MEASURING THE COMPETITIVENESS OF SUGARCANE FARMING: A CASE STUDY IN MAGETAN REGENCY, EAST JAVA, INDONESIA

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ABSTRACT

This study aims to determine the competitiveness of sugarcane farming in Magetan Regency based on measuring the level of competitive advantage, comparative advantage, and impact on government policy. Policy Analysis Matrix (PAM) is used in this research. The result showed that PCR's value was 0.790 on planting cane and 0.664 on ratoon cane; it is assumed that sugarcane farming has a competitive advantage. While farming also seems to have a comparative advantage since the DRCR planting cane value resulted in 0.950 and 0.772 for ratoon cane. Overall, government policy's role made sugarcane farming in Magetan Regency attain high competitiveness because the result of NPCO both planting cane and ratoon cane were greater than 1, assuming the government policy on output is protected and profitable for the farmers. Moreover, the value of NPCI planting cane and ratoon cane are 0.603 and 0.643, respectively, indicating the government policy also protects the tradable inputs. However, the policy on non-tradable inputs imposes higher inputs, as the nominal value of TF planting cane is IDR 1,453,706 and TF ratoon cane IDR 1,174,254 for TF ratoon cane. Hence, sugarcane farmers pay non-tradable inputs higher than the social price.

Keywords: competitiveness, Magetan, Policy Analysis Matrix, sugarcane farming

INTRODUCTION

Magetan Regency, East Java Province, places sugar cane plantation as the largest plantation business. The land area of sugar cane harvest in the Magetan Regency occupies the top position of 7,697 hectares, followed by coconut 2,823 hectares and cashew nuts 1,070 hectares (BPS Jawa Timur, 2017). Sugarcane, as the largest plantation business, makes this commodity in Magetan Regency need attention because it is related to the local people'seconomy. Sugarcane farmers in Magetan Regency deposit their harvest to PG Redjosari asone of the sugar factories under PT Perkebunan Nusantara XI. Redjosari PG status as a State- Owned Enterprise located in Magetan adds to theurgency of research in the area. Besides, PG Redjosari relies on all raw materials for sugar cane from smallholder plantations, so that government policy related to sugarcane farming indirectly affect company operations because it affects smallholder sugarcane farmers in Magetan Regency.

The people's sugarcane plantations are currently getting sluggish with competition for imported sugar that has lowered competitiveness. If the government only imports without the protection of sugarcane farmers, the sugarcane farmer's economy is threatened. Profits far enough make sugarcane farmers in Magetan Regency lose money and even think about

switching commodities. However, sugarcane plantations continue and are needed as a supplier of raw materials for sugar production. Sugar from local farmers is needed for the SME industry and community household needs. Sugarcane farmers in Magetan Regency still hope that the government will take sides in sugarcane farmers' fate so that sugarcane farming in Magetan Regency will have more competitiveness. Competitiveness can be seen from its competitive advantage, comparative advantage, and the impact of government policy.

The government's efforts to strengthen the national sugar industry are manifested in policy in various sectors, including agriculture, trade, and capitalization. The sugar cane agricultural sector, as a sugar producer, is cultivated through policy, such as subsidizing fertilizer production inputs. The trade sector is pursued by fixing the purchase price of sugar at the farmer level and the supply of goods in the market, such as the distribution system and import quotas and import tariffs. The capital sector is cultivated by deducting farm interest from the percentage of interest that should have been paid. Other policies indirectly affect the sugar industry,such as determining income tax (PPh) for sugarcane farmers, fuel subsidies, and regional minimum wages. Policy for the development of the sugarcane industry in the Magetan Regency has also been planned in the Magetan Regency Long-Term Development Plan (RPJKD) for 2005-2025. The hope is that this policy will benefit sugarcane farmers and consumers,

especially when there is a trade surplus.

Competitiveness describes producers' ability to produce a commodity with good quality and the lowest possible production cost. Analysis of a commodity's competitiveness is usually viewed from the supply side because the production cost structure is the main component that will determine the commodity's selling price (Salvatore, 1997). The approach measures agricultural commodities' competitiveness is the level of profits generated and farm commodities' efficiency. The profit level can be seen from the private profit and social benefit, while commodity farming efficiency can be seen from the comparative advantage and competitive advantage (Pearson *et al.*, 2005). Comparative advantage is the ability of a region or country to produce one unit of several commodities at a relatively lower cost than its social offset costs from other alternatives. According to competitive advantage is a tool for measuring private profitability and is calculated based on market prices and official currency exchange rates (Asian Development Bank, 1992).

