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The Effects of Number of Industrial Enterprises, Value of Input, Value of Output, And Regional Minimum Wage on Labor Demand in Indonesia : An Empirical Study on Micro Industrial Enterprises

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Abstract

The purpose of this research is: (1) to identify the effects of variables of: the number of industrial enterprises, the value of input, the value of output, and the regional minimum wage on the labor demand in Indonesia, especially in micro industrial enterprises, (2) to detect the elasticities of the variables toward the labor demand in the micro enterprises. To estimate the data, regression of panel data is used.

The results of the research show that the variable of the number of micro industrial enterprises positively and significantly affects the labor demand of micro industrial enterprises. The variable of input value negatively affects the labor demand of micro industrial enterprises but not significant. The variable of output value positively affects the labor demand of micro industrial enterprises but not significant. While the variable of regional minimum wage negatively and significantly affects the labor demand of micro industrial enterprises. All variables are inelastic on the labor demand. The government needs to stimulate the growth of the number of micro industrial enterprises to be able to absorb more labors. The micro industrial enterprises need to build relationships with other companies for the mutually benefit, strengthen and support each other.

Keywords: labor demand, number of enterprises, regional minimum wage, value of input, value of output

JEL Classification : D04, C23, C49, J01.

1. INTRODUCTION

One business field that can absorb the labor force is an industrial sector. The industrial sector in Indonesia is very diverse where there are major differences between large and medium scale industries with small micro-scale industries. The differences may depend on absorption of labor, capital, and other resources. Large-medium industries play an important role because they have a better position in terms of achieving growth in productivity and wages, withdrawal of investment expertise, transfer of technology, and the provision of social security. On the other hand, when a small-micro industries show a higher growth rate in employment opportunity, this sector is disadvantaged in terms of other characteristics. Thus, to strengthen the competitiveness

and productivity of micro-small business units, in particular, "home-based industries" and "home workers", become a very important task.

In Indonesia's economic development, micro and small enterprises are always portrayed as a sector with an important role, because most of the population is poorly educated and live in small enterprises activities in both the traditional and modern. But the development effort that has been implemented is still not a satisfactory result because, in reality, the progress of micro and small enterprises are very small compared to the progress achieved by large enterprises. High population growth led to the increasing number of the labor force, but the high number of the labor force is not balanced by the number of jobs available so that this can lead to unemployment.

In the labor market, an increase in labor force brings the number of labor supply also increases. But on the other hand, the demand for labor is still less able to absorb the existing workforce. Lack of jobs available is not balanced by the increase of the labor force will contribute to the high number of unemployed. The role of micro and small enterprises in the economic development of the most evident is in terms of employment. Micro and small enterprises are able to absorb more labor compared to large and medium enterprises, because of the characteristics of the job sector in micro and small enterprises do not need many requirements as in large and medium enterprises. The comparison of the number of workers absorbed in micro, small, and large enterprises presented in Table 1 and Table 2 below.

Table 1. Number of Micro, Small Industrial Enterprises and Absorption of Labor

Year	Number of Enterprises (unit)			Number of Labor (person)
	Micro	Small	Number	
2013	2,887,015	531,351	3,418,366	9,734,111
2014	3,220,563	284,501	3,505,064	8,362,746
2015	3,385,851	283,022	3,668,873	8,735,781

Source : BPS, 2015. www.bps.go.id (processed by author)

Tabel 2. Number of Medium-Large Enterprises and Absorption of Labor

Year	Number of Medium-Large Enterprises (unit)	Number of Labor (person)
2012	23,592	4,629,369
2013	23,698	4,928,839
2014	23,744	5,182,908

Source : BPS, 2015. www.bps.go.id (processed by author)

Many factors affect the number of labor demand. Feriyanto (2015) has expressed several independent variables that can affect the labor demand, i.e: wage, product sales, and the interest rate. It is also argued that the factors that can lead to the shifting of the balance of the labor demand are the number of producers, the amount of output demand, government policies, economic growth, technology, the budget of labor costs, and the price of labor input. In this study, not all these factors are analyzed but only includes four variables: number of producers or the number of industrial enterprises, wage, the value of input, and value of output. It is based on

the suitability of available secondary data published by Badan Pusat Statistik (BPS) Indonesia (Central Agency on Statistic of Indonesia).

According to Simanjuntak (2001) wages have an influence on employment. If the higher wage rates are set, it causes the rising cost of production. To make the efficiencies, enterprises are forced to reduce the workforce, which resulted in low levels of employment. Therefore, the rates of wage have a negative impact on employment (Nurafuah, 2015). In this study the variable of wage using the proxy of regional or province minimum wage in accordance with the Labor Law No. 13 the year of 2003 (UU No. 13/2003).

The rising prices (costs) of input factors may encourage manufacturers to perform substitution by reducing the use of input factors with more expensive price, then replace it by increasing the use of labor. The value of the input is the cost incurred in the production process. Then, the use the enterprises' workforce will be affected by the level (volume) of product sales. The larger the enterprises' product sales, it can push enterprises to increase the labor demand so that production can be increased to pursue an increase in sales. The rise of product sales due to the rising of product demand can be affected by the rise in average income of residents. The higher the average income of the population hence the need for consumption of goods, in general, will rise and can motivate entrepreneurs to raise the output. The variable of sales volume is proxied by the value of the output of the enterprises. The output is the value of the output produced from the industrial activity.

Noting the above phenomenon, i.e: (1) the growth of number of enterprises tends to increase the absorption of the workforce, which in turn increases the labor demand, (2) the great sales of products is able to encourage the increase of labor demand, (3) the increase in the price or value of input, (4), as well as the higher wage of labor will cause the labor demand to decrease, it is necessary to investigate whether the variables mentioned above could significantly affect the labor demand or not. This study is restricted to the micro industrial enterprise where its workforce a number of 1 - 4 persons (BPS, 2016). The research objective is to determine whether the variables of a number of industrial enterprises, the regional minimum wage (UMR), the value of the input, and the value of output significantly affect the labor demand on micro industrial enterprises. Furthermore, the study is also to determine how much the sensitivity that occurs in the labor demand as a result of changes in these variables.

