APLIKASI ADMINISTRASI
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From Farms to Cities: Understanding Labor Migration Determinants in Indonesia's Agricultural Sector During Structural Transformation

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A R T I C L E   I N F O

A B S T R A C T

This study examines the determinants of labor migration from the agricultural sector in the structural transformation process in Indonesia. Using a panel data regression approach, this study analyzes the effects of several key factors, including provincial minimum wage, agricultural land area, inflation, GDP growth in the agricultural sector, and the proportion of employment in the agricultural sector on labor mobility. The results indicate that these variables exhibit varying influences on the transition of labor from agriculture to other economic sectors. The findings reveal that minimum wage increases tend to limit the absorption of labor in the modern sector, encouraging workers to remain in agriculture. Meanwhile, a reduction in agricultural land area and inflation negatively impact agricultural employment, accelerating labor migration to other sectors. However, GDP growth in agriculture does not significantly affect labor retention in the sector, suggesting that economic expansion in agriculture does not always translate into higher labor absorption. Additionally, the proportion of employment in agriculture significantly influences workforce retention, indicating that job opportunities in the sector play a crucial role in sustaining agricultural labor. These insights provide valuable implications for policymakers in designing strategies to maintain workforce resilience in agriculture while promoting inclusive economic growth in Indonesia.

1. INTRODUCTION

Economic growth remains a fundamental objective for all nations in their pursuit of development and improved public welfare. While Gross Domestic Product (GDP) is commonly used to measure economic progress, relying solely on GDP growth is insufficient to capture the quality and inclusiveness of development. True economic advancement must also generate broad employment opportunities, reduce poverty and inequality, and ensure sectoral balance across agriculture, industry, and services. In countries like Indonesia, where structural transformation is actively reshaping the economy, understanding the dynamics between these sectors especially the declining role of agriculture is essential for ensuring that growth remains inclusive and sustainable.

Based on Figure 1 below, Indonesia recorded the highest GDP in ASEAN in 2022, reaching USD 1,390 billion, significantly outperforming countries such as Thailand, Malaysia, and Vietnam. This indicates a strong overall economic performance. However, according to Kuznets (1966) theory of structural transformation, economic growth is typically accompanied by a shift in employment and output from agriculture to industry and services. In Indonesia's case, this transformation has resulted in uneven sectoral development, with agriculture lagging behind. Therefore, it is necessary to analyze how this structural shift affects the labor dynamics in the agricultural sector to ensure that economic growth remains inclusive and sustainable.
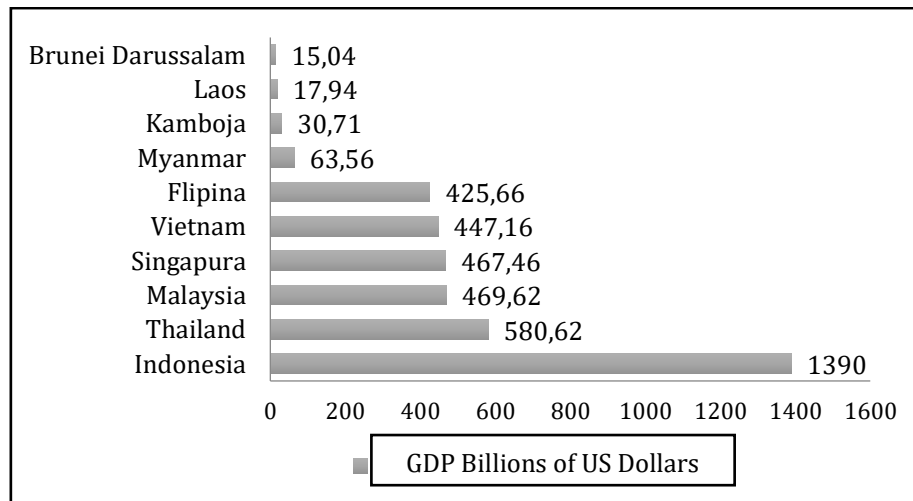
Figure 1. ASEAN Countries GDP in Billion US Dollars
Source: International Monetary Fund, 2022

