Analysis of Factors Affecting Labor Absorption in the Province of the Riau Islands

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Abstract: *This study aims to analyze the effect of the labor force, Regency/ City Minimum Wage, investment and economic growth on employment in the Riau Islands Province in 2010-2019. This study uses secondary data in the form of panel data. The analysis method used in this research is panel data regression with the Fixed Effect Model (FEM) model. The data used in the study were obtained from the Central Statistics Agency (BPS) and the Riau Islands Province Manpower and Transmigration Service Report. The results of the analysis show that the labor force and investment have a significant positive effect on employment in the Riau Islands Province. While the Regency/City Minimum Wage and economic growth has a negative influence on employment in the Riau Islands Province. The high MSE and low labor productivity have caused companies to replace workers with production machines (capital intensive).*

Keywords: labor absorption, district minimum wage, investment, economic growth

1. Introduction

Employment problems in Indonesia are still quite complex, such as the high unemployment rate caused by the large number of workers who have not been absorbed by the available jobs. Unemployment that occurs can cause productivity and people's income to be low, so that it has an impact on the problem of poverty and can even trigger crime (Biamrillah & Nurhayati, 2018). Therefore, every individual must have superior potential in order to be able to compete in obtaining a decent job.

The number of labor force in Indonesia always increases every year. In 2019, the workforce was 133.56 million people, an increase of 2.55 million people when compared to 2018. The workforce is a component made up of the working population and the unemployed. The number of working population in 2019 was recorded at 126.52 million people and 7.05 million people were unemployed. When compared to the previous year, the number of working people increased by 2.50 million people and the number of unemployed people increased by 50 thousand people (Statistics, 2019).

An increase in the number of labor force indicates that there is an increase in the supply of labor available in the labor market. However, this increase is not necessarily matched by an increase in the demand for labor that can absorb the existing workforce. Therefore, the high labor force is a challenge for the government. The government must be able to provide as many job opportunities as possible so that the workforce can be absorbed. The ability and skills of a workforce must also be improved, so that labor productivity increases and the economy of a region or a country becomes even better.

Another factor that can affect the absorption of labor is the level of wages. The minimum wage policy is an attempt by the government to improve the wage system in overcoming labor problems. This policy is carried out so that the per capita wages of workers increase and have an impact on increasing the average wage of workers (Wasilaputri, 2016). In addition to the minimum wage, there are other variables that can affect employment, namely investment. Investment is an expenditure made to buy various capital goods and production equipment so that the goods and services produced are increasing.

2. Previous Research

There are two theories that explain the issue of employment. The first theory is the theory put forward by Lewis (1959) which assumes that excess workers are an opportunity and not a problem. The excess of workers in one sector is considered to encourage output growth and become a provider of labor for other sectors. The economy of developing countries has two sectors, namely the modern sector and the traditional sector. In the traditional sector there is an excess supply of labor and the level of wages given is lower than in the modern sector. Low wages for workers in rural areas will encourage entrepreneurs in urban areas to use the workforce in industrial development in urban areas. Thus, according to Lewis, excess workers are an opportunity and not a problem, assuming that the movement of workers from the traditional sector to the modern sector runs smoothly and the movement does not become too much (Mulyadi, 2017). The second theory is the theory of Fei-Ranis (1961) which explains the effect of excess labor on economic development. There are 3 stages of economic development in conditions of excess workers, namely first, workers who have not found work will be transferred to the industrial sector by providing the same wages. Second, agricultural sector workers can increase output but the resulting production is smaller than the wages that will be earned and transferred to the industrial sector. Third, the output produced by agricultural sector workers is greater than the wages that will be obtained, this is called self-sufficiency. Excess workers are absorbed into the industrial and service sectors which experience a continuous

increase in line with increasing output and expanding their business.

One of the parameters to measure the success of a country's economic development is to see how many job opportunities can be created from economic development. The number of job opportunities created can increase income and increase people's purchasing power, so that people's lives will be prosperous.

