

Determinants Of Labor Force Participation Rate In West Nusa Tenggara Province

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Abstract

This study analyzes the factors that affect the Employment Participation Rate (TPAK) in West Nusa Tenggara Province for the 2019-2024 period. Using the panel data approach and *the Fixed Effect Model* (FEM) method, this study examined three independent variables, namely Education, minimum wage and economic growth and Labor Force participation level as dependent variables. This study aims to analyze the influence of education, minimum wage, and economic growth on TPAK partially and simultaneously. The results of the FEM Estimate show that partially, the variables of Education and minimum wage have a significant effect on TPAK while the economic growth variable does not have a significant effect. Meanwhile, simultaneously all independent variables had a significant effect, with an *adjusted R squared* value of 67.53%.

Keywords: Labor Force Participation Rate, Fixed Effect Model, West Nusa Tenggara

A. INTRODUCTION

In the development process, the participation of labor greatly determines the progress of development in a country. Labor in this case is a person or human being who works both individually and in groups by using their abilities to achieve maximum business results (Hidayat et al., 2017). Without manpower, the development process cannot be implemented, making manpower an important component (Haspa et al., 2023).

The workforce includes the labor force and not the labor force (Hardiani et al., n.d.). To measure the proportion of the labor force relative to the working-age population, the Labor Force Participation Rate (TPAK) is used. TPAK refers to the percentage of the population aged 15 years and above who are in the labor force. This includes those who work to earn wages or benefits, the unemployed who are actively looking for work, and those who produce goods for their own consumption.

The Labor Force Participation Rate (TPAK) describes the large percentage of the working-age population that actively participates economically in certain regions/regions. High Labor Force Participation Rate (TPAK) It is an indication that the economic system is running effectively because it is supported by the active involvement of the population in production activities (Sari & Sugiharti, 2022). In an effort to increase economic activity, productivity is an important element that needs to be increased. High productivity levels demand the ability of individuals to adapt to technological developments as well as dynamics that occur in the labor market (Sutranggono & Isnaini, 2023).

In general, TPAK reflects good labor involvement conditions if the number of labor force is relatively high. However, the high TPAK can be a problem if it is not balanced with the availability of adequate jobs (Asmara & Wahed, 2024). TPAK in an area has different characteristics depending on geography, potential, population density, and other factors (Adnan et al., 2024). The large number of working-age population does not automatically guarantee that all individuals are able and willing to actively participate in economic activities, because there are still various inhibiting factors, such as limited skills and access to information and technology. (Aini & Satarudin, 2022). Higher TPAK indicates greater labor availability which can contribute to increased productivity and economic growth (Ahn & Hamilton, 2022).

Based on data from the Central Statistics Agency (BPS), the labor force participation rate (TPAK) of West Nusa Tenggara Province in 2019 was recorded at 66.68 percent and then reached the highest value in 2024, which is around 73.31 percent. In general, the data shows that TPAK in West Nusa Tenggara Province has a tendency to increase from year to year. In 2024, North Lombok Regency will be the area with the highest labor force participation rate, which is 80.86 percent, followed by Dompu

Regency which reaches 80.30 percent. This achievement shows that the majority of the working-age population in the two regions is actively involved in economic activities.

The level of education is indirectly used as a basis for assessing the productivity and ability of the workforce in the world of work. In general, there are usually certain educational qualifications that must be met by workers according to their desired position and role in the economy. The level of education in NTB Province in the 2024 observation year, shows the difference between regions, where Bima City and Mataram City have the highest average length of schooling, while North Lombok Regency still records the lowest educational achievement. This condition reflects the education gap between the city and district areas.

In accordance with the theory of labor supply, where an increase in the wage rate will make the labor supply will increase. On the other hand, a decrease in wage rates will make the supply of labor decrease. (Simanjuntak, 2001). Wage levels can also influence a person to enter or not enter the labor market, where if the wage level is high, more people will enter the labor market, it is hoped that it can also increase TPAK in NTB Province.

In 2024 the minimum wage in NTB Province shows variation between regions, with Mataram City setting the highest minimum wage, while some districts are still at relatively lower wage levels. Based on the theory of Human Capital put forward by (Becker, 1975) In his book, that through educational investment, the quality of human resources and the level of individual productivity can be improved, so that individuals have a more competitive position in the labor market.

