

**Effects of the Number of Industrial Enterprises,
Values of Input and Output, and Regional
Minimum Wage on Labor Demand in Indonesia:
Empirical Study on Micro Industrial Enterprises**

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— *Review of* —
**Integrative
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ABSTRACT

This study aims to (1) identify the effects of the number of industrial enterprises, values of input and output, and Regional Minimum Wage (RMW) on the labor demand in Indonesia, particularly in micro industrial enterprises; and (2) detect the elasticities of these variables toward the labor demand in micro enterprises. The regression of panel data is used to estimate the data. Results of this research show that the number of micro industrial enterprises positively and significantly affects the labor demand of these enterprises. Input negatively but insignificantly affects the labor demand of micro industrial enterprises, whereas output positively but insignificantly affects the labor demand of these enterprises. Meanwhile, RMW negatively and significantly affects the labor demand of micro industrial enterprises. All variables are inelastic on labor demand. Accordingly, the government should stimulate the increase in the number of micro industrial enterprises to absorb many workers. Moreover, micro industrial enterprises should build relationships with other companies to mutually benefit, strengthen, and support one another.

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

1. INTRODUCTION

The industrial sector can absorb the labor force. In particular, the industrial sector in Indonesia is diverse. Major differences are observed between large and medium-scale industries and small micro-scale industries in this country. Such differences may depend on the absorption of labor, capital, and other resources. Large-medium industries play an important role because they have an advantageous position in terms of achieving growth in productivity and wages, withdrawal of investment expertise, transfer of technology, and provision of social security. By contrast, small-micro industries, which show a substantially high growth rate in the area of employment opportunity is disadvantaged in terms of other characteristics. Thus, the competitiveness and productivity of micro-small business units, particularly “home-based industries” and “home workers”, should be strengthened.

Indonesia’s economic development emphasizes the important role of micro and small enterprises important because the majority of the country’s population are poorly educated and rely on small traditional and modern enterprise activities for their livelihood. However, the development effort remains unsatisfactory because the progress of micro and small enterprises are considerably small compared with the progress achieved by large enterprises. High population growth has led to an increasing labor force but such increase is not balanced by the number of jobs available, thereby possibly leading to unemployment. Cale et al. (2017) stated that population size can increase human capital stock.

Tables 1 and 2 present the comparison of the number of workers absorbed in micro, small, and large enterprises.

Table 1. Number of Micro and 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)

Table 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 (LD). Feriyanto (2015) presented several independent variables, such as wage, product sales, and interest rate, which can affect LD. The factors that can lead to the shifting of the balance of LD are the number of producers, amount of output demand, government policies, economic growth, technology, budget of labor costs, and price of labor input. The present study only analyzes four variables, namely, number of producers or industrial enterprises, wage, and values of input and output. This study is based on the suitability of available secondary data published by Badan Pusat Statistik (BPS) Indonesia (Central Agency on Statistic of Indonesia).

Simanjuntak (2001) explained that wages influence employment. High wage rates cause the increasing cost of production. To achieve efficiency, enterprises are forced to reduce the workforce, thereby resulting in low levels of employment. Therefore, wage rates have a negative impact on employment (Nurafuah, 2015). So, in this study, the variable of wage uses the proxy of the regional or province minimum wage in accordance with Labor Law No. 13 of 2003 (UU No. 13/2003).

The increasing prices (costs) of input factors may encourage manufacturers to perform substitution by reducing the use of input factors with substantially expensive prices and replacing by increasing the use of labor. The value of input is the cost incurred in the production process. Thereafter, the use of the enterprises' workforce will be affected by the level (volume) of product sales. Considerably large product sales can push enterprises to increase LD, thereby possibly increasing production to increase sales. The increase of product sales due to the increase of product demand can be affected by the increase in the average income of residents. A considerably high average income of the population will result in a general increase in the need for the consumption of goods and can motivate entrepreneurs to raise output. Sales volume is proxied by the value of the output of enterprises. Output is the value of the output produced from an industrial activity.

The process of investigating whether the aforementioned variables may significantly affect LD given the following factors: (1) the increase in the number of enterprises tends to increase the absorption of the workforce, thereby increasing LD, (2) the substantial sales of products is able to encourage the increase of LD and (3) the increase in the price or value of input, (4) and the high wage of labor will cause a decrease of LD. The current study is restricted to the micro industrial enterprise with a workforce of 1–4 persons (BPS, 2016). The research objective is to determine whether the number of industrial enterprises, RMW, and value of the input and output significantly affect labor demand of micro industrial enterprises. Furthermore, this study aims to determine the extent of sensitivity that occurs in LD due to the changes in the aforementioned variables.

