Determinants of Oil Palm Farmers' Welfare in Aceh, Indonesia

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Abstract: This study examines the determinants of the welfare of oil palm farmers in Aceh, Indonesia. The main focus of this study is on the current price of oil palm, whether it affects the level of welfare of oil palm farmers or not and what efforts the government has made to improve the farmers' welfare. This research applies quantitative descriptive approach. The number of samples was 70 Aceh farmers in 24 districts in east Aceh. The selected famers who have been designated as farm owners and workers. The sampling technique used is judgment sampling. The research data collected by using a closed questionnaire. The results of the study found that when the price of palm oil is unstable, farmers must be able to process by-products in an effort to maintain the welfare of their families. In testing the two models, the same results were obtained, this cost could not be controlled by the farmers, especially the maintenance costs using industrial processed products such as fertilizers and pesticides. Therefore, the government must further intensify the economic empowerment programs for oil palm farmers. More programs for people are still required. During the Pandemic Covid-19, farmers only relies on the sale of fresh fruit bunches (FFB) at fluctuating prices which decreases farmers' income thus making them unable to improve their welfare.

Keywords: determinants, government, welfare, and oil palm farmers

1. INTRODUCTION

Indonesia has become a major producer of palm oil in the world with a production output of 20 million tons of Crude Palm Oil (CPO) with an average growth of 10-12%. This condition has provided economic benefits to agro-industrial companies and several millions small land owners (Fricke, 2009). The role of the palm oil industry in Indonesian economy is substantial since it has become one of the leading sectors and a strategic state industry that is able to absorb a workforce of more than 17.5 million people and to provide welfare of 2.3 million small farmers (Laoli, 2020). Thus, the role of the oil palm plantation sector is supposedly significant on reducing the poverty rate in Indonesia. However, current level of welfare for oil palm farmers is still low even though Indonesia is the largest producer and exporter of palm oil in the world.

Independent oil palm smallholders have difficulty accessing markets, capital, skills and technology. Other constraints come from legality of plantation land (Saifuddin et al., 2017). Community empowerment in the plantation sector can be a solution to reducing poverty but requires a structural approach. Until March 2020 the poverty rate in Aceh was still 14.99% (Ria, 2020). The plantation sector is a top priority in Aceh Province. At present, the total area of oil palm plantations in Aceh is in the ninth position of national level oil palm plantations. The expansion of oil palm plantations continues to increase and has reached 39.43% of land ownership from other commodities (Muhajir, 2015). There are three districts that have the largest palm oil area in Aceh, namely: Nagan Raya District 82,252 ha (20.91%), East Aceh District 60,592 ha (15.41%), and Aceh Singkil District 55,441 ha (14.10%). The rest are scattered in other districts in Aceh, with the number of workers in this sector reaching 75,030 people (Rino, 2019).

The oil palm plantation sector is able to create elevated multiple effects so that it can improve the welfare of farmers (Syahza, 2004), and increase their human resources (Sismudjito, 2016). Presently, many oil palm farmers in East Aceh are still in the poverty line which is due to the high production and transportation costs (Yunus, et al., 2020). This condition can actually be overcome by the government considering that farmers in East Aceh have high social capital in farmer groups yet unable to reduce the degree of poverty of oil palm farmers (Yunus, et al., 2020). Particularly in the midst of the Covid-19 pandemic, the price of palm oil is unstable. The main focus of this study is on two things, namely whether the current price of palm oil affects the level of welfare of oil palm farmers and what efforts the government have made to improve the welfare of oil palm farmers.

2. LITERATURE REVIEW

Poverty is a common problem faced by any developing countries (Vincent, 2009). It is a complex problem that requires an appropriate and sustainable strategy to overcome (Trisnu and Sudiana, 2019). Poverty concepts and indicators vary widely. The World Bank defined poverty using a measure of ability / purchasing power, namely US \$ 1 or US \$ 2 per capita per day (Pebrianto, 2019). Meanwhile, Windia (2015) defined poverty as a condition of lack of money, low levels of income and unfulfilled daily living needs. From Friedman's point of view (1992) poverty meant inequality of opportunity to accumulate a basis of social power. This social power base includes: (1) Productive capital such as land, means of production, housing, health; (2) Source of finance; (3) Social and political organizations that can be used for common interests such as cooperatives, political parties, social organizations; (4) social networks; (5) Knowledge and skills, (6) Practical information for the advancement of life (Suharto, 2009).

