

## Unemployment, Economic Growth, and Government Expenditure in West Java: Perspectives from Dynamic Panel Model

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<i>Artikel Info</i>	<i>Abstract</i>
<p><i>Article history:</i> Received August 24, 2023 Revised December 12, 2023 Accepted December 18, 2023 Available online December 31, 2023</p> <p><b>Keywords:</b> <i>Unemployment; Economic Growth; Government Expenditures; Labor Force Participation Rate; HDI; Okun's Law; GMM Estimation</i></p> <p>JEL Classification: E20; E60; J60; O10</p>	<p>The state plays a vital role in unemployment alleviation because the problem of unemployment can have serious economic, social, and political repercussions. West Java Province has had the highest unemployment rate in Indonesia in recent years. This study aims to determine and examine how the economic growth rate, government expenditure, labor force, and human development competence can affect the open unemployment rate in West Java Province in 2018-2022. The data used is panel data from 27 regencies/cities in West Java Province. The results showed that the economic growth rate has a negative relationship in the short and long term and directly validates the Okun Law in West Java. Government expenditure and HDI have a positive relationship to unemployment in the long run. The labor force has a negative relationship with unemployment in the short and long run. Thus, local governments need to address the availability of jobs through fiscal policy through effective and appropriate government expenditure. In addition, consider investment policies in works to overcome employment. However, when labor-intensive investment policies are implemented, it is essential to improve the skills of human resources through the Job Training Center (BLK).</p>

### INTRODUCTION

Development can be defined as a multidimensional process of change from various interrelated aspects of life. These aspects include multiple elements, such as social structure, people's attitudes toward accelerating economic growth, reducing income inequality, and poverty alleviation efforts (Todaro & Smith, 2011). Development's main objective is to achieve prosperity through various economic developments, including increasing growth. Economic growth is one of the indicators of the success of a country's development in achieving the Sustainable Development Goals (SDGs). This is in line with the findings of Estrada & Wenagama (2020), which

explain that the economic growth rate indicates the success of development. Since the end of World War II, many countries have set economic growth as one of the main targets (Chen & Xu, 2022).

The development of a country or region can face various problems that affect growth, stability, and people's welfare. These problems can be seen in economic growth, job availability, industrial transformation, etc. Unemployment is one of the critical problems faced by modern society. Forecasting unemployment is one of the responsibilities of economists and policymakers in the face of economic recession (Barnichon & Nekarda, 2012; Boga, 2020; Mulero & García-Hiernaux, 2021). One of the main objectives of macroeconomic policy across countries is to achieve high and sustainable economic growth while keeping unemployment low and stable. Unemployment was a significant challenge to economic growth for sustainable development and social cohesion before the financial crisis in recent years. Simionescu et al. (2020) state that low unemployment can create a sustainable economic and social framework.

Economic growth and unemployment rates are key indicators that policymakers and the public constantly monitor. Economic growth and unemployment can provide a clear picture of a country's economic development. In addition, the relationship between the unemployment rate and economic growth is a very relevant macroeconomic issue and is a broad area of theoretical and empirical research (Sadiku et al., 2015). The widely accepted view in economics is that economic growth higher than Gross Domestic Product (GDP) can increase employment and reduce unemployment (M. I. Ahmed & Cassou, 2021). Strong economic growth has more abundant potential and job opportunities in various sectors. Companies tend to hire more employees to meet the growing demand. This theoretical proposition linking output and unemployment is known as Okun's Law. Okun's law is one of the most prominent laws in macroeconomic theory and has been shown to apply to several countries and regions, especially in developed countries (Christopoulos, 2004; Farsio & Quade, 2003; Lee, 2000).

Djohanputro (2006) in Putri (2016) explained that open unemployment (OUR) is someone who has the desire to work and is trying/developing a job but has yet to succeed in getting a job. In developing countries economic development, increasing unemployment becomes more severe and complicated than the problem of changes in income distribution that disadvantage low-income populations (Muslim, 2014). The situation in developing countries over the past few decades shows that economic growth has yet to be able to create jobs quickly as the population grows. In recent decades, economic development in developing countries needs to provide more job opportunities to keep pace with population growth, so the unemployment problem has become increasingly severe. If the problem is not immediately addressed and the solution is not found, it can cause social insecurity and worsen poverty (Anggraini, 2021). Therefore, the unemployment problem faced is getting more severe from year to year. Even sadder, in some poor countries, not only is the number of unemployed people getting bigger, but their proportion of the total labor force is also increasing (Niken et al., 2023).

