

ANALYSIS OF LABOR ABSORPTION IN THE AGRICULTURAL SECTOR IN WEST NUSA TENGGARA PROVINCE

Baiq Saopi Nadiawati¹, Suparmin¹ Taslim Sjah¹

¹ Agribusiness Master Program, Faculty of Agriculture, University of Mataram, Mataram, Indonesia

DOI: <https://doi.org/10.5281/zenodo.16267959>

Published Date: 21-July-2025

Abstract: This study aims to: (1) Analyze the contribution of labor absorption in the agricultural sector to total employment in West Nusa Tenggara Province, and (2) Examine the factors influencing labor absorption in the agricultural sector in West Nusa Tenggara Province. A descriptive method with a quantitative approach was applied, with the unit of analysis being West Nusa Tenggara Province. Data collection was based on secondary time-series data. The analytical methods used were the contribution formula and the Auto Regressive Distributed Lag (ARDL) model using EViews 12 software. The results showed that: (1) Labor absorption in the agricultural sector contributed to total employment in West Nusa Tenggara Province, with a contribution of 35.67%. (2) Labor absorption in the agricultural sector in West Nusa Tenggara is simultaneously influenced by agricultural GRDP, the Farmer's Exchange Rate (NTP), and the Provincial Minimum Wage (UMP). Partially, current agricultural GRDP and UMP, as well as the NTP from three years prior, had a negative and significant effect, while the NTP from four years prior had a positive and significant effect.

Keywords: Labor Absorption, Contribution, Agricultural Sector, Auto Regressive Distributed Lag.

I. INTRODUCTION

Development is a planned process of change and is a continuous, sustainable, and gradual activity toward a more advanced and better level. To realize this goal, development must be carried out in a planned and programmed manner across all fields, sectors, and sub-sectors. One way to achieve successful development is through economic development [12].

Economic growth is one of the indicators of successful development in an economy. The progress of an economy is determined by the level of growth as indicated by changes in national output [7]. As one of the indicators of economic growth, the agricultural sector is expected to absorb more labor. An increase in the labor force and employment is expected to positively impact economic growth.

As an agrarian country where the majority of the population lives in rural areas and depends on agricultural land, the agricultural sector plays an important role in the lives of the Indonesian people, including in West Nusa Tenggara Province. The agricultural sector is also one of the main sources of livelihood for a large portion of the population. In 2023, 32.76% of the workforce in West Nusa Tenggara depended on agriculture, making it the sector with the highest labor absorption compared to other employment sectors [6].

Some of the economic indicators used to observe regional economic growth include Gross Regional Domestic Product (GRDP), Farmer's Exchange Rate (NTP), and Provincial Minimum Wage (UMP). GRDP is a key factor in economic potential related to labor absorption. Each economic sector or available employment field has a different capacity for labor absorption depending on labor intensity and employment opportunities [11].

The level of development in a region can also be seen from the number of people employed in various business fields. Employment is a fundamental aspect of economic development. As one of the production factors, labor is crucial and highly influential in managing and controlling the economic system, including production, distribution, consumption, and investment [14].

The number of workers absorbed in an economic sector illustrates the sector's capacity to accommodate the labor force [1]. As one of the indicators of economic growth, the agricultural sector is expected to absorb more labor. With an increasing labor force, economic growth is also expected to increase. Therefore, it is important to analyze "Labor Absorption in the Agricultural Sector in West Nusa Tenggara Province".

This study aims to: (1) Analyze the contribution of labor absorption in the agricultural sector to total employment in West Nusa Tenggara Province, and (2) Examine the factors influencing labor absorption in the agricultural sector in West Nusa Tenggara Province.

II. METHODS

This study uses secondary data in the form of time series data sourced from publications issued by government agencies, such as Statistics Indonesia (BPS), BPS of West Nusa Tenggara Province, and other relevant institutions. The data used includes the labor force working in nine economic sectors, employment in the agricultural sector, agricultural Gross Regional Domestic Product (GRDP), Farmer's Exchange Rate (NTP), and Provincial Minimum Wage (UMP) in West Nusa Tenggara Province for the period 1997–2024.

The study employs a descriptive method with a quantitative approach. To achieve the first objective analyzing the contribution of labor absorption in the agricultural sector to total employment from 2014 to 2024 a formula is used as follows:

$$CALAt = \frac{XSPt}{XSt} \times 100\%$$

Description:

CALAt = Contribution of agricultural labor absorption in year t

XSPt = Labor in the agricultural sector in year t

XSt = Total labor force in year t

Next, to analyze the second objective, which is the factors influencing labor absorption in the agricultural sector in West Nusa Tenggara Province, the analytical method used in this study is the Auto Regressive Distributed Lag (ARDL) method. The Autoregressive Distributed Lag (ARDL) analysis method is a regression model that includes lags of both independent and dependent variables simultaneously. According to Gujarati & Porter [9], this method aims to analyze the effect of independent variables on the dependent variable over time, including the influence of past values of the independent variables on the current values of the dependent variable. This model can analyze different levels of stationarity [15].