2. LITERATURE AND PREVIOUS STUDIES

2.1 Manufacturing, Micro Industrial, and Labor

In Indonesia, there is a diversity of manufacturing definition, type of enterprises and labor. There are certain institutions that give definition to classify "micro and small enterprises", and there is also a grouping into "small and medium enterprises (SMEs)". However, in this study the definition is restricted to the definition given by the Badan Pusat Statistik-BPS (Central Agency on Statistic of Indonesia) (BPS, 2016), namely:

(1). Manufacturing

Manufacturing is an economic activity which conducts transform basic goods mechanically, chemically, or by hand so be finished /semi-finished, and or goods have less value to goods of higher value, and their characteristics are closer to the end user. Included in this activity is a service industry and assembling. Services industry is industrial activities that serve the needs of others. In this activity the raw material provided by the other party while the manufacturer is only doing its manufacturing rewarded with a sum of money or goods as a

service fee or wage. For an example, rice milling enterprises conducting grinding rice of farmers with a certain fee. Enterprises or industrial business is a unit of business doing economic activities, producing a good or service, located in a building or particular location, and maintain business administration regarding production and cost structure as well as at least one person who is responsible for the business.

(2). Small and Micro Industrial Enterprise

Micro industrial enterprises is an industrial enterprise of its labor a number of 1- 4 persons. Small industrial enterprises is an industrial enterprise of its labor a number of 5 – 19 persons. The classifications of industrial enterprises are solely based on the number of people working, regardless of whether the enterprise is using the engine power or not, and regardless of the capital of the enterprise.

(3). Labor

The number of labor is the number of workers or employees working on average daily either paid workers and workers who are not paid. Production workers are workers who work directly in the production process or related to it, including workers who directly supervise the production process, operating machinery, noting the raw materials used and the goods produced. Other workers are workers who are not directly related to the production process, these workers usually as a firm support worker, such as managers (not production), head of personnel, secretaries, typists, the night watchman, company drivers, etc.

In this study, the research is only performed on micro industrial enterprises. This is caused by the incomplete data of small industrial enterprises from provinces in Indonesia during the period of the year 2013 – 2015.

2. 2 Absorption of Labor or Labor Demand

The absorption of labor explains the relationship between the desired quantity of labor with wage level. Labor demand done by employers indicate that they can increase the production of goods or services and then sell it to consumers. Furthermore, the growth of labor demand depends on the increase of the demand of public for goods and services (Simanjuntak, 2001). According to Sudarsono (1988), labor demand related to the quantity of labor required by the company or a particular agency. Labor demand is influenced by changes in wage rates and changes in other factors affecting demand for production, such as the volume of production, the price of capital goods or tools used in the production process. In this regard, Todaro (2003) expresses that absorption of labor is the acceptance of the workers to do the job properly or the existence of a situation that illustrates the availability of workers or jobs to be filled by job seekers. In terms of profit maximization, employers simply can set how many employees could be employed. For the consideration, a company needs to estimate the additional output obtained by the company in connection with the addition of an extra employee, also called as the marginal physical product (MPP) of employees (Feriyanto, 2015). After that, the additional marginal result or also called marginal revenue (MR) can be calculated by multiplying the value of the MPP with the price per unit of output.

Basically, the absorption of labor depends on the size of the labor demand. In general, the absorption of labor shows the ability of a company to absorb a number of labor to produce a product Kuncoro (2002) conveys that the absorption of labor is the number of jobs that have been filled that reflected in a large number of people working. Working population absorbed and

scattered in various of sectors of the economy. The absorption of working population caused by the labor demand. Therefore, the absorption of labor can be regarded as the labor demand.

2.3 Minimum Wage

Definition of wage according to the Act No. 13 of 2003 on Manpower, Chapter I, Article 1, Paragraph 30 : A wage is the right of the worker/ labourer that is received and expressed in the form of money as remuneration from the entrepreneur or the employer to workers/ labourer, whose amount is determined and paid according to a work agreement, consensus, or laws and regulations, including allowances for the worker/ labourer and their family for a job and or service that has been performed or will be performed. Then in article 89, the wage as mentioned in paragraph 30 is the minimum wage. The minimum wage is provincial or district/city-based minimum wages and provincial or district/city-based sectoral minimum wages. Briefly, it is termed as the Regional Minimum Wage or Provincial Minimum Wage. The minimum wage shall be determined by the Governor after considering the recommendations from Provincial Wage Councils and/or District Heads/Mayors.

Theoretically, a wage given by an employer is considered as the price of worker energy that sacrificed for the sake of production. In connection with it, the wage of the worker can be divided into two kinds: (1) nominal wage is a wage that is expressed in the form of money received regularly by a worker, (2) real wage is the ability of nominal wages received by a worker if exchanged for goods and services, as measured by the number of goods and services that can be obtained from the exchange (Sukirno, 2008). At present, the feasibility of a minimum wage standard is based on the needs of workers in accordance with the following criteria: (1) the needs for minimum living, (2) the Consumer Price Index (CPI), (3) the ability of the company, its growth and sustainability, (4) the standard minimum wage in the surrounding area, (5) labour market conditions, and (6) economic growth and income per capita. However, some of the variables used to assess the feasibility of the minimum wage are the regional economic growth, inflation, and minimum living needs of workers (Feriyanto, 2014).

Iksan (2010) states that the problem in determining the regional minimum wage lies on the method of calculation. There is a real difference in productivity among the business sectors. The sectors that use educated and skilled workers, generally have paid the wages far above minimum wage because it reflects the productivity. But many other sectors which have low productivity pay the wage below the minimum wage so that the minimum wage policy by the government will hit this sector, generally the labor-intensive sectors. That's why the wage system is a framework for how the wage is set and determined in order to improve the welfare of workers.

Meanwhile, according to Sumarsono (2009), in Indonesia, the wages determined are generally based on the three functions of wages, namely: (1) to ensure a decent living for workers and their families, (2) to reflect a reward for one's work, (3) to provide incentives to encourage the increasing of labor productivity. Furthermore, Sumarsono (2009) reveals that some economists argue that the setting of a minimum wage will hamper the job creation. Other economists with the empirical evidence show that the application of the minimum wage is not always identical with a reduction in employment, even be able to encourage the process of economic recovery.

