

## Poverty And Food Security: A Reality in ASEAN Countries

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### Abstract

Poverty and food security have important problem in countries. There are some policies to reduce poverty and to achieve food security in the countries. This study aims to analyze the linkages of food security, food price index, economic growth, agriculture sector and population living below the poverty line in several ASEAN countries. ASEAN countries that became the objects of this study included Indonesia, Malaysia, Philippines, Thailand, Cambodia and Myanmar. The data used in the study were data from the period 2012-2017. These data included percentage of population living below the poverty line, food security index, food price index, contribution of agricultural sector to gross domestic product, economic growth rate and population. These data are available in the Asian Development Bank publication. Data analysis method used was panel data with least square method. The results of this study concluded that food security rate, economic growth, and contribution of the agricultural sector to gross domestic product had a significant but negative impact on poverty rates. Meanwhile, the population had a positive and significant impact on poverty rates in various ASEAN countries.

**Keywords:** *Food security, Agricultural sector, Poverty rate, Panel data*

**JEL Classification:** C01, I30, O13, Q01, Q18

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### INTRODUCTION

In the development of the global environment, climate change is one of the important issues in relation to the agricultural sector and food availability at the community level. The agricultural sector needs to be intensified so that it can contribute significantly to development, food supply, achieving economic output, and poverty alleviation (Ahmed and Siwar, 2013; Adu, et al., 2018; Udemezue and Osegbue, 2018). Moreover, food availability is one important indicator in relation to the achievement of people's prosperity. In the concept of The Global Environmental Change and Food Systems (GECAFS), food security is closely related to environmental welfare and social welfare. The carrying capacity of the environment can affect production of the agricultural sector and community food

availability. The availability of sufficient food can improve people's welfare. In relation to social welfare, there are aspects of income and employment opportunities. Low income and few employment opportunities can cause poverty and social problems. In other words, food security has a close relationship with the issues of poverty (Ericksen, et al. 2009).

Economic growth in ASEAN countries fluctuates in response to the dynamics of global economic development. Volatility in the global economy has led to structural adjustments in ASEAN countries. This structural adjustment needs to be taken in order to maintain the momentum of economic stability both on the demand side and on the supply side. The ASEAN region has a total population of nearly 600 million people in 2017, making this region an important part in maintaining economic stability in the Asian region and the world. Different conditions of economic resources cause different achievements in economic performance. Natural resources are an endowment factor for countries in the ASEAN region. The agricultural sector in ASEAN countries has a role in increasing economic growth, reducing poverty, and at the same time, providing food for the community (Kadir and Ratna, 2018). However, the conditions that occur indicate that the achievements in economic growth in various ASEAN countries are still accompanied by poverty incidence. Poverty and economic growth cannot be separated from the constellation of the global economy that is experiencing vulnerability, uncertainty, complexity, and ambiguity (VUCA).

In the context of development on the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs), poverty and food insecurity have strong links (Wight V, et al., 2014). The availability of food that is affordable by the people will facilitate them to fulfill their daily needs. Food affordability is closely related to purchasing power and the amount of people's income. The ability of countries to manage food and control economic stability is an important factor in alleviation of poverty that occurs in ASEAN countries. To achieve the MDGs in ASEAN countries, eradicating extreme poverty and hunger is a top priority (ASEAN secretariat, 2017). As an area with a large population, poverty alleviation and food supply are development targets that must be achieved by ASEAN countries.