Open unemployment is a labor force that does not have a job and is completely unemployed. As of August 2022, Indonesia's available unemployment rate reached 5.86 percent, with 8.4 million unemployed people. Open unemployment is still a problem in every province in Indonesia, including West Java Province. Based on the report of the [Badan Pusat Statistik \(2023\)](#), the open unemployment rate in West Java Province is consistently included in the three provinces with the highest OUR in Indonesia for the last five years in 2018-2022. In addition, West Java Province has the first highest OUR compared to other provinces in Indonesia in 2022. The following is OUR data from recent years in West Java Province.

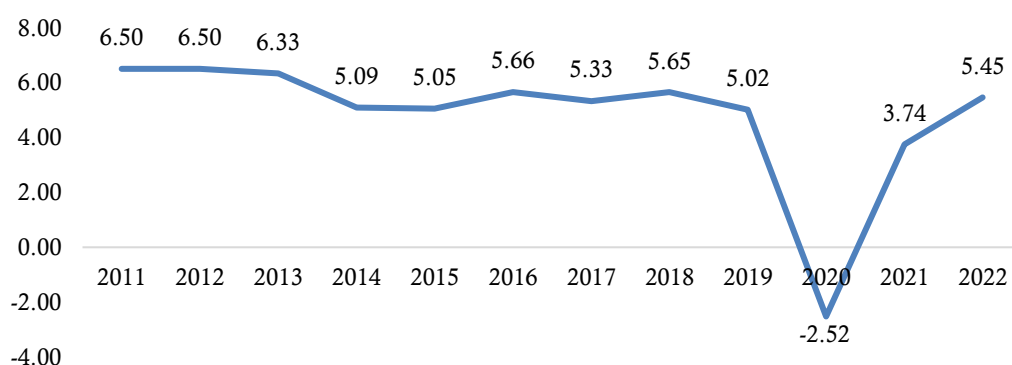
**Table 1. Open Unemployment Rate in West Java Province in 2018-2022**

Year	Unemployment (%)	Rank (in Indonesia)
2018	8.17	2 <sup>nd</sup> Highest
2019	7.99	2 <sup>nd</sup> Highest
2020	10.46	3 <sup>rd</sup> Highest
2021	9.82	2 <sup>nd</sup> Highest
2022	8.31	1 <sup>st</sup> Highest

Source: BPS, 2023

Table 1 explains that OUR in West Java Province has fluctuated recently. In 2020, there was an increase in OUR compared to the previous year, with an OUR rate of 10.46 percent. This is also due to the effects of the Covid-19 pandemic that hit Indonesia in early 2020. The high unemployment rate in West Java is also a concern, considering that the unemployment rate of West Java Province exceeds the national unemployment rate from 2018 to 2022. In addition, unemployment in West Java has always been included in the province with the highest open unemployment rate in Indonesia.

**Figure 1. Economic Growth Rate of West Java Province in 2011-2022**



Source: BPS, 2023

However, in contrast to the economic level in West Java Province, it continues to experience favorable growth every year. Based on a [BPS report \(2023\)](#), it is explained that the economic growth rate in West Java Province has experienced a positive number even though it had contracted due to the COVID-19 pandemic. After the pandemic, the economy in West Java Province was able to bounce back and show

positive numbers year-on-year. The trend of economic growth in West Java Province could reduce open unemployment. However, economic growth in West Java Province has yet to be able to answer the problem of open unemployment in West Java Province. Figure 1 explains that at the end of 2022, the economy of West Java Province rebounded after the COVID-19 pandemic with a growth rate of 5.45 percent. When viewed in the previous year, economic development in West Java Province continues to experience consistent growth at 5 percent.