Rakhmawati & Boedirochminarni (2018) research on the factors that influence labor absorption with the title "Analysis of the Industrial Sector Absorption Rate Analysis in Gresik Regency concludes that partially the wage and labor force variables have a significant and positive effect on labor absorption while the industry variable has a significant and negative effect on employment. Another study was conducted by Meilasari (2020) with the title "The Influence of Provincial Minimum Wage, GRDP, Investment on Manpower Absorption in the Industrial Sector in Java Island in 2010-2016". The results showed that partially the minimum wage variable had a negative and significant effect on employment, while the GRDP and investment variables had a positive and significant effect on employment.

Research conducted by Rusniati et al., (2018) entitled "Analysis of the Effect of Economic Growth and Minimum Wage on Labor Absorption in Malang Regency" partially concludes that economic growth variables have a positive and significant effect on employment. Meanwhile, the minimum wage variable has a negative and insignificant effect on employment. The research conducted has similarities and differences.

The purpose of the study with the title of analysis of the factors that influence labor absorption in the Riau Islands province is to see the effect of the labor force, district/city minimum wages, investment, and economic growth on employment in Riau Province.

3. Research Data

The data in this study uses secondary data obtained from downloading the district/city-level annual report from the Central Statistics Agency (BPS) and the report from the Department of Manpower and Transmigration of the Riau Islands Province for 2010-2019. Secondary data that will be downloaded in this study includes data on labor absorption taken from data on the working community, labor force, Regency/City Minimum Wage (UMK), investment, and economic growth contained in district/city book reports in figures and reports. Department of Manpower and Transmigration.

4. Research Methodology

This study uses panel data regression. The advantages of using panel data regression in a study include (Widarjono, 2009): first, panel data can take into account individual heterogeneity explicitly by allowing individual specific variables. Second, with the ability to control heterogeneity, panel data can be used to test and build more complex behavioral models. Third, panel data is based on repeated

cross-sectional observations (time series), so that the panel data method is suitable for use as a study of dynamic adjustment. Fourth, the high number of observations has implications for data that is more informative, varied, and the collinearity between the data is decreasing, and the degree of freedom is higher so that more efficient estimation results can be obtained. Fifth, panel data can be used to study complex behavioral models. Sixth, panel data can be used to minimize bias that may arise from the aggregation of individual data.

Panel data regression model is used with the aim of simplifying calculations with econometric methods. The dependent variable used is employment with the variable symbol (PTK) and the independent variables are the labor force (AK), Regency/City Minimum Wage (UMK), investment (INV), and economic growth (PE). The general model of panel data regression can be written as follows:

$PTK = \alpha + b1AK_{it} + b_2UMK_2it + b_3INV_{it} + b_4PE_{it} + e$……………………. …. . . …. …. . …. (1)
$logPTK = \alpha + b1logAK_{it} + b_2logUMK_2it + b_3logINV_{it} + b_4logPE_{it} + e$…. . …. . . …………. (2)

Information:
PTK = employment
α = Constant
AK = Labor Force
UMK = Regency/City Minimum Wage
INV = Investment
PE = Economic Growth
b (1. .2) = Regression coefficient of each independent variable
log = logaritm
e = Error term
t = Time (2010, 2011, 2012, ……, 2019)
i = Place (Karimun Regency, Bintan, …, Tanjungpinang City)

With the results of these equations will be obtained 3 approaches that can be used in the estimation method of the regression model using panel data, namely Cammon Effect Model, Fixed Effect Model, and Random Effect Model. The basis for determining the best model (Gujarati & Porter (2009) between the Cammon Effect Model or the Random Effect Model is based on the Chi-Squares distribution through the degrees of freedom (df) of the number of independent variables. If the value of the Lagrange Multiplier (LM) is greater than the critical value of Chi-Squares, then H0 is rejected and H1 is accepted, meaning that the best model for estimating panel data is the Random Effect Model. On the other hand, if the value of the Lagrange Multiplier (LM) is less than the critical value of Chi-Squares, then HO is accepted and H1 is rejected, meaning that the best model for estimating panel data is the Cammon Effect Model.

