

Supply Demand Analysis of Oil Palm Commodity in West Sumatera Province

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Abstract—Oil palm as a leading commodity in the plantation sector in West Sumatera Province has contributed the most to GRDP. This condition should be able to prosper the economy of the oil palm smallholders, however, it is not as expected. One of the reasons is that the quality of Fresh Fruit Bunches (FFB) produced by independent smallholders is not in accordance with the standards set by the oil palm processing factory. Moreover, it is due to an imbalance between the supply of FFB produced by independent smallholders towards the demand of FFB from oil palm processing factory. Consequently, FFB from independent smallholders is rejected by oil palm processing factory, or bought with a low price. This study aims to analyze the conditions of existing supply and demand of fresh fruit bunches in West Sumatera Province by examining the causative factors of FFB excess supply. Results showed that the characteristics of independent smallholders in West Sumatera Province were the cause of the low bargaining power of FFB they produced. The quality standards of FFB produced by independent smallholders had not met the quality standards of raw materials required by the palm oil processing factory. Thus, a big amount of FFB from independent smallholders were rejected by the factory, which resulted in excess supply of FFB of smallholders. A policy was proposed in the form of the concept of the establishment of Regional-Owned Enterprise, which can be expected to create an effective and efficient supply chain system.

Keywords—*excess supply; FFB; independent smallholders; Regional-Owned Enterprise*

I. INTRODUCTION

The plantation sub-sector which has enormous potential to be developed in West Sumatera Province is oil palm commodity. Based on the planting area and the plantation production in West Sumatera in 2016, oil palm was ranked first compared to other plantation crops, such as rubber and cocoa, which ranked second and third. Oil palm had the largest average planting area and plantation production, with a total planting area of 384,237.68 hectares and a total production of 1,184,692.79 tons, which spread almost in all regencies/cities in West Sumatera Province. Meanwhile, rubber had an average planting area of 181,002.32 hectares with a total production of 163,800.80 tons, and cocoa had an average planting area of 145,761.38 hectares with a total production of 67,843.6 tons [1]. Therefore, it can be said that oil palm commodities are the

main commodities in West Sumatera Province in the plantation sub-sector.

Theoretically, the products of agricultures, forestry, and fisheries will provide an added value and are competitiveness if they are in the condition of the perfect competition market, indicated by the interaction between the power of demand and supply which are in equilibrium (equilibrium price and equilibrium quantity). According to Adam Smith, in perfect competition market, all goods produced by the economy must be absorbed by society. However, this condition has never been achieved since demand and supply are always in an imbalance position. Currently, this condition happens to oil palm plantations in West Sumatera Province. Although oil palm was ranked first as a plantation crop in West Sumatera Province which contributed the most to GRDP, it had not yet prospered the economy of oil palm smallholders. One of the reasons is interaction between the supply of FFB, especially the supply of FFB produced by independent smallholders towards the demand of FFB from palm oil processing factory, which experienced the excess supply of FFB from independent smallholders.

In the case of palm oil commodities, several studies have discussed more about the price of palm oil commodities and their derivatives. Research conducted by Bisuk about the transmission elasticity of international CPO price towards FFB prices in regency of Padang Lawas, showed an overview of FFB channels occurred in the study area, margin share received by each channel of the trade system and the level of efficiency of the trading system [2]. Abidin conducted study on the analysis of CPO exports in Indonesia [3]. Moreover, foreign researches also discussed about CPO, such as Mohammadi et.al examined the effect of Malaysian CPO prices on local CPO production, world prices, and soybean oil prices [4]. Hariyanto conducted a study about the causative factors of the domestic price of CPO in Indonesia by using an econometric approach. The results showed that the volume of production, world prices, volume of exports, and domestic consumption had a significant effect on CPO prices domestic, while import volume had no significant effect on CPO prices [5].

Basiron conducted a research about palm oil and its global supply and demand prospects, which was a qualitative descriptive study. The study discussed about global palm oil, the development of the Malaysian and Indonesian palm oil

industries, and the self-sufficiency policies of imported countries that inhibited exports. Result showed that palm oil contributes to the supply and demand for world oil and fat. However, this study only used qualitative description without quantitative data [6].