The government has several policies and authorities to influence the increase in economic growth and reduce development problems. One of these policies is fiscal policy, which aims to improve education, health, and employment infrastructure to lead to equitable development (Roşoiu, 2015). Government expenditure has solid implications for boosting demand for labor due to aggregate demand for goods and services and rapid economic growth (Antonopoulos, 2010; J. De Henau, S. Himmelweit, 2017; K. Kim et al., 2019). Erlina et al. (2017) explained that the quality of shopping has a close relationship with financial management by local governments. The quality of shopping can be reflected in planning and budgeting. Conversely, government expenditure will not positively impact the economy if the spending is not practical or of good quality (Udoka et al., 2015). Government expenditure quality indicators generally cover several aspects, namely efficiency and effectiveness of expenditure, timely, transparent, and accountable (Alkin et al., 2004; Juanda et al., 2013; Mullins & Pagano, 2005). When the government spends on infrastructure, education, health, and social assistance programs, it drives demand for goods and services from related sectors. Increased demand due to government expenditure will encourage producers and firms to increase production, expand, and create new jobs to meet the high demand (Eichengreen & Gupta, 2013; İkkaracan & Kim, 2019; Stiglitz, 2016).

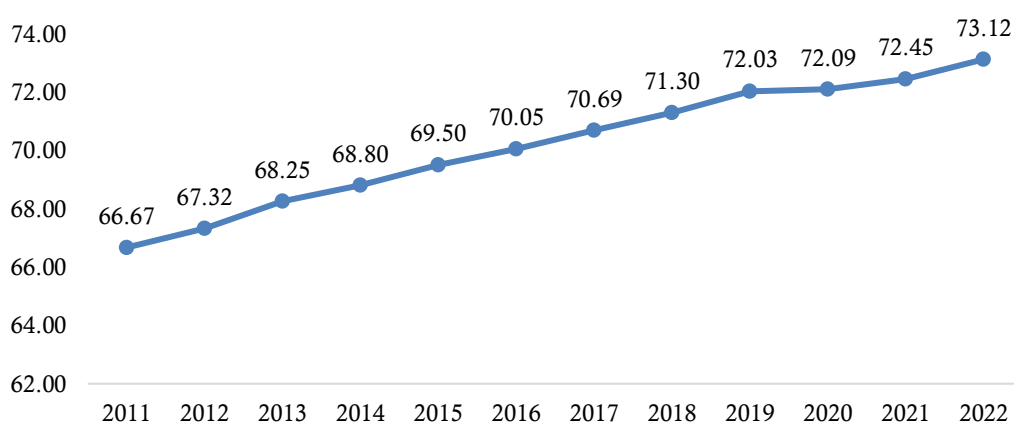
High production will create more income for workers and companies, so it has the potential to increase demand further. However, the availability of labor needs to be accompanied by the quality of human resources (HR). The quality of human resources has a close relationship and influences each other in the economy. Good quality human resources and relevant skills can increase product and service productivity. If the quality of labor has limited skills and does not meet employment needs, it is possible for an economic slowdown and an increase in the unemployment rate (Bagliano et al., 2019). The quality of human resources can be measured through the magnitude of the Human Development Index (HDI) value.

The Human Development Index (HDI) is a number used to measure the achievement of human development based on several essential qualities of life components that can affect a person's productivity level. According to Badan Pusat Statistik (2016), HDI is built based on three basic dimensions. These dimensions include longevity and good health, education and knowledge, and a decent standard of living. When viewed from its development, HDI in West Java Province has continued to increase in recent years. This shows that the quality of human resources has qualified capacity and has the potential to compete in the labor market. Figure 2 explains an increasing trend in HDI numbers in West Java Province from 2011 to 2022. This shows that the quality of human development in West Java Province is

quite good, but Indonesia's open unemployment rate in 2018-2022 still occupies the highest position. The quality of human development and the unemployment rate are related. This is by Nicholas' findings that the quality of human development has a negative and significant relationship with the unemployment rate. The findings explain that increasing the HDI rate in a region will reduce the unemployment rate.

According to the New Growth Theory, government has a vital role in enhancing human capital development and developing its potential to increase human productivity. One way to achieve this is through investment in the education sector, which is expected to improve the quality of human resources by strengthening individual knowledge and skills. With the improvement of the quality of human resources, personal knowledge, and expertise will also increase, which will encourage increased work productivity. When companies hire workers with high productivity, they will be able to achieve more results. With companies absorbing more labor, unemployment is expected to decrease (Todaro et al., 2011).

