

The Effect of Labor Force Size, Regional Own-Source Revenue, and Average Years of Schooling on Gross Regional Domestic Product in West Java

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ARTICLE INFO

Keywords: Gross Regional Domestic Product, Labor Force Size, Regional Own-Source Revenue, Average Years of Schooling

Received : 12, June

Revised : 13, July

Accepted: 31, August

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ABSTRACT

West Java Province is one of the most populous provinces in Indonesia and possessing substantial economic potential. However, the growth of Gross Regional Domestic Product (GRDP) across its regencies and cities still exhibits considerable disparities. This study aims to analyze the effect of labor force size, Regional Own-Source Revenue (ROSR), and Average Years of Schooling (AYS) on the GRDP of regencies and cities in West Java Province during the 2015-2025 period. The method employed is a quantitative approach using panel data regression analysis, in which the Fixed Effect Model (FEM) was selected as the best model based on the Chow test and Hausman test. The result show that labor force size, regional own-source revenue, and AYS each have a positive and significant effect on GRDP, both partially and simultaneously. These findings indicate that labor availability, regional fiscal autonomy, and the quality of public education are strategic factors that must be continuously improved to encourage more equitable economic growth across all regencies and cities in West Java Province.

INTRODUCTION

Growth disparities across regions are a key indicator of current economic dynamics, with each province experiencing uneven rates of development. Some regions are experiencing rapid growth due to the success of industrial development, while others are stagnating due to their dependence on the primary sector and inadequate infrastructure (Fitri & Rindiani, 2024). In times of global uncertainty, stable regional growth is key to economic recovery. This is because economic fluctuations at the provincial level not only affect investment attractiveness but also serve as a benchmark for the effectiveness of development policies implemented by local governments (Anshari, 2025). Gross Regional Domestic Product (GRDP) serves as an indicator of a region's economic output while also reflecting aggregate regional productivity. Increased economic activity in strategic sectors should ideally accelerate the circulation of money and expand employment opportunities. However, significant increases in GRDP in various regions have often failed to effectively reduce unemployment and inequality (Ahmad, 2024). This phenomenon indicates that substantial economic development does not necessarily correlate directly with improved social welfare; therefore, a more in-depth evaluation of the quality of regional resources and fiscal autonomy is needed to foster higher quality growth.

West Java Province, which ranks among the provinces with the highest economic contribution nationwide, has made GRDP growth in each regency and city a top priority in regional development planning. This is supported by a high concentration of manufacturing activities, such as the electronics, textile, food processing, furniture, and petrochemical industries, as well as the energy sector and other industries (Wistantri & Bintariningtyas, 2023). According to the Third Quarter 2025 Regional Fiscal Review published by the West Java Provincial DJPb Provinsi Jawa Barat (2025) West Java's economy is projected to grow by approximately 4.95%–5.2% in 2024–2025. Although this indicates positive economic performance, this growth has not been evenly distributed across all regions. Metropolitan areas such as Bodebekkar (Bogor, Depok, Bekasi, and Karawang) serve as the main drivers of West Java's economic growth, while regencies and cities in other regions still face challenges in accelerating the growth of their respective GRDP. This diversity in economic characteristics indicates that GRDP performance across all regencies and cities in West Java is not uniform but rather reflects substantial variations.

Based on data from the West Java Central Statistics Agency BPS (2026) the GRDP values of regencies and cities for the 2023–2025 period varied significantly. Bekasi Regency was recorded as the region with the highest GRDP, reaching 308,568.27 billion rupiah in 2025, followed by Bandung City and Karawang Regency. In contrast, Pangandaran Regency and Banjar City ranked at the bottom, with GRDP of only 9,850.57 billion rupiah and 4,083.17 billion rupiah, respectively. These data show that the gap in GRDP values among regencies and cities in West Java is quite wide, with industrial and urban areas dominating while rural and agriculture-based areas lag behind. This indicates that the disparity between regions continues to widen because the more developed regions are growing from a much higher baseline. Economic growth in West Java

exhibits interesting dynamics because, although the province is known as a national industrial hub, there are still significant disparities in development among its regions. Among the 27 regencies and cities, there are clear differences in regional capacity to manage resources ranging from labor utilization and local budget strength to the quality of education for the population (Pratama et al., 2024). Labor issues in this province are not merely a matter of a large population but rather stem from workers' lack of readiness to keep pace with industrial developments. According to the West Java Central Statistics Agency BPS Jawa Barat (2026) Bogor Regency has the largest labor force, reaching 2.8 million people, while Banjar City has the smallest. Interestingly, Bekasi Regency, which has the highest GRDP, actually has a smaller labor force, indicating that a large labor force does not always guarantee a high GRDP if it is not supported by sufficient skills.