The regression model equation used is as follows:

$$LnY_t = \beta_0 + \beta_1 LnX1_t + \beta_2 LnX2_t + \beta_3 LnX3_t + \epsilon_t$$

The above regression equation can be expressed as a general ARDL model as follows:

$$LnY_t = \alpha_0 + \sum_{i=1}^p \alpha_i LnY_{t-i} + \sum_{j=0}^{q1} \beta_j LnX1_{t-j} + \sum_{k=0}^{q2} \gamma_k LnX2_{t-k} + \sum_{l=0}^{q3} \delta_l LnX3_{t-l} + \epsilon_t$$

The form of the ARDL model with the optimal lag length estimated in this study is written as follows:

$$LnY_t = \alpha_0 + \alpha_1 LnY_{t-1} + \beta_0 LnX1_t + \gamma_0 LnX2_t + \gamma_1 LnX2_{t-1} + \gamma_2 LnX2_{t-2} + \gamma_3 LnX2_{t-3} + \gamma_4 LnX2_{t-4} + \delta_0 LnX3_t + \delta_1 LnX3_{t-1} + \delta_2 LnX3_{t-2} + \delta_3 LnX3_{t-3} + \delta_4 LnX3_{t-4} + \epsilon_t$$

Description:

LnY_t = Labor absorption in the agricultural sector in the current period

$LnX1_t$ = Agricultural GRDP in the current year

$LnX2_t$ = Farmer's Terms of Trade in the current year

$LnX3_t$ = Provincial Minimum Wage in the current year

LnY_{t-1} = Labor absorption in the agricultural sector one year prior

$LnX2_{t-1}$	= Farmer's Terms of Trade one year prior
$LnX2_{t-2}$	= Farmer's Terms of Trade two years prior
$LnX2_{t-3}$	= Farmer's Terms of Trade three years prior
$LnX2_{t-4}$	= Farmer's Terms of Trade four years prior
$LnX3_{t-1}$	= Provincial Minimum Wage one year prior
$LnX3_{t-2}$	= Provincial Minimum Wage two years prior
$LnX3_{t-3}$	= Provincial Minimum Wage three years prior
$LnX3_{t-4}$	= Provincial Minimum Wage four years prior
β_0	= Constant
$\beta_1, \beta_2, \beta_3$	= Regression coefficients
t	= Current year (period)
α_0	= Intercept
β_j	= Coefficients of $\ln Y$
γ_k	= Coefficients of $\ln X_1$
δ_l	= Coefficients of $\ln X_3$
ϵ_t	= Error term

Based on the above equation, this study analyzes the factors affecting labor absorption in the agricultural sector, with the dependent variable being the number of working-age individuals employed in agriculture in West Nusa Tenggara Province. The independent variables include agricultural GRDP, NTP, and UMP in West Nusa Tenggara Province.

Before estimating the regression model parameters, several preliminary tests are conducted, including stationarity test, optimal lag test, cointegration test, ARDL model estimation, and classical assumption tests (normality, heteroscedasticity, multicollinearity, and autocorrelation). Furthermore, model fit is assessed through the coefficient of determination (R^2), followed by F-test and t-test analyses.

III. RESULT AND DISCUSSION

Contribution of Labor Absorption in the Agricultural Sector to Total Employment in West Nusa Tenggara Province

The contribution of labor absorption in the agricultural sector to total employment illustrates how many people are employed in this sector relative to the overall economy in West Nusa Tenggara Province. This study specifically analyzes the agricultural sector in depth..

Table 1. Contribution of Labor Absorption in the Agricultural Sector to Total Employment in West Nusa Tenggara Province

Year	Agricultural Sector Employment (People) (XSpt)	Total Employed Population (People) (XSt)	Contribution (%) (CALAt)
2014	903.139	2.094.100	43.13
2015	829.993	2.127.503	39.01
2016	920.910	2.367.310	38.90
2017	829.637	2.316.720	35.81
2018	721.283	2.154.124	33.48
2019	727.413	2.387.036	30.47
2020	893.383	2.575.956	34.68
2021	866.546	2.657.395	32.61
2022	939.781	2.718.345	34.57
2023	970.339	2.892.982	33.54
2024	1.122.821	3.105.549	36.16
Rata-Rata	884.113	2.513.414	35.67

Source: BPS NTB (2025, processed)

Based on Table 1. employment in the agricultural sector in West Nusa Tenggara Province fluctuated between 2014 and 2024. The highest number of agricultural workers occurred in 2024 (1,122,821 people), while the lowest was in 2018 (721,283 people). On average, 884,113 people were employed in the agricultural sector over the period. Overall, employment in agriculture increased, although certain years (e.g., 2018 and 2019) saw declines. These declines were due to labor shifting from agriculture to non-agricultural sectors [13]. In 2018, for example, the sectors with the most significant growth were wholesale and retail trade; motor vehicle repair; manufacturing; and mining and quarrying [4].