2. REVIEW OF THE LITERATURE AND PREVIOUS STUDIES

2.1 Manufacturing, Micro Industrial, and Labor

Indonesia has a diverse manufacturing definition, type of enterprises, and labor. Certain institutions provide definitions to classify “micro and small enterprises” and group “small and medium enterprises (SMEs).” However, the definition used in the current study is restricted to the definition provided by BPS (Central Agency on Statistic of Indonesia) (BPS, 2016) as follows.

2.1.1 Manufacturing

Manufacturing is an economic activity that transforms basic goods mechanically, chemically, or manually to be finished/semi-finished or goods that have low to high value, and their characteristics are close to the end user. This activity includes the service and assembly industry. The service industry includes industrial activities that serve the needs of others. Accordingly, the raw materials are provided by the other party, while the manufacturer is paid a service fee or wage by cash or goods. For an example, rice milling enterprises grind the rice harvested by farmers for a fee. An enterprise or industrial business is a unit of business that performs economic activities, produces goods, or offer services. This business unit is located in a building or particular site and maintains business administration regarding production and cost structure. Moreover, at least one person is responsible for this business.

2.1.2 Small and Micro Industrial Enterprise

A micro industrial enterprise is an industrial enterprise with 1–4 employees. A small industrial enterprise has 5–19 employees. The classifications of industrial enterprises are solely based on the number of people working, regardless of whether the enterprise uses engine power and the enterprise capital.

2.1.3 Labor

The number of labor is the number of paid or unpaid workers or employees who work daily. Production workers work directly in or related to the production process. They include workers who directly supervise the production process, operate machinery, and note the raw materials used and the goods produced. Other workers are indirectly related to the production process. These workers often support workers, such as managers (not production), heads of personnel, secretaries, typists, night watchmen, and company drivers, among others.

2.2 Absorption of Labor or Labor Demand

The absorption of labor explains the relationship between the desired quantity of labor and wage level. LD by employers indicates that they can increase the production of goods or services and sell them to consumers. Furthermore, the growth of LD depends on the increase of the public's demand for goods and services (Simanjuntak, 2001). Sudarsono (1988) explained that LD is related to the quantity of labor required by a company or particular agency. LD is influenced by changes in wage rates and other factors that affect demand for production, such as production volume and price of capital goods or tools used in the production process. In this regard, Todaro (2003) expressed that the absorption of labor is the acceptance of workers to perform a job properly or the existence of a situation that illustrates the availability of workers or jobs to be filled by job seekers. Employers can set the number of employees that could be employed to maximize profit. A company should estimate the additional output that it obtained in connection with the addition of an additional employee; this estimation is called the marginal physical product (MPP) of employees (Feriyanto, 2015). Thereafter, the additional marginal result or marginal revenue can be calculated by multiplying the value of MPP with the price per unit of output.

The absorption of labor depends on the size of LD. The absorption of labor generally shows the ability of a company to absorb a number of laborers to produce a product. Kuncoro (2002) conveyed that the absorption of labor is the number of jobs that have been filled that reflects many people working. The working population is absorbed and scattered in various sectors of the economy. The absorption of the working population is caused by LD. Therefore, the absorption of labor can be regarded as LD.

2.3 Minimum Wage

Act No. 13 of 2003 (i.e., on Manpower, Chapter I, Article 1, Paragraph 30) defines wage as the right of the worker/laborer that is received and expressed in the form of money as remuneration from the entrepreneur or employer; the amount is determined and paid according to a work agreement, consensus, or laws and regulations and includes allowances for the worker/laborer and their family for a job and or service that has been performed or will be performed. Article 89, Paragraph 30 mentions that wage is referred to as the minimum wage. The minimum wage is the provincial or district/city-based and provincial or district/city-based sectoral minimum wages. A wage is termed as RMW or provincial minimum wage. The minimum wage shall be determined by the governor after considering the recommendations of the provincial wage councils or district heads/mayors.