5. Data Analysis

There are three models used in panel data regression analysis, namely Cammon Effect Model, Fixed Effect Model, and Random Effect Model. The best model can be determined through two tests, namely the Chow test and the

Hausman test. The Chow test is a test conducted to determine the best model in estimating panel data, namely the Cammoon Effect Model with the OrdInary Least Square (OLS) approach or the Fixed Effect Model commonly known as the Least Square Dummy Variable (LSDV) technique. Then, the Hausman test is used to choose the best model between the Fixed Effect Model or the Random Effect Model.

Based on the results of the Chow test and the Hausman test that have been carried out, both suggest using the best model, namely the Fixed Effect Model in estimating the influence of the labor force, minimum wage, investment and economic growth on employment in the Riau Islands Province. The Fixed Effect model was also chosen as the best model because in this model there are more significant probability values in each independent variable compared to the Cammon Effect Model or the Random Effect Model.

Table 1: Estimated Results of Labor Absorption Regression

Dependent Variable: Labor absorption Model	Model		
	Cammon Effect	Fixed Effect	Random Effect
Constant		-1.228	-0.062
Probability		0.002***	0.447
LOGAK	1.020	1.059	1.019
Probability	0.000***	0.000***	0.000***
LOGUMK	0.001	-0.024	0.005
Probability	0.470	0.012***	0.386
LOGINV	-0.019	0.057	-0.018
Probability	0.000***	0.005***	0.000***
PE	-0.004	-0.003	-0.003
Probability	0.001***	0.037**	0.006***
R^2	0.999	0.999	0.999
$F_{Statistik}$		20435.15	32758.62
Probability		0.000***	0.000***
Durbin Watson Stat	1.634690	1.837871	1.511163

Notes: *** Significant at α = 1% ** Significant at α= 5% * Significant at α= 10%

After conducting several tests to determine the best model to be used in the estimation of panel data, it can be concluded that the Fixed Effect Model is the best model recommended in this study. This model is a model whose parameters are unknown and will be estimated using a dummy variable technique to capture differences in intercepts between cross-sections. The following is a table of results from the Fixed Effect Model estimation with the number of research observations as many as 7 districts/cities in the Riau Islands Province during the 2010-2019 period.

Table 2: Fixed Effect Model Estimation Results

Dependent Variable: Labor Absorption Model	Model
	Fixed Effect
Constant	-1.228
Probability	0.002***
LOGAK	1.059
Probability	0.000***
LOGUMK	-0.024
Probability	0.012***
LOGINV	0.057
Probability	0.005***
PE	-0.003
Probability	0.037***
R^2	0.999
$F_{Statistik}$	20435.15
Probability	0.000***
Durbin Watson Stat	1.837871

Notes:
*** Significant at α= 1%
** Significant at α= 5%
* Significant at α= 10%

Based on Table 2, the constant value of 1.058840 can be interpreted that when the labor force increases by 1%, the absorbed workforce will increase by 1.058840% with the assumption that other factors are held constant. The coefficient value-0.023913 can be interpreted that when the district/city minimum wage increases by 1%, the absorbed workforce will decrease by 0.023913% with the assumption that other factors are held constant. The coefficient value of 0.057395 can be interpreted that when investment increases by 1%, the absorbed workforce will increase by 0.057395% with the assumption that other factors are held constant. The coefficient value-0.002933 can be interpreted that when economic growth increases by 1%, the absorbed workforce will decrease by 0.002933% with the assumption that other factors are held constant.

According to the estimation results above, it shows that there is an effect of cross section in the districts/cities in the Riau Islands Province on the absorption of labor in the Riau Islands Province. Based on the estimation, it can be seen that Karimun Regency, Natuna Regency, Lingga Regency, and Anambas Islands Regency have a positive cross section effect as evidenced by the coefficient value with details of the coefficient value of 0.014031 for the Karimun Regency area, the coefficient value of 0.075083 for the area Natuna Regency, the coefficient value is 0.135696 for the Lingga Regency area, and the coefficient value is 0.111774 for the Anambas Islands Regency. Areas that have a negative cross section effect are Bintan Regency, Batam City and Tanjungpinang City. This is evidenced by the coefficient value of-0.032289 for the Bintan Regency area, the coefficient value of-0.256930 for the Batam City area, and the coefficient value of-0.047365 for the Tanjungpinang City area.

