The Potential of Rural Development in Indonesia based on the perspective of Employment in Agriculture and Economic Value Added in the Agricultural Sector

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Abstract

This study aims to investigate agricultural employment, rural residents, the added value of agriculture in Indonesia. The data analysis method used in this research is the Vector Autoregression quantitative analysis method in the study period 2000 to 2019. The variables used in this study are rural populations, while the independent variables are jobs in agriculture, value-added agriculture. Based on the results of our research, the agricultural sector is a sector that absorbs a very large workforce and even continues to increase. However, an anomaly occurs when employment opportunities in the agricultural sector increase and the added value of the agricultural industry continue to increase and is unable to attract residents to remain in rural areas. This is a gap that needs to be filled in the form of rural development and an increase in the added value of an agriculture-based and rural economy.

Keywords: Agriculture, Rural, Indonesia
JEL Classification : C10 , J24

Background

Indonesia is a country rich in natural resources (Pelzl & Poelhekke,2021). Indonesia is blessed with abundant natural resources. Not only riches in the form of diverse and abundant natural potentials but also extraordinary natural beauty.

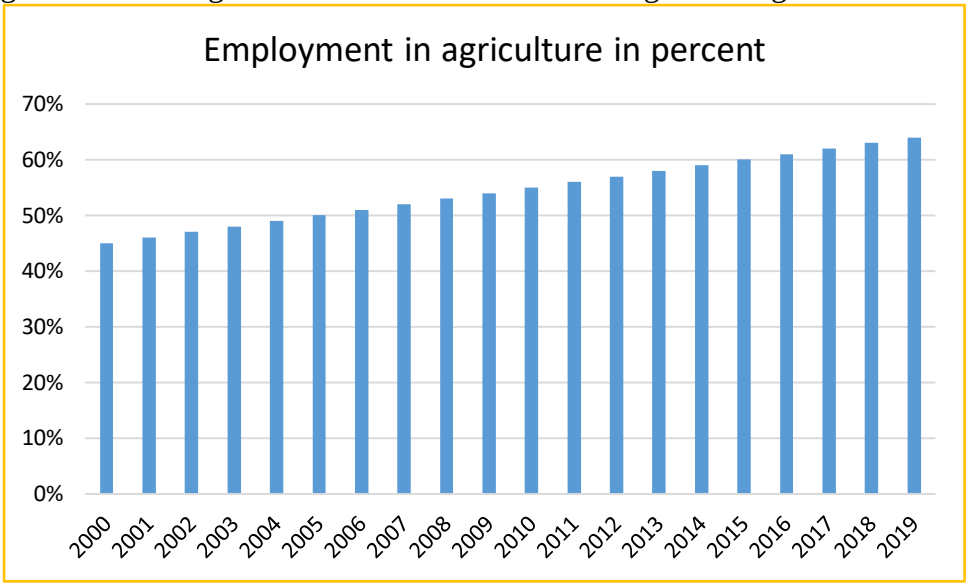
Indonesia's natural wealth should be preserved and protected in order to remain sustainable and be of benefit to future generations. Economic development should not sacrifice natural sustainability. However, they work together to support each other as mutually reinforcing components.

Natural development and nature preservation can go hand in hand with economic development. Empowerment of nature has the potential to provide added economic value and contribute to economic development (Mueller & Tickamyer,2020).

The agricultural sector is one of the sectors that have the potential to be developed while at the same time preserving nature. The preservation of beautiful nature can make people comfortable to stay (Noorollahi et al,2021). The agricultural sector can also be developed together with the tourism sector which supports each other in providing added value to the economy.

The agricultural sector has the potential to be developed in rural areas (Pelucha et al,2021). Rural areas that are beautiful and have their own characteristics can attract tourists to come to visit. Agriculture in rural areas can be developed by preserving the natural beauty and natural beauty of rural areas and their distinctive culture. Based on data from the world bank, the agricultural sector absorbed more than 40% of Indonesia's workforce in the period 2000 to 2019. In fact, it has absorbed more than 50% since 2007 and has penetrated the absorption rate of more than 60% since 2016. Labour absorption in the sector agriculture in Indonesia is presented in Figure 1 below:

Figure 1. Percentage of Indonesian Workers Working in the Agricultural Sector



Source: World Bank compiled

Figure 1 illustrates that from an employment perspective, the agricultural sector is a vital sector because it absorbs a large number of workers in Indonesia. When the agricultural sector is developed, the people's welfare and economic growth have the potential to be encouraged so that it will get better.

Villagers who uphold the noble values and culture of the nation can be empowered not only from the agricultural sector but also the tourism sector by preserving nature and culture. Rural empowerment can support the national economy.