Increasing the proportion of the working-age population indirectly increases the availability of the labor force. This is in line with Solow-Swan's theory of economic growth, which emphasizes the interaction between factors such as population growth, capital accumulation, technological advancement, and production. In this case, the economic growth of a region can be measured by the Gross Regional Domestic Product (GDP). The development of regency/city economic growth in NTB Province, especially in 2024, shows differences in performance between regions. West Sumbawa Regency and Mataram City are areas with relatively higher economic achievements than other regions, so it shows the existence of inequality in economic activity and capacity at the regional level.

Based on the previous description, it can be seen that the problem of the Labor Force Participation Rate (TPAK) is influenced by various factors. This condition encourages researchers to conduct a more in-depth study to comprehensively understand the problem of TPAK. This research was carried out through a series of tests on the dynamics of TPAK in NTB Province. In this context, it is important to analyze various factors that affect TPAK, including education levels, minimum wages, and economic growth. This analysis is expected to be able to provide a deeper understanding of the causes of the problem and alternative solutions that can be applied by NTB Province.

B. Literature Review

Labor demand and supply theory

Labor demand essentially reflects a company's decision to open as many vacancies as possible in order to achieve optimal production efficiency. This concept is highly dependent on the wage level; The higher the wages offered, the lower the interest of employers in recruiting additional workers. Each company certainly has a unique demand curve, influenced by the scale of the business, type of production, technology utilization, and management quality of its managers. (Simanjuntak, 2001).

Labor supply refers to the number of workers offered by the owner of that factor of production at a wage level as well as a certain period of time. Factors such as the number of population, the level of participation in the job market, and the time available to work greatly influence the magnitude of these offers, with everything depending on the amount of wages offered. When wages rise, the supply of labor tends to increase; On the contrary, the decrease in wages actually causes the supply to decrease. (Simanjuntak, 2001).

Economic Growth Theory

The Neoclassical theory of economic growth was developed by Robert M. Solow and Swan. The Solow-Swan model uses elements of population growth, capital accumulation, technological advancement, and the amount of output that interact with each other (Tarigan, 2014). Solow's growth model is actually an extension of the Harrod-Domar model, with the addition of labor variables and the introduction of technological factors as important elements. This model explains how the growing capital stock, labor growth, and technological advances affect overall output. Solow-Swan growth theory, the elements of economic growth are population growth, capital accumulation, technological progress and the amount of output that interact with each other. . The main difference with the Harrod-Dhomar model is the inclusion of elements of technological advancement and production models that allow for the substitution of capital and labor.

Labor Force Participation Rate

According to (Rusli, 1983) argues that the labor force participation rate is a measure that is classified as the number of labor force for every 100 working-age populations. The labor force participation rate is the percentage of the population aged 15 years and above who are in the labor force. According to (Sumarsono, 2003) There are several factors that affect the level of labor force participation, which are as follows:

1. The number of people who are still students
2. Number of people who take care of households
3. Family income level.
4. Age sturtuk.
5. Wage rates.
6. Education level.

Education

Human capital theory (*human capital*) states that education is the main key to increasing one's income. Every additional year of education not only enriches work skills, but also encourages a real increase in income. According to (Sumarsono, 2003), The quality of a qualified workforce is often reflected in the level of education, because education itself is a process of absorbing knowledge and expertise that shapes the personality and independence of individuals.

Minimum Wage

Wages are financial rewards given by employers to employees for work or services that have been or will be done. This payment is determined based on mutual agreement or the provisions of laws and regulations, and is paid according to the agreement between the two parties, including various benefits for both employees and their families (Sumarsono, 2003).

In wage theory, according to David Ricardo, when the general standard of living increases, the minimum wage that can be paid to workers also increases. If this labor absorption is associated with the regional minimum wage (UMR), then it can be seen that there is a tendency to have a negative relationship between wages and labor absorption.

Economic Growth

Broadly speaking, economic growth reflects the level of economic activity of a country or region in increasing people's income over a certain period of time. Sadono defines it as the development of various economic activities that ultimately increase the production of goods and services in the community. (Sukirno, 2003)

Previous Research

Various previous studies provide an empirical foundation in understanding the factors that affect the Labor Force Participation Rate (TPAK) in Indonesia, both at the national and regional levels. In general, economic variables such as minimum wage, education, and Gross Regional Domestic Product (GDP) are often studied as the main determinants of TPAK, although the direction and significance of their influence indicate differences between regions and research periods.

