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THE EFFECT OF GOVERMENT POLICY AND MARKET FAILURE ON DIVERGENCE OF CASSAVA COMPETITIVENESS IN SOUTH LAMPUNG

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Abstract: Indonesia is one of the world's leading cassava producers, and Lampung Province is the main producer. Efforts to increase cassava production must be accompanied by good farming activities that link to a complete agribusiness system. This study aims to analyze the divergence effect of cassava competitiveness as an effect of government policies and market failure in South Lampung. This study was conducted using a survey method. The number of respondents was 64 cassava farmers, 8 cassava collectors, and 1 tapioca industry. Data collection was carried out in August-September 2022. This study uses PAM (Policy Analysis Matrix) to analyze the competitiveness and the divergence effect and market structure analysis to analyze the market failure. The result showed that there is a market failure of cassava because the market structure is not perfectly competitive (oligopsony). Therefore, the divergence effect of cassava did not reach the target because it caused the transfer of inputs prices from traders to farmers due to the fertilizer subsidy and the transfer of income from consumers to farmers due to the determination of cassava minimum price (Rp900/kg). However, cassava farming has a competitiveness with the value of comparative advantage (DRCR = 0.30) which is smaller than the value of competitive advantage (PCR = 0.58). The changes from comparative to competitive advantage require government policies to control market failure and to reduce the high transaction cost economy.

Keywords: divergence effect, market failure, cassava, oligopsony, agribusiness system

Abstrak: *Indonesia merupakan salah satu negara penghasil ubi kayu dunia dan Provinsi Lampung merupakan penghasil utamanya. Upaya peningkatan produksi ubi kayu harus diiringi dengan kegiatan usaha tani yang baik dan mempunyai keterkaitan dalam sistem agribisnis yang utuh. Penelitian ini bertujuan untuk menganalisis efek divergensi daya saing ubi kayu akibat kebijakan pemerintah dan kegagalan pasar di Lampung Selatan. Penelitian ini dilakukan dengan menggunakan metode survei. Jumlah responden sebanyak 64 orang petani, 8 orang pedagang pengumpul, dan 1 pabrik tepung tapioka. Pengumpulan data dilakukan pada bulan Agustus-September 2022. Penelitian ini menggunakan PAM (Policy Analysis Matrix) untuk menganalisis daya saing dan efek divergensi serta menggunakan analisis struktur pasar untuk menganalisis kegagalan pasar. Hasil penelitian menunjukkan bahwa terdapat kegagalan pasar ubi kayu yang diakibatkan oleh struktur pasar yang tidak bersaing sempurna (oligopsoni). Oleh karena itu, efek divergensi ubi kayu tidak mencapai sasaran karena menyebabkan terjadinya transfer harga input dari pedagang ke petani akibat subsidi pupuk dan transfer pendapatan dari konsumen ke petani akibat penetapan harga minimum ubi kayu (Rp 900/kg). Namun, usaha tani ubi kayu tetap berdaya saing dengan nilai keunggulan komparatif (DRCR = 0.30) yang lebih kecil dari nilai keunggulan kompetitifnya (PCR = 0.58). Untuk mewujudkan keunggulan komparatif menjadi kompetitif diperlukan kebijakan pemerintah yang ditujukan untuk menghilangkan adanya kegagalan pasar dan menekan tingginya biaya transaksi.*

Kata kunci: *efek divergensi, kegagalan pasar, ubi kayu, oligopsoni, sistem agribisnis*

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INTRODUCTION

Cassava is one of the leading commodities in the food crops sub-sector because it can substitute for Indonesia's main foods (rice and corn), industrial raw materials, feed ingredients, and imports/export commodities. China is Indonesia's largest cassava export country, with US$ 19.71 million (48.14% of the total value) in 2020. On the import side, most of the cassava in Indonesia is imported from Thailand, for US$ 62.83 million (7.47% of the total value) in 2020. Lampung Province is a cassava production center in Indonesia (from seven other provinces) with a production of 6,819,473 tons (36.41% of the total value) in 2020 (Pusat Data dan Sistem Informasi Pertanian, 2021).

Therefore, Lampung Province must increase cassava production and productivity to always contribute in fulfill the demand for cassava in national and international markets. On the other hand, the government provides a policy to support the cassava farmers in order to compete with imported cassava products. Efforts to increase cassava production must be accompanied by good farming activities that link to a complete agribusiness system. Increasing competitiveness can be achieved through the essence of competitiveness itself, namely productivity. Sources of productivity growth are technical change, technical efficiency, and economics of scale through farming activities (Saptana, 2016). These efforts can assist farmers in increasing productivity as well as comparative and competitive advantages in cassava farming.