Based on the estimation results, it can be seen that Lingga Regency is an area that has the highest cross section effect on employment in the Riau Islands Province with a coefficient value of 0.135696. Lingga Regency is a district that produces the highest agricultural, forestry and fisheries sectors when compared to other economic sectors. Based on data from the Central Statistics Agency (BPS) shows that the agricultural, forestry, and fishery sectors in the last 10 years have always been the highest contributor to GRDP in Lingga Regency. This causes Lingga Regency to have the highest cross-sectional effect on employment, because the agriculture, forestry, and fisheries sectors are sectors that lead to labor-intensive activities.

Lingga Regency is the Regency with the lowest Open Unemployment Rate (TPT) when compared to regencies/cities in the Riau Islands Province. Based on data

uploaded by the Central Statistics Agency (BPS) of the Riau Islands Province, it shows that over the last 10 years the average TPT in Lingga Regency is 4.1 percent. This figure is the lowest number when compared to other districts/cities. The low value of TPT in an area illustrates that a large number of the workforce is absorbed by employment, so that unemployment in the area is low.

Batam City is an area that has the lowest cross section effect on employment in the Riau Islands Province with a coefficient value of-0.256930. The manufacturing sector is the leading sector in Batam City, and even the leading sector in the Riau Islands Province. The manufacturing sector is a sector that plays a major role in the growth of the region's Gross Regional Domestic Product. This can be seen based on the data uploaded by the Central Statistics Agency (BPS) of the Riau Islands Province which shows that the manufacturing sector contributes 37.92% to GRDP.

The low influence of the cross section in Batam City on labor absorption is due to the sub-sector of the processing industry that contributes the most in the area is the sub-sector of metal goods, computers, electronic goods, optics, and electrical equipment, which is 57.85 percent of the total sector processing industry in 2019. The processing industry sub-sector is a sub-sector that tends to be capital-intensive, because the production process uses a lot of equipment such as machines and other technologies. This causes human labor to lose competitiveness with capital goods.

Based on the estimation results that have been carried out in the study, it can be seen that the coefficient value of the district/city labor force variable in the Riau Islands Province is 1.058840 with a probability value of 0.0000. The results of the coefficient and probability values can be interpreted that the labor force variable has a positive and significant influence on employment in the Riau Islands Province. The value of 1.058840 can be interpreted that when the labor force increases by 1%, the absorption of labor will increase by 1.058840% with the assumption that other factors are held constant.

The results of the study which show that the labor force has a positive and significant effect on employment are in accordance with the hypothesis in the study. The labor force is a population aged 15 years and over who are active in economic activities and have an important role in pushing the economy towards a better direction. Through an efficient and productive workforce, it can be a determining factor for increasing the economy and welfare of the people of an area (Feriyanto& Sriyana, 2016). Based on Lewis' theory which explains that excess workers are an opportunity and not a problem, because excess workers in one sector can contribute to the supply of workers in other sectors, and can increase output (Mulyadi, 2017).

The results of the study are in line with research conducted by Halim et al., (2015) which explains that the workforce has a positive and significant effect on employment in Aceh Province. The existence of a labor force illustrates the availability of labor supply in the labor market to fill economic sectors. When the labor force in an area increases, the supply of available labor in the labor market for each sector will also increase, so that the labor force can affect employment. The existence of a significant influence between the labor force and employment is caused by the development of the number of the workforce which will later encourage the need for expansion of job opportunities.

The results of the study are also in line with research conducted by Rakhmawati & Boedirochminarni, (2018); Utami, (2009); which states that the labor force has a positive and significant effect on employment. That is, when the number of labor forces increases it will increase the number of absorption of labor.

Based on the estimation results that have been carried out in the study, it can be seen that the coefficient value of the district/city minimum wage variable in the Riau Islands Province is-0.023913 with a probability value of 0.0123. The results of the coefficient value and probability value can be interpreted that the district/city minimum wage variable has a negative and significant influence on employment in the Riau Islands Province. The value of-0.023913 can be interpreted that when the district/city minimum wage increases by 1%, the absorbed workforce will decrease by 0.023913% with the assumption that other factors are held constant.