2. 4 Relationship of Number of Enterprises, Wage, Value of Input, Value of Output, And Regional Minimum Wage on Labor Demand

Prabowo (1997) argues that the more the number of enterprises or business units that established, the more the addition of labor. It means that if the enterprise units increase, the demand of labors also increases. This relationship is strengthened by Rejekiningsih (2004) which states that the number of business units and outputs have a significant effect on employment. The influence of the number of business units on employment is positive, which means that the increasing of the number of business units will increase the number of labors absorbed.

Wage also has an influence on labor demand. If the higher the wage rates are set, the higher the cost of production, and to make the efficiencies, the enterprises are forced to reduce the workforce reductions, which in turn causing the low levels of employment. Thus, the wage has a negative impact on labor demand. For the enterprises, the labor cost is the cost of production, so the increasing of labor cost will decrease the profit (Simanjuntak, 2001; Hinnosaar & Room, 2003). A similar opinion is also expressed by Kuncoro (2001), the quantity of labor occupied in enterprises will decline as a result of wage increases. If the wage rate rises, while prices of other inputs are fixed, meaning the price of labor is relatively more expensive than other inputs. This situation encourages the enterprises to reduce the use of relatively expensive labor in order to maintain the maximum profit.

Feriyanto (2015) argues that the value of the input and the value of the output can affect the number of labor demand. If the price of inputs rises, this could encourage the manufacturers to perform substitution by reducing the use of more expensive inputs, then replace it by increasing the use of labor. The value of the input is the cost incurred in the production process. The use of labor would be affected by the level (volume) of product sales. The larger the product sales can push the enterprises to increase the labor demand so that the production can be raised to pursue an increasing in sales. Besides, the rise of product sales due to the rising of demand for the product can be affected by the rise in average income of population in a country. The higher the average income of the population, hence the need for consumption of goods, in general, will rise and can motivate enterprises to raise their output. The output is the value of the product produced from the industrial activity.

2. 5 Previous Studies

Wulandari (2015) has performed the research in the sectors of the food industry, beverages and tobacco in Province of North Sumatra. The result of the study indicates that the variables of investment in industrial sectors and a number of industries have a positive and significant impact on labor demand. The variable of regional minimum wage has a negative and significant effect on labor demand, while the variable of inflation has a negative effect but not significant on labor demand. The result also shows that the most dominant variable affect the labor demand in sectors of the food industry, beverages, and tobacco in Province of North Sumatra is the regional minimum wage.

Nurafuah (2015) has conducted the research related to absorption of labor in Province of Central Java. He concludes that the number of small and medium enterprises (SMEs) and the investment have a positively and significant correlation with the absorption of labor. In Province of Aceh, the result of research conducted by Arida et al (2015) shows that the variable of land area and investment have a positive and significant effect on labor demand in the agricultural sector, while the variable of wage has a negative effect but not significant on labor demand. Budiawan (2012) has also conducted the research on the fish processing industry in District of

Demak, Province of Central Java. He indicates that the value of wages, the value of production, and the capital have a positive and significant effect on the absorption of labor.

The result of research conducted by Prabandana (2015) in District of Sukoharjo, Province of Central Java shows the different result. The research reveals that the capital has no effect on the absorption of labor in the sector of small industries in Sukoharjo, arguing that the increasing of capital undertaken by the industries to add the modern equipment has been capable of producing the greater products than labor. However, the value of production has a positive and significant effect on the absorption of labor, meaning the high or low of the number of labor demand affects the high and low of the number of goods produced by the labor force. While the wage rate has a negative and significant effect on the absorption of labor, meaning that the higher the rate of wages, the smaller the labor demand in the sector of small industries.

Then the study of Arianti (2003) in District of Jepara, Province of Central Java mentions that the value of production and value of production one year ago have a positive influence on the labor demand. The wage rate and wage rate one year ago negatively affect the labor demand. While non-wage labor expenditures and non-wage labor expenditures one year ago have a positive influence on the labor demand.

3. DATA AND MODEL SPECIFICATION

3.1 Data

The data used in this research is secondary data with the panel data. The time series data used is the period of the year 2013 - 2015. The cross-sectional data consist of the number of micro industrial enterprises, the value of the input, the value of output, the regional minimum wage, and labor demand of micro industrial enterprises in Indonesia that cover 34 provinces (Table 3). The data are collected from Badan Pusat Statistik-BPS (Central Agency on Statistic of Indonesia).

Tabel 3. Names of Provinces in Indonesia

Provinces	Code	Provinces	Code
ACEH	P1	NUSA TENGGARA BARAT	P18
SUMATERA UTARA	P2	NUSA TENGGARA TIMUR	P19
SUMATERA BARAT	P3	KALIMANTAN BARAT	P20
RIAU	P4	KALIMANTAN TENGAH	P21
JAMBI	P5	KALIMANTAN SELATAN	P22
SUMATERA SELATAN	P6	KALIMANTAN TIMUR	P23
BENGKULU	P7	KALIMANTAN UTARA	P24
LAMPUNG	P8	SULAWESI UTARA	P25
KEPULAUAN BANGKA BELITUNG	P9	SULAWESI TENGAH	P26
KEPULAUAN RIAU	P10	SULAWESI SELATAN	P27
DKI JAKARTA	P11	SULAWESI TENGGARA	P28
JAWA BARAT	P12	GORONTALO	P29
JAWA TENGAH	P13	SULAWESI BARAT	P30
DI YOGYAKARTA	P14	MALUKU	P31
JAWA TIMUR	P15	MALUKU UTARA	P32
BANTEN	P16	PAPUA BARAT	P33
BALI	P17	PAPUA	P34