The total workforce in West Nusa Tenggara increased overall, except for a decline in 2018. In 2014, the total working population was 2,094,100, increasing to 3,105,549 in 2024. The average over the period was 2,513,414 people. This indicates that although total employment grew, the proportion working in agriculture decreased, suggesting a structural shift in the labor force. This could be a positive signal if labor moves to more productive sectors. For instance, in 2019, employment grew most in public administration, education services, and construction [5]. Another reason for the decline in agricultural and total employment in 2018 is that the 2018 Labor Force Survey (Sakernas) excluded North Lombok Regency due to an earthquake disaster, affecting data coverage [4].

The contribution of agricultural labor to total employment shows a slow downward trend from 43.13% in 2014 to 36.16% in 2024. Despite fluctuations, the sector consistently contributed significantly. Over 2014–2024, agriculture accounted for an average of 35.67% of employment making it the largest contributor among all economic sectors. This confirms that the agricultural sector remains a key employment provider in West Nusa Tenggara Province.

Factors Affecting Labor Absorption in the Agricultural Sector in West Nusa Tenggara Province

Stationarity Test

The first test conducted in this study was the stationarity test. The stationarity test was performed using the Unit Root Test with the Augmented Dickey-Fuller (ADF) approach. The unit root approach includes tests at the level $I(0)$, first difference $I(1)$, and second difference $I(2)$. Based on the stationarity test using the ADF approach at the level $I(0)$, one variable showed a probability value smaller than the significance level ($\alpha = 5\%$), namely the independent variable LnX3 with a probability of 0.0000. This result indicates that the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. In other words, the independent variable LnX3 (provincial minimum wage) is considered stationary. Meanwhile, the variables LnY (agricultural labor), LnX1 (agricultural GRDP), and LnX2 (farmer's terms of trade) each had probability values greater than $\alpha = 5\%$, thus they failed the stationarity test and required further testing using the first difference $I(1)$ approach. After applying the first difference $I(1)$, the results showed that the dependent variable LnY (agricultural labor) had a probability of 0.0025, the independent variable LnX1 (agricultural GRDP) had 0.0002, and LnX2 (farmer's terms of trade) had 0.0001, all of which were below $\alpha = 5\%$. This indicates rejection of H_0 and acceptance of H_a , meaning the data passed the stationarity test. Data that pass the stationarity test exhibit stable characteristics, so they are considered suitable for further testing. When both dependent and independent variables are stationary, the ARDL model can be applied.

Determination of Optimal Lag

Determining the optimal lag aims to find the appropriate number of lags to be used in data processing and is a prerequisite before performing ARDL regression modeling. In this study, the optimal lag was determined based on the estimation results using the Akaike Information Criterion (AIC). Based on the AIC lag selection results, it can be explained that overall, the lowest AIC value obtained was negative, with the smallest value being -2.08 at lag (1,0,4,4). The best model obtained is the ARDL model (1,0,4,4).

Cointegration Test

The cointegration test used in this study was the bound testing approach to determine whether the data have cointegration or a long-term relationship among the variables examined. This test was developed by Pesaran, Shin, and Smith (2001) [15]. The cointegration test compares the F-test statistic with the lower and upper bounds. If the F-statistic value is greater than the upper bound, the null hypothesis (H_0) is rejected, indicating the presence of cointegration or a long-term relationship. The cointegration test results, processed using EViews 12, showed that the F-statistic was smaller than both the lower and upper bounds at the 5% significance level $4.306\% < 2.4912\%$. This means the tested variables do not have cointegration or no long-term relationship between the dependent variable (agricultural labor absorption) and the independent variables (agricultural GRDP, farmer's terms of trade, and provincial minimum wage). Based on the cointegration test (Bound Test), it is concluded that no cointegration relationship exists among the variables studied. This implies no long-term relationship between the dependent and independent variables in the model. Therefore, the ARDL model estimation is used to analyze short-term relationships.

ARDL Model Estimation

From the stationarity test results, it was found that all variables are stationary at the first difference level, allowing for ARDL model testing. After confirming the data suitability, the ARDL test examines the relationship among variables to determine whether there is a connection in the short and long term. This test uses the cointegration method, followed by analysis through the ARDL model test.

