



Analysis of Competitiveness and the Impact of Government Policy on Patchouli commodity in Pasaman Barat District

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ABSTRACT

Patchouli oil is Indonesia's potential essential oil which is widely traded in the world market. This study aims to analyze the competitiveness of patchouli commodities in West Pasaman Regency and analyze the impact of government policies on the competitiveness of patchouli commodities in West Pasaman Regency. The method used in this research is a survey method. Analysis of the data used in this research is descriptive quantitative using a measuring instrument Policy Analysis Matrix (PAM). The results showed that Patchouli Farming in West Pasaman Regency already has competitiveness based on the acquisition of private and social benefits as well as competitive advantages and comparative advantages. Competitive advantage is expressed by a PCR value of $0.64 < 1$. Comparative advantage is reflected by a DRC value of $0.56 < 1$. PCR and DRC values that are smaller than one indicate that the commodity has competitiveness. The closer the value is to 0, the commodity has high competitiveness and is very profitable to cultivate. The impact of government policies shows that there are government policies that inhibit commodities with taxes on output and there are government policies that are protective of tradable inputs. This is indicated by the value of the Nominal Protection Coefficient of Patchouli commodity output of 0.89; Nominal Protection Coefficient Input of 0.48; Effective Protection Coefficient of 0.90; Profitability Coefficient of 0.73; and the Subsidy Ratio to Produce of -0.12.

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1. Introduction

The agricultural, forestry and fisheries sectors have a fairly important role in the world's and Indonesia's economic activities. These sectors have a contribution to Gross Domestic Product (GDP) which is around 13.14 percent in 2017 or is second only to the manufacturing sector (BPS, 2017). The agricultural sector, especially the plantation sector, has a large enough role. Plantation commodities are the mainstay of Indonesia's national income and foreign exchange. Judging from the export value of plantation commodities, in 2015 total plantation exports reached US\$ 23.933 billion or equivalent to Rp. 311.138 trillion (Ministry of Agriculture, 2017). One of the plantation industry sub-sectors with great potential is essential oil. The value of Indonesia's essential oil exports in 2015 was US\$ 180 million. This value jumped 15.1% compared to the export value in 2014 which reached US\$ 156 million (Ministry of Agriculture, 2017).

There are 80 types of essential oils traded in the world market, while Indonesia has only exported 12 types of essential oils. This is indicated by the variety of essential oils produced by Indonesia to be traded in the international market. Essential oils that cannot be traded include clove leaf oil, clove flower and masoi oil (Indonesian Atsiri Council and IPB, 2009).

According to the latest data from Bank Indonesia, the world's need for patchouli oil ranges from 1,100 – 1,200 tons per year with an annual supply of approximately 900 tons. By looking at the difference between demand and supply per year, there are still market opportunities of approximately 200 tons per year (Ministry of Trade, 2017). In line with the opening of free trade and existing opportunities, efforts are needed to increase competitiveness. Quality, quantity and timeliness of product supply are important points that must be met to be able to compete in the world market. Therefore, increasing competitiveness is a demand that cannot be avoided by manufacturers so that products are able to compete in the global market.

Competitiveness is the ability of producers to produce with good quality and low costs so that at prices that occur in the international market, producers can produce and market them with sufficient profit so that they can maintain their business continuity (Murtiningrum, 2013 in Fitri 2017:5). The approach that is often used is the level of profit and efficiency. The advantages are seen from two sides, namely private benefits and social benefits. Meanwhile, efficiency can be seen from two indicators, namely competitive and comparative advantage.

In West Pasaman Regency, patchouli is one of the mainstay commodities with a clear market. The people have known patchouli for a long time and still make patchouli a desirable plant. Besides that, ecologically, the West Pasaman Regency is very suitable for patchouli cultivation. Some of the common obstacles encountered related to patchouli commodities in West Pasaman were the low yield of patchouli oil obtained, the low and varied quality of the oil and fluctuating selling prices. The problems above are closely related to one another so that new efforts and breakthroughs are needed that can eliminate these problems.

The West Pasaman Regency Government through the Plantation Service has carried out various policies to increase the competitiveness of plantation commodities through efforts to increase efficiency, productivity of commodity agribusiness businesses that will increase farmers' income and encourage state revenue through export foreign exchange (West Pasaman Plantation Office, 2017). The government of West Pasaman Regency has implemented a fertilizer subsidy policy for patchouli farmers to support the increase in patchouli production. It aims to increase patchouli production and improve the quality of patchouli essential oil.