**Figure 2. Human Development Index of West Java Province in 2011-2022**



Source: BPS, 2023

The use of Okun's Law is one exciting approach to observing the problem of unemployment. Okun's Law explains that any increase in the percentage of unemployment in a country will be associated with a decrease in the size of the Gross Domestic Product (GDP) by 2 percent. In this context, an increase in the unemployment rate indicates a problem in the labor market that can affect overall economic performance. Mankiw (2003) and Zhang et al. (2022) state that economic growth measured through increased GDP can positively impact employment. When national income increases, production also tends to increase. This means that the higher the GDP, the more labor is involved in production. However, the open unemployment rate in West Java Province continues to increase from 2018 to 2022 despite being accompanied by a consistent positive economic growth rate trend of 5 percent each year. Furthermore, although the Okun Law approach has been dominant in modeling the relationship between unemployment and economic growth, some studies still need more consistency. Some literature shows a close negative relationship between economic growth and unemployment (Muslim, 2014; Neifar, 2022; Nurcholis, 2014). However, there are several other literature that explain the positive



relationship between economic growth and unemployment, so the approach using Okun's Law cannot be validated (Anggraini, 2021; Gómez & Irewole, 2023; Salsabella et al., 2020). From the description above, there are still gaps and discrepancies in the findings of previous studies. Therefore, research on the relationship between economic growth and unemployment remains open for further investigation.

The purpose of this study is to examine the effect of economic growth rate, government expenditure, labor force participation rate (LFPR), and Human Development Index (HDI) on the open unemployment rate (OUR) in West Java Province in 2018-2022. The author uses Okun's Law approach to analyze the relationship between economic growth and the unemployment rate and uses the generalized method of Moment (GMM) estimation as his analysis method. Okun's Law implies that there is a negative relationship between the rate of economic growth and the unemployment rate.

## RESEARCH METHODS

### Data and Measurement

This study used secondary data with a descriptive quantitative approach sourced from the Badan Pusat Statistik (BPS) West Java. The data used is panel data from 2018 to 2022 in 18 districts and nine cities in West Java Province. This study uses two types of variables: dependent and independent. This study used the open unemployment rate (OUR) as the dependent variable. The independent variables are the economic growth rate, government expenditure, labor force participation rate (LFPR), and human development index (HDI). Data processing is carried out using econometric software, namely STATA16. In general, this study can be analyzed using the following equation:

$$OUR_{it} = \alpha + \beta_1 EGR_{it} + \beta_2 GE_{it} + \beta_3 LFPR_{it} + \beta_4 HDI_{it} \dots \dots \dots (1)$$

OUR : Open Unemployment Rate (%); EGR : Economic Growth Rate (%); GE: Government Expenditure (IDR Million); LFPR : Labor Force Participation Rate (%); HDI : Human Development Index (Poin);  $\alpha$  : Constanta; I : cross-section (27 regency/city); t: time series (2018-2021)

To facilitate the interpretation of estimation results and standardization of variable units, this study uses logarithmic transformations (log). In addition, using logarithms also reduces the likelihood of problems with classical assumption tests (Gujarati et al., 2012). Here is a model of the transformation logarithm equation used in this study.

$$OUR_{it} = \alpha + \beta_1 EGR_{it} + \beta_2 \log GE_{it} + \beta_3 LFPR_{it} + \beta_4 HDI_{it} \dots \dots \dots (2)$$

**Table 2. Description of Variables**

Variable	Description	Source
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Open Unemployment Rate ( <b>OUR</b> )	Indicators of unemployed people open. The data used is in the form of percentage units.	Badan Pusat Statistik
Economic Growth ( <b>EGC</b> )	The economic growth rate is seen from the Gross Regional Domestic Product value based on constant prices. The data used is in the form of percentage units.	Badan Pusat Statistik
Government Expenditure ( <b>Log GE</b> )	The nominal budget of local governments. The data used is in the form of units of million rupiah.	Badan Pusat Statistik
Labor Force Participation Rate ( <b>LFPR</b> )	An indicator to measure the percentage of a country's labor force that actively works or participates in economic activity. The data used is in the form of percentage units.	Badan Pusat Statistik
Human Development Index ( <b>HDI</b> )	Indicators measure the level of human development in a region and provide an overview of the quality of life and human well-being. The data used is in the form of index units.	Badan Pusat Statistik