This situation is exacerbated by highly unequal regional own-source revenue disparities. Regions with developed industries have large budgets to build public facilities, while underdeveloped regions struggle to improve their infrastructure due to limited funds, thereby creating an ever-widening economic gap (Manto et al., 2025). According to the Ministry of Finance's Directorate General of Regional Finance DJPK Kemenkeu (2025) Bogor Regency recorded the highest regional own-source revenue in 2025, reaching 5,019.52 billion rupiah, while Banjar City ranked lowest with regional own-source revenue of only 155.31 billion rupiah. The ability to generate revenue in West Java's regencies and cities varies significantly, and this pattern aligns with the level of GRDP. This situation is further evident in workforce capabilities, as measured by average years of schooling, where major urban areas have higher education levels compared to rural areas (Wardani, 2024). The West Java Central Statistics Agency BPS Jawa Barat (2026b) notes that Indramayu Regency has the lowest average years of schooling at 7.06 years, while the cities of Bekasi, Depok, and Bandung exceed 11 years, indicating that disparities in human resource competencies across regions remain an unresolved issue. Given the output gap, disparities in labor supply, varying fiscal capacities, and uneven human resource quality, the researchers are interested in analyzing **"The Effect of Labor Force Size, Regional Own-Source Revenue, and Average Years of Schooling on Gross Regional Domestic Product in West Java."**

THEORETICAL REVIEW

Neoclassical Economic Growth Theory

One example of the type of economic development study that emerged during the transitional period between the late 1950s and early 1960s is neoclassical growth theory. U.S. economist Robert Solow is recognized as the creator of this theory of economic growth. Robert Solow's theory states that capital accumulation, population size, and labor are the primary determinants of economic activity. The essence of Solow's growth theory is the belief in free-market mechanisms capable of automatically adjusting toward a steady state, this implies that the government's scope for action in the economy is limited. Government control is exercised solely through a mix of fiscal and monetary policies (Solow, 1956, as cited in Tomia & Aisyah, 2026).

Several previous studies have examined the effects of these variables on GRDP. Kasidi & Fitri (2024) in their study of Central Java Province, found that own-source revenue and investment had a positive and significant effect on GRDP, whereas the total labor force actually had a negative and significant effect on GRDP. This negative finding regarding the labor force contradicts the general assumption and is likely due to high unemployment rates or a skills mismatch in the region. Meanwhile, Hadaina et al. (2025) demonstrated that local revenue and capital expenditures have a positive and significant effect on GDP at the national level, confirming the important role of local revenue as a driver of growth.

Based on neoclassical theory, the following hypotheses are proposed:

H1: It is hypothesized that the size of the labor force has a positive and significant effect on the GRDP of regencies and cities in West Java Province.

H2: It is hypothesized that regional own-source revenue has a positive and significant effect on the GRDP of regencies and cities in West Java Province.

Endogenous Growth Theory

Endogenous growth theory, the focus of analysis is on the accumulation of internal factors. This concept asserts that economic growth is determined by forces within the economic system itself. Investment in knowledge by economic actors serves as a stimulus for technological progress. This aligns with Romer (1989, as cited in Apostol et al., 2022) view that economic growth is fundamentally driven by mechanisms within the production system, rather than by external factors. In his panel study, Izaskhasti (2024) demonstrated that human capital, institutional quality, and innovation have a positive and significant impact on regional gross domestic product (GRDP). These findings confirm that improving the quality of the workforce through education does indeed make a tangible contribution to increasing regional output.