During the period of 2012-2017, poverty rates in ASEAN countries, such as Indonesia, the Philippines, Malaysia, Thailand, Cambodia, and Myanmar, had been fluctuating. In 2012, the proportion of population living below the national poverty line in these countries averaged 16.1%. Among these countries, Malaysia had the lowest poverty rate, at 1.7%, while the largest poverty rate was in Myanmar, at 26.6%. In 2017, the poverty rate decreased to an average of 14.3%. Among the ASEAN countries until 2017, only Myanmar whose poverty rate increased at 32.1%. In more detail, the data can be seen in graph below:

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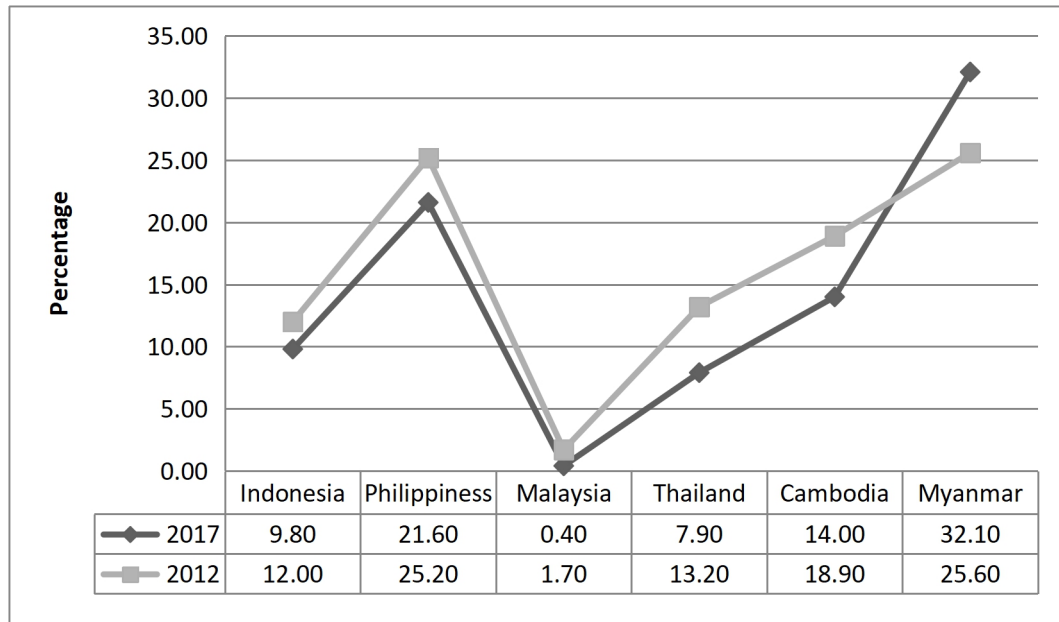


Figure 1. Poverty Rate in ASEAN-6  
Source: Asian Development Bank, [www.adb.org](http://www.adb.org)

Poverty in ASEAN countries shows that there are still some people who do not obtain adequate access to available food resources. Access to these resources is important for meeting the needs through economic activities. As it is known, one of the important indicators of poverty is the ability of the population to access food that is available in the economy. The Asian Development Bank report in 2012 showed that many countries in Asia and the Pacific faced the problem of food security, both in food access and food utilization. Food access is closely related to people's purchasing power, food availability, large population, role of the agricultural sector, and food price stability. High economic growth cannot be enjoyed by all people when food and poverty issues are not addressed properly. Large population will also only become a burden in development when the population is not balanced with adequate expertise in utilizing available economic resources.

The ability of the population to access food can facilitate the population to alleviate poverty. This was confirmed by the results of a study by Oriola (2009), which found that development in the agricultural sector would increase agricultural sector production. As a consequence, increased production will strengthen people's food security. The availability of sufficient food has been proved to be able to contribute to poverty reduction in Nigeria. Food sufficiency for the community can also ensure that there is no food scarcity in the economy. In other words, food security can be a leverage for food price stability. Food prices that tend to increase will have an impact on the increasing government budget for subsidies. This can cause crowding out in investment in public infrastructure, such as health facilities, education, and infrastructure. Furthermore, in relation to the food problem, the results of research conducted by Mukhlis (2019) explicitly concluded that food security could reduce poverty rates in communities around forests in Kediri Regency, East Java Province, Indonesia.

Based on the background explanation, this study aims to analyze the relationship between food security and poverty rates in ASEAN countries.