Considering the information shown in Figure 1, Indonesia recorded the highest GDP in ASEAN in 2022, reaching 1,390 billion US dollars, much higher than other countries such as Thailand, Malaysia, and Vietnam. This data expose that the Indonesian economy is in a positive trend. However, it should be noted that GDP growth is uneven across all sectors, so further analysis is needed regarding the developing economic structure in Indonesia Kuznets (1966).
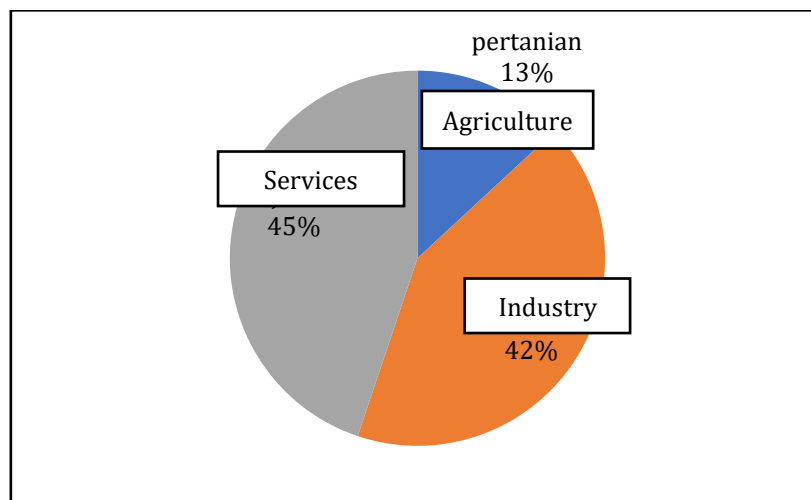

Figure 2. Proportion of Each Sector to GDP at Constant Prices 2023
Source: Badan Pusat Statistik, 2023

Figure 2. showing the proportion of each sector to GDP. The data expose that in 2023, the service sector will be the largest contributor to Indonesia's GDP with a participation of 45%, followed by the industrial sector at 42%, while the agricultural sector only contributes 13%. This indicates that the Indonesian economy is increasingly shifting towards the service sector, while the agricultural sector is increasingly lagging behind in the national economic structure. The fall in the participation of the agriculture sector to GDP is not a new phenomena. Based on research Widyawati (2017) In 1991, the agricultural sector still contributed 19.66% to Indonesia's GDP, but in 2020, its participation decreased to only 13.70%. This demonstrates that the agriculture industry is not growing as quickly as other industries, especially the industrial and service sectors.

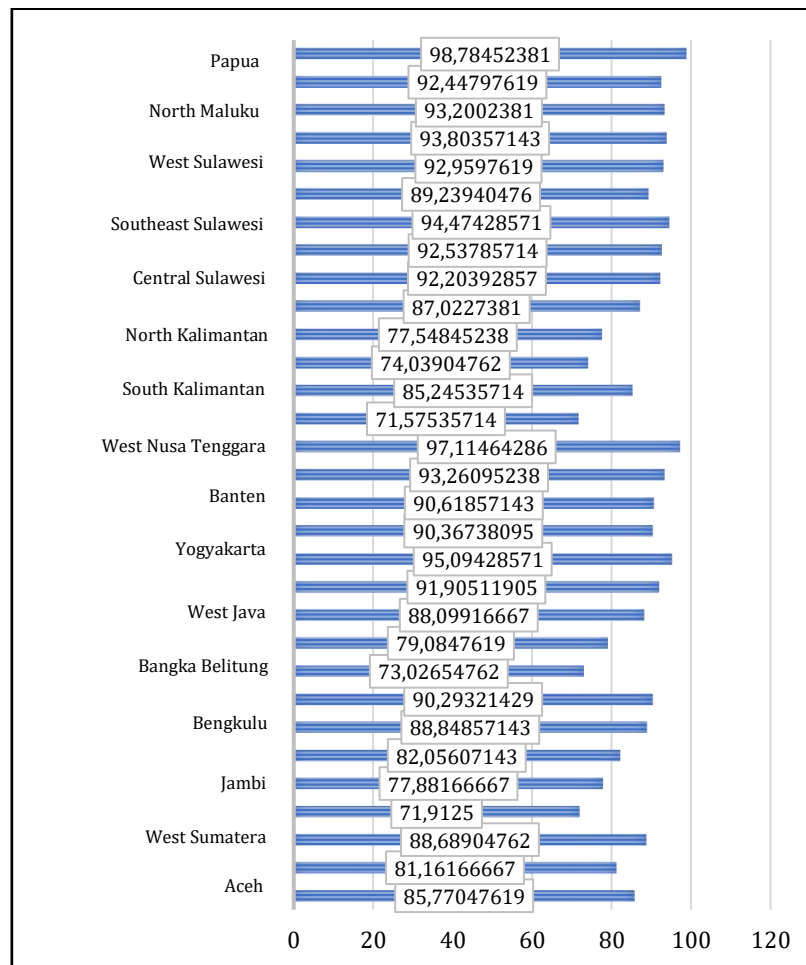This change in economic structure also has an impact on employment. It can be seen in the following image:

Province	Value
Papua	98,78452381
	92,44797619
North Maluku	93,2002381
	93,80357143
West Sulawesi	92,9597619
	89,23940476
Southeast Sulawesi	94,47428571
	92,53785714
Central Sulawesi	92,20392857
	87,0227381
North Kalimantan	77,54845238
	74,03904762
South Kalimantan	85,24535714
	71,57535714
West Nusa Tenggara	97,11464286
	93,26095238
Banten	90,61857143
	90,36738095
Yogyakarta	95,09428571
	91,90511905
West Java	88,09916667
	79,0847619
Bangka Belitung	73,02654762
	90,29321429
Bengkulu	88,84857143
	82,05607143
Jambi	77,88166667
	71,9125
West Sumatera	88,68904762
	81,16166667
Aceh	85,77047619

Figure 3. Average Number of Workers in the Agricultural Sector in Indonesia 2015-2023 (Percent)
Source: Badan Pusat Statistik, 2024

Figure 3. displays data on the average number of workers in the agricultural sector in various provinces in Indonesia during the period 2015–2023. This data expose that the number of workers working in the agricultural sector is still quite high in some regions, but continues to decline nationally. For example, Papua Province has the highest number of agricultural sector workers in Indonesia, reaching 98.78%, while Central Kalimantan has the lowest percentage of agricultural sector workforce, which is 71.57%.

The decline in labor in the agricultural sector can be attributed to several factors, including: Low wage levels in the agricultural sector compared to other sectors, income uncertainty due to the nature of work that depends on the season, reduced agricultural land area due to land conversion for industrial and residential purposes. Attractive Factors from the Non-Agricultural Sector include: Job opportunities in the industrial and service sectors that offer higher income stability and Modernization and technological advances that reduce the need for labor in the agricultural sector(Haviz et al., 2021).

Considering the research by Pesik et al (2016) the shift in labor out of agricultural sector to the non-agricultural sector occurred in response to uncertainty in the agricultural sector and optimized employment opportunities in other more promising sectors. While the agricultural sector continues to play an important role in national food

security, it faces a number of major challenges. Considering the information out of Central Statistics Agency (2022), throughout 2021, the agricultural sector experienced growth of 12.93% and contributed 14.27% to national GDP. However, this participation is still far below the industrial and service sectors. Some of the main challenges faced by Indonesia's agricultural sector are the poor human resource quality, where the majority of farmers in Indonesia still have a low level of education and lack access to modern agricultural technology, besides that most farmers in Indonesia are small-scale farmers who only manage an average of 0.6 hectares of land. Other challenges are the lack of supporting infrastructure, the condition in Indonesia of the irrigation system that is not optimal hinders agricultural productivity, and the limited access to transportation makes the distribution of agricultural products less efficient. Technology and capital are also one of the challenges that must be faced, namely Many farmers still use traditional farming methods due to limited capital for investment in modern technology, and the invention of more efficient agricultural technology can reduce the need for labor, but also risk increasing unemployment in this sector (Habtiah et al., 2021).

With Indonesia's population projected to optimize by 31% by 2050, food needs will also optimize significantly. To meet these needs, agricultural production must optimize by 60%. Therefore, policies that support the agricultural sector are needed so that they can survive and develop in the midst of changing economic dynamics. Indonesia has a great opportunity to make the agricultural sector more productive and sustainable by utilizing the right technology and economic policies. The question now is, is Indonesia ready to face this challenge and make the agricultural sector an integral part of inclusive and sustainable economic growth? This research will provide an answer to this question, by raising the title of determinants of labor movement in the agricultural sector in the process of structural transformation in Indonesia.