To measure poverty, the Central Bureau of Statistics applies the concept of the ability to meet basic needs. With this approach, poverty is seen as an economic inability to meet basic food and non-food needs as measured by the Poverty Line. Failure to overcome the problem of poverty will lead to the emergence of various social, economic and political problems in society (Purwanto, 2007).

Multiple Effect Economy Analysis is used to find the results of plantation development in rural areas that has provided job opportunities for people who are able to accept these opportunities. With the existence of plantation companies, the livelihoods of local communities are no longer limited to the primary sector in meeting the needs of their families, but have significantly expanded their business space to the tertiary sector.

In a study conducted by Yunus, et.al, (2019) it was found that small farmers were limited in power related to land management due to lack of knowledge about efficient and profitable farming methods that forced them to traditionally manage their lands and resulted in small yields (Yunus et. al, 2020). Apart from the economic and environmental impacts, the expansion of oil palm plantations has placed an impact on the development of the CPO processing industry. Industrial activities produce liquid waste that creates externalities (Utami et al., 2017).

Several accusations that have continously directed towards Indonesia's palm oil sector in recent years have only been aimed at large plantation companies, while small farmers managing considerable plantation areas have been ignored. However, efforts to attract smallholders into sustainable cultivation face many difficulties which require a strong role from the government's side. Some oil palm smallholders, especially independent ones, not only live far apart from each other, but also lack in experience or organizational skills. Therefore it requires an important government role in helping them to obtain necessary certifications in the form of farmer outreach to establish, raise and maintain institutions that belong to them themselves, not those of others. The government must require all companies and palm oil mills that purchase fresh fruit bunches (FFB) directly to foster the farmers. To build institutions or farmer associations is neither easy nor cheap. In addition, the farmers should be provided with training towards certification. Access to information and the organization skills should also be accomodated. It is important that the government encourage or facilitate emergence of leaders among the farmers who in the future will be able to bring their fellow farmers toward better welfare.

3. RESEARCH METHODS

This research was conducted in East Aceh District, Aceh Province, Indonesia. This district has an area of 6,040.60 Km2. Administratively, East Aceh Districe consists of 24 sub districts. This research applied quantitative methods (Nauman, 2007). Sampling in this study was conducted using purposive sampling (Rahim, 2009). The sample in the study was taken as many as 70 oil palm farmers spread across 24 districts in East Aceh. This research was conducted through a survey with the Developmental Research method. This research was conducted by selecting locations by means of multistages cluster sampling in oil palm plantation development areas (Sugiono, 2013). The data's source were originally form both print and electronic media. This study used primary data sources which were directly obtained from respondents in the form of a questionnaire.

Empirical Model

$$KP_{it} = \beta_0 + \beta_1 HP_{i,t} + \beta_2 BP_{i,t} + \beta_3 PP_{i,t} + \beta_4 PS_{i,t} + \epsilon_{it}$$

Where:

KP _{it}	=	Farmers Welfare period i, t
$HP_{i,t}$	=	Product Price period i, t
$BP_{i,t}$	=	Maintenance costs period i, t
$PP_{i,t}$	=	Role of Government Period i, t
ε _{it}	=	Error term i, t

Interaction Mode; (Moderating Variabel on by Product)

$$\begin{split} KP_{it} &= \beta_0 + \beta_1 HP_{it} + \beta_2 BP_{it} + \beta_3 PP_{it} + \beta_4 PS_{it} + \beta_5 HP * PS_{it} + \beta_6 BP * PS_{it} + \beta_7 PP * PS_{it} \\ &+ \varepsilon_{it} \end{split}$$

Where:

HP*PS _{it}	=	Interaction between HP and PS Period it
BP*PS _{it}	=	Interaction of BP with PS Period it
PP*PS _{it}	=	Interaction of EPS with DER in that period

 $\varepsilon_{it} = \text{Error term i, t}$ $\beta_0 = \text{Constant}$

4. RESULT AND DISCUSSION

This research was conducted in East Aceh District where the palm oil area consist of 60,592 ha (15.41%) with a total of 12,888 oil palm farmers (Saifuddin et al., 2017). The economic contribution of the oil palm sector is very significant in East Aceh District since it is the leading regional sector (Bank Indonesia, 2017). The objects of this research were the oil palm plantation business actors namely plantation laborers and the plantation owners in East Aceh District. The samples used in this study amounted to 70 oil palm farmers spread across 24 districts in East Aceh District.