Generalized Method Moment (GMM) is a development of the moment method approach. GMM aims to equate the condition of the entire population with the condition observed from the sample. In the context of dynamic panel data models, the main challenge is the correlation between endogenous lag variables (which are used as explanatory variables) and errors, causing the Ordinary Least Squares (OLS) method to produce estimates that tend to be biased and inconsistent. Therefore, the Arellano-Bond GMM estimation method is used as an alternative. This method can provide unbiased, consistent, and efficient parameter estimation. The results of parameter estimation for equation (3) can be seen as follows:

$$\begin{aligned} \begin{pmatrix} \hat{\delta} \\ \hat{\beta} \end{pmatrix} &= \left[ \left( N^{-1} \sum_{i=1}^N (\Delta y_{i,t-1}, \Delta x_i)' z_i \right) \hat{\Lambda}^{-1} \left( N^{-1} \sum_{i=1}^N z_i' (\Delta y_{i,t-1}, \Delta x_i) \right) \right]^{-1} \\ &\quad \left[ \left( N^{-1} \sum_{i=1}^N (\Delta y_{i,t-1}, \Delta x_i)' z_i \right) \hat{\Lambda}^{-1} \left( N^{-1} \sum_{i=1}^N z_i' \Delta y_i \right) \right]. \end{aligned} \dots\dots\dots (3)$$

**RESULT AND DISCUSSION**

Descriptive statistics is an approach used to describe and provide an overview of a study's frequency distribution of variables. The goal is to provide a general explanation of the problem being analyzed to facilitate understanding for the reader. Descriptive statistical analysis aims to provide an overview of the distribution and behavior of research sample data, considering the minimum value, maximum value, average (mean), and standard deviation of each independent and dependent variable.

**Statistics Descriptive**

**Table 3. Statistics Descriptive**

Variable	Measurements Unit	Obs	Mean	Std. Dev	Min	Max
OUR	Percentage (%)	135	8.59	2.31	1.56	14.29
EGR	Percentage (%)	135	3.71	2.83	-3.80	7.85
LogGE	Contants 2010 (IDR Millions)	135	14.98	0.55	13.60	16.13
LFPR	Percentage (%)	135	65.05	3.66	55.74	79.92
HDI	Index/Poin	135	71.76	4.72	64.62	82.50

Table 3 presents statistical descriptive data on factors influencing and contributing to the unemployment rate. The unemployment rate is measured with the open unemployment rate as the dependent variable. The independent variables used include economic growth rate, government expenditure, labor force participation, and human development index. First, the average open unemployment rate is 8.59 percent, with a variability of 2.31 percent. The unemployment rate had the highest value of 14.29 percent and the lowest value of 1.56 percent. Second, the average economic growth rate is 3.71 percent, with a variability value of 2.83 percent. The economic growth rate ranges between a maximum value of 7.85 percent and a minimum of -3.80 percent. Third, the average government expenditure was 14.98 percent, with a variability value of 0.55 percent. Government expenditure had the highest value of 16.13 percent and the lowest value of 13.60 percent. Fourth, the average labor force participation rate was 65.05 percent, with a variability value of 3.66 percent. The labor force participation rate ranges between a maximum value of 79.92 percent and a minimum value of 55.74 percent. Fifth, the average human development index is 71.76 percent, with a variability value of 4.72 percent. The human development index has the highest value of 82.50 percent and the lowest value of 64.62 percent.

### Model Specification Test

#### *a) Sargan Test (Instrument Validity)*

**Table 4. Sargan test**

Sargan test of overidentifying restrictions		
H0	:	Overidentifying restrictions are valid.
chi2(5)	=	4.005
Prob > chi2	=	0.549

The Sargan test is used to check the validity of an instrument variable when the number exceeds the number of presumed parameters (overidentifying conditions), with a null hypothesis stating that the instrument is valid (over-identifying restrictions are valid, instrument variables are not correlated with errors). In addition to checking the validity of instrument variables, this test is also helpful in assessing whether the residual data of GMM estimates show homoscedasticity. Based on the test results, the perfection of the dynamic model can be seen from the estimated margin with a statistical value of 4.005 and a probability of 0.549 (not significant at the level of 5 percent). Thus, the conditions of a valid instrument are met.