Literature review

Rural is an area or administrative area designated as a village. In general, rural areas have natural preservation that is still maintained. Including cultural preservation. Rural areas generally have a population that is not as dense as urban areas so that they can provide space for tourists to visit and stay temporarily (Nelson et al,2021).

The agricultural sector is commonly developed in rural areas in Indonesia (Mehraban & Ickowitz,2021). Indonesia is a country that has the potential to be developed on the basis of agriculture and economic development from the village. Villages can be developed by empowering villagers and their natural and cultural potential.

The agricultural sector provides opportunities and potential in employment (O'Donnell et al,2018). The agricultural sector can provide job opportunities for many people who need work. The agricultural sector can also provide employment from various levels of education, both from the formal and informal sectors. The agricultural sector also provides economic added value that supports national economic development. Agriculture with its various operational activities can provide various sectors to participate in supporting agricultural activities. Starting from the industrial sector for the provision of agricultural equipment and machinery to the tourism and creative sectors. So that when the agricultural sector develops, various sectors will receive a positive impact from the development of the agricultural sector, especially in rural areas.

Research Methodology

The type of data used in this research is quantitative data, while the data source in this study is secondary data. Secondary data is data that already exists and is collected for research purposes. Population data can be defined as a collection of all possible observations. The population in this study were all employment in agriculture, rural residents, the added value of agriculture in Indonesia. The sample in this study is represented by all users of employment in agriculture, rural residents, agricultural value-added in Indonesia, which is recorded by the world bank.

This study uses the VAR method to see the response and encouragement between variables so that the dependent variable in this study is labour in agriculture, rural residents, the added value of agriculture in Indonesia.

The independent variable is a variable that is believed to be a predictor that causes fluctuations in the dependent variable. The independent variable of this study uses the VAR method to see the response and encouragement between variables so that the independent variables in this study are employed in agriculture, rural residents, the added value of agriculture in Indonesia.

Based on mathematical models and literature reviews, it is possible to simulate possible responses and impulses between variables with unknown future economic data. To see the responses and impulses of the main economic variables that we discuss in this journal, we use the Vector Autoregression (VAR) method to estimate the possibility that could happen in the future based on simulations or forecasting. Follows the following equation model:

$$Y_t = C + A_1 Y_{t-1} + ... A_p Y_{t-p} + e_t$$

Where $Y_t=(Y_{1t},...,Y_{Kt})$ is the set of K time series variables, c is K x 1 constant vector, A is the coefficient matrix K x K and et is the error term

The vector Autoregression Model (VAR) is an extension of the univariate autoregression model for multivariate time series data. The VAR model is a multi-equation system in which all variables are treated as endogenous (dependent). There is one equation for each variable as the dependent variable.

We focused on simulating pre-corona responses and impulses based on past data sets for the period 2000 to 2019 with the assumption that variables outside the key variables we studied did not change.

Results and Discussion

In understanding the relationship between variables using the Vector Autoregression analysis tool in analyzing the interconnectivity relationship of employment in agriculture, rural residents, the added value of agriculture in Indonesia. The results of the Vector Autoregression estimation are shown in the following table:

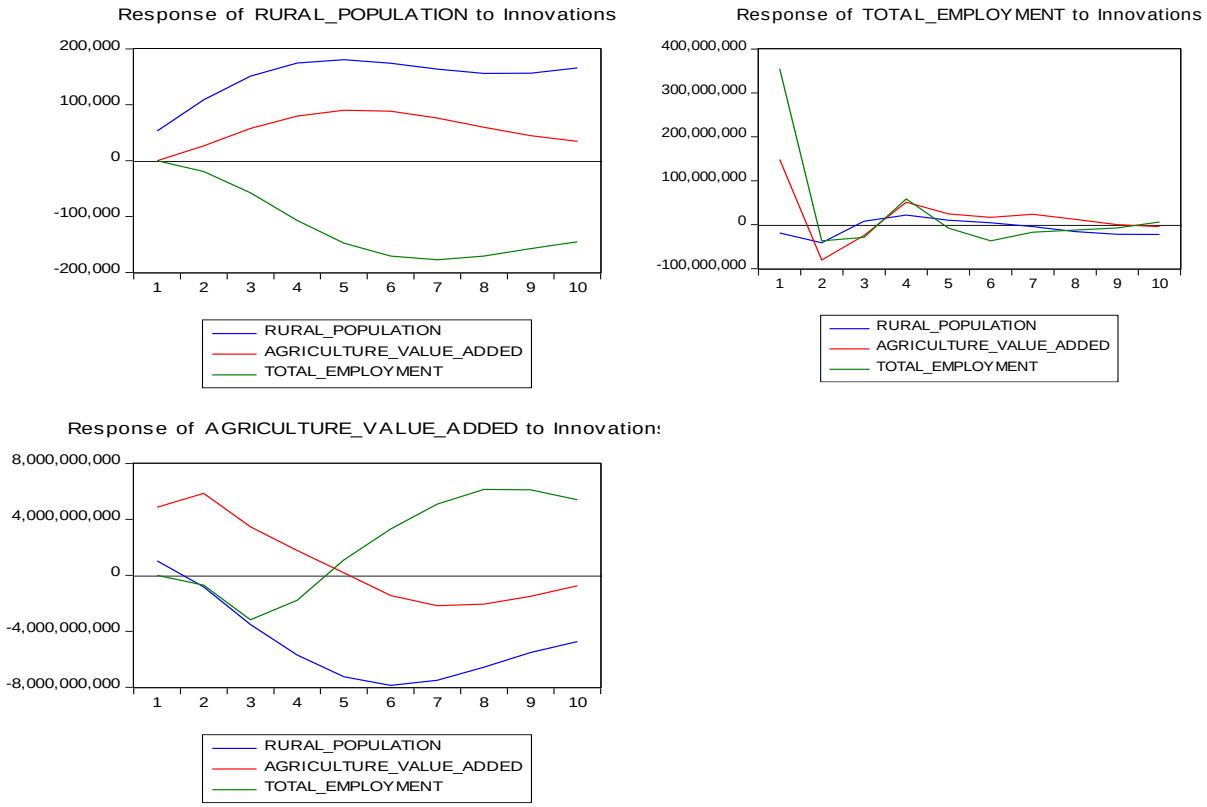
Table 1. Vector Autoregression Estimation Results