The results of the validity test meet the results of the validity test showing that all the items in the questionnaire were declared valid, because r count> r table with a significant value of 5%. Meanwhile, the reability test had a cronbac alpha > 0.60. Thus, it can be concluded that the research questionnaire has met the reliability requirements. The dependent variable, namely farmer welfare (Y), has a minimum value of 31 and a maximum value of 50. The mean value is 41.04 and a standard deviation of 4.661. This indicates that the mean value obtained is greater than the standard deviation so that the data deviation that occurs is low which results in evenly distribution of values. The results show that the welfare of farmers has experienced large fluctuations.

Descriptive Statistics							
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	Ν	Minimum	Maximum	Mean	Std. Deviation		
Y	70	31	50	41,04	4,661		
X1	70	6	17	9,26	2,282		
X2	70	8	19	13,27	2,014		
X3	70	6	21	10,84	2,597		
X4	70	10	18	13,63	2,253		
Valid N (listwise)	70						

Table 1				
Descriptive Statistics				

Source: Field Research, 2020

The classical assumption test used has met the assumptions and all variables have met the normality test, heteroscedasticity and multicollinearity testing. The analysis used is multiple linear regression which aims to see the effect of oil palm prices, oil palm plantation maintenance costs, the role of government, and palm oil derivative products on the welfare of oil palm farmers.

	Main Model Linear Regression Analysis Results Coefficients ^a								
Mo	Model Unstandardized Standardized					t	Sig.		
Coefficients		Coefficients							
		В	Std. Error	Beta					
1	(Constant)	20,164	3,485			5,786	,000		
	X1	,855	,342		,419	2,501	,015		

Table 2 Main Model Linear Regression Analysis Results

	X2	,844	,281	,365	3,003	,004	
	X3	,132	,164	,073	,803	,425	
	X4	,024	,245	,012	,099	,922	
a. l	a. Dependent Variable: Y						

Source: Field Research, 2020

Based on the results of the analysis in the main model of oil palm farmer welfare, it can be formulated in the following equation.

 $KP_{it} = 20,164 + 0,855X1 + 0,844X2 + 0,132X3 + 0,024X4 + \epsilon_{it}$

As for testing the moderation variable, it can seen it in the table below:

			Coefficie	ante ^a				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
		В	Std. Error	Beta				
1	(Constant)	8,374	15,336		,546	,587		
	X1	-3,413	1,728	-1,671	-	,053		
					1,975			
	X2	4,132	1,332	1,786	3,104	,003		
	X3	,721	,950	,402	,759	,451		
	X4	,812	1,036	,393	,784	,436		
	X1.X4	,307	,119	3,198	2,589	,012		
	X2.X4	-,231	,092	-2,380	-	,015		
					2,498			
	X3.X4	-,048	,069	-,523	-,696	,489		
a. 1	a. Dependent Variable: Y							

Table 3
Results of the Moderation Model Regression Analysis Test

Source: Field Research, 2020

Based on the results of the analysis in the moderation model for the welfare of oil palm farmers, it can be formulated in the following equation.

$$\begin{split} KP_{it} = 8,374 & -3,413HP + 4,132BP + 0,721PP + 0,812PS + 0,307HPPS \\ & -0,231BPPS - 0,048PPPS + \epsilon_{it} \end{split}$$

Table 4						
	Hasil Koefisien Determinasi (R ²) Regresi Linear					
	Model Summary ^b					
Model	Model R R Square Adjusted R Square Std. Error of the Estimate					
1	1 ,778 ^a ,605 ,580 3,019					
a. Predictors: (Constant), X4, X3, X2, X1						
b. Deper	b. Dependent Variable: Y					

Sumber: Penelitian Lapangan, 2020

Based on table 4, it can be seen that the value of the coefficient of determination (Adjusted R2) is 0.580 or equivalent to 58%. Thus, it can be concluded that variable X in this study has the ability to explain variable Y by 58% and 42% is explained by other variables outside of this study.

Results of the Coefficient of Determination (R2) of Linear Regression							
Model Summary ^b							
Model	Model R R Square Adjusted R Square Std. Error of the						
	Estimate						
1	,809 ^a	,655	,616	2,889			
a. Predictors: (Constant), X3.X4, X2, X4, X1, X3, X2.X4, X1.X4							
b. Depend	b. Dependent Variable: Y						

 Table 5

 Results of the Coefficient of Determination (R2) of Linear Regression

Sumber: Penelitian Lapangan, 2020

Based on table 5, it can be seen that the coefficient of determination (Adjusted R2) is 0.616 or equivalent to 61.6%. So, it can be concluded that the X variable in this study has the ability to explain the Y variable which is moderated by the derivative product variable of 61.6% and 38.4% is explained by other variables outside of this study. Based on tables 5.14 and 5.15, it can be seen that the coefficient of determination (Adjusted R2) before the moderation variable is 0.580 or 58%. However, when the moderating variable is calculated into the model the value of determination coefficient (Adjusted R2) increases to 0.616 or 61.6%. Thus, it can be concluded that the moderating variable, namely derivative products (X4), can strengthen the relationship between the price of oil palm / FFB (X1), plantation maintenance costs (X2), the role of government (X3) on the welfare of oil palm farmers (Y).