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West Pasaman Regency is a patchouli production center in West Sumatra. Therefore, it is necessary to study the competitiveness of patchouli commodity exploitation in West Pasaman Regency. Furthermore, strategic efforts to increase the competitiveness of Indonesian patchouli in the international market can be determined through fiscal policy support.

Patchouli commodity trade is inseparable from government policies such as quotas, tariffs, taxes and subsidies, considering that patchouli is an export-oriented Indonesian plantation commodity. The policy is related to the input and output of patchouli commodity exploitation. Existing government policies will also affect the competitiveness of patchouli commodities in West Pasaman as one of the centers of patchouli production in West Sumatra. This policy will affect the input and output of patchouli commodity business in West Pasaman. Policies that cause input costs to decrease and increase the use value of outputs will increase the competitiveness of patchouli commodities, while policies that cause input costs to increase and output use values to decrease will also reduce competitiveness.

To see how the competitiveness of an agricultural commodity and see how the impact of government policies affect these commodities, an analytical tool in the form of a policy analysis matrix (PAM) is needed for these commodities. Through a policy analysis matrix approach, it will be seen whether a commodity has competitiveness after intervention from the government in the form of a policy and how the influence of that policy on the feasibility and competitiveness of a commodity can be seen and formulated through the values or indicators contained in the policy. analysis matrix. The higher the competitiveness of an agricultural commodity, the more profitable it will be for farmers to cultivate. For this reason, it is important to analyze the competitiveness of patchouli commodities and the impact of government policies on the competitiveness of patchouli commodities in West Pasaman Regency.

2. Method

The method used in this research is a survey method. The survey method is an investigation conducted to obtain facts from existing phenomena and seek factual information, both about social, economic or political institutions of a group or an area. The survey method dissects and skins and recognizes problems and obtains justification for the current situation and practices (Nazir, 2009:56). The survey method used in this study aims to obtain information about the description of patchouli farming, information about input-output prices in patchouli farming obtained from respondent farmers. So it can be seen how the condition of competitiveness and the influence of government policies on patchouli commodities cultivated by farmers in the research location.

The data collection technique used in this study is an open interview method, where researchers can ask respondents about the facts of an event in addition to their opinions about existing events. This interview was assisted by an interview guide, namely by compiling a list of questions (questionnaires) that were posed to respondents by means of direct question and answer between researchers and respondents as the main instrument of research data collection.

The population in this study are patchouli farmers in West Pasaman Regency who have patchouli gardens and distill patchouli oil. The sample is part of the number and characteristics possessed by the population (Sugiyono, 2012:81). Sampling is done randomly, on the grounds that the members of the population are considered homogeneous and the population size is not too large. West Pasaman Regency of 11 sub-districts, there are 10 sub-districts that cultivate patchouli. Based on the sampling, it was found that the sub-districts for the research location were Kinali District, Talamau District, and Pasaman District which represented West Pasaman Regency with the largest patchouli area and the highest patchouli oil production.

From 532 populations of patchouli farmers in 3 sub-districts, namely Kinali District, Pasaman District and Talamau District, 30 people were taken to be used as samples to represent the population. To avoid bias in calculations, the sample that must be used is at least 30 samples (Soekartawi, 2003: 198). In conducting PAM analysis, data sources can be taken from a not too large sample. The data entered into the PAM is a mode (central tendency), not a parameter estimated through an econometric model with a statistically valid number of samples. Researchers were stimulated to collect more information, both in terms of depth, compared to the large number of farmers interviewed (Pearson, 2005:41).

Samples in the population of each sub-district were taken randomly with a predetermined proportion in each sub-district to complete 30 people using the formula (Prasetyo, 2005: 130):

$$\text{Sample (n)} = \frac{\text{Population}}{\text{Total Population}} \times \text{Total Sample}$$

For more details on the number of respondent farmers in this study can be seen in table 1.