The government tries to increase agricultural productivity, including plantations, through interventions in the agricultural sector using three types of policy: agricultural price policy, public investment policy, and macroeconomic policy. The agricultural price policy is a policy that is only aimed at certain commodities such as sugar. Price policy can also affect agricultural inputs. State budget affects all means of agricultural pricing policy or transfers from producers to consumers of a commodity. The macroeconomic policy consists of all regions in a country, so that macroeconomic policy will affect all commodities. Public investment policy allocates state budget expenditures. This policy affects various groups, namely producers, traders, and consumers, with different impacts because these impacts are only aimed at the areas where the investment is conducted. Government policy can be applied to tradable and non-tradable inputs. Policy for these two inputs can be in the form of positive or negative subsidies (taxes), while the trade barrier policy only applies to tradable inputs because domestic inputs are only applied to commodities produced and consumed domestically (Pearson *et al.*, 2005).

The competitiveness of commodities and the impact of government policy can be identified by analyzing the PAM method. The part that can indicate government policy or not in the PAM model analysis is calculating social prices. The social price value can be higher or lower than the private price, depending on the policy type. According to Susila (2005) and Dewan Gula Indonesia (2009), several policies are required in the national sugar industry, including production policy, acreage, marketing, amalgamation, trade, and improving the quality of sugar. Nurjanah *et al.* (2017) determine the social price of fertilizer input by calculating the CIF of fertilizer from China to ports in Indonesia, then adding the farmers' distribution costs. The prices obtained at different (lower) at a price of fertilizer in the market because it has been influenced by government policy in the form of fertilizer subsidies despite having been taxed imported goods.

METHOD

The research location was chosen based on the researcher's specific considerations and objectives with a purposive sampling method that determined the sample based on specific considerations (Nazir, 2014), namely Redjosari Sugar Factory under the State-Owned Enterprise (BUMN) PT Perkebunan Nusantara XI in Magetan Regency. The research areais located in smallholder plantation farmers assisted by the BUMN Sugar Factory in Magetan Regency, then determined by the farmer who owns the cultivator of the sugarcane land is owned. The farmers who were sampled spread to various sub-districts in Magetan Regency. The population in this study were sugarcane farmers in Magetan Regency. The number of farmer samples used was 34 farmers for each unloading ratoon and ratoon-treated. Determination of thesample of farmers was done by purposive sampling because only the farmers who own the sugarcaneunloading ratoon and care for the ratoon and become partner farmers of the Redjosari Sugar Factory. Besides, the selection of samples of sugarcane farmersalso aims to make the data normally distributed.

This study includes an analysis of the competitiveness and impact of government policies on commodities cane. Competitiveness analysis consists of efficiency analysis, which can be seen from comparative and competitive advantages. Both use the developed PAM method by Monke and Pearson (1989). Indicators' PAM matrix analysis results include efficiency analysis, profit analysis, and government policy (Murtiningrum, 2013). The stages in the preparation of the PAM table are as follows:
1. Identify all inputs used in the production process.
2. Allocate tradable and non-tradable inputs.
3. Calculate the shadow prices of inputs, outputs, and the exchange rate.
4. Analyze the comparative and competitive advantages, private and social benefits, and policy implications with the PAM model.

The approach used in this study is the total approach because it is considered appropriate to be used in analyzing the impact of policies and estimating economic (social) costs in the policy matrix analysis. The total approach assumes that domestic products' tradable input costs are divided into domestic and foreign cost components. The

increase in tradable inputs is assumed to be fulfilled from domestic products if these inputs can be produced domestically. Non-tradable inputs assumed that all production components are met within the country (Monke and Pearson, 1989). The input and output structure of sugarcane farming in Magetan Regency can be seen in table 1. The social price can be determined from

the shadow price. The shadow price is a portion of the price that occurs in the economy in a state of perfect competition and a state of equilibrium