Table 2. The ARDL model estimation results are presented

Variable	Coefficient	Std. Error	T-statistic	Prob.
LN _Y (-1) (labor absorption in the agricultural sector one year prior)	0.249478	0.220037	1.133793	0.2810
LN _X 1 (agricultural GRDP in the current year)	-0.182412	0.059901	-3.045226	0.0111**
LN _X 2 (NTP in the current year)	-0.039554	0.132799	-0.297846	0.7714
LN _X 2(-1) (NTP one year prior)	0.182146	0.142269	1.280291	0.2268
LN _X 2(-2) (NTP two years prior)	0.068636	0.107476	0.638621	0.5361
LN _X 2(-3) (NTP three years prior)	-0.268849	0.110542	-2.432110	0.0333**
LN _X 2(-4) (NTP four years prior)	0.359621	0.107942	3.331609	0.0067**
LN _X 3 (UMP in the current year)	-1.493715	0.654344	-2.282768	0.0433**
LN _X 3(-1) (UMP two years prior)	1.605359	1.132522	1.634987	0.1303
LN _X 3(-2) (UMP two years prior)	-0.837983	1.012868	-0.739926	0.4748
LN _X 3(-3) (UMP three years prior)	-0.212380	0.506456	-0.209682	0.8377
LN _X 3(-4) (UMP four years prior)	0.920036	0.506456	1.816616	0.0966***
C	12.44468	3.590219	3.466273	0.0053*
F-statistic	= 2.785288	*	= significant at the 1% level	
Prob (F-statistic)	= 0.050	**	= significant at the 5% level	
R ²	= 0.4822	***	= significant at the 10% level	

Source: Processed EViews 12 Data (2025)

In this study, the dependent variable used is LnY_t (labor absorption in the agricultural sector in the current period) with the independent variables LnY_{t-1} (labor absorption in the agricultural sector one year prior), $LnX1_t$ (agricultural GRDP in the current year), $LnX2_t$ (NTP in the current year), $LnX2_{t-1}$ (NTP one year prior), $LnX2_{t-2}$ (NTP two years prior), $LnX2_{t-3}$ (NTP three years prior), $LnX2_{t-4}$ (NTP four years prior), $LnX3_t$ (UMP in the current year), $LnX3_{t-1}$ (UMP one year prior), $LnX3_{t-2}$ (UMP two years prior), $LnX3_{t-3}$ (UMP three years prior), and $LnX3_{t-4}$ (UMP four years prior). Based on Figure 3, variables with probability values less than the confidence level $\alpha=0.05$ are $LnX1_t$ (current year agricultural GRDP), $LnX2_{t-3}$ (NTP three years prior), $LnX2_{t-4}$ (NTP four years prior), and $LnX3_t$ (current year UMP). This indicates that these independent variables significantly influence the dependent variable.

Based on the selected optimal lag model (1,0,4,4) and the results from the AIC test, the estimated parameters are as follows:

$$LnY_t = 12.4447* + 0.2495LnY_{t-1} - 0.1824LnX1_t^{**} - 0.0396LnX2_t + 0.1821LnX2_{t-1} + 0.0686LnX2_{t-2} - 0.2688LnX2_{t-3}^{**} + 0.3596LnX2_{t-4}^{**} - 1.4937LnX3_t^{**} + 1.6054LnX3_{t-1} - 0.8380LnX3_{t-2} - 0.2124LnX3_{t-3} + 0.9200LnX3_{t-4}^* + \epsilon_t$$

The equation above can be interpreted as follows:

1. The constant term of 12.4447 indicates that when all independent variables equal 1 (so that $LnY_t = 0$), the expected value of $e^{12.4447} = 252,314$ units. This means the baseline value of Y_t is approximately 252 units when other variables have no influence.
2. The regression coefficient for LnY_{t-1} is positive (+) at 0.2495, indicating a positive relationship between labor absorption in the agricultural sector one year earlier and labor absorption in the current period. A 1% increase in LnY_{t-1} is expected to increase LnY_t by 0.2495%, assuming other variables remain constant.

3. The coefficient for $LnX1_t$ is negative (-) at 0.1824, indicating a negative relationship between current-year agricultural GRDP and current-period labor absorption. A 1% increase in $LnX1_t$ is expected to decrease LnY_t by 0.1824%, holding other variables constant.
4. The coefficient for $LnX2_t$ is negative (-) at 0.0396, showing a negative relationship between current-year NTP and labor absorption. A 1% increase in $LnX2_t$ will decrease LnY_t by 0.0396%, ceteris paribus.
5. The coefficient for $LnX2_{t-1}$ is positive (+) at 0.1821, indicating a positive effect of NTP one year prior on current labor absorption. A 1% increase in $LnX2_{t-1}$ raises LnY_t by 0.1821%, other variables held constant.
6. The coefficient for $LnX2_{t-2}$ is positive (+) at 0.0686, suggesting NTP two years prior positively influences current labor absorption. A 1% increase in $LnX2_{t-2}$ increases LnY_t by 0.0686%, assuming other variables fixed.
7. The coefficient for $LnX2_{t-3}$ is negative (-) at 0.2688, showing a negative impact of NTP three years prior on current labor absorption. A 1% increase in $LnX2_{t-3}$ reduces LnY_t by 0.2688%, with other factors constant.
8. The coefficient for $LnX2_{t-4}$ is positive (+) at 0.3596, indicating a positive effect of NTP four years prior. A 1% increase in $LnX2_{t-4}$ leads to a 0.3596% increase in LnY_t , holding other variables steady.
9. The coefficient for $LnX3_t$ is negative (-) at 1.4937, indicating a negative relationship between current-year UMP and labor absorption. A 1% increase in $LnX3_t$ decreases LnY_t by 1.4937%, ceteris paribus.
10. The coefficient for $LnX3_{t-1}$ is positive (+) at 1.6054, indicating a positive impact of UMP one year prior. A 1% increase in $LnX3_{t-1}$ increases LnY_t by 1.6054%, all else constant.
11. The coefficient for $LnX3_{t-2}$ is negative (-) at 0.8380, showing a negative effect of UMP two years prior. A 1% increase in $LnX3_{t-2}$ decreases LnY_t by 0.8380%, assuming other variables unchanged.
12. The coefficient for $LnX3_{t-3}$ is negative (-) at 0.2124, suggesting a negative relationship of UMP three years prior. A 1% increase $LnX3_{t-3}$ reduces LnY_t by 0.2124%, ceteris paribus.
13. The coefficient for $LnX3_{t-4}$ is positive (+) at 0.9200, indicating a positive effect of UMP four years prior. A 1% increase in $LnX3_{t-4}$ increases LnY_t by 0.9200%, with other variables constant.