Theoretically, the wage given by an employer is considered the price of a worker's energy that was sacrificed for the sake of production. The wage of a worker can be classified into (1) nominal wage, which is expressed in the form of money received regularly by a worker; and (2) real wage, which is the nominal wage received by a worker in exchange for an amount of goods and services (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) needs for minimum living; (2) the consumer price index; (3) ability, growth, and sustainability of accompany; (4) standard minimum wage in the surrounding area; (5) labor market conditions; and (6) economic growth and income per capita. However, a few of the variables used to

assess the feasibility of minimum wage are regional economic growth, inflation, and minimum living needs of workers (Feriyanto, 2014).

Iksan (2010) stated that the problem in determining the RMW lies on the calculation method. A real difference exists in the productivity among the business sectors. The sectors that use educated and skilled workers generally pay wages that are substantially above the minimum wage because such case reflects productivity. However, other sectors that have low productivity pay below the minimum wage and are affected by the minimum wage policy by the government. These sectors are generally labor-intensive. Therefore, the wage system is a framework for how the wage is set and determined to improve the welfare of workers.

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

2.4 Relationship of Number of Enterprises, Wage, Values of Input and Output, and Regional Minimum Wage on Labor Demand

Prabowo (1997) argued that having many established enterprises or business units requires numerous laborers. That is, an increase in the number of enterprise units also increases LD. Rejekiningsih (2004) strengthened this relationship by stating that the number of business units and outputs has a significant effect on employment. The influence of the number of business units on employment is positive, that is, the increase in the number of business units will increase the number of labors absorbed.

Wages also influence LD. If high wage rates are set, then the production cost increases. Moreover, the process of developing efficiencies forces enterprises to reduce the workforce reductions, thereby causing low levels of employment. Thus, wages have a negative impact on LD. For enterprises, labor cost is the cost of production; thus, an increasing labor cost will decrease the profit (Simanjuntak, 2001; Hinnosaar & Room, 2003). Kuncoro (2001) expressed a similar opinion, that is, the quantity of labor in enterprises will decline as a result of wage increases. If the wage rate increases while the prices of other inputs are fixed, then the price of labor is relatively more expensive than other inputs. This situation encourages enterprises to reduce the use of relatively expensive labor to maintain the maximum profit.

Feriyanto (2015) argued that the value of the input and output can affect LD. An increasing in the price of inputs could encourage manufacturers to perform substitution by reducing the use of substantially expensive inputs and replace expensive inputs 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. Substantially large product sales can push enterprises to increase LD, thereby enabling the possible increase in production to increase sales. The increase of product sales due to the increase of demand for a product can be affected by the increase in the average income of a country's population. Hence, a high average income can increase the need for the consumption of goods, thereby generally

motivating enterprises to increase their output. The output is the value of the product produced from an industrial activity.

2.5 Previous Studies

Wulandari (2015) studied the food, beverage, and tobacco industries in North Sumatra. The result indicates that the variables of investment in the industrial sectors and a few industries have a positive and significant impact on LD. RMW has a negative and significant effect on LD, while inflation has a negative but insignificant effect on LD. The result also shows that RMW is the most dominant variable that affects LD in the food, beverage, and tobacco industries in North Sumatra.

Nurafuah (2015) studied the absorption of labor in Central Java and concluded that the number of small and medium enterprises (SMEs) and investment have a positive and significant correlation with the absorption of labor. Arida et al. (2015) showed that land area and investment in Aceh have a positive and significant effect on LD in the agricultural sector, while wage has a negative but insignificant effect on LD. Budiawan (2012) studied the fish processing industry in Demak District in Central Java. He indicated that wages, production, and capital have positive and significant effects on the absorption of labor.

Prabandana (2015) presented a different result in his study on Sukoharjo District in Central Java. His research revealed that capital has no effect on the absorption of labor in small industries and argued that the increase of industry capital to add modern equipment can produce substantial products than labor does. However, the value of production has a positive and significant effect on the absorption of labor, that is, the high or low LD affects the high and low number of goods produced by the labor force. Although the wage rate has a negative and significant effect on the absorption of labor, the higher the rate of wages is, the smaller LD is in small industries.

Arianti (2003) studied the Jepara District in Central Java and mentioned that the present and previous year's values of production have a positive influence on LD. The present and previous year's wage rates negatively affect LD. Meanwhile, the present and previous year's non-wage labor expenditures have a positive influence on LD.

3. DATA AND MODEL SPECIFICATION

3.1 Data

The data used in this research are secondary data with panel data. The time series data used are from 2013 to 2015. The cross-sectional data consist of the number of micro industrial enterprises, value of the input and output, RMW, and LD of micro industrial enterprises that cover 34 provinces in Indonesia (see Table 3). The data were collected from BPS (Central Agency on Statistic of Indonesia).