(Gittinger, 1986). Determination of the exchange rate based on the development of the dollar exchange rate, to determine the exchange rate used shadow price formula that has beenassumed by Gittinger (1986):

$$SER = \frac{OER}{SCF}$$ ....(1)

Description:

SER = Shadow Exchange Rate (Rp/US$)
OER = Official Exchange Rate (Rp/US$)
SCF = Standard Conversion Factor for year t

The standard conversion factor value, which is the ratio of the import and export value, plus the tax, can be determined as follows (Gittinger, 1986):

$$SCF = \frac{Xt + Mt}{(Xt - TXt) + (Mt + TMt)}$$ ....(2)

Description:

SCF = Standard Conversion Factor for year t
Xt = Sugarcane export value for year t
Mt = Sugarcane import value for year t
TXt = Government revenue from the export tax for year t
TMt = Government revenue from import tax for year t

Table 1. Allocation of Input-Output Costs in Domestic and Foreign Components

Component	Domestic (%)	Foreign (%)
Sugar	0	100
Molasses	100	0
Phonska fertilizer	0	100
ZA fertilizer	0	100
Seeds	100	0
Petrorganik Fertilizer	100	0
Liquid Organic Fertilizer	100	0
Manure	100	0
Amexone herbicide	0	100
Herbicide Starmin	0	100
Plowman	100	0
Maintenance	100	0
Cutting Costs	100	0
Transportation Costs	44.86	55.14
Land Rent	100	0
Equipment depreciation	100	0
Land Tax	100	0
Water Fee	100	0
Ceremonial	100	0
Tool Repair	100	0
Credit Interest	100	0

Source: Saptana *et al*., 2004 (processed)

The calculation of the shadow prices of input and output in this study used the domestic price approach. Shadow prices are used to determine the social price of the product. The social value of input or output can be calculated based on the limit price and domestic prices in table 2. The PAM model can be used for profit analysis, competitiveness analysis, and government policies' impact. The PAM analysis results inform private and social benefits, competitive and comparative advantages, and government policies' impact on specific commodity systems.

Competitiveness is reflected in the commodity valuation value, whether it includesvery high, high, moderate, low, very low competitiveness. These criteria are presented intable 3. The indicators used include PP, SP, PCR, and DRCR values from sugarcane farming. Differences in the range of competitiveness in a commodity can be used to determine the priority scale for the development of the commodity concerned, namely:
1. Commodities that have very high competitiveness should be prioritized for

development.
2. Commodities with high competitiveness are still prioritized for development, but commodities with very high competitivenessare prioritized.
3. Commodities with moderate competitiveness

have two possibilities: can be developed or cannot, depending on field analysis due to policy distortion or market failure.
4. Commodities that have low or very low competitiveness should not need to be developed.

Table 2. Policy Analysis Matrix (PAM)

Description	Cost			
	Revenue	Tradable Input	Non-tradable Input	Profit
Private Price	A	B	C	D
Social Price	E	F	G	H
Policy Impact	I	J	K	L

Sumber: Pearson *et al.*, 2005

Description:
A = Privat revenue (IDR/ha)
B = Total privat tradable input costs (IDR /ha)
C = Total privat non-tradable input costs (IDR /ha)
D = Privat profit (IDR /ha)
E = Social revenue (IDR /ha)
F = Total social tradable input costs (IDR /ha)
G = Total social non-tradable input costs (IDR /ha)
H = Social profit (IDR /ha)
I = Output transfer
J = Input tradable transfer
K = Transfer factor (IDR /ha)
L = Net transfer (IDR /ha)

Table 3. Matrix Assessment of Competitiveness

Indicator	Value Criteria				
PP	+	-	-	-	-
SP	+	+	-	-	-
PCR	+	+	+	-	-
DRCR	+	+	+	+	-
Combined Values	4+	3+1-	2+2-	1+3-	4-
Competitiveness	Very high	High	Moderate	Low	Very low

Source: Kohari, 2005 *cit* Setiawan *et al.*, 2014

RESULTS AND DISCUSSION

In PAM analysis, private profits can benefit financial value, while social benefits can benefit economic value. After the analysis, we found several points of discussion. Figures obtained an analysis of farming per hectare per year. To determine the profit per farm, it is necessary to multiply the average area of 3.10 hectares farm for unloading ratoon and 10.52 hectares for inpatient ratoon. In table 4, it is known that the profit value of the private price of unloading ratoon sugarcane farming is IDR 8,826,672/ha/year and ratoon-treated IDR 13,924,869/ha/year, while the social price is IDR 1,679,265/ha/year and IDR