### **Food Security and Poverty**

In the 1996 World Food Summit, it was agreed that food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. In this definition, there are 4 important points regarding food security, namely: food availability, food access, utilization, and stability ([www.fao.org](http://www.fao.org)). Meanwhile, according to Srinita (2018), factors that can affect food security are such as availability, accessibility, and absorption.

The community food security rate will be influenced by climate conditions, purchasing power, facilities and infrastructure, economic conditions, and geographical conditions. In this case, easy access to socio-economic facilities and infrastructure as well as communication is important for poor people to meet their daily food needs. Lack of access to existing facilities and infrastructure can make it difficult for the poor to meet their food needs. Access to food is an important factor in supporting community food security (Islam, et al, 2014; Chavas, 2017).

Food security is closely related to the poverty rate in the economy. The right to food is a basic right of the community to sustain their lives. The availability of sufficient food can guarantee the sustainability of people's lives in meeting the needs of life to achieve prosperity. In this case, Poureza, et al. (2018) in their research confirmed that food insecurity rate would be able to drive poverty. This means that inadequate availability of food to sustain community needs can increase community poverty. In another view according to Ericksen, et al. (2009), food security is also closely related to income and employment opportunities. Low income level and a low employment rate can reflect the low purchasing power of the people. This low purchasing power can have an impact on the inability of people to meet their needs. In the end, increasingly widespread poverty can reduce the level of attainment of income distribution and the level of community welfare.

Food and poverty issues become concern in various countries and become concern of international organizations. Food scarcity and unstable food prices can cause uncertainty in meeting people's food needs. In this case, Fabian Research Report (2015) showed that an increase in food prices has become burden on low-income groups in the range of 16% to 35% in the UK. Under these conditions, the income of low-income household will increasingly be spent to meet food needs, while the allocation of income to meet other needs may be reduced. That is why strong food security is needed so that the availability of food can guarantee food needs and poverty reduction. Even so, the results of research by Mahadevan and Hoang (2015) showed that there was no relationship between poverty and food security in urban areas, but there was an insignificant relationship between poverty and food security in rural areas. The research used composite index for food security as indicator. However, there was a strong relationship between poverty, calorie intake, and food sufficiency in rural and urban areas in Vietnam.

According to Mood and Jonsson (2016), poverty is a condition where there are limited economic resources that have negative social consequences. This affirms that poverty is closely related to population access to economic resources.

Limited access to economic resources can cause the population to be unable to meet their needs. A study by Grobler (2016) found a significant difference with respect to poverty perceptions between food security and food for households. In the research, households with food security viewed individualistic reasons as the root cause of poverty. Meanwhile, households with food insecurity viewed the community and fatalistic causes as causes of poverty.

A study by Chakona and Shackleton (2019) in South Africa showed that households that received social grants were more vulnerable to food insecurity with lower average cost of food per month. In addition, the households also obtained a wealth index that was lower than the households that did not receive social grants. Another finding was that in areas where wild food was available for low-income people to consume, there was no decrease in the community food insecurity rate. An increase in food prices would gradually increase the number of people who were in a food-insecure condition.

The problem of poverty will be more widespread when the number of population is increasingly rising out of control. The increasing number of young people in various developing countries can potentially increase the population. An increase in the number of population that is not accompanied by food availability will have an impact on the limited fulfillment of food in the community. Consequently, this condition will have an impact on increasing poverty rates. According to Sinding (2009), poverty can also be influenced by population. Population growth that can be controlled will make it easier for the government to determine per capita income targets. Implementation of population policy and family planning programs in the overall economic development strategy may encourage high and sustainable economic growth rates and gradually reduce poverty rate in a country.