Based on this theoretical framework of endogenous growth, the following hypothesis is proposed:

H3: It is hypothesized that the average years of schooling (AYS) has a positive and significant effect on the GRDP of regencies and cities in West Java Province.

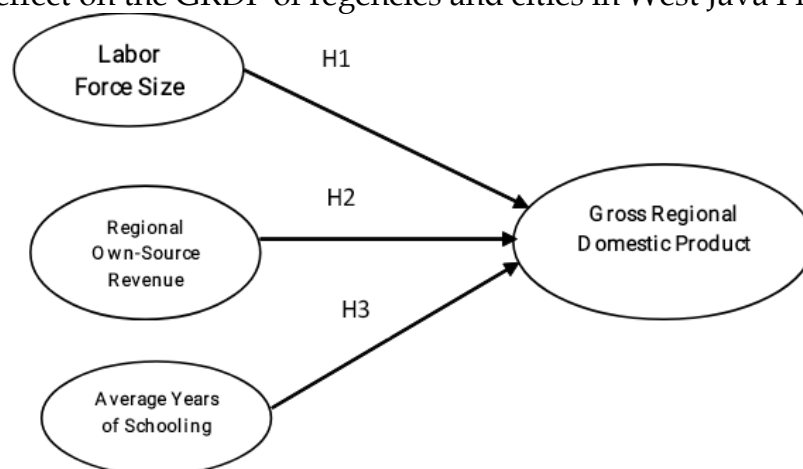


Figure 1. Conceptual Framework

METHODOLOGY

This study employs a quantitative approach with a causal-associative design that utilizes a panel data structure (pooled data), integrating time series data from 2015 to 2025 and cross-sectional data covering 27 regencies and cities in West Java Province. West Java was selected due to its role as the primary driver of the national economy and its diverse economic characteristics, with the study period covering before, during, and after the COVID-19 pandemic phases to capture the medium-term dynamics of the regional economy. The population in this study consists of all 27 regencies and cities, which were simultaneously used as the sample through a census method (saturation sampling), resulting in a total of 297 observations derived from the accumulated data for each region over the study period.

Data collection was conducted using an annual secondary-data-based documentation method, sourcing data from the West Java Central Statistics Agency for the variables Gross Regional Domestic Product (GRDP), labor force size, and Average Years of Schooling (AYS), as well as from the Directorate General of Regional Finance of the Indonesian Ministry of Finance for the regional own-source revenue variable. Data analysis utilized panel data regression using EViews 13 software, which was selected for its ability to account for unobserved heterogeneity across regencies and cities and to enhance the efficiency and accuracy of parameter estimates due to the large number of observations. The model specification used is

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Description:

Y	= Gross Regional Domestic Product (GRDP)
β_0	= Constant / intercept
$\beta_1, \beta_2, \beta_3$	= Regression coefficients for each independent variable
X_1	= Labor force size
X_2	= Regional own-source revenue
X_3	= Average years of schooling
e	= error term

Panel Data Regression Estimation Methods

In panel data regression, there are three types of estimation models that are used, namely (Ghozali & Ratmono, 2020, as cited in Siahaan & Sahla, 2026):

1. Chow Test

The Chow test is used to determine the most appropriate model for panel data analysis that is, between the Common Effects Model (CEM) and the Fixed Effects Model (FEM). The choice between the CEM and FEM approaches depends on the P-value from the Chow test. The FEM model will be applied if the P-value is < 0.05 . However, if the P-value is > 0.05 , the approach used switches to CEM.

2. Hausman Test

The Hausman test was used as a screening tool to compare the estimation efficiency between the Fixed Effects Model (FEM) and the Random Effects Model (REM). The decision to use the FEM or REM approach is determined entirely by the probability value of the Hausman test results. The FEM will be selected if the

p-value is < 0.05 . However, if the test results show that the probability is > 0.05 , the REM model will be selected.

3. Lagrange Multiplier Test

The Lagrange Multiplier (LM) test is used as an evaluation tool to determine whether the Common Effects Model (CEM) or the Random Effects Model (REM) is most appropriate for estimating panel data. The test statistic for the LM test can be analyzed using the Breusch-Pagan method. The probability value from the LM test determines whether the REM or CEM approach is more appropriate to use. REM is chosen if the P-value is < 0.05 . However, if the test results show a probability > 0.05 , the model used is CEM.