Classical Assumption Tests

Normality Test

The normality test aims to determine whether the data used in this study are normally distributed or not. The normality test in this research employs the Jarque-Bera method. Based on the normality test, the probability value obtained is 0.5916. Therefore, since the probability value is greater than the significance level $\alpha = 5\%$, H_1 is rejected and H_0 is accepted, meaning the data are normally distributed.

Heteroskedasticity Test

The heteroskedasticity test is conducted to identify whether there is a variance of residuals in the study. This test uses the Breusch-Pagan-Godfrey method. Based on the probability value of the Obs*R-squared from the Breusch-Pagan-Godfrey test, which is 0.4764, exceeding the significance level $\alpha = 5\%$, H_0 is accepted and H_a is rejected. This indicates that the model does not have heteroskedasticity problems.

Multicollinearity Test

Based on the multicollinearity test, the Variance Inflation Factor (VIF) values of the independent variables LnY_{t-1} (labor absorption in the agricultural sector one year prior), $LnX1_t$ (current year's agricultural sector GRDP), $LnX2_t$ (current year's NTP), $LnX2_{t-1}$ (NTP one year prior), $LnX2_{t-2}$ (NTP two years prior), $LnX2_{t-3}$ (NTP three years prior), $LnX2_{t-4}$ (NTP four years prior), are all below 10. Therefore, H_0 is rejected and H_a is accepted. This means these variables show no symptoms of multicollinearity or have passed the multicollinearity test.

Autocorrelation Test

The autocorrelation test is used to determine whether there is a correlation between the variables under study. In this research, the test was conducted using the Breusch-Godfrey Serial Correlation LM Test. The F-statistic probability value obtained from this test is 0.1338, which is greater than the significance level $\alpha = 5\%$. Therefore, H_0 is accepted and H_a is rejected, indicating that there is no correlation between variables, or in other words, no autocorrelation problem exists.

Coefficient of Determination Test (R^2 Test)

The coefficient of determination test measures the extent to which the independent variables explain the dependent variable. Based on Table 3, the Adjusted R-Square value is 0.4822. This means that 48.22% of the variation in the dependent variable $\text{Ln}Y_t$ (labor absorption in the agricultural sector in the current period) can be explained by the variation of all independent variables, namely $\text{Ln}Y_{t-1}$ (labor absorption in the agricultural sector one year prior), $\text{Ln}X1_t$ (current year's agricultural sector GRDP), $\text{Ln}X2_t$ (current year's NTP), $\text{Ln}X2_{t-1}$ (NTP one year prior), $\text{Ln}X2_{t-2}$ (NTP two years prior), $\text{Ln}X2_{t-3}$ (NTP three years prior), $\text{Ln}X2_{t-4}$ (NTP four years prior), $\text{Ln}X3_t$ (current year's UMP), $\text{Ln}X3_{t-1}$ (UMP one year prior), $\text{Ln}X3_{t-2}$ (UMP two years prior), $\text{Ln}X3_{t-3}$ (UMP three years prior), and $\text{Ln}X3_{t-4}$ (UMP four years prior), while the remaining 51.78% is influenced by variables outside the model. The Adjusted R-Square value of 48.22% indicates that the model has moderate explanatory power.