7,753,547/ha/year. It indicates a large economic benefit, namely 19.02% for unloading ratoon and 55.68% for ratoon-treated from financial benefits. The difference between economic benefits and financial benefits between the two sugarcane cultivation systems has a different value, namely IDR 7,147,407 for unloading ratoon and IDR 6,171,322 for ratoon-treated; it also shows the benefits from the impact of the policy. The advantages of policy's impact indicate a divergence, with higher private prices of the social price. The advantage of a positive policy impact can be said that the sugarcane farming of unloading ratoon and caring for ratoon in Magetan Regency is feasible.

Tabel 4. Policy Analysis Matrix (PAM) of Sugarcane Farming in Magetan Regency

Unloading Ratoon

Description	Revenue	Cost		Profit
		Tradable	Non-Tradable	
Private Price (IDR)	47,019,724	4,965,560	33,227,492	8,826,672
Social Price (IDR)	41,688,307	8,235,256	31,773,785	1,679,265
Policy Impact (IDR)	5,331,417	- 3,269,696	1,453,706	7,147,407

Ratoon- Treated

Description	Revenue	Cost		Profit
		Tradable	Non-Tradable	
Private Price (IDR)	45,270,767	3,855,421	27,490,477	13,924,869
Social Price (IDR)	40,068,919	5,999,149	26,316,223	7,753,547
Policy Impact (IDR)	5,201,848	-2,143,728	1,174,254	6,171,322

Source: Primary Data Analysis, 2017

Private and social revenues from unloading ratoon cane farming are IDR 47,019,724 and IDR 41,668,307, respectively, while private and social revenues from ratoon-treated sugarcane farmingare IDR 45,270,767 and IDR 40,068,919, respectively. The private revenue of unloading ratoon cane farming is greater than that of ratoon unloading sugarcane farming because the output of ratoon unloading cane is greater than ratoon-treated, so the effect on income will be greater in ratoon unloading sugarcane farming. Sugarcane plants in the early years of harvesting have a fairly high production but will continue to decline at the next harvest. In terms of these figures, private income is greater than social revenue. The difference in the revenue of this resulted from the market divergence. The market divergence causes differences in actual prices with social prices; in this context, the outputs are sugar and molasses.

Differences in the existing market cause an implicit subsidy to farmers of IDR 5,331,417 for unloading ratoons and IDR 5,201,848 for ratoon-treated. Market divergences can occur due to policy distortions or market failures. The price of sugar obtained by farmers is higher than the price of international sugar imported from Thailand due to government policy. The government issued this policy in the Regulation of the Minister of Trade of the Republic of Indonesia Number 27/M-DAG/PER/5/2017 concerning Determination of Reference Prices for Purchases at Farmers and Reference Prices for Sales at Consumers by setting a reference price for purchasing sugar at farmers of IDR 9,100/kg. This price is below the private sugar price of IDR 9,700/kg, while the social price of sugar is IDR 8,282/kg. This policy is included in a distorted policy. Distortive policies will hinder the occurrence of efficient resource allocation and will cause divergences. Distortive policies are implemented to achieve "non-efficiency" goals, namely equity or food security (Pearson *et al.*, 2005).

Tradable input costs lower than the non-tradable input costs in private prices. Non-tradable input costs in private prices are also lower than in social prices. The difference in value is said to be a policy impact. The difference in tradable input values in private prices and tradable input values in social prices is IDR -3.269.696 for ratoon unloading and -2.143,728 for ratoon care. The negative impact of policies shows the role of government. The negative transfer of tradable inputs was caused by 39.70% subsidies for unloading ratoons and 35.73% for ratoon-treated. Sugarcane farming in Magetan Regency has been affected by government policy from subsidizing fertilizer prices.