Testing Classical Assumptions

Next, to ensure that the model used meets the necessary assumptions for the analysis, classical assumption tests were conducted, including tests for multicollinearity and heteroscedasticity (Gujarati, 2004, as cited in Kesuma et al., 2024).

1. Multicollinearity Test

A multicollinearity analysis was conducted to ensure that there were no interfering linear relationships among the independent variables in the model. Indications of multicollinearity in a regression analysis can be identified by examining the correlation matrix among the independent variables. High correlation values that is, > 0.80 suggest the presence of strong intercorrelations that could potentially bias the estimates. Meanwhile, correlation values of < 0.80 indicate that the degree of linearity among the independent variables remains within acceptable limits, so the model is considered free of multicollinearity issues.

2. Heteroscedasticity Test

Heteroscedasticity tests are designed to evaluate whether the variability of the residuals in a regression model is not constant across observations. Classical assumptions hold that a good model must be homoscedastic, meaning that the variance of the residuals does not change across observations. Variability in the residual variance indicates the presence of heteroscedasticity; in this study, the procedure for detecting heteroscedasticity was performed using the Glejser test. The data do not exhibit heteroscedasticity if the probability is > 0.05 . The data exhibit heteroscedasticity if the probability is < 0.05 . If the test results indicate the presence of heteroscedasticity, a correction is made using White's cross-section robust standard errors (White, 1980, as cited in Febiola et al., 2026).

Statistical Tests

Statistical tests are used to evaluate the extent to which a regression function can estimate actual values based on the model's fit to the sample data. According to Ghazali & Ratmono (2020, as cited in Siahaan & Sahla, 2026) can be done statistically through the t-test, the F-test, and the coefficient of determination test

1. t-Test

This test was conducted separately to assess the effect of each independent variable on the dependent variable. Partially, an independent variable has no significant effect on the dependent variable if the probability value is greater than α (p-value > 0.05). Conversely, partially, an independent variable has a significant effect on the dependent variable if the probability value is less than α (p-value < 0.05)

2. F-Test

The F-test is a statistical test based on the concept of Analysis of Variance (ANOVA) that is used to evaluate the overall significance of a regression model. If the Prob. F-statistic value is less than the specified significance level (≤ 0.05), then the regression model as a whole is considered significant and is therefore suitable for explaining the variation in the dependent variable. Conversely, if the Prob. F-statistic value is greater than the significance level (≥ 0.05), then the regression model as a whole is not significant.

3. Coefficient of Determination (R^2) Test

One measure used to evaluate the accuracy of a regression model is the coefficient of determination. This measure describes the extent to which the independent variables can explain the changes in the dependent variable. The R^2 value ranges from 0 to 1. The higher the value obtained, the greater the model's ability to explain the variation in the dependent variable

RESULTS

Panel Data Regression Model Selection

1. Chow Test

Table 1. Results of Chow Test

Test cross-section fixed effects			
Effect Test	Statistic	d.f	Prob.
Cross-section F	284.616785	(26,267)	0,0000
Cross-section Chi-square	997.158722	26	0,0000

cross-sectional chi-square probability value of $0.0000 < 0.05$. This result indicates that the Fixed Effects Model (FEM) is a more appropriate model for estimating panel data than the Common Effects Model (CEM). Based on this statistical decision, the next step in the analysis is to conduct the Hausman test.

2. Hausman Test.

Table 2. Results of Hausman Test

Test cross-section random effects			
Effect Test	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	21.490662	3	0,0001

The results of the Hausman test show that the probability value for the cross-sectional random hypothesis is $0.0001 < 0.05$. These statistical results confirm that the Fixed Effects Model (FEM) is more accurate in estimating panel data than the Random Effects Model (REM). Therefore, the researcher does not need to

perform a Lagrange multiplier test because the results of the Chow and Hausman tests have absolutely justified that the FEM is the best model for this analysis.

