MSI's units throughout Indonesia. Three large provinces like Central Java, East Java and West Java, dominate the distribution of MSI's units, with each province having more than 600 thousand MSI's units.[3]

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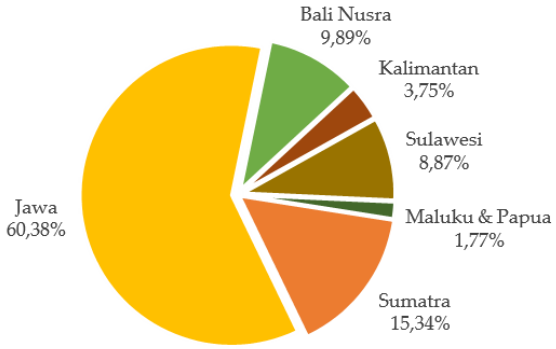

Figure 1. Distribution of MSI's Units by Island in 2021

In 2021, MSI's units will be able to absorb a labors of 9.11 million people. Based on distribution patterns, the largest number of MSI's labors is on the island of Java, namely around 5.97 million people. Meanwhile, MSI's labors on the islands of Maluku and Papua are the fewest with less than 130 thousand people.[3]

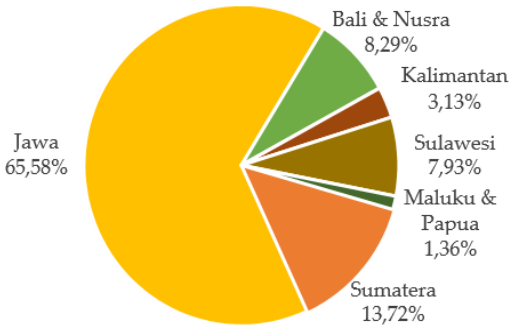

Figure 2. MSI's Labors Distribution by Island in 2021

2 Literature Review

2.1 Inflation

Inflation is the tendency to increase the prices of goods and services in general and continuously. Based on its source, inflation can be categorized into two, namely demand-pull inflation and cost-push inflation. The general indicator used to measure the level of inflation is the CPI (Consumer Price Index), an index that describes price indicators used to see the success of monetary policy in controlling inflation.

Inflation is the tendency for prices to rise generally and continuously. An increase in the price of just one or two goods cannot be called inflation, unless the increase extends to or results

in an increase in most other goods. Inflation is caused by many things, including monetary policy carried out by the government which is directly related to the economic development of a country with measurement indicators including increases or decreases in interest rates, the amount of money in circulation, inflation, the rupiah exchange rate and unemployment.

Economic conditions with high inflation rates can cause changes in output and employment opportunities. High inflation rates also have an impact on unemployment. If the inflation rate is high, it can cause high unemployment rates, this means that the development of job opportunities is getting smaller or in other words the amount of labor absorbed will also be small, so the government must implement appropriate macro policies in order to maintain low inflation rates and control the amount of money. circulating in society.[4]

2.2 Wages

According to Law Number 13 of 2013, it is stated that the Provincial Minimum Wage or Regional Minimum Wage is the minimum standard used by entrepreneurs or industrial players to provide wages to employees, employees or laborers in their business or work environment. Wage payments are principally given in the form of money. Wages are basically a reward from employers to workers for work that has been or will be done, expressed or assessed in a form determined according to the agreement or applicable laws and regulations.

One of the problems that usually arises in the labor force sector is an imbalance between demand for labor (demand of labor) and supply of labor (supply of labor), at a certain wage level. This imbalance is where supply is greater than demand for labor (excess supply of labor) or demand is greater than supply of labor (excess demand of labor) in the labor market.