#### *b) Arellano Bond Test (Instrument Consistency)*

**Table 5. Arellano-Bond test**



<b>Arellano-Bond test for zero autocorrelation in first-differenced errors</b>			
<b>H0</b>	<b>:</b>	<b>No autocorrelation</b>	
<b>Order</b>	<b>z</b>	<b>Prob &gt; z</b>	
1	-2.4641	0.0137	
2	0.8572*	0.3913	

The Arellano Bond test ensures that the error term is not serially correlated with AR(2) so that the estimate obtained is consistent with the null hypothesis; that is, there is no autocorrelation. The expected result is not to reject the null hypothesis with a real rate of 5 percent in both tests. Thus, reasonable conclusions can be compiled from the results of model specifications (Adeleye et al., 2019; Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998; Osabuohien et al., 2015). Based on the test results, this study is free and meets the consistency test. This is evidenced by a probability value of 0.3913 or above 5 percent.

### Unbiased

**Table 6. Unbiased test**

<b>Variable</b>	<b>fdgmm</b>	<b>fem</b>	<b>pls</b>
our			
L1.	.56226847***	.48826719***	.68744784***
egr	-.31449419***	-.30393845***	-.36239859***
lge	-.16421672	-.04816747	.2433121
lfpr	-.10551678**	-.09927696*	-.17336449***
hdi	-.87674941***	-.83142261***	.03701469
_cons	77.285693***	72.490583***	8.9093161*
N	81	108	108

In the unbiased test, the estimation results with First-Differences GMM need to be compared with the Fixed Effect Model (FEM) and Pooled Least Square (PLS) results. The unfamiliarity criterion is considered met if the estimated value of FD-GMM falls between the estimated values of the FEM and PLS models. Based on Table 5, the value of the FEM < FD-GMM < PLS coefficient, or  $0.488 < 0.562 < 0.687$ . The value means that the condition of unfamiliarity has been met.

### Estimation Results

The estimation results show that using the FD-GMM model, the economic growth rate negatively influences the open unemployment rate in West Java Province in the short and long term. The economic growth rate has a negative and significant coefficient value of 0.3039 in the short run and 1.1595 in the long run. This shows that an increase in the economic growth rate of 1 percent will reduce the open unemployment rate in West Java Province by 0.30 percent in the short term and 1.16 percent in the long term. This finding can directly validate Okun's Law in West Java Province that there is a negative relationship between unemployment and the rate of output growth in both the short and long run (Benos & Stavrakoudis, 2022; J. Kim et al., 2020; Muslim, 2014; Neifar, 2022; Nurcholis, 2014; Woo, 2023).

**Table 7. Robustness Estimation of Open Unemployment with FD-GMM**

Dependent: OUR

Variable	Short-run			Long-run		
	Coefficient	Std. Error	P-Value	Coefficient	Std. Error	P-Value
EGR	-0.3039***	0.0628***	0.000	-1.1595***	0.2058***	0.000
LogGE	-0.0482***	0.0266***	0.958	0.7785***	0.4907***	0.113
LFPR	-0.0993**	0.9074***	0.023	-0.5547***	0.0876***	0.000
HDI	-0.8314***	0.0429***	0.000	0.1184***	0.0610***	0.052
Const	72.4906*	18.5756*	0.000			
R-square	= 0.7689					
F (5,76)	= 50.56					
Prob>F	= 0.0000					

Table 7 shows that government expenditure hurts the open unemployment rate in the short run and has a positive effect in the long run. This indicates that if there is an increase in government expenditure, it will reduce the unemployment rate in the short term (Ali et al., 2022). In the long run, government expenditure positively influences the open unemployment rate. The implication is that if government expenditure increases by 1 percent, it will increase the unemployment rate by 0.77 percent. The cause of this positive relationship is allegedly due to structural problems in the labor market. Unemployment in West Java Province is influenced by structural issues in the labor market, such as a lack of skills that match market demand, the mismatch between workers' qualifications and job needs, etc. Although government expenditure can create new jobs, unemployment can continue if the workforce lacks the necessary skills (Masduki et al., 2022). In addition, the Head of the Investment and One-Stop Integrated Services Agency (DPMPTSP), Eka Sanatha in Azzam (2022), explained that the high investment value has yet to absorb labor. This is because investment entering West Java Province tends to be capital-intensive, especially in industrial estates in West Java.