3. 2 Model Specification

In this study, to estimate how the variables of the number of micro industrial enterprises, the value of the input, the value of the output, the regional minimum wage influence the labor demand of micro industrial enterprises in Indonesia, it is used the model that specified as follows:

$$LD_{it} = f(MIE_{it}, INPUT_{it}, OUPUT_{it}, RMW_{it}) \quad (1)$$

$$LD_{it} = \beta_0 + \beta_1 MIE_{it} + \beta_2 INPUT_{it} + \beta_3 OUPUT_{it} + \beta_4 UMR_{it} + e \quad (2)$$

$$LogLD_{it} = Log\beta_0 + \beta_1 LogMIE_{it} + \beta_2 LogINPUT_{it} + \beta_3 LogOUPUT_{it} + \beta_4 LogRMW_{it} + e \quad (3)$$

where: LD is labor demand of micro industrial enterprises (persons), MIE is the number of micro industrial enterprises (unit), RMW is the rate of regional minimum wage (Rp), INPUT is the value or price (cost) of inputs of production process (Rp), OUTPUT is the value of output or production (Rp), β_0 is a constant, and $\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficient of regression of independent variables, e is the error term, i is the observation of cross-section or provinces ($i = 1, 2, 3, \dots 34$), and t is the time series ($t = 2013, 2014, 2015$). The expected signs of the coefficient are $\beta_1 > 0, \beta_2 > 0$ or $\beta_2 < 0, \beta_3 > 0, \beta_4 < 0$.

3. 3 Regression of Panel Data

To estimate the variables that affect labor demand of micro industrial enterprises that use the panel, then the regression models of Common Effect, Fixed Effects, and Random Effect are used. To obtain the best model of the three models is determined by Chow Test and Hausman Test. Furthermore, to investigate the changes or sensitivity of dependent variable (LD) as a result of changes in the independent variables (MIE, INPUT, OUTPUT, RMW), the analysis of elasticity is performed.

4. RESULTS AND DISCUSSION

4.1 The Profile of Micro Industrial Enterprises in the Year of 2013-2015: Number of Labor Demand, The Number of Industrial Enterprises, The Value of Input, The Value of Output and Regional Minimum Wage

The focus of the discussion is a micro industrial enterprise by using workforce category embraced by the Central Agency on Statistic of Indonesia, namely one to four persons of workers. The profiles of the labor demand, the number of micro industrial enterprises, the value of the input, the value of the output, and regional minimum wage during the years of 2013 - 2015 are presented in the following pictures.

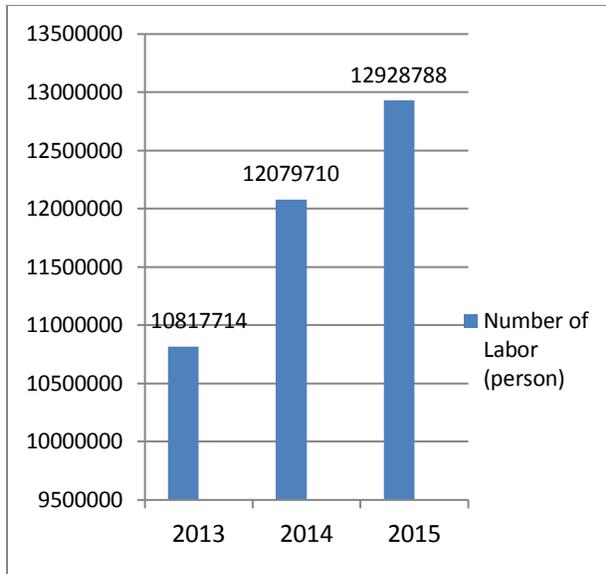


Figure 1.
Labor Demand of Micro Industrial Enterprises
(Source : Data Processing of BPS 2015, by author)

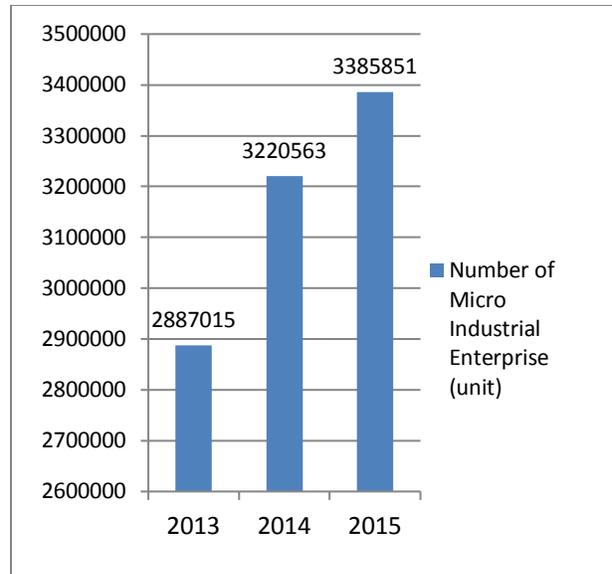


Figure 2.
The Number of Micro Industrial Enterprises

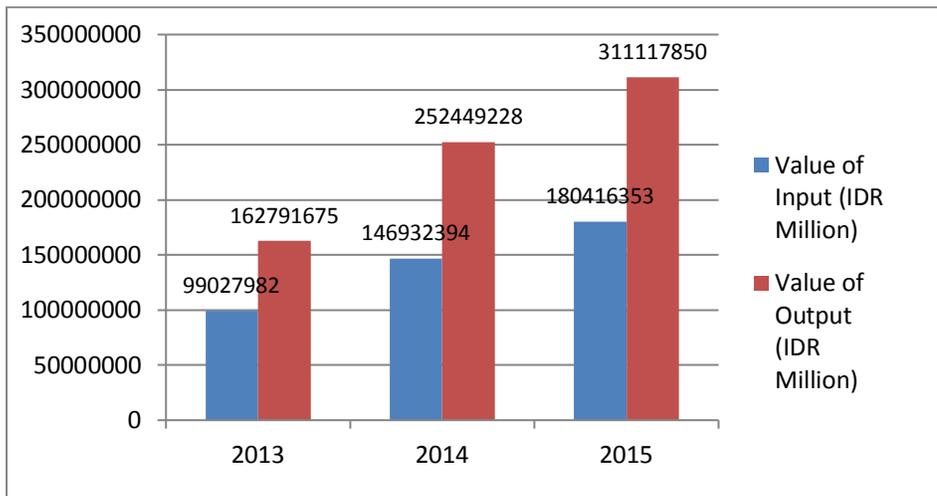


Figure 3. Value of Input and Output of Micro Industrial Enterprises
(Source : Data Processing of BPS 2015, by author)

Figure 1 shows that labor demand in 2013 as 10,817,714 persons has increased to be as 12,079,710 persons in 2014, there is an increase of 11.67%. In 2015, labor demand occupied as 12,928,788 persons, an increase of 7.03% from 2014. This increasing is caused by the rise of enterprises units. Figure 2 shows that the number of micro industrial enterprises in 2013 there were 2,887,015 units to 3,220,563 units in 2014, an increase of 11, 55%. While in 2015 there were 3,385,851 units, an increase of 5.13% from 2014. The increasing of these enterprises units is caused by the government policies that encourage the birth of micro-enterprises to be able to

accommodate the workforce, as well as ease of the terms of venture funding. These circumstances indicate that in 2013 average of micro industrial enterprises has been capable of absorbing labors for 3.75 persons, in 2014 as 3.75 persons and in 2015 as 3.82 persons. In other words, during the period of 2013 - 2015, every micro industrial enterprise can absorb labor for an average of 4 persons.