A number of studies have found that economic variables have a positive influence on TPAK. (Sarsi et al., n.d.) (Nidyasarta et al., 2025) shows that the minimum wage and GDP have a positive and significant effect on TPAK. These findings indicate that increased economic activity and wage incentives can encourage the participation of the working-age population in the labor market. Nevertheless, different results were also found in other studies. (Rukmana, 2019) and (Sari & Sugiharti, 2022) shows that the minimum wage has a negative effect on TPAK, which indicates that wage increases are not always followed by increased employment opportunities.

In terms of education, the results of the study also show variations. (Audilla & Rachmawati, 2025) found that education had a positive but insignificant effect on TPAK, while (Widodo, 2023) showed that the average length of schooling which is a proxy of education had a positive effect on TPAK and the GDP variable did not have a significant effect. This difference in results indicates that the influence of education on TPAK is greatly influenced by the ability of the labor market to absorb labor.

Based on these findings, it can be concluded that the determinants of TPAK are contextual and are greatly influenced by regional characteristics, economic structure, and labor market conditions. The difference in results from previous research shows that there is no single empirical agreement on the direction of the influence of variables such as minimum wage, education, and economic growth on TPAK. Therefore, further research is important to review the determinants of TPAK in the context of certain regions and periods, so as to be able to provide a more comprehensive and relevant picture for the formulation of employment policy.

Hypotheses

Based on this frame of thought, this study proposes the following hypotheses:

Parsial hypothesis (H1–H3):

H1: it is suspected that education has a positive and significant effect on **the level of labor force participation** in NTB Province.

H2: it is suspected that the minimum wage has a positive and significant effect on **the level of labor force participation** in NTB Province.

H3: it is suspected that economic growth has a positive and significant effect on **the level of labor force participation** in NTB Province.

Simultaneous hypotheses (H4):

H4: it is suspected that education, minimum wage and economic growth simultaneously have a positive and significant effect on **the level of labor force participation** in NTB Province.

C. METHODOLOGY OF RESEARCH

This research uses a quantitative research method, where the data obtained is realized in the form of numbers to analyze phenomena, with a focus on objective measurements and analysis using statistics. Using secondary data sourced from official publications owned by the Central Regional Statistics Agency (BPS) of West Nusa Tenggara Province. The data used covers the period 2019-2024. The object of the research covers 10 regencies/cities in West Nusa Tenggara Province.

Data collection is carried out by the documentation method, namely collecting, recording, and processing data that has been officially published by BPS in accordance with the period and area of the research.

The dependent variable in this study is the Labor Force Participation Rate (Y), which is the working-age population who are working or actively looking for work. Independent variables are Education (X1), minimum wage (X2) and economic growth (X3). All variables are sourced from official BPS NTB data.

The empirical model used in this study is formulated in the form of panel data regression, with the following basic equations:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it}$$

I indicates the district/city and t indicates the research year (2019–2024). The value of α is constant, β_1 – β_6 is the regression coefficient, and ϵ_{it} is the term error.

The selection of the best model is carried out through the Chow Test, Hausman Test, and Lagrange Multiplier (LM) Test. Before the hypothesis test, the multicollinearity test, the heteroscedasticity test, and the normality test were performed to ensure the validity of the model.

Hypothesis testing was performed by t-test (partial) and F-test (simultaneous), while the determination coefficient value (R^2) was used to measure the ability of independent variables to explain population migration variations.

D. RESULT AND DISCUSSION

1. Estimation Model Selection

Chow Test

The chow test was used to select the best panel data regression estimate between *the common effect* and *fixed effect* models. This test was carried out using F-statistics with the following hypothesis.

H_0 : *Common Effect Model* is better than *Fixed Effect Model*.