Table 3. 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

Source: Badan Pusat Statistik, 2017.

3.2 Model Specification

The following model is used to estimate how the number of micro industrial enterprises, values of input and output, and minimum wage influence LD of micro industrial enterprises in Indonesia.

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

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

$$\text{Log}LD_{it} = \text{Log}\beta_0 + \beta_1 \text{Log}MIE_{it} + \beta_2 \text{Log}INPUT_{it} + \beta_3 \text{Log}OUPUT_{it} + \beta_4 \text{Log}RMW_{it} + e, \quad (3)$$

where LD is the labor demand of micro industrial enterprises (persons); MIE is the number of micro industrial enterprises (unit); RMW is the rate of the regional minimum wage (Rp); INPUT is the value or price (cost) of the inputs of production process (Rp); OUTPUT is the value of the output or production (Rp); β_0 is a constant; $\beta_1, \beta_2, \beta_3$, and β_4 are the coefficients of the regression of independent variables; e is the error term; i is the observation of the 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 the Panel Data

The regression models of common, fixed, and random effects are used to estimate the variables that affect LD of micro industrial enterprises that use the panel. The best model among the three models is determined through the Chow Test and Hausman Test. An analysis of elasticity is performed to investigate the changes or sensitivity of the dependent variable

(i.e., LD) as a result of the changes in the independent variables (i.e., MIE, INPUT, OUTPUT, and RMW).

4. RESULTS AND DISCUSSION

4.1 Profile of Micro Industrial Enterprises in 2013–2015: Number of Labor Demand, Number of Industrial Enterprises, Values of the Input and Output, and Regional Minimum Wage

The focus of the discussion is a micro industrial enterprise that uses a workforce category, that is, one to four workers, embraced by the Central Agency on the Statistic of Indonesia. Figures 1, 2, 3 present the profiles of LD, number of micro industrial enterprises, values of the input and output, and the RMW in 2013–2015.

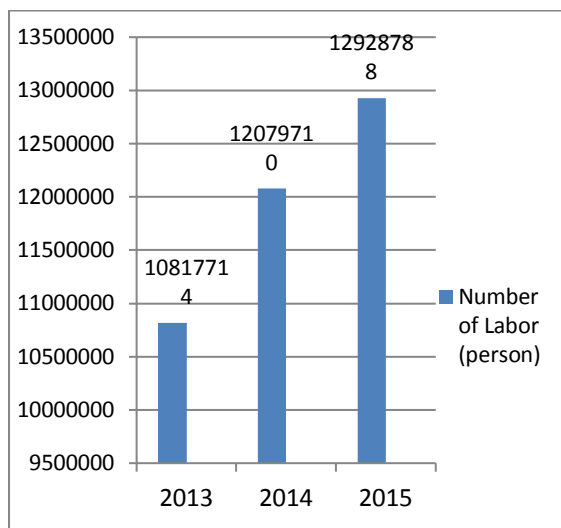


Figure 1. Labor Demand of Micro Industrial Enterprises

(Source: Data Processing of BPS 2015, by author)