Figure 3 shows that in 2013 the value of the input amounted to Rp 99,027,982 has risen to be Rp 146,932,394 million in 2014, an increase of 48.37%. In 2015, it amounts to Rp 180,416,353 million or an increase of 22.79% from 2014. In 2013, the value of output amounted to Rp 162,791,675 million and in 2014 to be Rp 25,449,228 million, an increase of 55.08%. Whereas in 2015 it amounts to Rp 311, 117,850 million or an increase of 23.24% from 2014. These data have shown that the ratio of the value of output to input in 2013, 2014 and 2015 respectively by 1.64, 1.72 and 1.72. This indicates that during the year of 2013 to 2015, the micro industrial enterprises have operated more efficiently.

The determination of rate for the regional minimum wage (RMW) is based on Act No. 13 of 2003 on Manpower and the authority of the Regional Head (Governor or Mayor) with regard to the recommendation of the Regional Wage Board. Table 4 below shows the rate of regional minimum wage in each of provinces in Indonesia during the years of 2013-2016.

Table 4. Regional Minimum Wage of Propinces During The Year of 2013 – 2016 (IDR)

PROPINSI	2013	2014	2015	2016
ACEH	1550000	1750000	1900000	2118500
NORTH SUMATERA	1375000	1505850	1625000	1811875
WEST SUMATERA	1350000	1490000	1615000	1800725
RIAU	1400000	1700000	1878000	2095000
JAMBI	1300000	1502300	1710000	1906650
SOUTH SUMATERA	1630000	1825000	1974346	2206000
BENGKULU	1200000	1350000	1500000	1605000
LAMPUNG	1150000	1399037	1581000	1763000
BANGKA BELITUNG	1265000	1640000	2100000	2341500
RIAU ISLAND	1365087	1665000	1954000	2178710
DKI JAKARTA	2200000	2441000	2700000	3100000
WEST JAVA	850000	1000000	1000000	2250000
CENTRAL JAWA	830000	910000	910000	-
DI YOGYAKARTA	947114	988500	988500	-
EAST JAWA	866250	1000000	1000000	-
BANTEN	1170000	1325000	1600000	1784000
BALI	1181000	1542600	1621172	1807600
WEST NUSA TENGGARA	1100000	1210000	1330000	1482950
EAST NUSA TENGGARA	1010000	1150000	1250000	1425000
WEST KALIMANTAN	1060000	1380000	1560000	1739400
CENTRAL KALIMANTAN	1553127	1723970	1896367	2057558
SOUTH KALIMANTAN	1337500	1620000	1870000	2085050
EAST KALIMANTAN	1752073	1886315	2026126	2161253

NORTH KALIMANTAN	-	-	2026126	2175340
NORTH SULAWESI	1550000	1900000	2150000	2400000
CENTRAL SULAWESI	995000	1250000	1500000	1670000
SOUTH SULAWESI	1440000	1800000	2000000	2250000
SOUTH EAST SULAWESI	1125207	1400000	1652000	1850000
GORONTALO	1175000	1325000	1600000	1875000
WEST SULAWESI	1165000	1400000	1655500	1864000
MALUKU	1275000	1415000	1650000	1775000
NORTH MALUKU	1200622	1440746	1577617	1681266
WEST PAPUA	1720000	1870000	2015000	2237000
PAPUA	1710000	2040000	2193000	2435000
INDONESIA	1296908	1584391	1790342	1997819
Minimum	830000	910000	910000	1425000
Maximum	2200000	2441000	2700000	3100000

Source : Data Processing of BPS 2016, by author

Table 4 shows that the lowest rate of RMW for the period of 2013-2015 occurred in Province of Central Java, respectively IDR 830,000, IDR 910,000, and IDR 910,000. While the highest rate of RMW for the period of 2013 - 2016 occurred in DKI Jakarta, respectively IDR 2,200,000, IDR 2,441,000, IDR 2,700,000 and IDR 3,100,000. Nationally, during the period of 2013 - 2016 the average of RMW respectively IDR 1,296,908, IDR 1,584,391, IDR 1,790,342, and IDR 1,997,819. These figures show an average increase of 15.58% per year.

Since the enactment of the Indonesian Government Regulation Number 78 of 2015 concerning the determination of the minimum wages performed each year is based on the need for decent living and by taking into account the productivity and economic growth. Thus, the amount of RMW for 2016 has been set based on this rule.

4. 3 Panel Data Regression

In this study, there are four variables that are expected to affect the labor demand (LD) business micro industries, namely: the number of micro industrial enterprises (MIE), the value of the input (INPUT), the value of output (OUTPUT) and the regional minimum wage (RMW). All the variables are obtained from all provinces in Indonesia amounted to 34 provinces for the period of the year 2013 to 2015 which is publicized by Central Agency on Statistics of Indonesia. One of the provinces, Kalimantan Utara, has incomplete data so that the province is excluded from panel data estimation. The observed data to be 33 provinces.