H_1 : *Fixed Effect Model* is better than *Common Effect Model*

Table. 2 Chow Test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.315803	(9,47)	0.0000
Cross-section Chi-square	57.154764	9	0.0000

Source : Secondary Data (processed)

Based on the results of the chow test, it is known that the probability value in *the cross-section* f is 0.0000 which means a probability of $0.0000 < 0.05$ of the P-value. So from the results of the chow

test, it shows that H₁ is accepted and H₀ is rejected, it can be said that *the fixed effect model* is the right model.

Hausman Test

The thirist test is used to determine the estimation method that is more appropriate between *fixed effect* and *random effect*. If the test results show a probability of > 0.05, then *the random effect model* is chosen as the right model to use. Conversely, if the probability < 0.05, then the *fixed effect model* is the right model to use.

Table 3 Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.095054	3	0.0112

Source : Secondary Data (processed)

Based on the results of the hasumman test, it is known that *the Chi-Square Statistic* probability value is 8.7764 and the probability value is 0.0112 < 0.05, so the results of the thirist test that have been able to show that *the fixed effect model* is the right model to use.

Based on 2 model selection tests that have been carried out, the best model selected is the *fixed effect model*.

Estimation of Panel Data Regression Model

Based on the results of the test of selecting the best model for panel data regression, namely *the fixed effect model* is the best model that was selected after the Chow Test and Hausman Test were carried out.

Table 4. Estimation of Panel Data Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-725.8026	249.0828	-2.913901	0.0054
LOG(X1)	80.66790	32.27063	2.499731	0.0160
LOG(X2)	212.4694	103.0414	2.061981	0.0448
LOG(X3)	73.99450	51.26675	1.443323	0.1556

Source : Secondary Data (processed)

Based on the results of the regression of panel data using *the Fixed Effect Model* (FEM) approach, the following equations were obtained:

$$Y = -725.9Y + 80.7X1 + 212.5X2 + 74X3$$

The constant value (C) of -725.9 indicates that when all independent variables, namely Education, MSEs, and GDP, are assumed to be zero, the Labor Force Participation Rate (TPAK) is estimated to decrease by -725.9 percent.

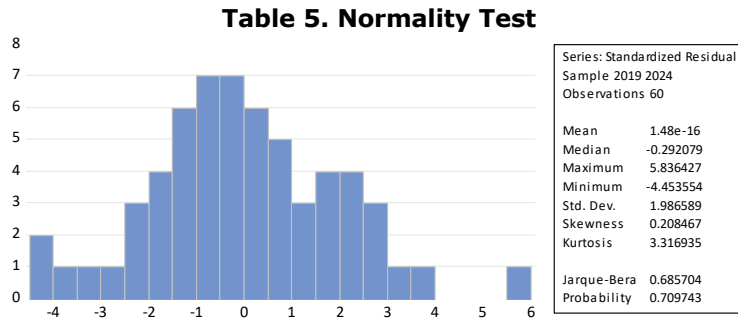
The Education Coefficient of 80.7 has a positive and significant sign. This means that every 1 education point increase will increase TPAK by around 80.7 percent. These results show that the better the quality of education, the greater the participation of the population in the job market.

The Minimum Wage Coefficient has a positive value of 212.5. This suggests that an increase in the Minimum Wage tends to increase TPAK, as higher wages can be an attraction for workers to enter the job market.

The economic growth coefficient has a positive value of 74. This indicates that regional economic growth has the potential to encourage an increase in TPAK, as increased economic activity is usually followed by increased employment opportunities and labor absorption.

**Classic Assumption Test
Normality Test**

Normality tests are performed to determine whether the residual variables in the regression model have a normal distribution, a good regression model should have normally distributed data. The method to test normality is to use the Jarque Bera (JB) test. The data is considered to be normally distributed if the calculated JB value is greater than $\alpha = 5\%$ so that the residual is considered to be normally distributed.



Based on the results of the tests that have been carried out, the statistical value of Jarque-bera is 0.685704 with a probability value of 0.709743 which means greater than 0.05. So it can be concluded that the data used in this study is normally distributed.

Multicollinearity Test

The multicollinearity test aims to determine the correlation between independent variables (X) in the regression model. A good regression model is one that is free of multicollinearity. where there is no correlation in independent variables or is said to be free of multicollinearity. To see whether or not multicollinearity exists, it can be seen with the Pair Wise Correlation method, with a value of the correlation coefficient value < 0.80 .