Tabe 5. Indicators of Excellence in Sugarcane Farming in Magetan Regency

Description	Unloading	Treated
PCR	0.790	0.664
DRCR	0.950	0.772
NPCO	1.128	1.130
NPCI	0.603	0.643
EPC	1.257	1.216

Source: Primary Data Analysis, 2017

The private profit and private cost ratio of sugarcane farming in the Magetan Regency are known to be IDR 8,826,672 for unloading ratoon and IDR 13,924,869 for ratoon care. At the private price, ratoon care cane farming has a greater advantage than unloading ratoon. The reason for this is that the input used is lower, especially in terms of using seeds. The positive private profit value (PP> 0) indicates that sugarcane farming in Magetan Regency is financially profitable. If the PPvalue is more than zero, it can be said that the sugarcane commodity system earns a profit above normal,

which implies that the commodity is capable of expansion unless resources are limited orthere are alternative, more profitable commodities.

The level of resource allocative efficiency can be measured using the private cost ratio (PCR). PCR coefficient value for the commodity of sugarcane is less than one (PCR<1) of 0.790 at unloading ratoon and 0.664 on ratoon care. This value shows that sugarcane farming is financially efficient because farmers can finance domestic input factors at private prices. PCR values of 0.790 and 0.664 mean that to produce one unit of output at private prices, sugarcane farmers need to pay domestic input costs in private prices of 0.790 and 0.664 units, or by producing one unit of output, the addition can save costs with private prices 0.210 and 0.336 units. Viewed from the two PCR values on unloading ratoon and ratoon-treated, it can be said that ratoon-treated has a competitive advantage and is more competitive than unloading ratoon. ThePCR value of sugarcane in Magetan Regency is lessthan one, which implies that the sugarcane commodity has a competitive advantage when there is a government policy.

The total social benefits of unloading ratoon farming are IDR 1,679,265, and ratoon care is IDR 7,753,547. Social benefits greater than zero (SP>0) indicate that sugarcane farming is economically profitable and feasible to operate and has a comparative advantage to expand production. The SP value of treated ratoon is higher than that of unloading ratoon, indicating that the cultivation of ratoon caring sugarcane is feasible. The DRCR indicator is the ratio between domestic costs and foreign income margins minus costs on social prices. The DRCR value of unloading ratoon is 0.950 (DRCR <1), indicating that the unloading ratoon sugarcane farming in Magetan Regency is economically efficient. DRCR 0.950 means to produce output with a unit price, sacrificing domestic inputs' social costs in the social price of 0.950 units. Unloading ratoon sugarcane farming has a comparative advantage in conditions without government policies and has competitiveness in the international market. However, DRCR approaching one indicates that comparative advantage is not so strong that it almost did not have a comparative advantage.

The DRCR value of ratoon-treated of 0.772 (DRCR <1) indicates that ratoon-treated sugarcane farming cultivated in the Magetan Regency is economically efficient. DRCR 0.772 means to produce output with a unit price, sacrificing the social costs of domestic inputs in the social price of 0.772 units. It shows that the sugarcane unloading ratoon farming is economically efficient and has a comparative advantage in conditions without government policy and has competitiveness in the international market. Besides that, ratoon-treated

The government's output policy is in the basic pricing purchase of sugar at the farmers' level.

sugarcane farming is more efficient using input compared to unloading ratoon.

Both systems in Magetan has a competitive advantage and comparative advantage. This result is following previous research by Saputro *et al*. (2017) on sugarcane farming business competition analysis in East Java province, showed that sugar cane farming in East Java province financially efficient was 0.71 (PCR <1). However, the DRCR value of sugarcane farming in the Magetan Regency is not following Saputro *et al*. (2017) research because it has a DRCR value <1. The study results by Saputro *et al*. (2017) showed a DRCR value of 1.05 for sugarcane farming in East Java. The two sugarcane farming systems in Magetan Regency also have DRCR values <1 so that the two sugar cane farming systems in Magetan Regency are economically efficient. Thus, sugarcane farming is financially efficient and economically efficient. Besides, it should be noted that the PCR value of sugarcane farming has a lower value than the DRCR or PCR <DRCR value. In other words, government policy is still needed to support competitiveness in international economic values.