Ernawati conducted a study about the decline in export taxes and its impacts on Indonesian palm oil exports to India. The study explained about oil palm export demand from India, the price of soybean oil, the price of coconut oil, export tax, and the amount of palm oil exported. The analysis used Error Correction Model (ECM), i.e. stationary data test, cointegration test, and ECM compile. Result showed that in the short term, India's palm oil export demand is influenced by the ratio between the price of soybean oil and the price of world palm oil. The decline in export tax will be followed by an increase in the amount of palm oil exported. A 10% decrease in export tax will increase the price of domestic palm oil by 14.83%. Nevertheless, the study did not explain the effect of changes in the price of CPO export towards the price of FFB from smallholders [7].

Afifufin *et. al.* studied about CPO market structure analysis and its effect on the regional economy. The study discussed about domestic demand for CPO, CPO exports, domestic CPO prices on regional economic development and used OLS logarithm regression method. Result showed that the structure of the CPO market in North Sumatra is in the form of oligopsony. Export markets, export prices, and domestic prices have a significant effect on regional economic development (area of oil palm). However, the research did not explain the dominant actor in the CPO oligopsony market [8].

Arianto *et. al.* conducted a research about palm oil prices, cointegration review of vegetable and petroleum oil prices. Result showed that in the long-term, CPO is the most influential variable in the vegetable oil market. Nevertheless, it did not explain whether CPO is influential in the short-term [9].

There are still few researches which discuss the aspects of palm oil supply and demand. This study aims to analyze the conditions of existing supply and demand of FFB in West Sumatra Province by examining the causative factors of excess supply of FFB and the solutions to overcome the excess supply of FFB produced by independent smallholders in West Sumatra Province.

II. METHODOLOGY

The research used a quantitative descriptive approach. The research was conducted by using primary and secondary data. Primary data was obtained directly from independent smallholders and other stakeholders. The instruments used in the research were direct interviews, questionnaires, field observations, and focus group discussions. Secondary data was obtained from the Agency of Plantation, Food Crops, and Horticulture, West Sumatra Province.

The research sample was determined purposively in West Pasaman Regency, Dharmasraya Regency, and South Pesisir Regency, then several palm oil supply chain actors in the research area were taken as respondents.

III. RESULTS AND DISCUSSIONS

A. Condition of Existing Supply and Demand of FFB in West Sumatra Province

Although oil palm was ranked first as a plantation crop in West Sumatra Province which contributed the most to GRDP, it had not yet prospered the economy of oil palm smallholders. One of the reasons is interaction between the supply of FFB, especially the supply of FFB produced by independent smallholders towards the demand of FFB from palm oil processing factory, which experienced the excess supply of FFB from independent smallholders.

Further analysis can be seen from the total production of FFB in West Sumatra Province in 2013 of 1,022,332 tons, which came from production of smallholder's plantations of 426,477 tons, production of government plantations of 27,998 tons, and production of private plantations of 567,857 tons. While the demand for FFB from palm oil processing factories each year on average is only 172,800 tons, with an average installed capacity of 50 tons/hour from a total of 27 palm oil processing factories in West Sumatra Province. Thus, the comparison between FFB supply from private plantations, government plantations, and smallholders plantation towards FFB demand from palm oil processing factories showed an excess supply of FFB.

Currently, oil palm processing factories in West Sumatera mostly already have their own FFB plantation, thus the factories will prioritize FFB supply from their plantation (80%). 15% of FFB supply comes from plasma smallholders (those who have partnered with the factories), and the remaining 5% of FFB supply comes from independent smallholders. FFB from independent smallholders is only an addition if FFB from the plantation of factories and plasma smallholders do not provide a sufficient amount of FFB supply at the factories. FFB from independent smallholders will be received after a strict sorting process from the factory. In fact, a big amount of FFB from independent smallholders are rejected by the factories because they have not met the quality standards of the factories, which require a yield of 22%. Although some of them are accepted, however, they were bought with a low price. Meanwhile, FFB from plasma smallholders are mostly accepted because FFB seedlings of plasma smallholders come from factories and are directly supervised by the factories.

The products of agro commodities are easily damaged, thus they must be processed directly by the factory to maintain the quality of FFB. However, limited of capital and transportation, do not allow independent smallholders to sell FFB directly to the factory. Thus, the smallholders have no other choice apart from selling FFB to the nearest collector. The selling price is determined by the collector and the smallholders have to agree with the price. Meanwhile, the world demand of Indonesian palm oil continues to increase as the increasing of the number of world population that need palm oil as raw material for the manufacture of derivative products (such as cooking oil, margarine, chocolate, cosmetics, bio diesel) for daily needs.