Hypothesis Testing**Simultaneous Test (F-Test)**

Based on Table 4.7, the calculated F-value is 2.7853 with a probability value of 0.05. At the significance level $\alpha = 0.05$, H_0 is rejected and H_a is accepted. This means that all independent variables simultaneously $\text{Ln}Y_{t-1}$ (labor absorption in the agricultural sector one year prior), $\text{Ln}X1_t$ (current year's agricultural sector GRDP), $\text{Ln}X2_t$ (current year's NTP), $\text{Ln}X2_{t-1}$ (NTP one year prior), $\text{Ln}X2_{t-2}$ (NTP two years prior), $\text{Ln}X2_{t-3}$ (NTP three years prior), $\text{Ln}X2_{t-4}$ (NTP four years prior), $\text{Ln}X3_t$ (current year's UMP), $\text{Ln}X3_{t-1}$ (UMP one year prior), $\text{Ln}X3_{t-2}$ (UMP two years prior), $\text{Ln}X3_{t-3}$ (UMP three years prior), and $\text{Ln}X3_{t-4}$ (UMP four years prior) included in the model have a marginally significant simultaneous effect on the dependent variable $\text{Ln}Y_t$ (labor absorption in the agricultural sector in the current period). These findings are consistent with those of previous studies conducted by.

Partial Test (t-Test)

Based on the partial statistical test at a 5% and 10% significance level ($\alpha = 0.05$ and 0.10), the t-test results in this study are presented in Table 4.7. The findings can be summarized as follows:

1. The coefficient of the variable $\text{Ln}Y_{t-1}$ (labor absorption in the agricultural sector one year prior) has a t-statistic of 1.133793 and a probability of 0.2810. This variable is not statistically significant at the 5% significance level. Since the probability is greater than $\alpha = 0.05$, H_0 is accepted and H_a is rejected, meaning that labor absorption in the agricultural sector one year prior does not have a significant influence on labor absorption in the current period ($\text{Ln}Y_t$).
2. The coefficient of the variable $\text{Ln}X1_t$ (current agricultural sector GRDP) has a t-statistic of -3.045226 and a probability of 0.0111, indicating that the variable is statistically significant at the 5% level. Since the probability is less than $\alpha = 0.05$, H_0 is rejected and H_a is accepted, implying that the current GRDP of the agricultural sector has a significant negative influence on current labor absorption in the sector. This suggests that an increase in agricultural GRDP tends to reduce the number of agricultural workers absorbed.
3. The coefficient of the variable $\text{Ln}X2_t$ (current year's Farmer's Terms of Trade/NTP) has a t-statistic of -0.297846 and a probability of 0.7714. This variable is not statistically significant at the 5% level. As the probability is greater than $\alpha = 0.05$, H_0 is accepted and H_a is rejected, indicating that current NTP does not significantly influence labor absorption in the agricultural sector this year.
4. The coefficient of the variable $\text{Ln}X2_{t-1}$ (NTP one year prior) has a t-statistic of 1.280291 and a probability of 0.2268. This variable is not statistically significant at the 5% level. Since the probability exceeds $\alpha = 0.05$, H_0 is accepted and H_a is rejected, meaning that NTP one year prior has no significant effect on current agricultural labor absorption.
5. The coefficient of the variable $\text{Ln}X2_{t-2}$ (NTP two years prior) has a t-statistic of 0.638621 and a probability of 0.5361. This variable is not statistically significant at the 5% level. With the probability greater than $\alpha = 0.05$, H_0 is accepted and H_a is rejected, meaning that NTP from two years ago does not significantly influence labor absorption in the current period.
6. The coefficient of the variable $\text{Ln}X2_{t-3}$ (NTP three years prior) has a t-statistic of -2.432110 and a probability of 0.0333, showing statistical significance at the 5% level. As the probability is below $\alpha = 0.05$, H_0 is rejected and H_a is accepted. This means that NTP three years prior has a significant negative influence on labor absorption in the agricultural sector today.

7. The coefficient of the variable $LnX2_{t-4}$ (NTP four years prior) has a t-statistic of 3.331609 and a probability of 0.0067, which is statistically significant at the 5% level. Since the probability is less than $\alpha = 0.05$, H_0 is rejected and H_a is accepted, indicating that NTP four years prior has a significant positive effect on current labor absorption in the agricultural sector.
8. The coefficient of the variable $LnX3_t$ (current year's minimum wage/UMP) has a t-statistic of -2.282768 and a probability of 0.0433, showing statistical significance at the 5% level. With the probability below $\alpha = 0.05$, H_0 is rejected and H_a is accepted, implying that the current minimum wage has a significant negative effect on agricultural labor absorption this year.
9. The coefficient of the variable $LnX3_{t-1}$ (minimum wage one year prior) has a t-statistic of 1.634987 and a probability of 0.1303, indicating that the variable is not statistically significant at the 5% level. Since the probability exceeds $\alpha = 0.05$, H_0 is accepted and H_a is rejected, meaning that the minimum wage one year ago does not significantly affect current labor absorption.
10. The coefficient of the variable $LnX3_{t-2}$ (minimum wage two years prior) has a t-statistic of -0.739926 and a probability of 0.4748, which is not statistically significant at the 5% level. Since the probability is greater than $\alpha = 0.05$, H_0 is accepted and H_a is rejected, meaning that the minimum wage two years ago does not significantly influence labor absorption in the current period.
11. The coefficient of the variable $LnX3_{t-3}$ (minimum wage three years prior) has a t-statistic of -0.209682 and a probability of 0.8377, showing no statistical significance at the 5% level. Since the probability is above $\alpha = 0.05$, H_0 is accepted and H_a is rejected, indicating that the minimum wage three years ago has no significant effect on labor absorption in the agricultural sector today.
12. The coefficient of the variable $LnX3_{t-4}$ (minimum wage four years prior) has a t-statistic of 1.816616 and a probability of 0.0966, showing statistical significance at the 10% level. With the probability below $\alpha = 0.10$, H_0 is rejected and H_a is accepted, meaning that the minimum wage four years ago has a significant positive affect agricultural labor absorption in the current year.