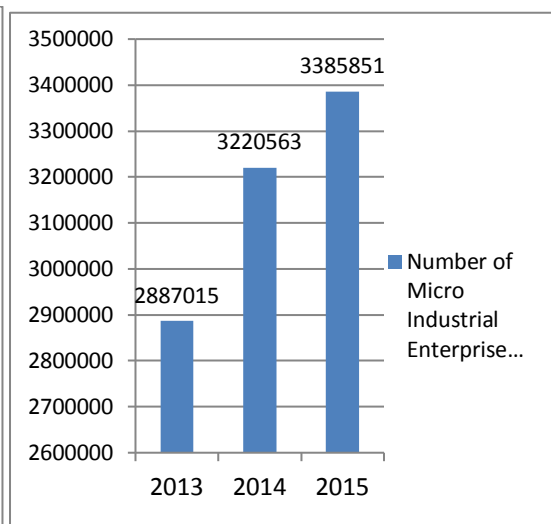


Figure 2. Number of Micro Industrial Enterprises

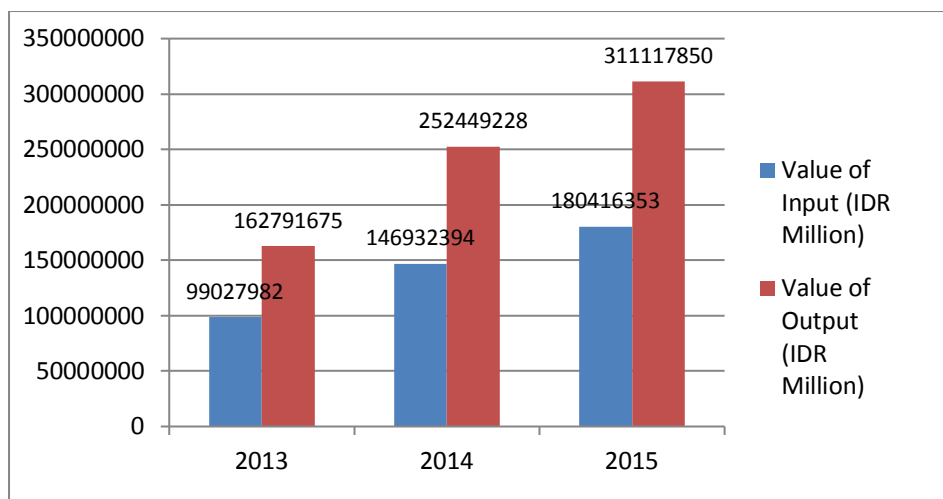


Figure 3. Values of the Input and Output of Micro Industrial Enterprises
(Source: Data Processing of BPS 2015, by author)

Figure 1 shows that the LD of 10,817,714 persons in 2013 has increased to 12,079,710 persons in 2014, thereby showing an increase of 11.67%. The LD of 12,928,788 persons in 2015 shows an increase of 7.03% from 2014. This increase is caused by the increase of enterprises units. Figure 2 shows that the number of micro industrial enterprises of 2,887,015 units in 2013 increased to 3,220,563 units in 2014, thereby showing an increase of 11.55%. The number of micro industrial enterprises in 2015 reached 3,385,851 units, thereby showing an increase of 5.13% from 2014. The increase of these enterprise units is caused by government policies that encourage the establishment of micro-enterprises to accommodate the workforce and ease the terms of venture funding. These circumstances indicate that the average of the micro industrial enterprises can absorb labor for 3.75 persons in 2013, 3.75 persons in 2014, and 3.82 persons in 2015. That is, every micro industrial enterprise in 2013–2015 can absorb labor for four persons.

Figure 3 shows that the value of the input that amounted to Rupiah (Rp) 99,027,982 in 2013 has increased to Rp 146,932,394 in 2014, thereby showing an increase of 48.37%. The value reached Rp 180,416,353 in 2015 for an increase of 22.79% from 2014. The value of output was Rp 162,791,675 in 2013 and increased to Rp 252,449,228 in 2014, for an increase of 55.08%. The amount reached Rp 311,117,850 in 2015 for an increase of 23.24% from 2014. These data show that the ratios of the value of output to input in 2013, 2014, and 2015 are 1.64, 1.72, and 1.72, respectively. This result indicates that the micro industrial enterprises have operated efficiently from 2013 to 2015.

The determination of the rate for RMW is based on Act No. 13 of 2003 (on Manpower) and the authority of the regional head (governor or mayor) regarding the recommendation of the regional wage board. Table 4 shows the rate of RMW in each of the provinces in Indonesia in 2013–2016.

Table 4. Regional Minimum Wage of Provinces in 2013–2016 (Rp)

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 JAVA	830000	910000	910000	-
DI YOGYAKARTA	947114	988500	988500	-
EAST JAVA	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 the author

Table 4 shows that the lowest rates of RMW for 2013–2015 in Central Java are Rp 830,000, Rp 910,000, and IDR 910,000. The highest rates of RMW in 2013–2016 that occurred in DKI Jakarta are Rp 2,200,000, Rp 2,441,000, Rp 2,700,000, and Rp 3,100,000.

The averages of RMW in 2013–2016 are Rp 1,296,908, Rp 1,584,391, Rp 1,790,342, and Rp 1,997,819. These figures show an average annual increase of 15.58%.

The enactment of the Indonesian Government Regulation Number 78 of 2015 concerning the annual determination of minimum wages is based on the need for a decent standard of living and considers productivity and economic growth. Thus, the amount of RMW for 2016 has been set based on this rule.