2. METHODS

This research uses secondary data obtained from several institutions, such as BPS and the Ministry of Agriculture. Panel data, which combines time series and cross-sectional data, is the type of data that is utilized. The object of this research consists of 32 provinces in Indonesia over the period from 2018 to 2022.

Panel data, which combines cross-sectional and time series data, is used in this study's regression analysis approach. time series data records how a person evolves over time, while cross-sectional data represent multiple individuals at a specific point in time. Therefore, panel data integrate both individual aspects (cross-section) and the time dimension (time series). In this study, the following equation function is used:

$$TKP_{it} = \beta_0 + \beta_1 UMP_{it} + \beta_2 LL_{it} + \beta_3 INF_{it} + \beta_4 PP_{it} + \beta_5 PLK_{it} + \varepsilon_{it}$$

Description :

TKP = Proportion of Agricultural Sector Labor

UMP = Provincial Minimum Wage

LL   = Agricultural Land Area

INF   = Inflation

PP   = Agricultural GDP Growth

PLK = Proportion of Employment in the Agricultural Sector

β_0 = Constant

$\beta_1 - \beta_5$ = Regression Coefficients of Independent Variable

ε = Error Term

i = Province

t = Time

3. RESULTS AND DISCUSSIONS

Results
Model Specification Test

This study applies several methodological approaches, namely CEM, FEM, and REM. To determine the most appropriate model, the Chow Test and Hausman Test are conducted

a. Chow Test

Table 1. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	75.058	30,147	0.0000

Source: Processed by the author with E-views 10

The Chow Test results are shown in Table 5, where the probability value is 0.0000, the degrees of freedom (d.f.) are 30,147, and the F-statistic value is 75.058. The null hypothesis ($H0$) is rejected because the probability value is less than the alpha significance level (0.05). Therefore, the most appropriate and suitable panel data model to use is FEM.

b. Hausman Test

Table 2. Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	35.504	5	0.0000

Source: Processed by the author with E-views 10

The Hausman Test findings are shown in Table 6, where the probability value is 0.0000, the degrees of freedom (d.f.) are 5, and the Chi-Square statistic is 35.054. The null hypothesis ($H0$) is rejected since the probability value is less than the alpha significance threshold (0.05). Thus, FEM is the best and most suited panel data model.

Classical Assumption Test

As shown below, this study uses three traditional assumption tests: the heteroscedasticity test, multicollinearity detection, and normality test.
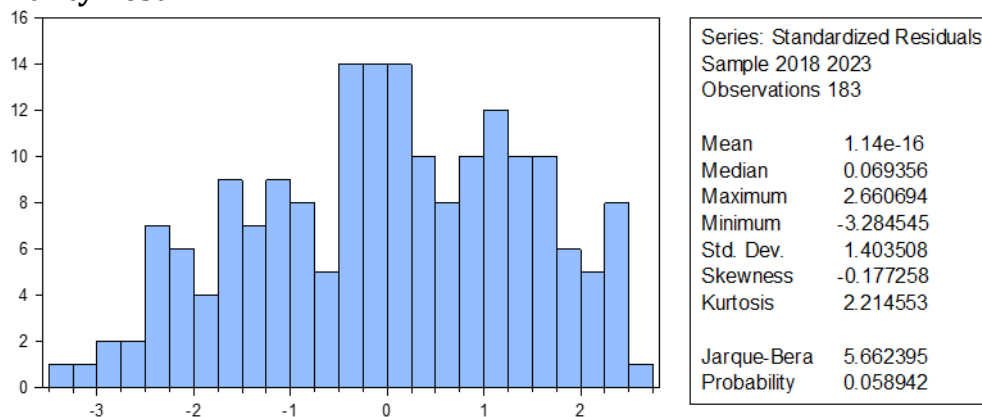
a. Normality Test