To estimate whether the above variables can affect the labor demand in micro industrial enterprises with panel data, regression models of Common Effect, Fixed Effect, and Random Effect are used. These models are estimated in forms of linear regression and logarithm regression. The models have been formulated in Section 3. 2 (Equation 2 and 3). The result of panel data regression is presented in Table 5 below:

Table 5. Estimation of Panel Data Regression

Variables	Coefficient (Linear)			Coefficient (Logarithm)		
	CE	FE	RE	CE	FE	RE
MIE	1.7551 (0.0000)***	2.0400 (0.0000)***	1.7769 (0.0000)***	0.8360 (0.0000)***	0.7568 (0.0000)***	0.8649 (0.0000)***
INPUT	0.0107 (0.0000)***	0.0026 (0.4434)	0.0091 (0.0002)***	0.0388 (0.7396)	-0.0536 (0.5689)	-0.0188 (0.8286)
OUTPUT	-0.0042 (0.0056)***	-0.0013 (0.5214)	-0.0034 (0.0138)**	0.1314 (0.2918)	0.1618 (0.1017)	0.1399 (0.1262)
RMW	0.0021 (0.5144)	0.0010 (0.85063)	0.0017 (0.6023)	-0.1348 (0.0512)*	-0.2344 (0.0080)***	-0.1747 (0.0117)**
Constant	-6288.5508 (0.2385)	-18210.0635 (0.0714)*	-6006.2913 (0.2471)	1.7268 (0.0746)*	4.8449 (0.5689)	2.6835 (0.0062)***
R ²	0.9992	0.9996	0.9988	0.9924	0.9984	0.9821
Adj. R ²	0.9991	0.9994	0.9988	0.9921	0.9974	0.9813
F-stat	27629.7772	4651,8999	20184,6982	3069,2866	1064,2994	1289,4981
Prob(F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
D-W stat	1.3952	2.4064	1.5120	1.0797	2.2642	1.7004
Number of observation = 99 Dependent Variable : LD CE = Common Effect, FE = Fixed Effect, RE = Random Effect ***) sign. 1%, **) sign. 5%, *) sign. 10%						

Source: Data processing, by author (2016).

Table 5 shows that the better model is the model of logarithm regression due to all of the coefficients of the variables (MIE, INPUT, OUTPUT, RMW) are in accordance with the expected sign.

4. 4 Selection of Best Model

To determine the best model of the three models as shown in Table 5, namely Common Effect (CE), Fixed Effect (FE), and Random Effect (RE), then the tests of F-Test (Chow Test) and Hausman Test are performed. Based on the results of the F-test and Hausman test, it can be concluded that the best model to estimate the variables affecting the labor demand on micro industrial enterprises by using panel data regression in Indonesia is a model of Fixed Effect (FE). Thus, the regression model is specified as follows:

$$\text{LogLD}_{it} = 4.8449 + 0.7568\text{LogMIE}_{it} - 0.0536\text{LogINPUT}_{it} + 0.1618\text{LogOUTPUT}_{it} - 0.2343\text{LogRMW}_{it} \quad (4)$$

Based on Table 5, the value of R² = 0.998, the value of Durbin-Watson Test = 2.264, and Prob(F-stat) = 0.000 have indicated that the regression model is already well established. All the signs of variable coefficients have been as expected. The variable of MIE has a positive and

significant effect ($\alpha = 0.01$) on LD. The variable of INPUT has a negative effect but not significant on LD. The variable of OUTPUT has a positive effect but not significant on LD. While the variable of RMW has a negative and significant effect ($\alpha = 0.05$) on LD.

To investigate the effects of the individual observation and the series time, the model of Fixed Effect is regressed in an assumption of constant slope of variable coefficient. Then this assumption is divided into two forms, namely: (1) a regression in the influence of individual observation, (2) a regression in the influence of time.

(1) Effect of Individual

The regression of panel data regression in the effect of individuals is possible to determine each individual intercept due to a change in the unit area or province. In this case, it can be used a dummy variable to the cross-sectional unit. The number of dummy variables is $n_i - 1$. This means that one unit of the province become to be excluded dummy as a constant coefficient. In this study, the dummy excluded is Province of Aceh (DP1). Thus the regression equation used is:

$$\text{LogPTK}_{it} = \alpha_0 + \alpha_2 dP_2 + \alpha_3 dP_3 + \alpha_4 dP_4 + \alpha_5 dP_5 + \alpha_6 dP_6 + \alpha_7 dP_7 + \alpha_8 dP_8 + \alpha_9 dP_9 + \alpha_{10} dP_{10} + \alpha_{11} dP_{11} + \alpha_{12} dP_{12} + \alpha_{13} dP_{13} + \alpha_{14} dP_{14} + \alpha_{15} dP_{16} + \alpha_{17} dP_{17} + \alpha_{18} dP_{18} + \alpha_{19} dP_{19} + \alpha_{20} dP_{20} + \alpha_{21} dP_{21} + \alpha_{22} dP_{22} + \alpha_{23} dP_{23} + \alpha_{24} dP_{24} + \alpha_{25} dP_{25} + \alpha_{26} dP_{26} + \alpha_{27} dP_{27} + \alpha_{28} dP_{28} + \alpha_{30} dP_{30} + \alpha_{31} dP_{31} + \alpha_{32} dP_{32} + \alpha_{33} dP_{33} + \beta_1 \text{LogMIE}_{it} + \beta_2 \text{LogINPUT}_{it} + \beta_3 \text{LogOUTPUT}_{it} + \beta_4 \text{LogRMW}_{it} + e_{it} \quad (5)$$

where : $dP_1 \dots dP_{33}$ = dummies of provinces, if $dP_2 = 1$, others = 0, if $dP_3 = 1$, others = 0, etc.
 $\alpha_2 \dots \alpha_{33}$ = coefficients of dummies
 $\beta_1, \beta_2, \beta_3, \beta_4$ = regression coefficient of each variables
i = observation of cross-section ($i = 1, 2, 3, \dots, 33$)
t = time ($t = 2013, 2014, 2015$)
e = error term

The result of regression is presented in Table 6 below.