The theory that explains the background to the formation of labor wages :

(1) The Wage Fund Theory.
    According to this theory, the amount of wages depends on the demand and supply of labor. Meanwhile, the supply of labor depends on the amount of wage funds, namely the amount of capital provided by the company for wage payments. An increase in population will encourage wage levels to tend to fall, because the number of workers is not proportional to the number of workers supplied. The situation is reversed, if the supply of labor is higher than the demand for labor, wages tend to rise.
(2) Natural Wage Theory.
    David Ricardo's theory explains that wages according to nature are wages that are sufficient to maintain the lives of workers and their families. In the market there will be wages according to market prices, namely wages that occur in the market are determined by the demand and supply of labor. Market price wages will change around according to nature. Therefore, modern experts use natural wages as the minimum limit for work wages.
(3) Iron Wage Theory.
    Founded by discovered by Ferdinand Lasslle. The implementation of the natural wage system creates pressure on workers, because we know that workers are in a position where it is difficult to penetrate the wage policies that have been set by producers. In connection with these conditions, this theory is known as the "Iron Wages Theory". For this reason, Lasslle recommended that in order to confront the producers' policies regarding wages, a labor union should be formed.
(4) Ethical Wage Theory.

Ethical Wage Theory according to Utopians (those who have idealistic ideals of society) the actions of entrepreneurs who pay wages only enough to meet minimum needs, are unethical actions. Therefore, it is better for employers, apart from providing decent wages to workers and their families, to also provide family benefits. Income is the maximum value that can be consumed by someone in a period with the expectation that the situation will be the same at the end of the period as the initial situation. Income is the remuneration given to workers or laborers who have an employer but are not permanent.

2.3 Micro and Small Industries (MSI)

Industry is an economic activity that processes raw materials, raw materials, semi-finished goods or finished goods into goods of high value. Another definition states that industry is something that produces finished goods through a processing process in large quantities so that these goods can be obtained at the lowest possible price but with the highest possible quality.

According to the Central Statistics Agency (BPS) of the Republic of Indonesia, micro industry is an industry that has a workforce of less than 5 (five) people. The characteristics of a micro industry are:[5]

1) Most of the workers are members of the owner/entrepreneur's own family who are generally not paid.
2) The production process is still manual and done at home.
3) Production is seasonal following activities in the agricultural sector which are seasonal.
4) The type of production is simple for simple consumption too.

The role of micro industry in the Indonesian economy can at least be seen from:

1) Its position as a major player in economic activities in various sectors.
2) Largest job provider.
3) An important player in the development of local economic activities and community empowerment.
4) Creator of new markets and source of innovation
5) Its contribution to maintaining the balance of payments through export activities micro industry is an economic enterprise that is widespread throughout the region.

According to the Central Statistics Agency (BPS) of the Republic of Indonesia, small industry is an industry that has a workforce of between 5 (five) to 19 (nineteen) people. Small industry has the following characteristics:[6]

1) Business activities are not well organized.
2) In general, business units do not have business permits.
3) The pattern of business activities is not focused in terms of location or working hours.
4) In general, the government's policy to develop economically weak groups does not extend to the small industrial sector.

2.4 Labor

Labor has several definitions, according to Law No. 13 of 2003 concerning Employment, labor is every person who is able to do work to produce goods and/services both to meet their own needs and those of the community. The workforce includes residents who have or are

currently working, who are looking for work, and who carry out other activities such as attending school and taking care of the household.

Labor or man power consists of the workforce and non-labor force. The workforce or labor force is the part of the workforce that wants and actually produces goods and services.[7] The labor force consists of groups who are employed and groups who are unemployed and looking for work. The non-labor force group consists of those attending school, those taking care of the household, and other groups or income earners.

Labor demand theory is a theory that explains how much a company will employ workers at various wage levels in a certain period. Labor demand is different from consumer demand for goods and services. People will buy goods or services because the goods provide benefits to the buyer. However, for entrepreneurs, hiring someone aims to help produce goods or services to sell to consumers. Therefore, the increase in entrepreneurs' demand for labor depends on the increase in public demand for the goods and services they produce. Thus, the demand for labor is a derived demand.

In neo-classical theory, it explains that in a market economy it is assumed that an entrepreneur cannot influence prices (price taker). To maximize profits, entrepreneurs can only regulate the number of employees they employ. Labor absorption is defined as the number of workers absorbed in a sector in a certain time.[8] This absorption of labor is a derivative of the production function of an economic activity. Production is a change from input or input (production factors) to output or output.

2.5 Income

Income is the main goal of establishing a company. As a profit-oriented organization, income has a very large role. Income is an important factor in the operations of a company, because income will influence the level of profit which is expected to ensure the company's survival. Referring to BPS, income includes main income, income from industrial services (*maklun*), income from other activities, and other income.