4.2 Panel Data Regression

The four variables that are expected to affect the LD of business micro industries are the number of MIE, INPUT, OUTPUT, and RMW. These variables are obtained from the 34 provinces of Indonesia in 2013–2015 and published by the Central Agency on Statistics of Indonesia. Kalimantan Utara has incomplete data; thus, this province is excluded from the panel data estimation. Accordingly, the observed data are from the remaining 33 provinces.

The regression models of the common effect (CE), fixed effect (FE), and random effect (RE) are used to estimate whether the aforementioned variables can affect LD in micro industrial enterprises with panel data. These models are estimated in the form of linear and logarithmic regressions. Moreover, these models have been formulated in Section 3.2 (Equations 2 and 3). Table 5 presents the result of the panel data regression.

Table 5. Estimation of the 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, and RE = Random Effect ***) sign. 1%, **) sign. 5%, and *) sign. 10%						

Source: Data processing by author (2016).

Table 5 shows that the model of logarithmic regression is better than that of the linear regression because all of the coefficients of the variables (i.e., MIE, INPUT, OUTPUT, are RMW) are in accordance with the expected sign.

4.3 Selection of the Best Model

The F-Test (Chow Test) and Hausman Test are performed to determine the best model among the three models presented in Table 5. The results of the F-test and Hausman test reveal that the FE model is the best model for estimating the variables that affect the LD on micro industrial enterprises using the panel data regression in Indonesia. Thus, the regression model is specified as follows:

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

Table 5 shows that the value of $R^2 = 0.998$, the value of Durbin-Watson Test = 2.264, and Prob(F-stat) = 0.000 indicate that the regression model is well established. The signs of the variable coefficients have been as expected. MIE has a positive and significant effect ($\alpha = 0.01$) on LD. INPUT has a negative but insignificant effect on LD. OUTPUT has a positive but insignificant effect on LD. RMW has a negative and significant effect ($\alpha = 0.05$) on LD.

To investigate the effects of the individual observation and time series, the FE model is regressed based on the assumption of constant slope of the variable coefficient. This assumption is divided into two forms: (1) regression in the influence of individual observation and (2) regression in the influence of time.

4.3.1 Effect of Individual

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

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

where $dP_1 \dots dP_{33}$ = dummies of the provinces; if $dP_2 = 1$, others = 0; if $dP_3 = 1$, others = 0. $\alpha_2 \dots \alpha_{33}$ = 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.

Table 6 presents the results of the regression.

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

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.052	0.600		3.419	0.001***
LogMIE	0.761	0.059	0.751	12.815	0.000***
LogINPUT	-0.042	0.093	-0.043	-0.456	0.650
LogOUTPUT	0.144	0.098	0.138	1.476	0.145
LogRMW	-0.215	0.088	-0.042	-2.440	0.018**
dP2	0.023	0.027	0.007	0.868	0.389
dP3	-0.023	0.028	-0.007	-0.851	0.398
dP4	-0.055	0.039	-0.017	-1.403	0.166
dP5	-0.055	0.036	-0.017	-1.528	0.132
dP6	0.008	0.025	0.003	0.329	0.743
dP7	-0.079	0.047	-0.024	-1.659	0.102
dP8	0.064	0.029	0.020	2.216	0.030**
dP9	-0.122	0.049	-0.037	-2.481	0.016**
dP10	-0.181	0.040	-0.056	-4.505	0.000***
dP11	0.046	0.036	0.014	1.270	0.209
dP12	0.091	0.042	0.028	2.179	0.033**
dP13	0.127	0.046	0.039	2.743	0.008***
dP14	-0.051	0.034	-0.016	-1.474	0.146
dP15	0.128	0.045	0.039	2.871	0.006***
dP16	-0.013	0.026	-0.004	-0.476	0.636
dP17	-0.020	0.026	-0.006	-0.750	0.456
dP18	-0.005	0.028	-0.002	-0.182	0.856
dP19	-0.001	0.027	0.000	-0.046	0.963
dP20	-0.024	0.031	-0.007	-0.784	0.436
dP21	-0.077	0.038	-0.024	-2.024	0.047**
dP22	-0.039	0.026	-0.012	-1.511	0.136
dP23	-0.258	0.038	-0.079	-6.777	0.000***
dP24	-0.030	0.027	-0.009	-1.147	0.256
dP25	-0.064	0.037	-0.020	-1.749	0.085*
dP26	0.038	0.026	0.012	1.465	0.148