Table 1
Number of Respondents Patchouli Farmers in West Pasaman District

No	District	Population	Sampling	Sample
1	Kinali	231	231/532 x 30 = 13,03	13
2	Pasaman	136	136/532 x 30 = 7,67	8
3	Talamau	165	165/532 x 30 = 9,30	9
	Total	532		30

The number of respondent farmers in this study were 30 people. Consisting of 13 people from Kinali District, 8 people from Pasaman District and 9 people from Talamau District.

The variables in this study can be seen in table 2 below.

Table 2
Research Variables, Data and Data Sources

No	Variable	Data	Data Source
1	Domestic Factors of Production	<ul style="list-style-type: none"> Seeds: type, number of seeds used, private prices, social prices Manure and Compost Fertilizer: dosage, private price, social price Production Means: type of equipment used, quantity used, purchase price of equipment, economic life, social price 	Farmer/merchant



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No	Variable	Data	Data Source
2	Tradeable Input	<ul style="list-style-type: none"> Labor: number, length of work in one day, wages, social prices, open unemployment rate Land: land area, land rent, social price of land Capital: working capital, investment capital, social prices Inorganic Fertilizer: type, dosage, purchase price, social price 	Farmers and Alibaba.com

Information:

A : Private Admission

B : Private Tradable Input Fee Biaya

C : Private Domestic Input Cost

D : Private Profit

E : Social Acceptance

F : Social Tradable Input Cost

G : Social Domestic Input Cost

H : Social Benefits

I : Output Transfer

A : Transfer Input Tradable

K : Transfer Factor

L : Net Transfer

3	Costs	<ul style="list-style-type: none"> Shipping and insurance costs for fertilizer imports Fertilizer handling costs Fertilizer transportation costs from the port to the village/garden The cost of transportation of patchouli oil from traders to the port 	Disperindag, West Sumatra/trader Collector merchant
4	Output	<ul style="list-style-type: none"> Shipping costs and patchouli oil export insurance Amount of dry patchouli leaf harvest Amount of patchouli oil production Selling price of patchouli oil International patchouli oil price 	Farmer West Pasaman Plantation Service, Alibaba World Trade, Indonesian Essentials Council
5	Exchange rate	<ul style="list-style-type: none"> The exchange rate of the rupiah against the dollar Indonesian Export Value\ Indonesian Import Value 	Bank Indonesia Central Bureau of Statistics

The data analysis used in this research is descriptive quantitative using a measuring instrument Policy Analysis Matrix (PAM) and sensitivity analysis which aims to substitute the weaknesses of the Policy Analysis Matrix (PAM) method.

Tabel 3.

Matrik PAM (*Policy Analysis Matrik*)

	Reception	Cost Tradable Input	Domestic Factor	Advantage
Private	A	B	C	D
Social	E	F	G	H
Divergence Effect	I	J	K	L

Source: Pearson et al., 2005

a. Competitiveness of Patchouli Commodity

1) Competitive Advantage

a) Private Profit (PP): $PP = D - A - (B + C)$

b) Private Cost Ratio (PCR) :

$$PCR = \frac{C}{A - B}$$

2) Comparative Advantage

a) Social Profit (SP) : $SP = H - E - (F + G)$

b) Domestic Ratio Cost (DRC):

$$DRC = \frac{G}{E - F}$$

b. Impact of Government Policy

1) Output Policy

a) Output Transfer (OT): $OT = I - A - E$

b) Nominal Protection Coefficient Output (NPCO):

$$NPCO = \frac{A}{E}$$

2) Input Policy

a) Input Transfer (IT) : $IT = J - B - F$



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- b) Nominal Protection Coefficient Input (NPCI):

$$NPCI = \frac{B}{F}$$

- c) Factor Transfer (FT): $FT = K = C - G$

- 3) Input Policy – Output Policy

- a) Effective Protection Coefficient (EPC)

$$EPC = \frac{A - B}{E - F}$$

- b) Net Transfer (NT): $NT = L = D - H$

- c) Profit Coefficient (PC):

$$PC = \frac{D}{H}$$

- d) Subsidy Ratio Producers (SRP)

$$SRP = \frac{L}{E}$$

- c. Benefit Analysis – Cost

$$\frac{1}{(1+i)^t}$$

- d. Sensitivity Analysis

- 1) Sensitivity analysis if there is a decrease in the output price of patchouli oil and other factors are considered constant (ceteris paribus) Assumptions (1)
- 2) Sensitivity analysis if the rupiah exchange rate against the United States Dollar (US\$) weakens and other factors are considered constant (ceteris paribus). Assumptions (2)
- 3) Sensitivity analysis if there is a change in the price of fertilizer (price of Urea, SP36, ZA, NPK if not subsidized by the government) and other factors are considered constant (ceteris paribus) Assumptions (3)