The results of the study which show that the minimum wage has a negative and significant effect on labor absorption are in accordance with the hypothesis in the study. According to Sumarsono (2003) the high level of wages will cause production costs incurred by a company to be more, so the company will increase the selling price of goods per unit. When the price of goods rises, consumers will respond quickly and reduce consumption of these goods, even no longer consume them. This causes the goods available on the market are not sold out, so the company will reduce the amount of production of these goods and reduce the amount of labor needed

The results of the study are in line with research conducted by Wasilaputri (2016) which states that an increase in the minimum wage will cause a decrease in the quantity of labor absorption in Java. When wages increase, but the prices of other inputs remain, the costs incurred to pay employees will be relatively expensive compared to other inputs. This will encourage entrepreneurs to replace relatively expensive labor with other, cheaper inputs in order to maintain the profits.

The results of the study are also in line with research conducted by Meilasari (2020); Jaya & Kholilah, (2020); Pramusinto & Daerobi, (2020) show that the minimum wage variable has a negative and significant effect on employment. This means that the higher the level of wages paid to workers, it will reduce the amount of labor absorption.

Based on the estimation results that have been carried out, it can be seen that the coefficient value of the district/city investment variable in the Riau Islands Province is 0.057395 with a probability value of 0.0054. The results of the coefficient value and probability value can be interpreted that the investment variable has a positive and significant

influence on employment in the Riau Islands Province. A value of 0.057395 can be interpreted that when investment increases by 1%, the absorbed workforce will increase by 0.057395% with the assumption that other factors are held constant.

The results of the study which show that investment has a positive and significant effect on energy absorption are in accordance with the hypothesis in the study. Investments made by a company can expand job opportunities, because with investment, the amount of production produced will increase. An increase in production in a company will require additional labor so that the production process can run smoothly. This is in line with Harrod-Dhomar's theory which states that investment not only creates demand, but also increases production capacity. The large production capacity requires a large number of workers (Mulyadi, 2017).

The results of the study are in line with research conducted by Meilasari (2020) which states that investment has a positive and significant effect on employment in the industrial sector in Java. Investment aims to replace or add capital goods so that the production process to produce goods and services will increase in the future. In other words, investment is a capital expenditure activity in order to increase production capacity, and to increase this production capacity requires human capital in it.

The results of the study are supported based on research conducted by Jaya &Kholilah (2020) which shows that increased investment has a positive effect on employment in 6 provinces on the island of Java. Efforts to encourage investment are one of the steps that can have an impact on increasing employment. Increased investment can increase production capacity which will have an impact on high demand for labor. Investments made by investors in both PMDN and PMA can be a source of capital for a company. Investment activities can increase the company's source of funding to obtain assets that can be used to increase the company's production capacity. Increased production capacity causes companies to need additional workers to carry out production activities.

The results of the study are also in line with research conducted by Pamungkas, (2020); Meilasari, (2020); Amalia &Woyanti, (2020) which states that investment has a positive and significant effect on employment. This means that the higher the level of investment, the higher the absorption of labor is carried out. Based on the estimation results that have been carried out, it can be seen that the coefficient value of the district/city economic growth variable in the Riau Islands Province is-0.002933 with a probability value of 0.0374. The results of the coefficient values and probability values can be interpreted that the economic growth variable has a negative and significant influence on employment in the Riau Islands Province. The value of-0.002933 can be interpreted that when economic growth increases by 1%, the absorbed workforce will decrease by 0.002933% with the assumption that other factors are held constant.

6. Conclusion

The number of the workforce in the Riau Islands Province has an influence on the absorption of labor. When the number of the workforce has increased, it is hoped that the government can increase the level of education such as 12-year compulsory education and improve the skills of the workforce so that they can have a positive impact on the economy of the Riau Islands Province. The central government and local governments can formulate policies related to minimum wages that are oriented to the interests of all parties. The determination of the minimum wage in an area must be determined based on the Decent Living Needs in each region. With a decent minimum wage, it is expected to increase the productivity of the workforce so that production growth increases and when production increases, the absorption of labor will also increase.