Government policy regarding output can be seen from two values: the output transfer (OT) and the national output protection coefficient (NPCO). Transfer output (OT) is the difference between private and social revenues. The results showed a positive value (OT> 0) IDR 5,331,417 for sugarcane unloading ratoon due to differences in private prices received by farmers and social prices. It shows a transfer of income from consumers to producers (farmers) and consumers buying at a higher price or producers (farmers) receiving more profit than the price paid. The same thing also happened to ratoon-treated sugarcane, which showed a positive value of IDR 5,201,848.

Sugarcane farming in Magetan Regency has private prices that are higher than the social prices. In other words, some subsidies cause higher output at private prices than at social prices. Price differences result in higher income for producers when government policies are in place or when prices apply. The impact of government policy on sugar prices benefit producers (farmers), or some subsidies increase their income. The transfer value of output also has some implications in international trade. Other indicators can be used to look at the impact of government policies, namely the protection of the nominal output coefficient, which indicates the level of government protection for output. The value of NPCO in sugarcane farming in the Magetan Regency is 1.128 for unloading ratoon and 1.130 for ratoon-treated, or farmers receive a higher output price of 12.8-13% import parity price. It shows that government policy is to protect against output.

The government issues a policy in the Regulation of the Minister of Trade of the Republic of Indonesia

Number 27/M-DAG/PER/5/2017 regarding Reference to Purchase Price at Farmers and Reference Price for Sale at Consumers by setting a reference price for purchasing sugar at farmers of IDR 9,100/kg. This price follows the prevailing sugar price in Magetan Regency, below the private sugar price of IDR 9,700/kg, while the social price of sugar is IDR 8,282/kg, so the price is higher than the benchmark price set by the government. It shows that sugarcane farmers in Magetan Regency have enjoyed output protection from the government.

IT value obtained from sugarcane farming in Magetan Regency has a negative value of IDR -3,269,696 for unloading ratoon and IDR -2,143,728 for ratoon-treated. Negative values indicate a government subsidy on foreign inputs. The value of IT, which is less than zero, indicates government policy or market distortion in tradable inputs that benefit producers. It is following the procurement and distribution of subsidized fertilizers for the agricultural sector, subsidized fertilizers such as urea, SP-36, ZA, and NPK. Sugarcane farming in Magetan Regency uses subsidized tradable inputs, namely Phonska, ZA, and Petroganik fertilizers, to not fully pay for input purchases pay input costs at a lower price than the actual price paid.

The nominal input protection coefficient is the ratio of private tradable input costs and social and an indicator that shows government protection for domestic input prices. The NPCI is less than one (NPCI <1) with a value of 0.603 at unloading ratoon and 0.643 in ratoon-treated. It shows that government policies protect tradable inputs, and producers receive tradable input subsidies, which means producers buy at lower prices. Sugarcane farmers receive lower input prices, which only spend 60.3-64.3% of the actual price. NPCI value of less than one means there is a subsidy on tradable inputs to encourage producers to use inputs.

TF value more than zero indicates that the cost of non-tradable or domestic inputs (seeds, herbicides, land rent, labor wages, loan interest) is higher than it should be, or in other words, there is no economic incentive to increase farmers' sugarcane production. Transfer factor (FT) shows the amount of subsidy on non-tradable inputs obtained from the difference between the costs of private and social non-tradable inputs. If the FT value is positive (FT> 0), then the subsidy is negative, and if the FT value is negative (FT <0), then the subsidy is positive. The FT obtained is positive at IDR 1,453,706 for ratoon unloading and IDR 1,174,254 for ratoon care. It indicates that there is a negative subsidy from the government. Negative subsidies from the government indicate that government policy imposes on the use of non-tradable inputs so that sugarcane farmers pay non-tradable inputs that are higher than their social Various government policies affect input costs ranging from large to small. The government

prices. issued the fertilizer input policy in the Minister of Agriculture Regulation

Number 69/Permentan/SR.310/12/2016 concerning Allocation and Highest Retail Price of Subsidized Fertilizer for the Agricultural Sector by setting the HET for NPK Subsidized Fertilizer (Phonska) IDR2,300/kg, ZA IDR 1,400/kg, and organic (Petroganic) IDR 500/kg. This price is below the social price of Phonska fertilizer of IDR 5,011/kg, ZA IDR 3,499/kg, and Petroganik IDR 1,200/kg while the private price of Phonska fertilizer IDR 2,313/kg, ZA IDR 1,406/kg, and Petroganik IDR 775/kg.