According to the governor of West Java, Ridwan Kamil in Ramdhani (2021), West Java is the destination area for workers. West Java has the highest wages, especially in Bekasi, Karawang, Purwakarta, Subang, Bogor, and Sukabumi, which are national-scale industrial centers. Thus, many migrant workers want to find work in West Java, and there is competition with local workers. Local workers are unable to compete with migrant workers who have more qualified competencies and work experience. This finding aligns with previous research on a positive relationship between government expenditure and unemployment in the long run (Abouelfarag & Qutb, 2021; Singh & Shastri, 2020).

The Labor Force Participation Rate (LFPR) refers to the percentage of the potential labor force or working-age population participating in economic activity, either in employment or active job search. There is an inverse relationship between LFPR and the open unemployment rate. When LFPR increases, the unemployment rate decreases, and vice versa. That is because rising labor force participation suggests that more people are coming into the labor market to work or find work, which can reduce the open unemployment rate. Based on the findings in this paper, LFPR with available unemployment rates has a consistent negative relationship in the short and long term. Based on the results of this study, LFPR has a significant negative influence both in the short and long term. LFPR has coefficients of -0.0993 and -0.5547 in the short and long term to the open unemployment rate in West Java Province. This shows that an increase in LFPR by 1 percent will reduce the available unemployment rate in West Java Province by 0.09 percent in the short term and 0.55 percent in the long term. This finding is in line with previous research that explains that there is a negative relationship between LFPR and open unemployment, both in the short and long term (Astuti et al., 2017; Fatimah, 2014; Gessan & Tusianti, 2020; Raifu & Adeboje, 2022).

The long-term negative relationship between LFPR and open unemployment in West Java Province is influenced by the increase in labor force participation, especially among people who work in general each year. More people working means more income available to society. This increases people's purchasing power, encourages consumption of goods and services, and contributes to economic growth. In Table 8, the percentage of people working in West Java Province has continued to increase over the past few years, especially from 2018 to 2022, despite the COVID-19 pandemic.

**Table 8. Percentage of People Employed in 2018-2022**

<b>Year</b>	<b>% Employed Against the Labor Force</b>	<b>Number of People Working</b>
2018	91.8	20,936,930
2019	92.0	22,063,833
2020	89.5	21,674,854
2021	90.2	22,313,481
2022	91.7	23,452,568

Source: BPS, 2023

In 2019, there was an increase in the percentage of people working from 2018. Likewise, in 2022, there was an increase in the percentage of people working to 91.7 percent, more significant than in 2021, with a percentage of 90.2 percent. The rise in labor force participation suggests that more people are entering the labor market to work or find work, thus reducing the open unemployment rate (H. A. Ahmed, 2022; Nemore et al., 2021).

The education component in HDI highlights the importance of access to quality education. Countries with a good education have the potential to produce a skilled and educated workforce. This can help reduce the open unemployment rate because an educated workforce tends to have more job opportunities and is more adaptable to changes in an increasingly complex job market. Long life expectancy and good health in the HDI component can increase labor productivity. Healthy

individuals tend to be more productive and have a better chance of keeping a job. In addition, healthy individuals tend to have lower absenteeism rates and less sick leave, which can reduce the negative impact on company productivity.