The price of oil palm is an important factor in improving the welfare of oil palm farmers. When the price of oil palm increases, farmers' income also increases which result in farmers' ability to meet the operational costs of maintaining oil palm which will affect palm oil productivity and their welfare. Likewise, when the price of palm oil decreases, the farmer's income also decreases because the burden on farmers' expenses increases. The decline in the price of palm oil has had a significant impact on the socio-economic conditions of farmers, both in terms of income, education and health.

Oil palm farmer groups in East Aceh District have already possessed social capital and a high level of trust among farmer groups which in turnenable them to work together in managing oil palm plantations in order to improve their welfare (Yunus, et al., 2020). The results of this study support the research that has been carried out by Pohan (2018) which found that the price of FFB greatly affected the welfare of farmers, especially farmers who only owned 1 to 2 hectares of land.

The large amount of maintenance costs for oil palm plantations can only be met by farmers who gain lucrative income as well. Farmers with a high level of welfare will be able to provide standard care so that FFB production will increase. Likewise, less affluent farmers are unable to maintain oil palm according to the standard due to high maintenance cost which eventually reduce oil palm yields. Productive plant maintenance activities that are generally carried out are weeding weeds, sprouting midribs, controlling HPT and fertilizing. All these maintenance activities are only carried out by wholesale labors (TKLK) (Pangabean, et al, 2011). The maintenance cost are generally high when plantations are at the age of 10-15 years. Meanwhile, at the age of 4-10 years the cost is lower. Fertilization costs are also incurred by farmers at the same time as the development of the age of the oil palm. As an

effort to reduce the fertilization cost, many farmers disseminate natural fertilizers for garden maintenance (Hulu, 2014).

The level of welfare of oil palm farmers is influenced by their own efforts as well as by the role of the government. The farmers are actually aware of what they need and how they can be said to be prosperous (Saifuddin et al., 2017). Basically, the government only encourages people to achieve prosperity by providing what they need (Novianti et al., 2020). However, the community itself will determine their aspiration to progress (Iswadi et al., 2019).

Numerous of assistance has been channeled by the government to oil palm farmers, from providing fertilizer subsidies, providing seeds, and counseling and training for oil palm farmer groups. In June 2002, the government, through the People's Palm Oil Rejuvenation Program (PSR), decided to increase the grant for farmers to replant old and damaged oil palm trees by 30 million per hectare. The increase in distribution of oil palm rejuvenation funds is regardes as good news for oil palm farmers in South Sumatra Province (Arya, 2020).

At present, oil palm smallholders in East Aceh District have not maximized the use of palm oil by-products such as sticks, palm oil trunks and similar shell products. Research has found that oil palm shells that have a shape like coconut shells are still used as a by-product rather than as an energy substitution. In fact, when compared to coal, palm kernel shells have the advantage of being environmentally friendly fuel since because they do not contain sulfur so they do not produce polluting gases. The government must make efforts so the utilization can be optimized in order to improve the welfare of farmers .

5. CONCLUSIONS

The results of the study concluded that when the price of oil palm is unstable, farmers must be able to process by-products in an effort to improve the welfare of the oil palm farmer families. In testing the two models, the same results were obtained, this cost could not be controlled by the farmers, especially the maintenance costs using industrial processed products such as fertilizers and pesticides. Government programs to support the welfare of oil palm farmers intensify the economic empowerment programs for oil palm farmers in East Aceh. During the Pandemic Covid-19, farmers only depend on the sale of fresh fruit bunches (FFB) at fluctuating prices. This inevitably decrease their income, especially farmers who own only 1-2 hectares of land and could not improve their welfare.

6. **RECOMMENDATION**

Research results found that smallholders were not at the position to control the price of palm oil products as they were determined by large corporations with reference to the supply and demand factors. Current roles of government are still minimal in improving the welfare of oil palm farmers. It was expected that government increase their involvements by providing various stimuli and easy access to training, capital and legal protection. Future research is expected to examine the problem of palm oil farming resources, especially education, training to produce palm oil derivative products, mapping the area of oil palm plantation by paying attention to economic, social and ecological aspects.

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