Table 6. Regression Models with Fixed Effect: Constant Slope and Intercept of Individual Varies

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.052	.600		3.419	.001***
LogMIE	.761	.059	.751	12.815	.000***
LogINPUT	-.042	.093	-.043	-.456	.650
LogOUTPUT	.144	.098	.138	1.476	.145
LogRMW	-.215	.088	-.042	-2.440	.018**
dP2	.023	.027	.007	.868	.389

dP3	-.023	.028	-.007	-.851	.398
dP4	-.055	.039	-.017	-1.403	.166
dP5	-.055	.036	-.017	-1.528	.132
dP6	.008	.025	.003	.329	.743
dP7	-.079	.047	-.024	-1.659	.102
dP8	.064	.029	.020	2.216	.030**
dP9	-.122	.049	-.037	-2.481	.016**
dP10	-.181	.040	-.056	-4.505	.000***
dP11	.046	.036	.014	1.270	.209
dP12	.091	.042	.028	2.179	.033**
dP13	.127	.046	.039	2.743	.008***
dP14	-.051	.034	-.016	-1.474	.146
dP15	.128	.045	.039	2.871	.006***
dP16	-.013	.026	-.004	-.476	.636
dP17	-.020	.026	-.006	-.750	.456
dP18	-.005	.028	-.002	-.182	.856
dP19	-.001	.027	.000	-.046	.963
dP20	-.024	.031	-.007	-.784	.436
dP21	-.077	.038	-.024	-2.024	.047**
dP22	-.039	.026	-.012	-1.511	.136
dP23	-.258	.038	-.079	-6.777	.000***
dP24	-.030	.027	-.009	-1.147	.256
dP25	-.064	.037	-.020	-1.749	.085*
dP26	.038	.026	.012	1.465	.148
dP27	.001	.027	.000	.043	.966
dP28	-.082	.037	-.025	-2.242	.029**
dP29	-.102	.034	-.031	-3.017	.004***
dP30	-.095	.030	-.029	-3.196	.002***
dP31	-.194	.048	-.060	-4.064	.000***
dP32	-.206	.068	-.063	-3.026	.004***
dP33	-.057	.049	-.017	-1.152	.254

a. Dependent Variable: LogLD

Based on Table 6, the intercept value for individuals namely: dP8, dP9, DP10, dP12, dP13, dP15, dP21, dP23, dP25, dP28, dP29, dP30, dP31, dP32 have a significant effect on LD. This shows that there are characteristics of the 14 provinces that significantly influence the labor demand of micro industrial enterprises in Indonesia.

(2) Effect of Time

The regression of panel data with the effect of time assumes that labor demand can be shifted along the observation time. In this case, it can be used a dummy variable with respect to time. The number of dummy variables is $n_t - 1$. This means a single point in time be excluded dummy as a constant coefficient. In this study, the excluded dummy is the year of 2013 as the base year or comparison. Thus the regression equation used is:

$$\text{LogLD}_{it} = \lambda_0 + \lambda_1 2014 + \lambda_2 2015 + \beta_1 \text{LogMIE} + \beta_2 \text{LogINPUT} + \beta_3 \text{LogOUTPUT} + \beta_4 \text{LogRMW} + e_{it}$$

(6)

- where: d2014, d2015 = dummy of time, if d2014 = 1, other = 0 ; d2015 = 1, other = 0.
- λ_0 = intercept, λ_1, λ_2 = coefficient of dummy
- $\beta_1, \beta_2, \beta_3, \beta_4$ = regression coefficient of each independent variable
- i = observation provincial cross-section (i = 1, 2, 3, ... 33)
- t = time (t = 2013, 2014, 2015)
- e = error term

The result of regression is presented in Table 7 below.

Table 7. Fixed Effect Regression models with Constant Slope and Intercept Time Varies

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.574	.456		1.259	.211
LogMIE	.827	.033	.816	25.004	.000
LogINPUT	.016	.119	.016	.135	.893
LogOUTPUT	.168	.128	.161	1.310	.193
LogRMW	-.114	.073	-.022	-1.563	.121
d2014	-.023	.014	-.020	-1.650	.102
d2015	-.015	.015	-.012	-.971	.334

Dependent Variable: LogLD

Based on Table 7, the intercept values of time points are not significant. This indicates that the time do not have a significant effect on the labor demand of micro industrial enterprises in Indonesia.

4. 5. Interpretation of Panel Data Regression

(1) Number of Micro Industrial Enterprises (MIE)

The regression result in Equation 4 indicates that the coefficient of variable MIE is 0.7568. It means that an increasing number of micro industrial enterprises by 1% will increase the labor demand by 0.7568%. The number of micro industrial enterprise has a positive and significant effect ($\alpha = 0.01$) on the labor demand in Indonesia. The result of this study is consistent with the findings of Jaunita (2016), Nurafuah (2015), and Carib (2012).

Data of BPS (2016) shows that nationally, the number of micro industrial enterprises has increased by 11.55% in 2014 from a year earlier of 2013, and increasing again by 5.13% in 2015. The increase in the number of micro industrial enterprise has been able to absorb the labor force an average of 4 persons during the period 2013-2015. The increase in the number of micro industrial enterprises caused by the intensified empowerment activities of micro, small, and medium enterprises (SMEs). Supriyanto (2006) states that micro, small, and medium enterprises (SMEs) have a good potentiality because, in reality, the SMEs sector has a major contribution in employment, which, absorbs more than 99.45% of the workforce and the contribution to GDP of about 30 %. The efforts to promote and develop the SMEs sector will be able to absorb more of the existing workforce and of course, will be able to improve the welfare of the workers involved in it so as to reduce unemployment and ultimately will be used for poverty reduction.

Then, Sudargo et al (2013) express that SMEs sector in Indonesia is increasing its competitiveness because the government has implemented several strategies, namely: provision of information and market networkings, ease of access to funding and mentoring and capacity building in information technology. Meanwhile, according to Machmud (2011), some programs or policies relating to the technical aspects of production related to SMEs has helped to empower SMEs, for example, the Center for Development of Small Industry, Program of Input Subsidized, Training and Technology Management, SME Innovation Center, and Aid for Quality Supervision. However, the programs or policies are still needed to be improved to provide greater impact on labor absorption. In this study, the elasticity of the number of micro industrial enterprises on the labor demand which indicated by the coefficient of regression is less than one ($e < 0.76$). It shows that programs or policies performed have not been optimal yet. If the programs or policies of empowerment have been optimally performed the elasticity should have been greater than one, meaning that the percentage increase in the number of micro industrial enterprises should be able to generate the labor demand with the percentage is greater than one ($e > 1$).