Figure 4. Normality Test Result
Source: Processed by the author with E-views 10

The Jarque-Bera value is 5.662 with a probability of 0.0589, Considering the test findings above. The Chi-Square table value is 11.070 with five independent variables and a significance threshold of $\alpha = 0.05$. It may be inferred that the data is normally distributed as the probability is higher than alpha and the Jarque-Bera value is less than the Chi-Square table value.

b. Multicollinearity Detection

Table 3. Multicollieanrity Detection Result

	UMP	LL	INF	PP	PLK
UMP	1.000000	-0.44091	0.050279	-0.00600	0.002743
LL	-0.44091	1.000000	0.092168	-0.05844	-0.03971
INF	0.050279	0.092168	1.000000	0.015609	-0.03108
PP	-0.00600	-0.05844	0.015609	1.000000	-0.11723
PLK	0.002743	-0.03971	-0.03108	-0.11723	1.000000

Source: Processed by the author with E-views 10

The coefficients of the variables UMP, LL, INF, PP, and PLK are all smaller than 0.80, Considering the test findings above. Thus, it may be said that the independent variables do not have a multicollinearity problem.

c. Heteroscedasticity Test

Table 4. Heteroscedasticity Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.218662	1.448956	0.84106	0.4017
UMP	-0.0000004	0.00000033	-1.311562	0.1917
LL	0.00000199	0.00000174	1.143858	0.2545
INF	0.010325	0.039283	0.262833	0.793
PP	0.001849	0.013926	0.132742	0.8946
PLK	0.011457	0.022988	0.498361	0.619

Source: Processed by the author with E-views 10

The five independent variables' respective probability values, as determined by the EViews output above, are 0.1917, 0.2545, 0.793, 0.894, and 0.619. Thus, it may be said that the model does not have a heteroscedasticity problem.

Fixed Effect Model Regression

Table 5. Fixed Effect Model Regression Result

Variable	Coefficient	Prob.
C	77.35506	0.0000
UMP	0.00000195	0.0000
LL	0.00000630	0.0000
INF	-0.059576	0.0387
PP	-0.020961	0.4077
PLK	0.151088	0.0000

Source: Processed by the author with E-views 10

From the results of the FEM regression, the following equation is obtained:

$$PTK_{it} = 77.355 + 0.00000195\ UMP_{it} - 0.0000063\ LL_{it} - 0.059\ INF_{it} - 0.0209\ PP_{it} + 0.151 PLK_{it} + \varepsilon_{it}$$

T-statistic Test

This study adopts a significance level of α at 5%, with the proposed hypotheses as follows:

H_0: $\mu = 0$, independent variables do not have a significant effect on the dependent variable

H_a: $\mu \neq 0$, independent variables have a significant effect on dependent variables

a. T-test Results of UMP Variables

Table 6. T-test Results of UMP Variables

Variable	t-statistic	t-table (a = 5%)	Probability	Conclusion
UMP	5.509	1.653	0.0000	Tolak H_0

Source: Processed by the author with E-views 10

Considering the findings of the t-test, the t-statistic value of 5.509 is greater than the t-table value of 1.653 at a 0.05 (5%) significance level, with a degree of freedom (df) of 178 and a probability of 0.0000, which is lower than alpha 0.05. Therefore, $H0$ is rejected, indicating that the Provincial Minimum Wage (UMP) has a significant influence on the Proportion of Agricultural Sector Workforce (PTK) in 31 provinces of Indonesia.

b. T-test Results of LL Variables

Table 7. T-test Results of UMP Variables

Variable	t-statistic	t-table (a = 5%)	Probability	Conclusion
LL	-4.326	1.653	0.0000	Tolak H_0

Source: Processed by the author with E-views 10

With a degree of freedom (df) of 178 and a probability of 0.0000, which is less than alpha 0.05, the t-statistic value of -4.326 is less than the t-table value of 1.6287 at a 0.05 significance level, Considering the t-test results. Consequently, $H0$ is rejected,

suggesting that agricultural land area (LL) significantly affects the proportion of Agricultural Sector Workforce (PTK) in 31 Indonesian provinces.

c. T-test Results of INF Variables

Table 8. T-test Results of INF Variables

Variable	t-statistic	t-table (a = 5%)	Probability	Conclusion
INF	-2.085	1.653	0.0387	Tolak H_0