In economic development, the role of the agricultural sector is very important in poverty alleviation. The agricultural sector can provide employment, increase the value added of raw materials, meet food needs, alleviate poverty, and encourage economic growth. In relation to the role of the agricultural sector in providing food, it can play an important role in poverty alleviation in various countries. In fact, the Asian Development Bank report (2012) stated that poverty alleviation programs in various Asian countries cannot be separated from strengthening food security in the economy. In other words, there must be integration of policies to encourage food security to reduce poverty rates in various countries. This is important because rampant poverty can negatively affect social relations in people's lives (Mood and Jonsson, 2015). According to Mukhlis, et al. (2018), implementation of regional autonomy and fiscal decentralization policies in Indonesia should be able to encourage public access to available economic resources. This expansion of access can be seen as an effort of the people to get out of poverty. Regulations in Indonesia in Law No.18/2012 concerning Food states that food security is the fulfillment of food for the state up to the individual reflected by food availability in terms of sufficient (both in quantity and quality), safe, diverse, nutritious, prevalent, and affordable as well as not conflicting with religion, belief and culture, to live healthy, active, and productive in a sustainable manner. In this case, the right to food should receive the same attention as other human rights. Food security does not only include the notion of adequate food availability, but also the ability to access (and buy) food.

Food price is an indicator that can explain the conditions of food security in a region. Observations on the condition of food prices can be useful for various things, such as the availability of supply, demand, distribution of food, the impact of the implementation of government policies, people's purchasing power, welfare of farmers/producers, and so on. By analyzing information on food availability and prices, policies that are needed to overcome various problems related to food security can be formulated.

Based on the review of the theory above, it can be underlined that poverty is basically a fundamental problem in the development process in various countries. Poverty is identical with the non-existence of community economics against the economic resources available in the economy. The availability of food supplied from the agricultural sector will not be able to overcome poverty if it is not followed by population control. In addition, economic stability in the form of economic growth and food price stability is also needed to encourage people to have income and purchasing power, so that they can meet their daily needs.

## METHOD

The data used in this study are secondary data for the years 2012-2017. Data sources were obtained from Asian Development Bank publications, via the web [www.adb.org](http://www.adb.org) and [foodsecurityindex.eiu.com](http://foodsecurityindex.eiu.com), and the ASEAN Secretariat. ASEAN countries that became the study sample were Indonesia, Malaysia, the Philippines, Thailand, Cambodia, and Myanmar. These countries have a relatively similar economic structure, with the agricultural sector as a food-producing sector and a large provider of employment in the economy. The data analysis method used was the panel data model with the Panel Least Square (PLS) technique. The economic model used is:

$$POV = (FS, FPCI, EG, AGRICUL, POP) \quad (1)$$

In estimating the panel model, the data in this study can be rewritten as follows:

$$POV_{it} = \alpha_i + \alpha_i FS_{it} + \alpha_i FPCI_{it} + \alpha_i EG_{it} + \alpha_i AGRICUL_{it} + \alpha_i POP_{it} + ui + e_{it} \quad (2)$$

Whereby,

POV	= the percentage of population living below the poverty line
FS	= food security index
FPCI	= food price index
EG	= economic growth rate
AGRICUL	= the percentage of the agricultural sector contribution to GDP
POP	= population

In natural logarithmic form, the fixed effect model estimation equation is as follows:

$$LPOV_{it} = \alpha_i + \alpha_i LFS_{it} + \alpha_i LFPCI_{it} + \alpha_i LEG_{it} + \alpha_i LAGRICUL_{it} + \alpha_i LPOP_{it} + ui + e_{it} \quad (3)$$



To choose the appropriate model, the estimation model using panel data was done by comparing the values of R<sup>2</sup> (R-squared), Durbin Watson (DW) test, Akaike Info Criterion (AIC), Schwarz Criterion, Hannan-Quinn Criterion.

## RESULTS AND DISCUSSION

The development of important indicators in the economies of ASEAN countries, such as Indonesia, Malaysia, Cambodia, Myanmar, Thailand, and the Philippines, showed fluctuations. Following is the development of the economic indicators of ASEAN countries.