Economic Interpretation of Labor Absorption in the Agricultural Sector in West Nusa Tenggara Province

The Effect of Agricultural Sector GRDP on Labor Absorption in the Agricultural Sector

The ARDL model estimation results show that agricultural GRDP has a significant negative effect on labor absorption in the agricultural sector in West Nusa Tenggara. This negative coefficient suggests that increases in agricultural output do not directly translate into more employment. Instead, it reflects increased labor efficiency, likely due to the adoption of agricultural technologies and mechanization. This finding aligns with the direction of national agricultural policy in the 2020–2024 National Medium-Term Development Plan (RPJMN), which emphasizes modern, advanced, and self-reliant agriculture by improving productivity and production system efficiency [3]. The same is echoed in the 2019–2023 Regional Medium-Term Development Plan (RPJMD) of West Nusa Tenggara, which promotes agricultural modernization through the use of agricultural machinery, digital agriculture, and development of commodity-based agricultural zones [2].

While beneficial for agricultural output, this shift poses a challenge for the labor market, particularly for manual laborers in agriculture. It may also indicate a transition from labor-intensive to capital- and technology-intensive agriculture, which requires fewer workers. This is consistent by [13] findings in South Kalimantan, where agricultural GRDP negatively and significantly influenced agricultural labor absorption. Thus, growth in agricultural GRDP does not necessarily reflect increased employment, especially if it results from mechanization and productivity gains rather than labor expansion.

The Effect of the Farmers' Terms of Trade (NTP) on Labor Absorption in the Agricultural Sector

The Farmer's Exchange Rate (NTP) has a fluctuating impact depending on the lag. NTP three years earlier (lag-3) had a significant negative impact, while NTP four years earlier (lag-4) had a significant positive impact. This suggests that NTP does not have an immediate effect on labor absorption but rather a delayed, long-term influence.

An increase in NTP generally indicates improved purchasing power and welfare among farmers but does not necessarily lead to more employment in the short term. Therefore, stabilizing and improving NTP remains a policy priority in the RPJMD of West Nusa Tenggara, through efforts such as increasing production efficiency, strengthening farmer institutions, and developing agribusiness supply chains [2]. These strategies also align with the 2020–2024 RPJMN, which prioritizes income and welfare growth for farmers as part of inclusive and sustainable development [3].

This result is also consistent with [12], who found that NTP did not significantly influence labor absorption in the agricultural sector in South Kalimantan. Hence, while NTP impacts labor absorption, the effect is more pronounced over a multi-year lag.

The Effect of Provincial Minimum Wage (UMP) on Labor Absorption in the Agricultural Sector

The Provincial Minimum Wage (UMP) variable also has a significant negative effect on agricultural labor absorption. This finding reflects the reality that the agricultural sector, which is predominantly informal and labor-intensive, struggles to compete with the formal sector in terms of wage standards. In fact, an increase in UMP may drive labor out of agriculture and into other sectors that offer more flexible daily income opportunities.

To address this issue, the RPJMD NTB 2019–2023 includes policies that provide agricultural incentives such as input subsidies, agricultural equipment support, and the development of village-based economies centered around local commodities. These measures aim to maintain the attractiveness of the agricultural sector for local labor [2]. This approach is in line with national policies that emphasize improving farmer welfare through price protections and better access to agricultural financing [3].

The study's findings are supported by [10], who found that UMP negatively affects labor absorption in the agricultural sector in North Sumatra. Similarly, [8] found that UMP had a negative and significant impact on agricultural labor absorption in Tanjung Jabung Barat Regency. Therefore, it can be concluded that an increase in minimum wage, if not accompanied by improvements in productivity or efficiency in the agricultural sector, tends to burden agricultural producers especially small-scale farmers and agribusinesses. As a result, they may reduce the number of workers to cut production costs, ultimately leading to a decline in labor absorption. These findings strengthen the argument that minimum wage policies should consider the unique characteristics of each sector particularly labor-intensive sectors like agriculture to avoid counterproductive outcomes for employment.

The Effect of Previous Agricultural Labor Absorption on Current Agricultural Labor Absorption

The ARDL model estimation also shows that labor absorption in the agricultural sector in NTB from the previous year has a positive but not statistically significant effect on the current period. This indicates that labor fluctuations in the agricultural sector are quite high and structurally unstable.