(2) Value of INPUT

The variable of INPUT (value or price of an input factor) is the cost incurred in the production process excluding wages. Therefore, the cost can be also referred to as an investment. The regression coefficient of INPUT variable is - 0.0536, means a reduction of micro industrial enterprises by 1% will increase labor demand by 0.0536% or vice versa. The result of regression indicates that the value of the input of micro industrial enterprises has a negative effect but no

significant on the labor demand. During the period of the year 2013 - 2015, the price (cost) of input factors has increased so as to encourage the enterprises to reduce the use of expensive inputs and substituting them by the increasing of use of labor.

The result of this study is different from the results of studies done by Ismei et al (2015), Carib (2012) and Ward et al (2012). They state that the investment of small industries has a positive effect on labor demand, meaning that the higher the value of the investment, the higher the total manpower occupied. According to Jaunita (2016) the negative relationship or effect between the value of input and the labor demand can also be caused by enterprise owner that tend to use of capital goods (in the form of machinery) to support the production process and aim to improve the product quality and increase the productivity of goods and services more effectively and efficiently. As a result, the use of the machine will cause the low of labor absorption. The coefficient of the INPUT variable as - 0.0536 also shows the value of elasticity. This elasticity is inelastic ($e < 1$), which means a reduction in the value of inputs has no great impact on labor demand.

(3) Value of OUTPUT

The variable of OUTPUT (value of production) is the value of output produced by micro industrial activities. The coefficient of OUTPUT variable is 0.1618. It means that an increase of the output of micro industrial enterprises by 1% will increase labor demand by 0.1618%. The regression result shows that the output value of micro industrial enterprises has a positive effect but not significant on the labor demand. This finding is consistent with the studies conducted by Divianto (2014) and Amri et al (2013). Meanwhile, the studies of Jaunita (2016), Prabandana (2015), Ismei et al (2015), and Budiawan (2013) show that the value of output has a positive and significant effect on the labor demand. According to Budiawan (2013), the value of output is the overall level of production or the number of items that resulted in the production process of enterprises which will then be sold to consumers. If the demand of the product increases, the enterprises will tend to increase the production capacity, and for that purpose, the enterprises will increase the use of workforce. The coefficient of OUTPUT variable as 0.1618 also shows the value of elasticity. This elasticity is inelastic ($e < 1$), meaning that the value of output has a small impact on the labor demand.

(4) Minimum Regional Wage (RMW)

The regression coefficient of RMW variable is - 0.2344 means a decrease in regional minimum wage by 1% will increase labor demand in micro industrial enterprises by 0.2344% or vice versa. The regression result shows that the RMW has a negative and significant effect ($\alpha = 0.01$) on the labor demand. It means that if the rate of RMW increases then the optimal use of labor will be reduced from the previous number, otherwise if there is a decrease of UMR rate, the enterprises will increase the use of workforce in order to achieve the optimum allocation. This result is consistent with the studies conducted by Prabandana (2015), Amri et al (2014), Sulistiwati (2012), and Zamrowi (2007). Meanwhile, the study conducted by Juanita (2016) and Divianto (2014) also shows the negative effect of the minimum wage on the labor demand but not significant.

According to Bappenas (2010), theoretically, the enterprises will only pay the wages in accordance with the productivity of labor, meaning that labor which has low productivity will receive low wages and vice versa. In fact, the minimum wage which set is much more determined by the aspect of increase in the price level compared to the increase in productivity.

Productivity has not become a major determinant in the determination of wages. The elasticity of RMW on labor demand is inelastic ($e < 1$), which means that a decrease in the regional minimum wage has a small impact on the labor demand.

(5) Dummy Effect of Provinces and Time

The regression result in Table 6 shows that the values of the intercept for individuals or provinces dummies: Lampung (dP8), Bangka Belitung (dP9), Riau Islands (dP10), West Java (dP12), Central Java (dP13), East Java (dP15), Central Kalimantan (dP21), East Kalimantan (dP23), Central Sulawesi (DP25), Gorontalo (dP28), West Sulawesi (dP29), Maluku (dP30), North Maluku (dP31), and West Papua (dP32) significantly affect the labor demand in micro industrial enterprises in Indonesia. This indicates that the pattern of labor demand in the micro industrial enterprises in 14 provinces is different from the benchmark (Province of Aceh). The negative dummy coefficient in a province means that the level of labor demand in micro industrial enterprises is lower than the benchmark (Province of Aceh). While the positive dummy coefficient in a province means that the labor demand in micro industrial enterprises province is higher than the benchmark (Province of Aceh).

The regression result in Table 7 shows that the value of the intercept for time dummy variables (2014 and 2015) has no significant effect on the labor demand. This means that statistically, the time pattern of the year 2014 and 2015 do not differ from the benchmark (2013). The negative dummy coefficient of time means that the level of labor demand in micro industrial enterprises in 2014 and 2015 is less than in 2013.

5. CONCLUSION AND RECOMMENDATION

The estimation result of Fixed Model indicates that the number of micro industrial enterprises has a positive and significant effect ($\alpha = 0.01$) on the labor demand in Indonesia. The value of the input of micro industrial enterprises has a negative effect on the labor demand but not significant. The value of the output has a positive effect on the labor demand but not significant. The regional minimum wage has a negative and significant effect ($\alpha = 0.01$) on the labor demand. The elasticities of all variables are inelastic. It shows that programs or policies of empowerment have not been optimally performed. The reduction in the value of inputs, the increase of the value of output has no great impact on the labor demand. Meanwhile, a decrease in the regional minimum wage has a small impact on the labor demand. There are characteristics of the 14 provinces that significantly influence the labor demand of micro industrial enterprises in Indonesia. Whereas, the pattern of time has no significant effect on the labor demand of micro industrial enterprises in Indonesia.

It is expected that government needs to stimulate the growth of the number of micro-industrial enterprises to be able to absorb more workforce, as well as to review the rate of the regional minimum wage according to the price of living needs. The government also needs to provide the guidance, training, and counseling for the labors in the enterprises. Then, the parties of micro industrial enterprises need to establish the cooperative relations with the other companies (including state-owned companies) for the mutually benefit, strengthen and support each other.

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