1) Income from production and income from *maklun* services is the value of goods/services produced by an industry, both main and side production. Included in production are goods that are ready to be marketed and goods that are still in process (semi-finished).
2) Income from other activities related to the business is income obtained by the company from not the main activity but which is still part of a business unit with the main activity.
    a. Profit/loss on sales of goods in the same form. The difference in the selling and buying value of goods in the same form (without changing shape/without processing).
    b. Interest on deposits. The company's income from deposits on other parties includes bond interest and receivable interest.
    c. Profit sharing. Company income from profit sharing with other parties running business partnerships.
    d. Dividends. Income from shares both traded and not traded on the stock exchange.
    e. Imputation results. The value of income resulting from imputation of raw materials that is not released in real terms.
    f. Donations, grants, prizes, and the like. Income value in the form of transfers from other parties (donations, grants, gifts and the like).

3) Other income is income from other activities such as renting out capital goods belonging to the company, selling production waste/waste, income from renting equipment/machines/buildings owned by the business.

2.6 Income

Gross Regional Domestic Product (GRDP) is an economic measure to assess the economic performance of a region. GRDP is the amount of added value produced by all business units or the total value of final goods and services produced by all economic units in an area in a certain time period. GRDP can also show how goods and services are used, both for consumption, exports, for inventory for sale in the future period.

GRDP can be defined based on three approaches, namely:

1) Production Approach
   GRDP is the sum of the added value of goods and services produced by various production units in a country in a certain period of time (usually one year) plus taxes on net products (taxes minus subsidies on products).
2) Income Approach
   GRDP is the amount of remuneration received by production factors that take part in the production process in a region/region over a certain period of time (usually a year).
3) Expenditure Approach
   GRDP is all components of final demand which consist of : (1) Household Consumption Expenditures, (2) Consumption Expenditures of Household Non-Profit Institutions/LNPRT, (3) Government Consumption Expenditures, (4) Gross Domestic Fixed Capital Formation, (5) Changes in inventory, and (6) Net Exports (exports minus imports).[9]

GRDP includes of : (1) Agriculture, Forestry, and Agriculture; (2) Mining and excavation; (3) Processing industry; (4) Procurement of Electricity and Gas; (5) Water Supply, Waste Management, Waste and Recycling; (6) Construction; (7) Wholesale and Retail Trade, Car and Motorbike Repair; (8) Transportation and Warehousing; (9) Provision of accommodation and food and drink; (10) Information and Communication; (11) Financial Services and Insurance; (12) Real Estate; (13) Company Services; (14) Government Administration, Defense and Mandatory Social Security; (15) Education Services; (16) Health Services; and (17) Other Services.

3 Methodology

In this research, the sample used was a saturated sample (purposive sampling), namely using six provinces on the island of Java as samples for 10 years (2012-2021). The research method used in this research is the quantitative method. In this research there are 2 (two) variables used, namely the independent variable and the dependent variable. The independent variables are inflation (X1), Wages (X2), MSI's Units (X3), MSI's Labor (X4), and MSI's Income (X5) and the dependent variables are GRDP of processing industry sector (Y).

This research uses panel data. The panel data used is data from six provinces on the island of Java and a period of 10 years from 2012-2021. Calculation of regression coefficients for this research uses Eviews 10 software. To estimate the equation model in this research, panel

analysis techniques are used, where panel data is a combination of Time Series and Cross Section data. In general, there are three panel data regression estimation techniques, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM).

4 Result and Discussion

To determine and select the appropriate panel data model from the three existing panel data regression estimation models, the Chow Test, Hausman Test and Lagrange Multiplier (LM) Test were carried out. The Chow test is used to choose whether the model is CEM or FEM. The Hausman test is used to choose whether the model is FEM or REM. The LM test is used to choose whether the CEM or REM model.

The F test or simultaneous test is a test to see the effect of all independent variables on the dependent variable. The t test or partial test is used to find out how far the independent variable partially has an individual influence on the dependent variable. Regression is a process of systematically estimating what is most likely to happen in the future based on existing past and present information so that errors can be minimized. The Multiple Linear Regression Equation is used in the Model.