Based on the results of FD-GMM estimates, HDI has a negative and significant influence in the short term. In the short term, the human development index can reduce open unemployment in West Java Province. These results are coherent with the findings of [Adejumo et al. \(2021\)](#) and [Qazi et al. \(2017\)](#). However, in the long run, HDI has a positive and significant influence of 10 percent on the open unemployment rate in West Java Province. If the HDI increases by one basis point, it will increase unemployment by 0.19 percent. One of the reasons for the positive influence of HDI on unemployment is related to employment issues. While a high HDI level may reflect a better level of education, the change may not be followed by the skill adjustments needed for new jobs emerging due to technological change. In addition, according to the [PMPTSP report \(2021\)](#), the high operational load for labor in connection with the characteristics of labor-intensive industries is one of the factors causing the reduction in labor absorption. Furthermore, according to a report by the [Badan Pusat Statistik \(2023\)](#), the competency characteristics of the labor force in West Java Province are still dominated by the category of Elementary School (SD) and below to Junior High School (SMP) exceeding 50 percent in total. The following is labor force data based on education completed by percentage.

**Table 9. Labor Force Based on Education Completed in 2018-2022 (%)**

Year	SD	SMP	SMA	SMK	Diploma/ University
2018	37.39	18.43		32.35	11.83
2019	38.66	17.76		32.20	11.38
2020	37.87	17.88	17.67	14.88	11.69
2021	36.85	17.85	17.11	16.44	11.75
2022	37.35	17.65	18.23	15.31	11.48

Source: BPS, 2023

These limited competencies can mismatch job seekers' qualifications and skills and the labor market's needs. This can lead to skills gaps that make it difficult for job seekers to find jobs that match their educational background. These findings align with research conducted by [Nurcholis \(2014\)](#), which shows that HDI positively influences unemployment. The problem of employment is a challenge for policymakers. To overcome the absorption problem of local workers, the West Java Provincial government needs to maximize the competence of local workers through the Job Training Center (BLK) to increase competitiveness with migrant workers. Vocational-based training and skills development through BLK have significant value when adapted to the needs of the local job market. The importance of this approach lies in ensuring that trainees have the skills and knowledge appropriate to the demands of the local employment field. By adopting this approach, we can produce a more productive workforce that aligns with the needs of local industry. In addition, developing entrepreneurial interest in training can create new jobs and help reduce the unemployment rate. The drive for entrepreneurship can form a competitive and

innovative mentality among trainees, encouraging them to create job opportunities. It can also support the growth of economic sectors driven by local businesses.

## CONCLUSION

The findings in the study show that economic growth has a negative and significant influence in the short and long term. This finding supports previous research that shows that the economic growth rate can reduce the open unemployment rate and directly validates the Okun Law in West Java Province (Benos & Stavrakoudis, 2022; J. Kim et al., 2020; Muslim, 2014; Neifar, 2022; Nurcholis, 2014; Woo, 2023). In this study, government expenditure negatively influences the open unemployment rate in the short run and has a positive effect in the long run. This shows that if there is an increase in government expenditure, it will reduce the unemployment rate in the short term (Ali et al., 2022). However, government expenditure increases the open unemployment rate in the long run. The findings align with previous research on a positive relationship between government expenditure and unemployment in the long run (Abouelfarag & Qutb, 2021; Singh & Shastri, 2020).

In this study, LFPR has a significant negative influence both in the short and long term. LFPR has coefficients of -0.0993 and -0.5547 in the short and long term to the open unemployment rate in West Java Province. The education component in HDI emphasizes the significance of access to quality education. Countries that provide superior education systems can produce a skilled and educated workforce. HDI in this study showed a negative and significant influence. In the short term, HDI can potentially reduce the open unemployment rate in West Java Province. However, in the long run, HDI shows a positive and significant influence on the available unemployment rate in West Java Province at a significance level of 10 percent.

This paper contributes to literature that discusses the phenomenon of okun law, especially looking at the phenomenon of okun law in 27 regencies/cities in West Java Province. Based on the findings of this study, the government needs to address the problem of job availability. This can be overcome by implementing fiscal policy through appropriate, effective, and efficient government expenditure. Labor-intensive investment policies need to be considered to address the problem of job creation. The main objective of this policy is to reduce the unemployment rate and drive economic growth by utilizing available human resources. However, when labor-intensive investment policies are implemented, it is essential to improve the skills of human resources through the Job Training Center (BLK). Increasing the workforce's capacity and skills is needed to compete in the labor market and reduce unemployment problems in West Java Province.

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