In 2017, almost all of Indonesia's main export destination countries experienced a surge in demand of Indonesian palm oil compared to 2016. The Association of Indonesian Palm Oil

(2017) noted that in 2017 India increased its demand by 7.63 million tons compared to 2016 (an increase of 32%), Africa (increased by 50%), China (increased by 16%), European Union countries (increased by 15%), Pakistan (increased by 7%) and Middle Eastern countries (increased by 7%). Indonesia increased palm oil production to fulfil the increasing of world palm oil demand. In 2017, the total production of palm oil was 41.22 million tons (crude palm oil (CPO) production of 38.17 million tons and palm kernel oil (PKO) production of 3.05 million tons). Meanwhile, the total production of palm oil in 2016 was only 35.57 million tons (CPO production of 32.52 million tons and PKO production of 3.05 million tons). There was an increase of 16% of palm oil production in 2017 from the previous year [10].

The demand of palm oil exports in West Sumatra Province also showed an increase, however, in 2016 it decreased slightly by 15% from the previous year. Nevertheless, overall it can be said that the demand of palm oil exports in West Sumatra Province continues to increase. Consequently, the exporters are trying to increase the volume of palm oil exports. However, there are regulations that limit the export of Indonesian palm oil to abroad by charging export taxes and export duties, which are quite large for exporters. The aim is to maintain the stability of cooking oil prices and advance palm oil downstream industries. Since the world palm oil price increases significantly from year to year, it brings a positive effect on the economy prosperity of Indonesian exporters. Therefore, the increasing of world palm oil should have resulted in the increasing of selling price of FFB produced by independent smallholders.

However, in fact, these conditions have never happened in West Sumatera Province. The increasing of world palm oil prices cannot prosper the economy of independent smallholders. The percentage of the increasing of FFB selling price is still far below the percentage of the increasing of world palm oil prices. When world palm oil price increased, however, the selling price of FFB from independent smallholders declined sharply.

B. Causative Factors of Excess Supply of FFB from Independent Smallholders

Based on the results of the questionnaire, focus group discussions, interviews, and field observations, it was concluded that the causative factors of excess supply of FFB from independent smallholders in West Sumatra Province were:

- There was a big amount of FFB which were not sold to collectors. The price of FFB determined by small collectors is far below the standard price, unstable, and not transparent. Moreover, smallholders cannot bargain the selling price of FFB with small collectors. The government policy has not been fully implemented in handling oil palm. The main problems were the low and unstable selling price of FFB.
- Independent smallholders are still lacking knowledge about the selection of FFB seeds based on the cultivation standards and proper harvesting patterns, resulted in the low quality of FFB they produced.

Furthermore, independent smallholders do not want to be invited to form cooperative group, thus they are often cheated by collecting traders.

- FFB from independent smallholders cannot meet the quality standards required by the factory. It was due to the limitations of capital, human resources, and technology. The bargaining position of independent smallholders was still low. Thus, a big amount of FFB from independent smallholders were rejected by the factory, resulted in the excess supply of FFB.

C. Solutions to overcome the excess supply of FFB from independent smallholders in West Sumatra Province

One of the strategies, policies, and programs towards the development of palm oil commodities in the long term is the establishment of Regional-Owned Enterprises with the concept: Industries do not only process FFB into CPO or KPO, but also produce cooking oil as downstream CPO product which provides higher additional value. Furthermore, oil palm supply chain system should be well-organized from upstream to downstream. It starts from the supply of FFB as raw material, and the products are distributed to the final consumers without involving the third parties as intermediaries. Suppliers of raw materials are fully from independent smallholder's cooperative groups and consumers are fully from domestic consumers of cooking oil in West Sumatra Province and outside West Sumatra Province. For the long term, if CPO production has increased beyond the demand of raw material for cooking oil, the remaining CPO will be exported to foreign markets. The smallholders should manage their own FFB without assistance from private oil palm companies. Moreover, they should determine the selling price of FFB based on the current price set by the Plantation Office in West Sumatera Province.

IV. CONCLUSION

Results showed that the characteristics of independent smallholders in West Sumatera Province were the cause of the low bargaining power of FFB they produced. The quality standards of FFB produced by independent smallholders do not met the quality standards of raw materials required by the palm oil processing factory. Thus, a big amount of FFB from independent smallholders were rejected by the factory, which resulted in excess supply of FFB of smallholders. Furthermore, it can lead to a low selling price of FFB. This showed that the supply of palm oil commodities in West Sumatra Province is in an inefficient condition. A policy was proposed in the form of the concept of the establishment of Regional-Owned Enterprise, which can be expected to create an effective and efficient supply chain system.

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