Agricultural employment in NTB tends to be influenced by seasonal factors, climate variability, and market dynamics, causing year-to-year shifts in labor contributions. Productivity improvements that are not followed by sustained employment growth highlight the weak integration of farmer empowerment programs and rural job creation initiatives.

Therefore, the NTB Provincial Government, through its RPJMD 2019–2023, emphasizes the importance of strengthening farmer institutions, enhancing agricultural human resource capacity, and providing incentives to farmer groups and young people in agriculture as efforts to stabilize the workforce in this sector [2].

IV. CONCLUSION AND RECOMMENDATION

Conclusion

Based on the results of the analysis and discussion, the following conclusions can be drawn:

1. Labor absorption in the agricultural sector contributed to total employment in West Nusa Tenggara Province, with a contribution of 35.67%.
2. Labor absorption in the agricultural sector of West Nusa Tenggara is simultaneously influenced by the agricultural GRDP, Farmers' Terms of Trade (NTP), and Provincial Minimum Wage (UMP). Partially, the current agricultural GRDP and UMP, as well as the NTP from three years prior, have a significant negative effect, while the NTP from four years prior has a significant positive effect on labor absorption in the sector.

Recommendation

Based on the findings of this study, several recommendations can be proposed:

1. Since the agricultural sector serves as a key provider of employment and supports regional economic development in West Nusa Tenggara (with a contribution of 35.67%), efforts to develop the agricultural sector sustainably are essential to maintain and increase its capacity to absorb labor.

2. Government policies should align agricultural GRDP growth with increased labor absorption. NTP stability must be maintained, and the determination of UMP should consider the specific conditions of the agricultural sector. Policy formulation should be based on proven historical data and supported by continuous farmer training and empowerment programs to ensure sustainability.

REFERENCES

- [1] Basriwijaya, K. M. Z., & Maryoni, H. S. (2015). The Influence of Investment, Inflation, Interest Rates, and Wage Levels on Labor Absorption in the Agricultural Sector in North Sumatra Province. *Cano Ekonomos Scientific Journal*, 4(2), 82–96.
- [2] Bappeda NTB. (2019). *Regional Medium-Term Development Plan (RPJMD) of West Nusa Tenggara Province 2019–2023: NTB Gemilang*. Mataram: Regional Development Planning Agency of West Nusa Tenggara Province.
- [3] Bappenas. (2020). *National Medium-Term Development Plan (RPJMN) 2020–2024*. Jakarta: Ministry of National Development Planning (Bappenas).
- [4] BPS NTB. (2018). *Employment Situation in West Nusa Tenggara, August 2018*. Mataram: Statistics Indonesia (Badan Pusat Statistik) of West Nusa Tenggara.
- [5] BPS NTB. (2029). *Employment Situation in West Nusa Tenggara, August 2019*. Mataram: Statistics Indonesia (Badan Pusat Statistik).of West Nusa Tenggara.
- [6] BPS NTB. (2024). *Agricultural Potential of West Nusa Tenggara Province*. Mataram: Statistics Indonesia (Badan Pusat Statistik) of West Nusa Tenggara.
- [7] Bungkuran, J., Masinambow, V. A. J., & Maramis, M. T. B. (2021). Analysis of the Role of the Agricultural Sector on the Economic Growth of Talaud Islands Regency. *Efisiensi Scientific Periodical Journal*, 21(2), 153–165.
- [8] Dewi, R. F., Prihanto, P. H., & Edy, J. K. (2016). Labor Absorption Analysis in the Agricultural Sector in Tanjung Jabung Barat Regency. *Journal of Resource and Environmental Economics*, 5(1), 19–25.
- [9] Gujarati, D. N., & Porter, D. C. (2015). *Basic Econometrics* (5th ed., Vol. 2). Jakarta: Salemba Empat.
- [10] Hasibuan, A. P. H., Ginting, R., & Effendi, I. (2019). Factors Affecting Labor Absorption in the Agricultural Sector in North Sumatra. *Scientific Journal of Agribusiness Master's Program*, 1(1), 10–17.
- [11] Melati, T., & Idris. (2023). Analysis of Labor Absorption in the Agricultural Sector in Indonesia. *Journal of Economic and Development Studies*, 5(4), 1–8.
- [12] Octavia, Miranda, Faramita. (2021). The Role of the Agricultural Sector in Labor Absorption in Riau Province. Undergraduate Thesis. Islamic University of Pekanbaru, Riau.
- [13] Sakdiyah, H., & Taufiq, M. (2023). Analysis of Labor Absorption in the Agricultural Sector in Lamongan Regency. *Journal of Accounting and Economics*, 8(2), 55–66.
- [14] Srinita, G. (2019). Determinants of Labor Absorption in the MSME Sector in Makassar City (Case Study: Café Industry at Pasar Segar). Thesis. Alauddin State Islamic University of Makassar.
- [15] Widarjono, A. (2018). *Econometrics: An Introduction and Its Application with EViews Guide*. Yogyakarta: UPP STIM YKPN.