Source: Processed by the author with E-views 10

Considering the findings of the t-test, the t-statistic value of -2.085 is smaller than the t-table value of 1.653 at a 0.05 significance level, with a degree of freedom (df) of 178 and a probability of 0.0387, which is lower than alpha 0.05. Therefore, $H0$ is rejected, indicating that inflation (INF) has a significant influence on the Proportion of Agricultural Sector Workforce (PTK) in 31 provinces of Indonesia.

d. T-test Results of PP Variables

Table 9. T-test Results of PP Variables

Variable	t-statistic	t-table (a = 5%)	Probability	Conclusion
PP	-0.8302	1.653	0.4077	Terima H_0

Source: Processed by the author with E-views 10

Considering the findings of the t-test, the t-statistic value of -0.8302 is smaller than the t-table value of 1.653 at a 0.05 (5%) significance level, with a degree of freedom (df) of 178 and a probability of 0.4077, which is greater than alpha 0.05. Therefore, $H0$ is accepted, indicating that agricultural growth (PP) does not have a significant influence on the Proportion of Agricultural Sector Workforce (PTK) in 31 provinces of Indonesia.

e. T-test Results of PLK Variables

Table 10. T-test Results of PLK Variables

Variable	t-statistic	t-table (a = 5%)	Probability	Conclusion
PLK	6.940	1.653	0.0000	Tolak H_0

Source: Processed by the author with E-views 10

Considering the findings of the t-test, the t-statistic value of 6.940 is greater than the t-table value of 1.653 at a 0.05 (5%) significance level, with a degree of freedom (df) of 178 and a probability of 0.0000, which is lower than alpha 0.05. Therefore, $H0$ is rejected, indicating that the Proportion of Agricultural Sector Employment (PLK) has a significant influence on the Proportion of Agricultural Sector Workforce (PTK) in 31 provinces of Indonesia.

F-statistic Test

The following hypothesis was formed:

$H_0 = \beta1 = \beta2 = \beta3 = 0$, UMP, LL, INF, PP, PLK does not have a significant influence on PTK in 31 provinces in Indonesia.

$H_a \neq \beta1 \neq \beta2 \neq \beta3 \neq 0$, UMP, LL, INF, PP, PLK collectively have an influence on PTK in 31 provinces in Indonesia.

Table 11. F-statistic Test Result

df(k-1 ; n-k)	F-statistic	F-table	Probability	Conclusion
4 ; 178	163.2142	2.42	0.0000	Tolak H_0

Source: Processed by the author with E-views 10

Considering the findings of the F-Statistic test, the F-Statistic value of 163.214 is higher than the F-Table value of 2.42, with a probability of 0.0000 that is less than alpha 0.05, degrees of freedom of 4; 178, and a significance level of 0.05. Therefore, the independent variables may be said to, namely provincial minimum wage, land area, inflation, agricultural growth, and the proportion of agricultural sector employment, collectively influence the proportion of agricultural sector workforce in 31 provinces of Indonesia.

Interpretation of the Coefficient of Determination (R^2)

The Fixed Effect Model regression results expose that the R^2 value is 0.9749 and the corrected R^2 value is 0.9689. This indicates that the variables provincial minimum wage (UMP), land area (LL), inflation (INF), agricultural growth (PP), and the proportion of agricultural sector employment (PLK) explain 97.49% of the variations in the proportion of the agricultural sector workforce (PTK) across 31 provinces in Indonesia, whereas additional factors not included by the model have an impact on the remaining 2.51%.

Discussion

a. The Impact of Provincial Minimum Wage on the Proportion of Agricultural Sector Workforce

The findings of the regression expose that the Provincial Minimum Wage (UMP) has a significant impact on the proportion of the agricultural sector workforce across 31 provinces in Indonesia from 2018 to 2023. This finding aligns with Lewis's dual-sector economic theory, which suggests that the agricultural sector absorbs surplus labor out of modern sector as rising UMP optimizes production costs, limiting employment absorption inBasri & Putra (2021)Studies by Basri & Putra (2021) and Fan & Pena (2019) support this, highlighting that higher UMP can enhance the attractiveness of agricultural jobs due to labor flexibility and better income expectations. Additionally, research by Indradewa & Natha (2015), Lustig & McLeod (1996), and Sang Ketut Ari Ardiawan & Made Suyana Utama (2024) suggests that rising UMP boosts purchasing power, stimulates agricultural demand, and expands business operations, ultimately increasing labor absorption in the sector.