The R^2 coefficient shows the model's ability to explain the relationship between the independent variable and the dependent variable. The R^2 value will always be between 0 and 1. The closer it is to 1, the greater the ability of the independent variable to explain its effect on the dependent variable.

The summary of panel data regression estimates for the dependent variable is GRDP of the processing industry sector (PDRB) and the independent variables are inflation (IFL), wages (UPH), IMK units (UNT), IMK labor (TKI) and IMK income (PTI) shown in table 1.

Table 1. Summary of Panel Model Data Test Results

Variable	**Panel Data Regression Model**					
	CEM		**FEM**		**REM**	
Independent	**Coefficient**	**Prob.**	**Coefficient**	**Prop**	**Coefficient**	**Prob**
	-22.07911		5.845467		-22.34063	
		0.0025		0.0000		0.0000
IFL	0.655524		0.096724		0.672719	
		0.0000		0.0043		0.0000
UPH	1.394417		0.377368		1.415279	
		0.4621		0.0000		0.0000
UNT	0.271146		0.228645		0.304951	
		0.6428		0.0086		0.0000
TKI	-0.220607		0.159828		-0.258940	
		0.0000		0.0227		0.0000
PTI	1.227240		0.083448		1.230294	
		0.00010		0.0352		0.0000
R-squared	0.812181		0.799300		0.811325	

Adjusted R-squared	0.794790	0.799154	0.793526
Prob (F-statistic)	0.000000	0.000000	0.000000
Durbin-Watson	1.051939	2.011937	1.062900

The conclusion of the results of the Chow Test and Hausman Test for the model is shown in table 2. and it is concluded that the best model is the Fixed Effext Model (FEM).

Table 2. Conclusion of Model Test Results

No.	Method	Test	Summary
1.	Chow Test	CEM vs FEM	*Fixed Effect Model (FEM)*
2.	Uji Hausman	REM vs FEM	*Fixed Effect Model (FEM)*

Based on the results of the Fixed Effect Model (FEM) in table 1 obtained with Eviews 10 where inflation / IFL (X1), wages / UPH (X2), IMK / UNT units (X3), IMK / TKI workers (X4) and IMK income / PTI (X5) influences industrial sector GDP / GRDP (Y), the regression equation can be seen as follows:

$\hat{Y} = \alpha i + \beta_{1it} X_{1\,t} + \beta_{2\,t} X_{2\,t} + \beta_{3\,t} X_{3\,t} + \beta_{4\,t} X_{4\,t} + \beta_{5\,t} X_{5\,t} + \varepsilon it$

$\ln \hat{Y}\, t = \alpha i + \beta 1\ \ln X1it + \beta 2\ \ln X2it + \beta 3\ \ln X3it + \beta 4\ \ln X4it + \beta 5\ \ln X5it + \varepsilon it$

PDRD $= \alpha i - \beta_1 IFL + \beta_2\ UPH + \beta_3\ UNT + \beta_4\ TKI + \beta_5\ PTI$

PDRB $= 5{,}845467 + 0.096724\ X_1 + 0{,}377368\ X_2 + 0{,}228645\ X_3 + 0{,}159828\ X_4 + 0{,}083448\ X_5$

The results of the F test which shows the influence of the independent variables simultaneously on the dependent variable based on table 1 can be seen in Table 3.

Table 3. Effect Test Results of IFL, UPH, UNT, TKI, PTI Simultaneously on PDRB

Simultaneous Influence	R^2	*Adjusted* R^2	F-statistic	Prob(F-statistic)
IFL, UPH, UNT, TKI, PTI	0.799300	0.799154	684.7628	0.000000

The results of the t test which show the influence of the independent variable partially on the dependent variable based on table 1 can be seen in Table 4.

Table 4. Effect Test Results of IFL, UPH, UNT, TKI, PTI Partially on PDRB

Dependent Variable	t-statistic	Prob(t-statistic)
Inflation (IFL)	6.412357	0.0043
Wages (UPH)	13.73550	0.0000
MSI's Units (UNT)	4.274537	0.0086
MSI's Workers (TKI)	3.495189	0.0227
MSI's Income (PTI)	3.606223	0.0352

The coefficient of determination (R^2) measures how far the model's ability to explain variations in the dependent variable, the value of the coefficient of determination (R^2) is between 0 and 1. The results of data processing in table 1 above are used to see the Coefficient of Determination (R^2) or Adjusted R-squared of 0.799154 , meaning that IFL, UPH, UNT, TKI and PTI influence the GRDP of the processing industry sector (PDRB) by 79.91%, while the remaining 20.09% is influenced by other factors not included in the model.