3. Result and Discussion

3.1 Patchouli Commodity Competitiveness in West Pasaman Regency

West Pasaman Regency is one of the regencies located in West Sumatra Province and is the main production center of patchouli oil in West Sumatra. Administratively, West Pasaman Regency is bordered by Mandailing Natal Regency, North Sumatra Province in the north; the east is bordered by Pasaman Regency. In the south, it is bordered by Agam and Pasaman Regencies, and in the west by the Indian Ocean. West Pasaman Regency consists of 11 sub-districts, namely Sungai Bremas, RanahBatahan, Koto Balingka, Aur River, Melintang Valley, Mount Tuleh, Talamau, Pasaman, Luhak Nan Duo, SasakRanahPasisie and Kinali. There are 3 sub-districts that have the largest land area and the highest patchouli oil production, namely Kinali District, Talamau District and Pasaman District

a. Competitive advantage

Table 4

Private Profit (PP) and Private Cost Ratio (PCR) for Patchouli Farming in West Pasaman Regency

No	Indicator	Value
1	Private Profit (PP)	79.839.893,14
2	Private Cost ratio (PCR)	0,64

Based on table 4, it can be seen that private profit (PP) > 0, then the profit received by patchouli farmers with the existence of government policies at the time of the research is Rp. 79,839,893.14. This means that farmers' income based on private value is greater than expenditure on tradable input costs and domestic inputs.

Meanwhile, the value of the Private Cost Ratio (PCR) obtained is smaller than one (<1), so to increase the added value of output by one unit, an additional domestic factor cost is smaller than one unit, which is 0.64. This means that patchouli farming in the research location is financially efficient or competitive when there is a government policy. Thus, it can be seen that with government policies, patchouli farming in West Pasaman Regency is still feasible and has a competitive advantage. A PCR value that is smaller than one indicates that the commodity is competitive. The lower the value or close to 0, the commodity has high competitiveness and is very profitable to cultivate.

b. Comparative Advantage

Table 5

Domestic Resource Cost Ratio (DRCR) and Social Profit (SP) of Patchouli Farming in West Pasaman Regency

No	Indicator	Value
1	Social Profit (SP)	109.311.722,79
2	Domestic Resource Cost Ratio(DRCR)	0,56



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From table 5 it can be seen that, the value of social benefits (SP) from patchouli commodities in West Pasaman Regency is Rp. 109.311.722.79 then economically patchouli farming in West Pasaman Regency can generate profits with conditions without interference from government policies. Likewise, the value of the Domestic Resource Cost Ratio (DRC) in patchouli farming in West Pasaman Regency is 0.56. This means that to produce patchouli oil in West Pasaman Regency only requires domestic resource costs of 56 percent of the required import costs. So for every US\$1 needed to import patchouli oil, if it is produced in West Pasaman Regency, it only requires US\$0.56. DRC value < 1 indicates patchouli commodity has competitiveness. The lower the value or close to 0, the commodity has high competitiveness.

This value also explains that patchouli farming in West Pasaman Regency is economically efficient and has a comparative advantage and is able to operate without government assistance or intervention, meaning that patchouli commodity in West Pasaman Regency helps farmers' economic activities to increase regional competitiveness in accordance with one of the following: development goals, then this is in line with Lestari's research (2018). The results show that Indonesia's essential oils have a comparative advantage, this is indicated by the RCA value > 1, the gravity model results show the factors that affect Indonesia's essential oil exports significantly on the real GDP variable, destination country, real exchange rate, economic distance, export prices and tariffs.

c. Impact of Government Policy on Output

Table 6

Output Transfer Value (OT) and Nominal Protection Coefficient on Output (NPCO) Patchouli Farming in West Pasaman Regency

No	Indicator	Value
1	Output Transfer (OT)	-27.063.471,24
2	Nominal Protection Coefficient Output (NPCO)	0,89

Based on table 6, it is known that the TO value is negative, which is Rp. -27,063,471.24 and the NPCO value is smaller than one, which is $0.89 < 1$. A negative TO value and an NPCO value smaller than one indicate that there is a government policy that hinders commodities with taxes or export barriers. One of the factors suspected of causing the private price of patchouli to be lower than the social price is the Government's policy in Article 6 of the Regulation of the Minister of Finance No. 89/2020 related to the application of VAT collection on the delivery of certain agricultural products from farmer groups (PKP) to the industry collected not by PKP subject to a tariff of 1%. One of the agricultural products that can be subject to another 1% Value Added Tax DPP is the patchouli essential plant.