Table 6 Multicollinearity Test

	LOG(X1)	LOG(X2)	LOG(X3)
LOG(X1)	1	0.27819575...	0.54468805...
LOG(X2)	0.27819575...	1	0.19142825...
LOG(X3)	0.54468805...	0.19142825...	1

Source : Secondary Data (processed)

The correlation value of education (X1) and minimum wage (X2) is 0.2781 < 0.80 , the correlation value of Education (X1) and economic growth (X3) is 0.5446, the correlation value of minimum wage (X2) and economic growth (X3) is 0.1914 < 0.80 . It can therefore be concluded that independent variables are free from multicollinearity.

Heteroscedasity Test

The heteroscedasticity test was carried out to test whether in a regression model conducted there was a variance of variants from the residual regression model. Good data is data that does not heteroscedasticity. Heteroscedasticity occurs when the regression result of the residual absolute value of the variable has a significance value of < 0.05 . The calculation results of the heteroscedasticity test can be seen from the following table:

Table 7 Heteroskedacityity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-14.85230	135.1159	-0.109923	0.9129
LOG(X1)	19.86178	17.50534	1.134613	0.2623
LOG(X2)	-8.404386	55.89522	-0.150360	0.8811
LOG(X3)	10.74185	27.80985	0.386261	0.7010

Source : Secondary Data (processed)

The test results showed that the probability value of each independent variable was greater than 0.05. It can be concluded that all the data used passed the heteroscedasticity test.

T Test

Partial tests are used to determine the extent to which the independent variable (X) has an individual effect on the dependent variable (Y). The test was performed with a significance level of 5% ($\alpha = 0.05$). If the significance value < 0.05 , then the independent variable has a significant effect on the dependent variable; On the other hand, if ≥ 0.05 , then there is no significant effect.

Table 8. T Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-725.8026	249.0828	-2.913901	0.0054
LOG(X1)	80.66790	32.27063	2.499731	0.0160
LOG(X2)	212.4694	103.0414	2.061981	0.0448
LOG(X3)	73.99450	51.26675	1.443323	0.1556

Source : Secondary Data (processed)

The results of the partial test showed that education (X1) and minimum wage (X2) had a positive and significant effect on TPAK in NTB ($p < 0.05$). The variables of education and minimum wages have a positive effect, indicating that the increase in education and minimum wage encourages an increase in TPAK. Meanwhile, economic growth (X3) was not significant ($p > 0.05$). Based on these results, it can be concluded that TPAK is more influenced by the quality of education and wages. These findings indicate that improved skills, education, and high wages have a more dominant role in driving workforce participation.

Test F

Simultaneous tests are used to test whether all variables are independent together Influential signifikan against variable dependent. The test was carried out by looking at the F- statistic significance value.

1. If the significant value of $F < 0.05$ then H_0 is rejected and H_1 is accepted. This means that all independent variables have a significant influence on the dependent variables.
2. If the significant value of $F > 0.05$, then H_0 is accepted and H_1 This means that all independent variables do not have a significant influence on the dependent variables.

Table 9. Test F

F-statistic	11.22715
Prob(F-statistic)	0.000000

Source : Secondary Data (processed)

Based on the results of the F-statistical Test in Figure 4.7 F-statistics have a value of 10.66252 and a probability (F-statistic) of 0.000000, this value is smaller than the significance level of $\alpha = 5\%$ ($0.000000 < 0.05$) then H_1 is accepted, which means that independent variables, namely education, minimum wage, and economic growth, have a simultaneous influence on the Labor Force Participation Rate in several NTB Provinces in 2019-2024.

Coefficient of Determination Test (R²)

The coefficient of determination (R²) essentially measures how far a model is able to explain variations in dependent variables. The value is between zero and one. The three categories of determination coefficient levels are:

1. Strong, if the value is more than 0.67
2. Moderate, if the value is more than 0.33 but lower than 0.67
3. Weak, if the value is more than 0.19 but lower than 0.33.

Table 10. Coefficient of Determination Test (R²)

R-squared	0.741369
Adjusted R-squared	0.675335

Source : Secondary Data (processed)

The adjusted r-squared value was 0.6753 or 67.53%. The value of the determinant coefficient shows that independent variables consisting of X1 (Education), X2 (Minimum Wage), X3 (Economic Growth), have an effect of 67.53% on the dependent variable Y (Labor Force Participation Rate). But. 32.47% were influenced by other variables that were not used in this study.