5 Conclusion

Based on the research results and discussion, the conclusions of this research are as follows:

1. Inflation, Wages, MSI's Units, Labor and Income simultaneously have a significant effect on the Gross Regional Domestic Product (GRDP) of the processing industry sector in six provinces on the island of Java. The Determinant Coefficient value (Adjusted R^2) is 0.7991 or the influence reaches 79.91 percent, which shows the large influence of inflation, wages, SMI's units, workers and income on GRDP in the processing industry sector.
2. Inflation has a significant and positive effect on the GRDP of the processing industry sector in six provinces on the island of Java. Inflation is an increase in the price of goods or services where the goods or services are used as raw materials for MSI.
3. Wages have a significant and positive effect on GRDP in the processing industry sector in six provinces on the island of Java.
4. The MSI's unit has a significant and positive influence on the GRDP of the processing industry sector in six provinces on the island of Java.
5. MSI's workers have a significant and positive influence on the GRDP of the processing industry sector in six provinces on the island of Java.
6. MSI's income has a significant and positive effect on GRDP in the processing industry sector in six provinces on the island of Java.

References

[1] A. Ropik, Y. Yulmardi, and J. K. Edi, "Analisis Pengaruh Investasi, Unit Usaha, dan Tenaga Kerja Terhadap PDRB Sektor Industri Pengolahan di Provinsi Jambi," *e-Jurnal Ekonomi Sumberdaya dan Lingkungan*, vol. 6, no. 2, pp. 80–96, Jul. 2017, doi: 10.22437/jels.v6i2.11917.

[2] A. Nurhardiansyah and N. Istiyani, "Pengaruh IPM, PDRB, UMP dan Inflasi Terhadap Kesempatan Kerja di Pulau Jawa Tahun 2006 – 2015," *Jurnal Ekuilibrium*, vol. 1, no. 2, pp. 56–61, 2017.

[3] Subdirektorat Statistik Industri Kecil dan Rumah Tangga, "Perkembangan Indeks Produksi Triwulan Industri Mikro dan Kecil 2017 – 2019," Jakarta, 2019.

[4] H. N. Alifa, E. B. Kusumaningrum, and D. P. Maharani, "INDUSTRI MIKRO DAN KECIL: PERAN TERHADAP PEREKONOMIAN DAERAH DAN PENYERAPAN TENAGA KERJA," *Surplus: Jurnal Riset Mahasiswa Ekonomi, Manajemen, dan Akuntansi*, vol. 1, no. 1, pp. 25–38, Jun. 2021, doi: 10.35449/surplus.v1i1.365.

[5] Badan Pusat Statistik, "Profil Industri Mikro dan Kecil 2019," Jakarta, 2020.

[6] Badan Pusat Statistik, "Statistik Indonesia 2020," Jakarta, 2020.

[7] D. Rezky Pratama and S. Ulfa Eka Hadiyanti, "Pengaruh Produk Domestik Regional Bruto terhadap Kesempatan Kerja di Provinsi Kalimantan Timur," *Borneo Student Research*, vol. 1, no. 2, pp. 800–805, 2020.

[8] F. Paradisi, “Analisis Pengaruh Sektor Industri Pengolahan Terhadap Kemiskinan di Jawa Tengah, Direktori Mini Tesis – Disertasi,” Master’s Thesis, Universitas Gajah Mada, Yogyakarta, 2018.

[9] E. Wibisono, A. Amir, and Z. Zulfanetti, “Pengaruh Belanja Modal, Investasi, dan Tenaga Kerja terhadap PDRB Sektor Industri Pengolahan di Provinsi Jambi,” *Journal of Regional and Rural Development Planning*, vol. 3, no. 3, pp. 200–212, Oct. 2019, doi: 10.29244/jp2wd.2019.3.3.200-212.