	RURAL_POPULATION	AGRICULTURE_VALUE_ADDED	TOTAL_EMPLOYMENT
RURAL_POPULATION(-1)	1.895466	-41036.26	-550.4472
	-0.20498	-19299.3	-1492.25
	[9.24717]	[-2.12631]	[-0.36887]
RURAL_POPULATION(-2)	-0.863853	39690.09	612.9139
	-0.30261	-28491.1	-2202.98
	[-2.85472]	[1.39307]	[0.27822]
AGRICULTURE_VALUE_ADDED(-1)	7.08E-06	1.263112	-0.013346
	-2.00E-06	-0.185	-0.0143
	[3.60241]	[6.82760]	[-0.93298]
AGRICULTURE_VALUE_ADDED(-2)	-6.30E-06	-0.347956	0.016827
	-2.60E-06	-0.24063	-0.01861
	[-2.46423]	[-1.44601]	[0.90437]
TOTAL_EMPLOYMENT(-1)	-5.43E-05	-1.986102	-0.103844
	-4.10E-05	-3.87067	-0.29929
	[-1.32030]	[-0.51312]	[-0.34697]
TOTAL_EMPLOYMENT(-2)	-5.09E-05	-8.861439	-0.147858
	-4.30E-05	-4.07493	-0.31508
	[-1.17493]	[-2.17462]	[-0.46927]
C	-3970234	1.70E+11	-7.62E+09
	-1.40E+07	-1.30E+12	-1.00E+11
	[-0.28133]	[0.12831]	[-0.07413]
R-squared	0.998313	0.99007	0.191133
Adj. R-squared	0.997393	0.984654	-0.250067
Sum sq. resids	3.08E+10	2.73E+20	1.63E+18
S.E. equation	52946.77	4.99E+09	3.85E+08
F-statistic	1085.009	182.8002	0.433212
Log likelihood	-216.8954	-423.0435	-376.9674
Akaike AIC	24.87726	47.78261	42.66305
Schwarz SC	25.22352	48.12887	43.0093
Mean dependent	1.21E+08	9.14E+10	2.16E+08
S.D. dependent	1036988	4.02E+10	3.45E+08
Determinant resid covariance (dof adj.)	8.41E+45		
Determinant resid covariance	1.92E+45		
Log likelihood	-1015.035		
Akaike information criterion	115.115		
Schwarz criterion	116.1538		
Number of coefficients	21		

From the estimation results of Vector Autoregression, it can be seen in the table that the Value-added variable has a significant effect on all variables, the significance of the variable is seen by comparing the t-statistical value of the variable with the T-table. The results of the analysis show that the value-added variable becomes the motor of change in rural areas. This shows that, when rural areas are developed and their economic value is added through the agricultural industry, it will encourage residents to return to villages and increase the number of agricultural workers. The population has an effect on other variables, but not significant, as well as the total workers in the agricultural industry. This indicates that the key to rural development is increasing economic added value. One of the added values of the economy which is driving the economy in rural areas is the agricultural sector.