Table 3. Results of the Regression Analysis of Panel Data Using the FEM Model

Dependent Variable: PDRB Method: Panel Least Squares Sample: 2015-2025 Periods included: 11 Cross-section included: 27 Total panel (balanced) observations: 297				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-29552.48	10808.58	-2.734169	0,0067
Labor Force Size	0.012134	0.005143	2.359420	0,0190
ROSR	22.95179	1.656771	13.85333	0,0000
AYS	6409.941	1537.869	4.168068	0,0000
Cross-section fixed (dummy variables)				
R-squared		0.990141		
Adjusted R-Squared		0.989070		
F-statistic		924.6134		
Prob(F-statistic)		0.000000		

Test of Classical Assumptions

1. Multicollinearity Test

Table 4. Results of The Multicollinearity Test

	Labor Force Size	ROSR	AYS
Labor Force Size	1.000000	0.776736	-0.044331
ROSR	0.776736	1.000000	0.393821
AYS	-0.044331	0.393821	1.000000

Based on the test results, all independent variables showed correlation coefficients of < 0.80 , indicating that the regression model specification passed the classical assumption tests and that there were no signs of multicollinearity that could compromise the model's efficiency.

2. Hausman Test.

Table 5. Results of The Heteroscedasticity Test

Dependent Variable: ABS(RESID) Method: Panel Least Squares Sample: 2015-2025 Periods included: 11 Cross-section included: 27 Total panel (balanced) observations: 297				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	285.435	5587.350	0.510875	0.6099
Labor Force Size	-0.011659	0.002659	-4.385420	0.0000
ROSR	2.514348	0.856446	2.935795	0.0036
AYS	1038.729	794.9806	1.306609	0.1925

Based on the test results, the probability values obtained for each variable were 0.0000 for the labor force, 0.0036 for ROSR, and 0.1925 for AYS. These results show that the labor force and ROSR variables have probability values below the 0.05 significance level, meaning that both variables have a significant effect on the absolute residual values. This indicates the presence of heteroscedasticity in the model. To address this issue, a correction method using the robust standard

errors approach was applied to ensure that the panel data regression results remain unbiased and consistent.

Table 6. Panel Data Regression Results Using the White Cross-Section Method
(period cluster)

Dependent Variable: PDRB Method: Panel Least Squares Sample: 2015-2025 Periods included: 11 Cross-section included: 27 Total panel (balanced) observations: 297 White cross-section (period cluster) standard errors & cavariance (d.f. corrected) Standard error and t-statistic probabilities adjusted for clustering				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-29552.48	14005.88	-2.110006	0.0610
Labor Force Size	0.012134	0.005059	2.398684	0.0374
ROSR	22.95179	2.771247	8.282116	0.0000
AYS	6409.941	1970.715	3.252596	0.0087
Cross-section fixed (dummy variables)				
R-squared		0.990141		
Adjusted R-Squared		0.989070		
F-statistic		924.6134		
Prob(F-statistic)		0.000000		

The use of white cross-section (period cluster) standard errors in estimating the fixed-effects model (FEM) implicitly confirms the presence of heteroscedasticity in the data, which constitutes a violation of the assumptions of classical regression. This robust method serves as a statistical solution that corrects for bias in the calculation of standard errors without requiring changes to the selected FEM. This ensures that the resulting t-statistic and probability values are reliable and valid for hypothesis testing. Based on the coefficients obtained, the following equation can be formulated for the panel data regression model:

$$GRDP = -29552,48 + 0,012134 \text{ labor force size} + 22,95179 \text{ ROSR} + 6409,941 \text{ AYS} + \varepsilon_{it}$$

Statistical Test

1. t Test

Table 7. Results of t Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-29552.48	14005.88	-2.110006	0.0610
Labor Force Size	0.012134	0.005059	2.398684	0.0374
ROSR	22.95179	2.771247	8.282116	0.0000
AYS	6409.941	1970.715	3.252596	0.0087

For the labor force size variable, the probability value obtained from the estimation results is 0.0374. Since this value is lower than the 0.05 threshold, it can be concluded that the first hypothesis is satisfied or accepted. For the ROSR variable, the estimation results show a probability value of 0.0000. Since this value is much smaller than the 0.05 threshold, the second hypothesis is thus accepted. Meanwhile, the AYS variable shows a probability value of 0.0087, which is also below 0.05, so the third hypothesis is also accepted.