b. The Impact of Agricultural Land Area on the Proportion of the Agricultural Sector Workforce

From 2018 to 2023, the regression findings expose that the percentage of the agricultural workers in 31 Indonesian provinces is highly influenced by agricultural land area. Considering the Ministry of Agriculture (2023), the decline in agricultural land area during this period reduced agricultural employment as workers shifted to other sectors and modern farming tools replaced manual labor. Research by Dewi et al (2017) and Agusalim (2022) suggests that mechanization and modern technology decrease the demand for manual labor, while Bachtiar et al (2023) highlight that larger land areas optimize supervision and management costs, discouraging workforce participation in the sector. Furthermore, Loesasi (2013) explains that agricultural modernization shifts labor needs from physical work to technical skills required for operating and maintaining modern equipment.

The reduction of agricultural land due to land-use conversion has contributed to labor migration from the agricultural sector to other sectors. Government policies that provide incentives for industries engaged in agriculture and the implementation of environmental insurance also influence labor dynamics in the agricultural sector, particularly in terms of labor shifts and changes in work patterns (Darmawan & Ahmadi, 2022). As a result, the decreasing availability of agricultural land tends to encourage workers to transition to the industrial and service sectors, which offer more promising income and job stability.

c. The Impact of Inflation on the Proportion of the Agricultural Sector Workforce

The regression results indicate that inflation significantly affects the proportion of the agricultural workforce in 31 provinces of Indonesia from 2018 to 2023. Considering the classical economic theory, the agricultural sector has low income elasticity, meaning that when inflation rises, the prices of goods and services outside the agricultural sector optimize faster than agricultural product prices. This reduces farmers' purchasing power and encourages labor migration to more profitable sectors (Todaro & Smith, 2011). Additionally, inflation raises the costs of agricultural inputs such as seeds and fertilizers, reducing profit margins and further diminishing the sector's attractiveness (Ellis, 1993). Kuznets (1966)structural transformation theory also explains that economic development gradually shifts labor from agriculture to industrial and service sectors. Research by Juswadi & Sumarna (2024) and Indah et al (2023) supports these findings, showing that high inflation pressures production costs, lowers farmers' welfare through declining Farmer's Exchange Rate (NTP), and drives labor migration to other sectors.

d. The Impact of Agricultural Growth on the Proportion of the Agricultural Sector Workforce

The regression results indicate that agricultural growth does not significantly affect the proportion of the agricultural workforce in 31 provinces of Indonesia from 2018 to 2023. One of the main reasons is the adoption of modern technology, which enhances agricultural productivity while reducing labor demand (Kesumawati & Fisabilillah, 2024). Several provinces, such as South Sulawesi and East Kalimantan, experienced significant agricultural growth, yet this was not accompanied by a notable change in the workforce proportion. Conversely, in provinces like West Papua and North Maluku, where agricultural growth declined, the proportion of labor in the sector remained relatively stable. This suggests that other factors, such as mechanization levels, structural economic transformation, and labor preferences shifting towards industry or services, play a more dominant role in determining agricultural labor distribution. As a result, regardless of whether the agricultural sector expands or contracts, the proportion of labor in this sector tends to remain unchanged due to more complex structural factors.

e. The Impact of the Proportion of Agricultural Employment on the Proportion of the Agricultural Sector Workforce

The regression results indicate that the proportion of agricultural employment has a positive and significant effect on the proportion of the agricultural workforce in 31 provinces of Indonesia from 2018 to 2023. Data expose that the agriculture, forestry, and fisheries sectors remain dominant in the national employment structure, with 28.61% of the population engaged in these sectors as of August 2022 (BPS, 2022). As a labor-intensive sector, the expansion of agricultural employment has a significant domino effect on the economy, including an optimize in the Gross Regional Domestic Product (GRDP) of the agricultural sector (Todaro & Smith, 2011).This strengthens employment in agrarian-

based regions and contributes to regional economic stability (World Bank, 2021). Furthermore, the agricultural sector plays a crucial role in providing inclusive job opportunities, particularly for individuals with lower education levels or those who are not absorbed into the formal sector (FAO, 2022). The optimize in the agricultural workforce also enhances the sector's competitiveness and productivity, which is especially vital for developing countries like Indonesia, particularly in times of economic crisis or instability in non-agricultural sectors (Ministry of Agriculture, 2023).