dP27	0.001	0.027	0.000	0.043	0.966
dP28	-0.082	0.037	-0.025	-2.242	0.029**
dP29	-0.102	0.034	-0.031	-3.017	0.004***
dP30	-0.095	0.030	-0.029	-3.196	0.002***
dP31	-0.194	0.048	-0.060	-4.064	0.000***
dP32	-0.206	0.068	-0.063	-3.026	0.004***
dP33	-0.057	0.049	-0.017	-1.152	0.254

a. Dependent Variable: LogLD

Table 6 shows that the intercept value for individuals (i.e., dP8, dP9, DP10, dP12, dP13, dP15, dP21, dP23, dP25, dP28, dP29, dP30, dP31, and dP32) have a significant effect on LD. This result shows that the characteristics of the 14 provinces significantly influence LD of the micro industrial enterprises in Indonesia.

4.3.2 Effect of Time

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

$$\text{LogLD}_{it} = \lambda_0 + \lambda_1 2014 + \lambda_2 2015 + \beta_1 \text{LogMIE} + \beta_2 \text{LogINPUT} + \beta_3 \text{LogOUTPUT} + \beta_4 \text{LogRMW} + e_{it}, (6)$$

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 ($i = 1, 2, 3, \dots, 33$); t = time ($t = 2013, 2014, 2015$); e = error term.

Table 7 presents the result of the regression. Table 7 shows that the intercept values of the time points are insignificant. This result indicates that time does not have a significant effect on LD of the micro industrial enterprises in Indonesia.

Table 7. Fixed Effect Regression Models with Constant Slope and Intercept Time Variables

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.574	0.456		1.259	0.211
LogMIE	0.827	0.033	0.816	25.004	0.000
LogINPUT	0.016	0.119	0.016	0.135	0.893

LogOUTPUT	0.168	0.128	0.161	1.310	0.193
LogRMW	-0.114	0.073	-0.022	-1.563	0.121
d2014	-0.023	0.014	-0.020	-1.650	0.102
d2015	-0.015	0.015	-0.012	-0.971	0.334

Dependent Variable: LogLD

4.4 Interpretation of the Panel Data Regression

4.4.1 Number of Micro Industrial Enterprises

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

The BPS data (2016) show that the number of micro industrial enterprises in Indonesia increased by 11.55% in 2014 from 9.50% in 2013 and increased again by 5.13% in 2015. The increase in the number of micro industrial enterprise was able to absorb the labor force with an average of four persons in 2013–2015. The increase in the number of micro industrial enterprises was caused by the intensified empowerment activities of micro, small, and medium enterprises (MSMEs). Supriyanto (2006) states that SMEs have a good potential because the SMEs sector has a major contribution in employment, that is, this sector absorbs over 99.45% of the workforce and contributes 30% to GDP. The effort to promote and develop the MSME sector can absorb a majority of the existing workforce and improve the welfare of the workers, thereby reducing unemployment and, ultimately, poverty.

Sudargo et al. (2013) expressed that the SME sector in Indonesia is increasing its competitiveness because the government has implemented several strategies, namely, the provision of information and market networking, ease of access to funding and mentoring, and capacity building in information technology. Machmud (2011) explained that several programs or policies relating to the technical aspects of production related to SMEs have facilitated the empowerment of this sector. The programs are Center for Development of Small Industry, Program of Input Subsidized, Training and Technology Management, SMEs Innovation Center, and Aid for Quality Supervision. However, the programs or policies should be improved continuously to provide substantial impact on labor absorption. In this study, the elasticity of the number of micro industrial enterprises on LD, which is indicated by the coefficient of regression, is below 1 ($e < 0.76$). This result shows that programs or policies have yet to reach their optimal level. If the programs or policies of empowerment have been optimally performed, then the elasticity should have been above 1. This result means that the percentage increase in the number of micro industrial enterprises should be able to generate LD with the percentage above 1 ($e > 1$). **XXX**

4.4.2 Value of INPUT

INPUT (value or price of an input factor) is the cost incurred in the production process but excludes wages. Therefore, the cost can also be referred to as an investment. The regression coefficient of INPUT is -0.0536 , which means that a reduction of micro industrial enterprises by 1% can increase LD by 0.0536% or vice versa. The result of the regression indicates that the value of the input of the micro industrial enterprises has a negative but insignificant effect on LD. The price (cost) of the input factors in 2013–2015 has increased to encourage enterprises to reduce the use of expensive inputs and substitute them by increasing the use of labor.