To see the pull and push of the response and impulse between variables, an Impulse Response Function (IRF) analysis are carried out which describes the response of endogenous variables to shocks that occur in other variables in a dynamic VAR system. IRF can be used to see the effect of the fluctuation or shock of a variable on the value of other variables, both current and future. By understanding the impulse response, past data behaviour can be understood to predict and simulate what will happen in the future. So that a policy can be decided in achieving a goal. The results of the Impulse Response Function (IRF) are shown in Graph 1.

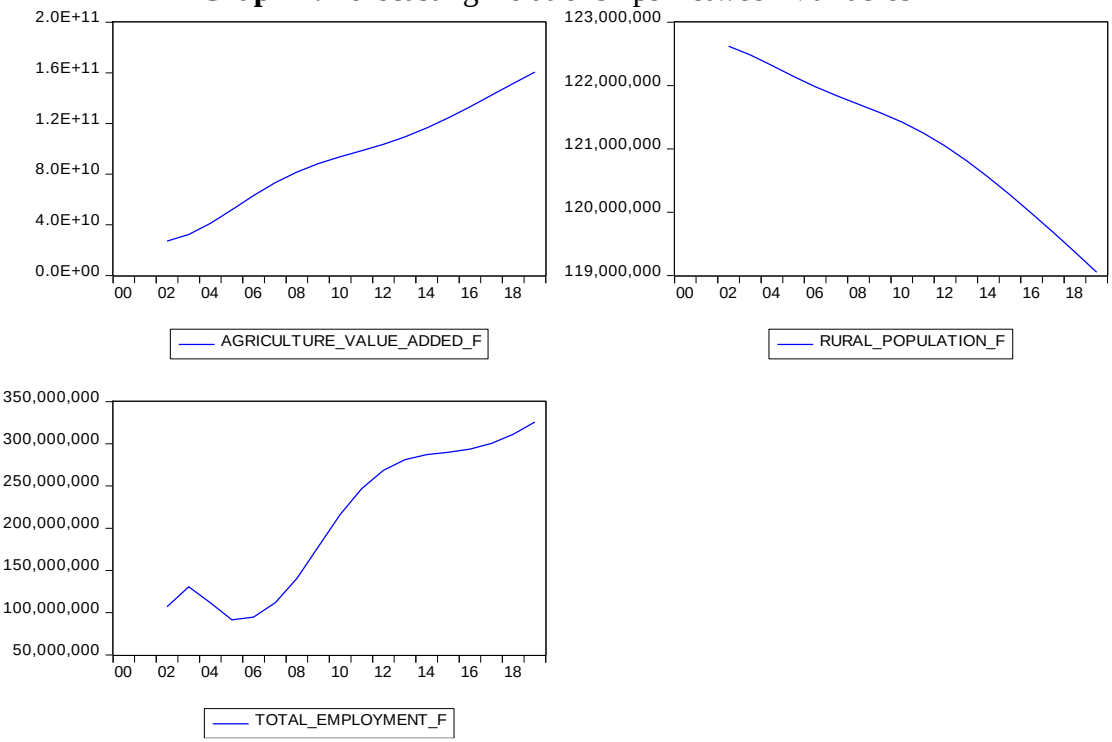
Graph 1. Results of the Impulse Response Function (IRF)



From the results of the impulse response, it can be seen that the added value of agriculture is the motor of change from other variables. Where when there is a change in the population variable, the added value of the agricultural economy follows the direction of change and vice versa. However, in contrast to employment. However,

when employment changes, other variables also change with the direction of employment. This shows that economic value added is driven by employment which in turn encourages value-added and population variables. To see the forecasting of the three variables which are the object of research. An illustration is done by predicting the relationship between variables in graph 2 as follows:

Graph 2. Forecasting Relationships Between Variables



When viewed from the results of the good impulse response produced is different from the forecasting graph. This is because the impulse response graph illustrates the response of a variable when one of the variables changes so that the effect of changes caused by each variable can be analyzed. However, forecasting between variables is carried out based on the time-series data of each variable so that the direction of movement of each variable can be predicted in the future. From the forecast results, it can be seen that the added value of agriculture is increasing in Indonesia, and employment in agriculture is also increasing. However, the population in rural areas is actually decreasing, which creates a gap that needs to be filled. The added value of agriculture and employment in the agricultural sector are not sufficient to attract the interest of the younger generation or the productive generation to remain in rural areas. However, employment opportunities in the agricultural sector are actually increasing, so there is an imbalance of employment in the agricultural sector in Indonesia which needs to be studied further.

Conclusion

The agricultural sector is a sector that absorbs a very large workforce and even continues to increase. However, an anomaly occurs when employment opportunities in the agricultural sector increase and the added value of the agricultural industry continue to increase and is unable to attract people to remain in rural areas. This is a gap that needs to be filled in the form of rural development and an increase in the added value of the economy based on agriculture and rural areas.

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