Input and output policies are a combination of input and output policies. Policy impact indicators can be seen from the input-output effective protection coefficient (EPC), the value of the subsidy ratio for producers (SRP), and the profit coefficient (PC) and net transfers (NT). An effective protection coefficient is a ratio between private tradable input costs, which reduces private incomes with social tradable input costs that reduce social income. It illustrates the influence of government policies that inhibit domestic production. Table 5 shows the EPC value obtained by 1.257 (EPC> 1) for ratoon unloading and 1.216 (EPC> 1) for ratoon care; this illustrates the policy on effective output and input subsidies and provides incentives for farmers to produce. It also shows that government policies support domestic production activities, which means that government policies are protective or aim to protect domestic producers who operate effectively.

Net transfers (NT) are the difference between private and social benefits that illustrate government policies' impact on revenues assuming perfect competition. The NT value obtained is positive for IDR 7,147,407 for unloading ratoon and IDR 6,171,322 for ratoon-treated, indicating that government policies applied to input and output factors provide incentives to increase production. NT values greater than zero indicate an additional producer surplus caused by government policies on inputs and outputs.

Value ratios related to the net transfer is the coefficient of profitability (PC). PC measures the impact of all transfers to private gain, or it can be said that the value of PC is a relative measure of net transfers that produce financial benefits that are greater or less than economic benefits. The PC value of sugarcane farming in the Magetan Regency was 5.256 for unloading ratoon and 1.796 for ratoon-treated. This value shows that private profits are much greater than social benefits, namely 5.256 times the unloading ratoon and 1.796 times the ratoon-treated. Based on the PC, it can be said that the overall government policy applied to sugarcane farming has resulted in increased profits. The value of PC> 1 means that overall government policies

provide incentives to producers.

Subsidy ratio to producers (SRP) is a measure of the combined effects of the transfer. This ratio is the ratio between the net transfer value and the revenue value calculated at the international price level. Thus, SRP shows the extent to which revenue increased or decreased due to transfer. The SRP value of 0.171 for unloading ratoon and 0.154 for ratoon-treated shows that the difference between financial and economic benefits in sugarcane

farming is around 17.1-15.4% of the gross income. SRP value greater than zero means the manufacturer issued a production cost less than the opportunity costs. The number of positive transfers shows that general government policies or existing market distortions benefit sugarcane farmers because sugarcane farmers receive positive subsidies than no government policies.

Table 6. Assessment of Competitiveness of Unloading Ratoon Sugarcane Farming in Magetan Regency

Unloading Ratoon

Indicator	Score	Criteria	Meaning	Combined Value	Competitiveness
PP (IDR)	8.826.672	(+)	Competitive		
SP (IDR)	1.679.265	(+)	Competitive	4+	Very High
PCR	0,790	(+)	Competitive		
DRCR	0,950	(+)	Competitive		

Ratoon-treated

Indicator	Score	Criteria	Meaning	Combined Value	Daya Saing
PP (IDR)	13.924.869	(+)	Competitive		
SP (IDR)	7.753.547	(+)	Competitive	4+	Very High
PCR	0,664	(+)	Competitive		
DRCR	0,772	(+)	Competitive		

Source: Primary Data Analysis, 2017

The calculation using the PAM method shows the competitiveness of sugarcane farming in the Magetan Regency. Values obtained in the PAM rated positive (+) or negative (-). An indicator of a presented in Table 6. Unloading ratoon sugarcane farming has positive PP values, positive PCR, positive SP, and positive DRCR. Likewise, ratoon-treated sugarcane farming has positive PP values, positive PCR, positive SP, and positive DRCR. The results of the Competitiveness Assessment Matrix, sugarcane farming in Magetan Regency, both unloading-ratoon and ratoon-treated, has very high competitiveness (value 4+), meaning that the commodity is highly prioritized to be developed. If other commodities have the same competitiveness value, to determine which one to choose, it can be observed that the PAM analysis results of each commodity are considered as a way of considering.

It is necessary to maintain the competitiveness of sugarcane farming in Magetan Regency, utilizing financial efficiency. Increasing the farmer's income can be done by increasing land productivity and input efficiency utilizing intelligence through extension workers or educated personnel. The government's increase in revenue can be done by increasing sugar prices at the farmer level and applying income tax for sugar cane farmers.