In relation to investment, the government should encourage more investments that lead to investment in labor and reduce capital-intensive investment. This is done so that more of the workforce can be absorbed by employment. To be able to encourage investment, the government needs to increase the attractiveness and conduct promotions related to regional advantages in order to attract foreign investors to invest their capital.

In addition, government policies must pay attention to sectors that contribute to increasing regional economic growth, especially sectors that are able to absorb a lot of labor, so that a lot of the workforce can be absorbed and can reduce unemployment.

References

[1] Amalia, D. & Woyanti, N. (2020). and Minimum Wage on the Labor Absorption in the Large and. *Jurnal Media Ekonomi Dan Manajemen*, *35* (2), 206–217.
[2] Biamrillah, A. & Nurhayati, S. F. (2018). Analisis Faktor-Faktor yang Mempengaruhi Penyerapan Tenaga Kerja di Daerah Karesidenan Semarang. *Journal University Research Colloquium*, 325–340.
[3] Feriyanto, N. & Sriyana, J. (2016). Labor absorption under minimum wage policy in Indonesia. *Journal Regional Science Inquiry*, *8* (1), 11–21.
[4] Gujarati, D. N., & Porter, D. C. (2009). Basic econometrics (international edition). *New York: McGraw-Hills Inc*.
[5] Halim, F. Z., Hamzah, A. & Sofyan. (2015). Faktor-Faktor Yang Mempengaruhi Penyerapan Tenaga Kerja. *Jurnal Ilmu Ekonomi*, *3* (1), 27–36.
[6] Jaya, T. & Kholilah, K. (2020). Effect of Gross Domestic Regional Bruto, Provincial Minimum Wage, and Investment on Labor Absorption. *Jurnal Ekonomi Bisnis Dan Kewirausahaan*, *9* (3), 236–249.
[7] Meilasari, D. (2020). Pengaruh Upah Minimum Provinsi, PDRB, Investasi terhadap Penyerapan Tenaga Kerja Sektor Industri di Pulau Jawa tahun 2010-2016. *Jurnal Akutansi Aktiva*, *1* (2), 169–190.
[8] Mulyadi, S. (2017). *Ekonomi Sumber Daya Manusia Dalam Perspektif Pembangunan*. Jakarta: Rajawali Pers.

[9] Pamungkas, L. S. (2020). Pengaruh Investasi, Jumlah Unit Usaha Dan Nilai Output Terhadap Penyerapan Tenaga Kerja Di Indonesia. *Jurnal Ekonomi Bisnis Dan Industri*, *02* (01), 40–48.

[10] Pramusinto, N. & Daerobi, A. (2020). Labor Absorption of the Manufacturing Industry Sector in Indonesia. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal), 3* (1), 549–561.

[11] Rakhmawati, A. & Boedirochminarni, A. (2018). Analisis Tingkat Penyerapan Tenaga Kerja Sektor Industri di Kabupaten Gresik. *Jurnal Ekonomi Pembangunan*, *2* (1), 74–82.

[12] Rusniati, R., Sudarti. & Agustin, A. . (2018). Analisis Pengaruh Pertumbuhan Ekonomi dan Upah Minimum terhadap Penyerapan Tenaga Kerja di Kabupaten Malang. *Jurnal Ekonomi Syariah*, *3* (2), 34–42.

[13] Sumarsono, S. (2003). *Ekonomi Manajemen Sumberdaya Manusia dan Ktenagakerjaan*. Yogyakarta: Graha Ilmu.

[14] Utami, B. T. (2009). Pengaruh Upah Minimum Kabupaten, Produk Domestik Regional Bruto, Angkatan Kerja Dan Investasi Terhadap Kesempatan Kerja Di Kabupaten Jember. *Jurnal Perencanaan Wilayah Dan Pembangunan*, *1* (1), 1–20.

[15] Wasilaputri, F. R. (2016). Pengaruh Upah Minimum Provinsi, PDRB dan Investasi Terhadap Penyerapan Tenaga Kerja di Pulau Jawa Tahun 2010-2014. *Jurnal Pendidikan Dan Ekonomi*, *5* (3), 243–250.

[16] Widarjono, A. (2009). Ekonometrikapengantar dan aplikasinya. *Yogyakarta: Ekonisia*.