Table 1. Average Economic Indicators of ASEAN Countries 2012-2017

Year	Poverty Line (%)	Food Security (%)	Economic Growth (%)	Share Agriculture Output to GDP(%)	Food Price Index (%)	Population (Million)
2012	16	51	7	19	3	83,891
2013	15	51	6	18	5	84,974
2014	14	51	6	17	5	86,113
2015	12	53	5	16	5	87,181
2016	15	54	5	15	5	88,235
2017	14	53	6	15	3	89,270

The poverty rate in the period 2012-2017 showed fluctuations that tended to decrease. In 2012, the average percentage of the population living below the national poverty line was 16%. The percentage then decreased to 12% in 2015. While in 2017, the percentage of the population living in poverty increased again to 14%. Data on average food security, economic growth, contribution of the agricultural sector to GDP, and average food price indexes also fluctuated from time to time. Meanwhile, the population in ASEAN countries tends to increase. Indonesia is the country with the largest population in the ASEAN region. In the period 2012-2017, ASEAN countries were bound by regional economic cooperation under the name AFTA (ASEAN Free Trade Area). The economic cooperation includes trade facilitation needs and priorities among fellow ASEAN countries. Meanwhile, cooperation with other country outside ASEAN is marked by the entry into force of the ASEAN and China economic cooperation within the framework of the ASEAN-China Free Trade Area (ACFTA). The economic cooperation can have implications for trade creation and also trade diversion for ASEAN and non-ASEAN countries. The joint economic framework is expected to improve economic performance in achieving economic growth, poverty reduction, and food supply and food price stability in the ASEAN region. The results of data processing using the panel method can be summarized as follows:

Table 2. Least-Squares Estimation of Panel Model

Variable	Coefficient	Std. Error	t-Statistic
C	15.881	3.629783	4.375122
FS	-8.787*	1.472190	-5.968711
FPCI	-0.045	0.159633	-0.284675
EG	-0.510***	0.288324	-1.768147
AGRICUL	-1.056***	0.617495	-1.709658
POP	0.365**	0.143901	2.538112
R <sup>2</sup>	0.819		
DW test	0.434		
AIC	0.205		
Schawrz criterion	0.469		
Hannan-quinnn criterion	0.297		
Normality test		1.344**, residual normal	

Based on the table above, the estimation model of poverty in ASEAN countries can be formulated as follows:

$$LPOV_{it} = 15.881 - 8.787LFS_{it} - 0.045LFPCI_{it} - 0.510LEG_{it} - 1.056LAGRICUL_{it} + 0.365LPOP_{it} \quad (4)$$

The coefficient of determination (R squared) of 0.819 meant that variations in food security, food price index, economic growth rate, contribution of the agricultural sector in GDP, and population were able to explain variations in poverty rates in ASEAN countries by 81.9%. It showed the level of accuracy of the estimation results using the existing model. Based on the results of data processing above, poverty rate was influenced by food security rate. The coefficient of determination was 8.787 with a negative correlation. It meant that an increase in food security by 1% could reduce poverty by 8.7875%. The existence of this negative correlation showed that food security was an important factor in reducing poverty rates in developing countries in the ASEAN region. Food security was represented by community's affordability level towards food needs. This food affordability also reflected community's purchasing power and availability of food in the economy. Among the four independent variables, food security had the greatest coefficient. This meant that the food security variable had the most significant influence on poverty rates in several ASEAN countries.

The results of this study support the findings in a study by the Asian Development Bank (2012), which showed that poverty alleviation programs in various Asian countries cannot be separated from strengthening food security. Asian countries have a food composition that mostly relies on food production from agricultural, marine, fishery, forestry, and plantation commodities. These commodities are produced in the production process of the agricultural sector, most of which still rely on human labor in producing primary food commodities. In this condition, agricultural sector is still a mainstay of employment in many countries. However, existing data showed a decrease in the contribution of agricultural sector output to GDP in ASEAN countries, such as Indonesia, Malaysia, Cambodia, Myanmar, Thailand, and the Philippines.

Further, the results of this study are relevant to the results of previous studies by Wight V, et al. (2014) and Poureza, et al. (2018), which stated that

poverty and food insecurity had strong links. High rates of food insecurity would drive poverty.