4. CONCLUSION

Considering the study's findings, it can be said that Indonesia's agriculture sector's labor mobility is influenced by several economic and structural factors. The Provincial Minimum Wage (UMP) has a significant and positive influence on the proportion of labor in the agricultural sector, showing that the optimize in UMP can limit the absorption of labor in the modern sector, so that more workers remain in the agricultural sector. Meanwhile, the area of agricultural land has a negative and significant influence, which indicates that the larger the agricultural land, the less labor is needed, especially due to the modernization and mechanization of agriculture which reduces the need for manual labor.

However, the growth of the agricultural sector does not significantly affect the proportion of labor in this sector, indicating that economic growth in the agricultural sector is not always in line with the optimize in the absorbed workforce. Inflation also has a negative effect on the proportion of agricultural labor, as rising inflation can result in a decrease in purchasing power and an optimize in the cost of living, which encourages workers to move to other sectors with higher incomes. However, the proportion of employment in the agricultural sector has a significant effect on the number of workers who remain in this sector, which means that the greater the job opportunities available, the higher the workforce that remains employed in the agricultural sector.

All things considered, the findings of this study demonstrate that economic variables like salaries, inflation, and agricultural modernization have an impact on the labor dynamics of the agricultural sector. Therefore, policies that focus on balancing wage optimizes, price stability, and investment in agricultural technology need to be considered in order to maintain the welfare of the workforce and support the structural transformation of the economy in Indonesia.

Therefore, in response to the research question, it can be concluded that Indonesia is currently *partially ready* to face the challenges in transforming and revitalizing the agricultural sector. The country demonstrates significant potential, supported by policy awareness, demographic strength, and natural resources. However, major obstacles such as unequal access to technology, limited agricultural land, inflationary pressures, and structural labor migration remain critical. For Indonesia to fully harness the agricultural sector as a pillar of inclusive and sustainable economic growth, a more integrated approach involving technological innovation, workforce development, and institutional reform is necessary. Thus, Indonesia's readiness is promising but requires further strategic interventions to be fully realized.

Suggestions:

Considering the results of this investigation, there are several suggestions that can be considered to support employment policies in the agricultural sector in the process of structural transformation in Indonesia. First, the government needs to balance the minimum wage policy by creating incentives for the agricultural sector to remain

competitive and able to attract qualified workers. In addition, optimized access to modern agricultural technology must be strengthened to overcome the negative impact of reduced labor needs due to mechanization, while still opening up job opportunities in related sectors such as agro-industry and agricultural services.

Furthermore, in the face of inflationary pressures that can encourage workers to leave the agricultural sector, it is necessary to have policies to stabilize the prices of basic necessities and targeted subsidy programs for farmers and agricultural sector workers. The government also needs to encourage more inclusive growth in the agricultural sector by providing greater access to agricultural land for smallholders and ensuring production sustainability through effective land use planning.

Moreover, in the context of the "from farms to cities" phenomenon, migration should not merely be seen as a threat to agricultural sustainability, but rather as an opportunity for transformation. Urban migration can foster knowledge and technology transfers that benefit rural areas, especially when returning migrants or urban-based entrepreneurs invest in agrotechnology, modern supply chains, or agro-industrial enterprises. Strengthening rural-urban linkages through infrastructure, digital platforms, and inclusive value chains can help ensure that urban growth contributes to rural resilience. Policies that encourage urban-rural partnerships and support agripreneurship among youth can transform labor migration into a tool for improving productivity and innovation in the agricultural sector.

In addition, considering that the proportion of employment in the agricultural sector is still a major factor in retaining the workforce, efforts are needed to create a more attractive working environment and improve the welfare of farmers through financial support, skills training, and optimized market access for agricultural products. With the right strategy, structural transformation can be more balanced, ensuring that the agricultural sector remains productive and contributes to inclusive economic growth in Indonesia.

5. ACKNOWLEDGE

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