2. F Test.

Table 8. Results of F Test

F-statistic	924.6134
Prob(F-statistic)	0.000000

Based on the concept of Analysis of Variance (ANOVA), the results indicate that the variation in the Gross Regional Domestic Product (GRDP) of regencies and cities in West Java Province that can be explained by the regression model is greater than the variation attributable to residual factors outside the model. Therefore, the regression model used is suitable for explaining the variation in the GRDP of regencies and cities in West Java Province during the 2015–2025 period.

3. Coefficient of Determination (R^2) Test

Table 9. Coefficient of Determination (R^2) Test Results

R-squared	0,990141
Adjusted R-squared	0,989070

Based on the table above, the Adjusted R-squared value obtained is 0.989070, or 98.90%. This figure indicates that the model is capable of explaining nearly all of the variation in the GRDP of regencies and cities in West Java Province, while the remaining 1.10% is influenced by other variables outside the scope of this study's model.

DISCUSSION

The Effect of Labor Force Size on Gross Regional Domestic Product

The findings of this study indicate a positive and significant effect of the labor force size on the GRDP of regencies and cities in West Java Province. The positive coefficient value indicates that the labor force is a strategic pillar in stimulating local production and economic growth. A large productive labor force will trigger a surge in the production capacity of goods and services, which will increase the GRDP. These findings support neoclassical growth theory (Solow, 1956, as cited in Tomia & Aisyah, 2026), which positions labor as a primary factor alongside capital and technology in growth, where an increase in labor input drives production capacity and economic output.

These findings are consistent with the study by Wiranatakusuma et al. (2025) which demonstrated a significant positive impact of the labor force on GDP in the ASEAN region. The consistency of these results underscores the role of the labor force as a crucial determining factor in expanding economic output at both the regional and global levels. From a cross-sectional perspective, based

on an analysis of 27 regencies and cities in West Java Province, it was found that the highest concentrations of the labor force and GRDP are in Bekasi Regency, Karawang Regency, and Bandung City, supported by economic structures based on the manufacturing industry and high-value-added services. The lowest rankings were held by Banjar City and Pangandaran Regency, which still rely on the traditional agricultural sector.

The Effect of Regional Own-Source Revenue on Gross Regional Domestic Product

The findings of this study confirm the positive and significant influence of the Regional Own-Source Revenue (ROSR) variable on the Gross Regional Domestic Product (GRDP) of regencies and cities in West Java Province. An increase in ROSR is directly proportional to an increase in GRDP in the relevant regions. The positive coefficient values underscore the role of ROSR as a strategic parameter for local authorities in mapping, optimizing, and allocating local economic resources to stimulate regional economic productivity. These findings provide empirical support for neoclassical growth theory (Solow, 1956, as cited in Tomia & Aisyah, 2026), which theoretically posits that an increase in regional financial capacity is a crucial instrument for enhancing the effectiveness of development spending.

The results of this study are consistent with the analysis by Hadaina et al. (2025) which indicates a positive and significant impact of local revenue on national economic growth due to the strengthening of local budget capacity. In a cross-sectional analysis of 27 regencies and cities in West Java Province, the highest local revenue was recorded in Bogor Regency, Bandung City, and Bekasi Regency. However, the high ROSR in these three regions does not fully align with their GRDP performance, as Bekasi Regency and Bandung City actually rank lower in GRDP compared to Purwakarta Regency, which has a relatively small ROSR. As an industrial area, Purwakarta Regency is able to generate the highest GRDP despite having a medium-level ROSR, indicating that economic output is more determined by real-sector activities than by local fiscal capacity alone. The lowest positions are held by Banjar City, Pangandaran Regency, and Ciamis Regency, where both ROSR and GRDP are at the lowest levels. This is due to an economic structure that still relies heavily on traditional agriculture and fisheries with limited value added.