This also indicates that there is a government policy that causes the private price of patchouli to be lower than the social price. This results in a transfer of incentives from producers to consumers where consumers buy at a lower price than the price they should pay and producers receive a lower price than the price they should receive.

d. Impact of Government Policy on Input

Table 7

Input Transfer (TI), Nominal Protection Coefficient on Input (NPCI) and Transfer Factor (TF) of Patchouli Farming in West Pasaman Regency

No	Indicator	Value
1	Input Transfer (IT)	-1.738.842,59
2	Nominal Protection Coefficient on Input (NPCI)	0,48
3	Factor Transfer (FT)	4.147.201,00

Based on table 7, it is known that the value of IT is Rp -1,738,842.59, indicating that the profit received is greater financially than without the policy. means that there is a policy of subsidies or taxes on tradable inputs that will increase the profits of producers/farmers because they get incentives.

This is because the tradable input in the form of Phonska NPK fertilizer used in farming is subsidized by the Government. The policy is a fertilizer subsidy policy as stated in the Decree of the Head of the District Plantation Office. West Pasaman No. 188.4/06/DISBUN/I/2017 concerning Determination of Allocation of Subsidized Fertilizer for Plantation Sub-Sector for Fiscal Year 2017 in Sub-District, West Pasaman Regency.

The NPCI value of patchouli farming is less than one, which is < 1 , indicating that there is no protection for input producers, while the sector that uses inputs will benefit from lower production costs. Patchouli farming NPCI value less than one (< 1) indicates that there is a government policy that is protective of tradable inputs. In other words, patchouli farmers have enjoyed the tradable input protection policy from the government.

Then the value of TF is Rp. 4,147,201.00 which means that there is no subsidy on non-tradable inputs causing implicit taxes or transfers of resources out of the system. The price of domestic/non-tradable inputs issued at the private price level is higher than the social price level. One of the causes of factor transfer is the low cost at the social price level for labor. Where the workforce in this study are workers who work based on experience.

e. Impact of Input-Output Policy

Table 8

Value of Effective Protection Coefficient (EPC), Net Transfer (TB), Profit Coefficient (PC) and Subsidy Ratio for Producers (RSP) of Patchouli Farming in West Pasaman Regency

No	Indicator	Value
1	Effective Protection Coefficient (EPC)	0,90
2	Net Transfer (NT)	-29.471.829,65
3	Profit Coefficient (PC)	0,73
4	Subsidy Ratio for Producers (RSP)	- 0,12

Based on table 8, it is known that the EPC value is 0.90. The EPC value < 1 indicates that the government's policy on input-output has not been effective or has hampered farmers in patchouli cultivation, which means that there is no government policy on domestic commodities.



The TB value is Rp. -29,471,829.65 indicates that there is a decrease in producer surplus in the analyzed output. This means that there is no visible economic incentive to increase patchouli oil production so that the producer surplus is reduced due to the absence of government policy on patchouli output.

The PC value is 0.73. PC value < 1 This value indicates that government policies make the profits received by producers smaller, meaning that the overall government policy does not provide large incentives to patchouli farmers. This shows that farmers have to spend 73 percent of funds on consumers because private profits received are more smaller than the social benefit of 73 percent.

The RSP value is -0.12. A negative RSP value indicates that the government policies that apply in the research location make patchouli farmers to incur production costs that are greater than the opportunity costs of producing.