Increase in government input subsidies with a record of providing subsidies efficiently considering that, on the one hand, the government is required to reduce the number of fertilizer

subsidies gradually so that the burden of the State profitable advantage is given a positive value. On the other hand, an indicator that loses is given a negative value. Results of the assessment of the competitiveness of sugarcane in Magetan are Budget (APBN) can be reduced for the sake of realizing fiscal sustainability. Increasing economic efficiency can be achieved by increasing sugar import tariffs.

CONCLUSIONS

Sugarcane farming to unload ratoon and care for ratoon in Magetan Regency has competitive and comparative advantages. Overall, government policy makes sugarcane farming in Magetan Regency a very high competitive value. In the sugarcane farm output, the government policy is to protect and benefit producers, tradable inputs and benefit the producers, whereas non-tradable inputs burden sugarcane farmers by paying higher inputs.

REFERENCES

Asian Development Bank, 1992. Competitive and Comparative Advantage in Tea: Indonesia and Sri Langka. in Comparative Advantage Study of Selected Industrial Crops in Asia. Final Report RETA 5382 The Pragma Corporation. Virginia.

Badan Pusat Statistik Provinsi Jawa Timur. 2016. Produksi Tanaman Perkebunan menurut Kabupaten/Kota dan Jenis Tanaman di

Provinsi Jawa Timur, 2016. <https://jatim.bps.go.id/statictable/201 7/06/19/570/produksi-tanaman- perkebunan-menurut-kabupaten-kota- dan-jenis-tanaman-di-provinsi-jawa- timur-ton-2016.html> diakses pada 4 April 2018.

Dewan Gula Indonesia. 2009. Kondisi Pergulaan Indonesia. Bahan Rapat Teknis. Sekretariat Dewan Gula Indonesia. Jakarta.

Gittinger, J. P. 1985. Economic analysis of agricultural projects (English). World Bank. Washington, DC.

Menteri Perdagangan Republik Indonesia. 2017. Peraturan Menteri Perdagangam Republik Indonesia Nomor 27 Tahun 2017. Kementerian Perdagangan. Jakarta.

Menteri Pertanian Republik Indonesia. 2016. Peraturan Menteri Pertanian Republik Indonesia Nomor 69 Tahun 2016. Kementerian Pertanian. Jakarta.

Monke, E. A dan S. R Pearson. 1989. The Policy Analysis Matrix for Agricultural Development. Cornel University Press. New York.

Murtiningrum, F. 2013. Analisis Daya Saing Usaha Tani Kopi Robusta (Coffea canephora) di Kabupaten Rejang Lebong. Tesis Fakultas Pertanian Universitas Bengkulu.

Nazir, M. 2004. Metode Penelitian. Ghalia Indonesia. Jakarta.

Nurjanah, H., Masyhuri, S. Hardyastuti, dan H. Perwitasari. 2015. Competitiveness analysis of sugarcane farming in Bantul. Proceeding of the 1st International Conference on Tropical Agriculture, Springer: 95 – 108.

Pearson, S. R., C. Gotsch dan S. Bahri. 2005. Aplikasi Policy Analysis Matrix pada Pertanian Indonesia. Yayasan Obor Indonesia. Jakarta.

Salvatore, D. 1997. Ekonomi Internasional. Erlangga. Jakarta.

Setiawan, K., S. Hartono, dan A. Suryantini. 2014. Analisis daya saing komoditas kelapa di Kabupaten Bandung. AGRITECH 34(1): 88 – 93.

Saptana, S. Friyanto, dan T. B. Purwantini. 2004. Efisiensi dan daya saing usaha-tani tebu dan tembakau di Jawa Timur dan Jawa Tengah. Pusat Penelitian dan Pengembangan Sosial Ekonomi Pertanian: 83-119.

Saputro, W. A., Masyhuri dan A. Suryantini. 2017. Analysis competitiveness of sugarcane farming in Central Java and East Java. Agro Ekonomi 28(2): 237-251.

Susila, W. R. 2005. Pengembangan Industri Gula Indonesia: Analisis Kebijakan dan Keterpaduan Sistem Produksi. Disertasi Doktor. Institut Pertanian Bogor. Bogor.