Discussion

Research findings on the influence of labor force participation rate in West Nusa Tenggara Province (NTB). The analysis using the Fixed Effect Model (FEM) approach, which proved to be accurate as determined through the Chow and Hausman test, showed the complexity of the relationships between variables in 2019–2024.

The Influence of Education on the Participation Rate of the Labor Force

Based on the results of the data regression estimation panel, Education (X1) has a positive and significant effect on the Labor Force Participation Rate in NTB Province. These findings are in line with human capital theory which views education as a long-term investment that improves the quality, productivity, and readiness of individuals to enter the job market (Sumarsono, 2003). The results of this study are also consistent with the findings of the (Wahyuningtias, 2019) and (Widodo, 2023) which suggests that the higher the level of education, the greater the tendency of individuals to participate in the labor market. An increase in educational attainment in NTB Province during the observation period, although there are still differences between regions in 10 districts and cities, also strengthens the results of research that education plays an important role in encouraging the Labor Force Participation Level in NTB Province.

The Effect of the Minimum Wage on the Labor Force Participation Rate

The minimum wage has a positive and significant value for the level of labor force participation in NTB Province. Previous research conducted by (Haspa et al., 2023) shows that the minimum wage has a significant effect on the Labor Force Participation Rate (TPAK). At the beginning of the study period, namely 2019, the minimum wage for districts/cities in West Nusa Tenggara Province was still in a relatively lower range, then increased gradually until 2024, with Mataram City and Bima City setting the highest minimum wage compared to other regions.

A high minimum wage can increase the attractiveness of the labor market and can encourage more people to actively look for work. This result is in line with the labor supply theory which states that wage increases labor supply, while wage decreases will decrease it (Simanjuntak, 2001).

The Effect of Economic Growth on the Labor Force Participation Rate

The test results show that economic growth has a positive but insignificant effect on the Labor Force Participation Rate (TPAK) in NTB Province. This means that changes in economic growth have not directly affected the level of population involvement in the labor market.

During the study period, there was a difference in economic growth achievements between districts/cities, with West Sumbawa Regency and Mataram City recording relatively higher growth. However, this increase has not been followed by a real increase in TPAK, which indicates that economic growth in NTB is more supported by capital-intensive sectors or increased production efficiency. Theoretically, although economic growth is expected to be able to expand employment opportunities as described in the neoclassical Solow–Swan theory, the results of this study show that economic growth in NTB Province has not been fully accompanied by adequate job creation, so its impact on TPAK is insignificant.

E. CONCLUSION

Based on the results of the research and discussion using panel data regression with a *fixed effect model* (FEM) approach regarding the influence of education, minimum wage, and economic growth on the Labor Force Participation Level (TPAK) in West Nusa Tenggara Province for the 2019–2024 period, it can be concluded:

Partially, the variables of Education and minimum wage have a positive and significant influence on the Labor Force Participation Rate (TPAK) in West Nusa Tenggara Province for the 2019–2024 period, while economic growth is influential but not statistically significant. Simultaneously, education, minimum wage and economic growth together affect the labor force participation rate (TPAK) with an *adjusted R²* value of 67.53%.

Increasing relatively better educational outcomes in urban areas such as Mataram City and Bima City needs to continue to be directed at strengthening skills and competency suitability with the needs of the job market, so that an educated workforce can be optimally absorbed. On the other hand, the relatively higher increase in the minimum wage in districts/cities in urban areas has been proven to increase incentives for labor force participation. Economic growth that does not have a significant effect

on TPAK shows that the increase in output in some regions, such as West Sumbawa Regency, has not been fully followed by extensive labor absorption. Therefore, regional development policies in West Nusa Tenggara Province need to be directed not only at achieving capital-intensive economic growth, but also at the development of labor-intensive sectors and improving the quality of human resources in order to encourage a sustainable increase in the Labor Force Participation Rate.

Suggestions for future research: to extend the observation period and add other relevant variables to be able to explain the variation in TPAK more comprehensively. In addition, the use of a mixed-methods approach (quantitative and qualitative) or further econometric models can be considered to gain a deeper understanding.

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