3.2 Patchouli Commodity Sensitivity Analysis in West Pasaman District

Table 9

Changes in Competitiveness Indicators and Impact of Government Policies on Patchouli Farming in West Pasaman District

Indicator	Normal Condition	Asumsion		
		1	2	3
PP	79.839.893,14	31.987.063,79	79.839.893,14	77.895.842,36
PCR	0,64	0,82	0,64	0,65
SP	109.311.722,79	109.311.722,79	139.503.407,70	109.311.722,79
DRC	0,56	0,56	0,50	0,56
TO	-27.063.471,24	-74.916.300,60	-57.624.281,94	-27.063.471,24
NPCO	0,89	0,70	0,79	0,89
TI	-1.738.842,59	-1.738.842,59	-2.084.174,98	44.690,24
NPCI	0,48	0,48	0,44	1,01
TF	4.147.201,00	4.147.201,00	4.123.407,60	4.307.718,95
EPC	0,90	0,70	0,80	0,89
TB	-29.471.829,65	-77.324.659,00	-59.663.514,56	-31.415.880,43
PC	0,73	0,29	0,57	0,71
RSP	-0,12	-0,31	-0,21	-0,13

If there is a decline in patchouli oil prices by 27.27%, patchouli farming in West Pasaman Regency still has competitiveness in terms of competitive and comparative advantages. This can be seen from the PCR and DRC values which are smaller than one, namely 0.82 and 0.56. The sensitivity scenario of a 27.27% drop in output prices causes a decrease in revenue from patchouli oil. The value of the decrease in revenue is 21.43% of private revenue under normal conditions, and the decrease in profit is 59.94%. From this, it can be seen that the selling price of patchouli oil is very sensitive to price changes. This means that every 1% change in price causes a decrease in profit by 2.20%. This shows that the decline in the selling price of patchouli oil is directly proportional to the decrease in revenue and profits of patchouli oil. Then the output transfer value or the impact of divergence also decreased by -27,063,471.24 to -74,916,300.60.

If the rupiah exchange rate against the dollar weakens, in March 2020, the rupiah exchange rate against the dollar at that time reached Rp. 16,367.00 due to the outbreak of the covid-19 pandemic. Changes in currency values only affect the social price of patchouli oil output and the social price of tradable inputs. Changes in the value of this currency have a significant effect on the social benefits received by farmers because the amount of profits received by farmers due to the depreciation of this currency is decreasing. This is due to the increase in the social prices of tradable inputs such as fertilizers (Urea, Phonska, SP-36, ZA) and herbicides (roundup). The weakening of the Rupiah exchange rate against the Dollar caused an increase in the level of social benefits received by farmers by 27.62% of social benefits under normal conditions. The DRCR ratio and the output transfer value (impact of divergence) have changed, meaning that the weakening of the rupiah against the dollar affects the competitiveness of patchouli essential oil.

If the Government does not provide subsidies for production inputs, it will cause an increase in tradable input costs by 111.13% of the tradable input costs that must be incurred during the subsidy policy. This resulted in a decrease in private profits of patchouli commodities by 2.43%. However, this change still provides a level of profit for farmers. The PCR value decreased to 0.65 from the previous 0.64. The PCR value < 1 indicates that the patchouli commodity still has a competitive advantage even though the subsidy policy is not enforced by the government. Because the price of tradable inputs is not subsidized by the government, the value of input transfers has increased and is positive, this happens because the costs of tradable inputs in the private component are greater than the costs of social tradable inputs. Thus, the input transfer value increased by 102.57% to 44,690,34.

4. Conclusion

Patchouli business in West Pasaman Regency has competitiveness both in terms of competitive advantage and comparative advantage. This is indicated by the value of private benefits (PP) and social benefits (SP) which are positive, namely Rp. 0.56 which means it has a high competitive and comparative advantage. The impact of government policies on patchouli oil output causes the private price to be lower than the social price. This condition indicates that the government intervention in the output of the farm is more profitable for consumers because consumers buy a lower price than the actual price. This can be seen through the output transfer value which is negative, namely -Rp.27,063,471.24. The impact of government policies on production inputs causes the private prices of tradable inputs to be lower than the social prices. This indicates that there is a government policy that is protective of tradable inputs or there is a subsidy policy on tradable inputs that will increase the profits of producers/farmers because they get incentives. This can be seen through the negative input transfer value, which is -Rp 1,738,842.59. The impact of government policies on input-output causes a decrease in producer surplus, meaning that there is no economic incentive to increase patchouli oil production. This can be seen through the negative net transfer value, namely -Rp.29,471,829.65.



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