The Effect of Average Years of Schooling on Gross Regional Domestic Product

The findings of this study indicate that the Average Years of Schooling (AYS) variable has a positive and significant effect on the Gross Regional Domestic Product (GRDP) of regencies and cities in West Java Province. This linear relationship suggests that every increase in the cumulative length of education attained by the population is directly correlated with an increase in real economic output (GRDP) at the regional level. This finding aligns with Romer (1989, as cited in Apostol et al., 2022) in the theory of endogenous growth. This theory states that education is not merely an expense but a long-term investment that serves as the primary driver of sustainable economic growth through increased technical efficiency. The findings of this study align with the

study by Izaskhasti (2024), which found that human capital has a positive and significant impact on GRDP. These results indicate that improvements in the quality of human capital can enhance worker performance as well as a region's capacity to generate economic output. Based on a review of 27 regencies and cities in West Java Province, the highest cross-sectional AYS concentration was found in Bekasi City, Depok City, and Cimahi City, corresponding to an average education level of 12 years above the high school level. However, the highest GRDP was achieved by Bekasi Regency, Bandung City, and Karawang Regency, which have lower AYS levels compared to the three aforementioned cities. This indicates that the quality of education alone is not sufficient to drive economic output without being supported by the availability of productive jobs. The lowest rankings were held by Indramayu Regency, which has an education level equivalent to elementary through junior high school, as well as Subang Regency and Cirebon Regency, which are equivalent to junior high school and have the lowest GRDP levels, respectively.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the panel data regression, all independent variables were found to have a positive and significant effect on the GRDP of regencies and cities in West Java. The size of the labor force made the highest contribution in industrial and service-oriented regions such as Bekasi, Karawang, and Bandung, while areas with a small labor force, such as Banjar and Pangandaran, recorded the lowest GRDP, confirming that the size of the labor force is a fundamental factor in economic growth. Regional Own Source Revenue (ROSR) was also found to have a positive effect; however, Purwakarta Regency demonstrates that moderate levels of ROSR can generate the highest GRDP when balanced by a strong industrial sector, whereas areas with low ROSR remain economically underdeveloped. The Average Years of Schooling (AYS) has a positive effect, but its impact is greater when productive jobs are available; this is evident in Depok and Cimahi, which have high AYS but lower GRDP compared to Bekasi and Karawang because many educated workers are employed outside the city or face a mismatch between their education and their jobs, whereas Bekasi and Karawang with lower AYS but strong industrial sectors – are able to optimally absorb the educated workforce.

Based on these findings, policy recommendations can be made in three main areas. First, local governments need to increase productive job opportunities in regions with an abundant labor force, such as Bogor and Indramayu Regencies, which still have low GRDP by improving infrastructure access and streamlining investment permitting processes so that the workforce is absorbed into the industrial or service sectors, rather than solely in agriculture and the informal sector. Second, regions with high ROSR, such as Bogor Regency, Bandung City, and Bekasi Regency, should direct local spending toward real-sector development, such as industrial roads, integrated economic zones, and logistics facilities given Purwakarta's experience, which demonstrates that a strong industrial sector can boost GRDP even when local revenue is not particularly high. Third, the alignment of educational curricula with the needs of

the business world needs to be promoted through collaboration between schools and companies, especially in areas with high AYS such as Depok and Cimahi, so that graduates not only master theory but also possess the applied skills required by industry. This will help reduce the risk of educated unemployment or underemployment and optimize the contribution of AYS to the GRDP.

FURTHER STUDY

This study is still limited to three variables and the province of West Java. Future researchers are recommended to broaden the scope of the variables by including others such as investment, inflation rates, and infrastructure spending, as well as to expand the geographic scope so that the results are more representative.

ACKNOWLEDGMENT

The researcher would like to express sincere gratitude to the thesis supervisor for the valuable guidance, constructive suggestions, and continuous support throughout the research process. Appreciation is also extended to the lecturers of the Development Economics Study Program, Universitas Pembangunan Nasional "Veteran" Jawa Timur, for the knowledge and academic insights that contributed to the completion of this study. Furthermore, the researcher gratefully acknowledge the Central Statistics Agency (BPS) and the Directorate General of Fiscal Balance (DJPK), Ministry of Finance of the Republic of Indonesia, for providing the secondary data used in this research. Finally, the researcher appreciate all parties who have directly and indirectly contributed to the completion of this study.

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