The results of other studies conducted by Mukhlis (2019) provided important information about the behavior of people around the forest in maintaining their survival. The pattern of community economic activities was highly dependent on nature and environment as foundation for economic activities and food fulfillment for rural communities. The routine economic activities in the agricultural sector were the production of food crops in the category of staples (rice, corn, cassava, and vegetables) and food crops in the fruits category (mango, durian, jackfruit, and banana). Community activities can be integrated both in meeting food needs and in generating income to meet their needs. Through economic activities in the food sector, rural communities can maintain their lives to get out of poverty. In this case, food security becomes the main focus of rural communities in carrying out their economic activities gradually from generation to generation so that they become economically empowered to meet their needs, such as education, health, and expansion of employment. The availability of agricultural land can encourage the creativity of farming communities in economic activities so that they can survive over time.

The results of this study indicated a negative relationship of economic growth rate, food price index, and the contribution of the agricultural sector to the Gross Domestic Product (GDP) with poverty rate. High rate of economic growth can make a significant contribution to poverty alleviation in ASEAN countries. Controlled economic stability in the ASEAN region can provide certainty for long-term economic activity. The flow of foreign capital into ASEAN countries is an important capital in the process of development. Each ASEAN country competes with each other to attract foreign direct investment in order to be able to finance priority economic activities. In this case, the development of the industrial sector is marked by the development of various industrial zones that are expected to absorb labor force and expand economic activity. This condition can ultimately increase income and purchasing power so that there is an opportunity to reduce poverty rate. The results of this study supported the findings of research conducted by Ericksen, et al. (2009), which confirmed that economic conditions would affect poverty rate of a country. A well-developed economic condition can produce higher level of economic value added so as to increase income, expand employment, and reduce poverty.

Food price index reflects the availability of food in the economy. Food availability rate will be influenced by food production in the agricultural sector. The results of this study concluded that the food price index did not significantly influence the poverty rate, but had a negative correlation. Food prices that are increasingly controlled will further reduce poverty rate in a country. An adequate food supply will help people manage their finances to meet their daily needs. In this case, the agricultural sector plays an important role in food stability (Ahmed and Siwar, 2013; Adu et al., 2018). However, food prices in ASEAN countries showed stability in the average range of 2.9% to 5.2%. On average, the food index in ASEAN countries was 4.3%. The condition of the agricultural sector in ASEAN countries strongly supports the fulfillment of food. The main products are rice, corn, vegetables, fruits, fish and livestock (cows, goats, chickens). In the process of producing food, there are various economic activities, such as

production, distribution, investment, and consumption. The availability of adequate food stocks can guarantee the stability of food prices. Furthermore, food price stability that is increasingly controlled will reduce poverty in ASEAN countries. However, the food price index in ASEAN countries was still below the average economic growth rates of ASEAN countries, which reached 5.8%. Therefore, the development of food prices did not have a significant impact on poverty rates in ASEAN countries.

The results of this study provided important information about the role of the contribution of the agricultural sector to the GDB in poverty alleviation. In their research, Chakona and Shackleton (2019) found that public consumption of wild food commodities could play an important role in food insecurity. However, this is not entirely true. In other words, the development of the agricultural sector in a country can actually cause anomalous events that make poverty increase. The results of this study concluded that there was a negative relationship between contribution of agricultural sector output to GDP and poverty rates in various ASEAN countries. The lower the contribution of the agricultural sector became, the higher the poverty rate that occurred. This indicated that there was still a potential for the attenuation of the agricultural sector in the economic activities of the community. Conditions in Indonesia showed that the contribution of the agricultural sector to GDP had decreased over time and was shifted by the industrial sector. The decline in the contribution of the agricultural sector can be an early warning for the government to increase the productivity of the agricultural sector and alleviate poverty. The same condition also occurred in other ASEAN countries, which experienced sectoral transformation from the agricultural sector to the industrial sector. Declining productivity of the agricultural sector can disrupt employment in rural areas. Of course, it will later have an impact on people's income and purchasing power. This condition, if it occurs in a long period of time, can cause poverty rates to become even higher.