The result of the current study is different from those of Ismei et al. (2015), Carib (2012), and Ward et al. (2012). They state that the investment of small industries has a positive effect on LD, which means that the higher the value of the investment is, the higher the total manpower is occupied. Jaunita (2016) stated that the negative relationship or effect between the value of input and LD can also be caused by the enterprise owner who tends to use capital goods (in the form of machinery) to support the production process, improve product quality, and increase the productivity of goods and services effectively and efficiently. Consequently, the use of the machine will cause low labor absorption. The coefficient of INPUT (i.e., -0.0536) also shows the value of elasticity. This elasticity is inelastic ($e < 1$), which means a reduction in the value of input has no substantial impact on LD.

4.4.3 Value of OUTPUT

OUTPUT (value of production) is the value of output produced by micro industrial activities. The coefficient of OUTPUT is 0.1618, which means that an increase of the output of micro industrial enterprises by 1% will increase LD by 0.1618%. The regression result shows that the output value of micro industrial enterprises has a positive but insignificant effect on LD. This finding is consistent with those of Divianto (2014) and Amri et al. (2013). Jaunita (2016), Prabandana (2015), Ismei et al. (2015), and Budiawan (2013) indicated that the value of output has a positive and significant effect on LD. Budiawan (2013) explained that 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 be eventually sold to consumers. If the demand of the product increases, then enterprises will tend to increase the production capacity. Consequently, the enterprises will increase the use of workforce. The coefficient of OUTPUT (i.e., 0.1618) also shows the value of elasticity. This elasticity is inelastic ($e < 1$), which means that the value of output has minimal impact on LD.

4.4.4 Minimum Regional Wage

The regression coefficient of RMW variable is -0.2344 , which indicates that a decrease in RMW by 1% increases LD in micro industrial enterprises by 0.2344% or vice versa. The regression result shows that RMW has a negative and significant effect ($\alpha = 0.01$) on LD. If the rate of RMW increases, then the optimal use of labor is reduced from the previous number. Otherwise, if the UMR rate decreases, then enterprises will increase the use of workforce to achieve the optimum allocation. This result is consistent with those of Prabandana (2015), Amri et al. (2014), Sulistiwati (2012), and Zamrowi (2007). Juanita (2016) and Divianto (2014) presented a negative but insignificant effect of the minimum wage on LD.

Bappenas (2010) explained that enterprises will only pay the wages in accordance with the productivity of labor. That is, laborers with low productivity will receive low wages and vice versa. The minimum wage set is more considerably determined by the aspect of increase in the price level compared with the increase in productivity. Productivity has not become a major factor in the determination of wages. The elasticity of RMW on LD is inelastic ($e < 1$), which means that a decrease in RMW has minimal impact on LD.

4.4.5 Dummy Effect of Provinces and Time

The regression result in Table 6 shows that the values of the intercept for individuals or provinces dummies (i.e., 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 LD in the micro industrial enterprises in Indonesia. This result indicates that the pattern of LD in the micro industrial enterprises in the 14 provinces is different from the benchmark (Province of Aceh). The negative dummy coefficient in a province means that the level of LD in micro industrial enterprises is lower than the benchmark (Province of Aceh). By contrast, the positive dummy coefficient in a province means that LD in micro industrial enterprises in a province is higher than the benchmark (Province of Aceh).

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

5. CONCLUSION AND RECOMMENDATION

The estimation result of the FE model indicates that the number of micro industrial enterprises has a positive and significant effect ($\alpha = 0.01$) on LD in Indonesia. The input of micro industrial enterprises has a negative but insignificant effect on LD. The value of the output has a positive but insignificant effect on LD. RMW has a negative and significant effect ($\alpha = 0.01$) on LD. The elasticities of all variables are inelastic, thereby showing that the programs or policies of empowerment have yet to be optimally performed. The reduction in the value of input and increase in the value of output have no substantial impact on LD. Meanwhile, the decrease in RMW has minimal impact on LD. The characteristics of the 14 provinces significantly influence LD of micro industrial enterprises in Indonesia. By contrast, the pattern of time has no significant effect on LD of micro industrial enterprises in Indonesia.

The government needs to stimulate the increase in the number of micro-industrial enterprises to absorb a substantial workforce and review the rate of RMW based on the price of living needs. The government also needs to provide guidance, training, and counseling for the enterprise laborers. The stakeholders of micro industrial enterprises should collaborate with other companies (including state-owned companies) to mutually benefit, strengthen, and support one another.

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