The population factor provides important information regarding food needs and economic burdens. The increasing population reflects the large amount of food that must be provided in the economy. A large population can also be a burden when the economy cannot provide employment. The results of this study concluded that the population had a positive influence on poverty rates. Rapid population growth will have an influence on the increasing poverty rate in ASEAN countries. Available data indicated an increase in the number of population in six ASEAN countries: Indonesia, Malaysia, Cambodia, Myanmar, Thailand and the Philippines. In 2012, the population in these countries averaged 83.891 thousand people and in 2017, it increased to 89.270 thousand people. According to Sinding (2009), there needed to be a policy to control the massive population growth. The inability of the economy to provide employment and basic necessities for the people will only cause unemployment and increase poverty. Among ASEAN countries, Indonesia is the country with the largest population. Therefore, it is an important concern for Indonesia government to determine development strategies based on high quality human resources that are adaptive to the dynamics of the developing economy. The results of this study provided an important message that the population in the ASEAN region needs employment immediately so that increasing population does not become

economic burden, which can actually lead to widespread poverty in the ASEAN region.

The ASEAN region is a homogenous economic entity in the structure of the economy, characterized by the role of the agricultural sector and the industrial sector that develops in parallel. The agricultural sector plays an important role in producing food as well as in providing employment for residents of ASEAN countries. Meanwhile, the industrial sector plays a role in the creation of economic added value and it is also a sector providing employment. In its development, ASEAN countries implemented the MDGs in their development process. The main priority in the MDGs is to eradicate extreme poverty and hunger. The priority of the MDGs denotes the strong commitment of ASEAN countries to jointly overcome poverty and hunger. The sectoral transformation that is occurring in ASEAN countries still causes poverty problems there. Poverty in ASEAN countries, such as Indonesia, Malaysia, Cambodia, Myanmar, Thailand, and the Philippines, indicates that there are some people who are unable to access economic resources to meet their needs. In addition, the existing sectoral economic transformation also causes food security in ASEAN countries. The agricultural sector, which becomes food-supply sector, has experienced a decline in performance in achieving GDP. This shows the ambiguity of the declining development of the agricultural sector output with economic growth and poverty rates. The results of this study made an important contribution to ASEAN countries in their efforts to reduce poverty. Food security is an important factor that can affect poverty rates. In this case, strengthening agricultural sector in the economy can support employment, supply of food, and GDP. In addition, it is important to improve the quality of human resources in order to increase the productivity of the population.

In improving the welfare of the people of ASEAN, AFTA has also been established. Afta was signed on 28 January 1992 in Singapore to strengthen the economy of Asean countries in the global economic constellation. The main objective of establishing AFTA is to Increase ASEAN's competitive edge as a production base in the world market through the elimination, within ASEAN, of tariffs and non-tariff barriers; and Attract more foreign direct investment to ASEAN. The production capacity of ASEAN countries in intra-regional ASEAN trade activities can assist in meeting the needs of the ASEAN population. In addition, the increasing intensity of economic activity in Asean countries can encourage the expansion of job opportunities, increase incomes and alleviate poverty.

## **CONCLUSION**

Poverty still exists in several ASEAN countries. The complexity of the problems in poverty requires strategies to reduce poverty rates. The results of this study concluded that food security, economic growth rates, and the contribution of the agricultural sector to GDP had a significant, but negative impact on poverty rates in ASEAN countries, such as Indonesia, Malaysia, Cambodia, Myanmar, Thailand, and the Philippines. Meanwhile, the population had a significant positive impact on poverty rates in several ASEAN countries. Compared to other independent variables, the food security variable had the most impact on poverty rates in several ASEAN countries. Based on the results of this study, policies to

strengthen food security need to be a priority in poverty alleviation. Food security can be strengthened by making it easier for farmers to obtain food crop seeds, repairing irrigation and road infrastructures, assisting farmers to obtain fertilizer, and determining competitive rice prices. In addition, population control also needs to be considered by creating employment in accordance with labor market demands. It can be achieved by strengthening the role of vocational training centers to improve the technical competence of workforce.

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