During the last ten years, there has been no policies from the government for cassava. The government only issued several programs that appeal to cassava industries and held a meeting between farmers and the tapioca industries in Lampung Province in 2021. The results of the meeting were to increase cassava production and productivity, do a transparent cassava transaction with a beneficial partnership, determine a minimum price of cassava (Rp900/kg) with a maximum fraction of 15%, form a forum for tapioca industries in Lampung Province, and conduct the counseling, coaching, and supervision in the development of cassava.

Cassava production produced by Indonesian farmers cannot suffice market demand due to increased demand the development of the animal feed industry (especially large ruminants). In addition, the decrease in the harvested area of Indonesian farmers has exacerbated the situation. This condition caused the processing industry to fulfill its raw material needs by importing semi-finished cassava products in starch, pellets, chips, and coarse flour (Ministry of Trade Republic of Indonesia, 2017 in Sinaga et al. 2021)). In fact, farmer's income will increase if they can increase domestic cassava production rather than importing it (Saptana et al. 2022). Policies to increasing production can be carried out by facilitating farmers to access production facilities (seed, fertilizers, pesticides), capital assistance, and marketing (Saptana et al. 2022).

According to (Zakaria et al. 2021), agribusiness cassava has several problems. However, the institutional collaboration in sustainable partnerships between farmer group association (Gapoktan), cassava industries (tapioca), and an ICT system could improve the farm, industries, and overall cassava agribusiness performance. Besides that, the government must keep the low prices of cassava for the tapioca industries to grow. Efforts that can be made is to provide a reasonable price or a decent price for farmers and industries. According to (Saptana et al. 2022), the output price policy can be carried out through guaranteed output prices by optimizing the function of the farmers market as a captive market for farmers.

Problems can occur from tapioca industries side and farmer's side. Tapioca industries may meet a raw material supply constraints during certain months, resulting in increase of the cost of tapioca production and decrease in profitability or competitiveness. The high costs between farmers and tapioca industries in the cassava transaction process result in weak linkages between them. During the rest of the harvest season, farmers must cover the supply of cassava by using high refraction and low prices of cassava. In other months, the tapioca industries meet a shortage of raw material supplies resulting in a decrease of the revenue and possibly a loss for the year.

There have been many studies on the competitiveness of cassava in Lampung Province. The results of previous studies showed cassava in Central Lampung (Asnawi & Mejaya, 2016; Endaryanto et al. 2022; Zulkarnain et al. 2021; Rosanti et al. 2018), East Lampung (Endaryanto et al. 2022; Rosanti et al. 2018), and North Lampung (Iswara et al. 2021; Rosanti et al. 2018) have a competitive and comparative advantages. However, there is no research has been found whether cassava in South Lampung have a competitiveness or

not. Therefore, this study will complement the previous research. This study does not only focus on the level of competitiveness of cassava but also analyze the divergence effect of competitiveness as an effect of government policies and market failure as well as what operational policies are to turn comparative advantage into a competitive advantage. This study using PAM (Policy Analysis Matrix) and market structure analysis. PAM can identify policy variables that directly affect the competitiveness and market structure analysis can identify the market failure that occur in the cassava's market.

METHODS

This research was conducted in Jati Agung and Tanjung Bintang, South Lampung which was carried out purposively. It is because these two districts have the largest harvest area each of 2.000 ha and 385 ha and the highest cassava production each of 53,224 tons and 10,231.76 tons (BPS Kabupaten Lampung Selatan, 2022). The population of this study was all farmers who farm cassava in Jati Agung (1,000 people) and Tanjung Bintang (100 people). Sampling using a simple random sampling method according to Isaac and Michael in (Ismail, 2018) as follows :

$$s = \frac{\lambda^2 NPQ}{d^2(N-1)+\lambda^2 PQ}$$

Notes: s (Farmers sample); ʎ (Confidence level (90% = 1.645)); N (Farmers population (1,100 people)); P (True chance (0.5)); Q (Wrong chance (0.5)); d (Deviation (10% = 0.1)).

Based on these calculations, the sample used was 64 farmers which were divided into 58 farmers from Jati Agung and 6 farmers from Tanjung Bintang. Besides farmers, there were 8 cassava collectors and 1 tapioca industry who were taken using the snowball sampling method as (Abriani et al. 2022) research. This study used primary data, was obtained from interviews with respondents (farmers, cassava collectors, and tapioca industry), and secondary data, was obtained from various sources, such as kind of literature, books, journals, and agencies related to this research. Data collection was carried out in August-September 2022 using the survey method.

This study used the PAM (Policy Analysis Matrix) method to describe competitiveness which is shows three lines. The first line represents the private prices, the second line represents the social price, and the third line represents the impact of government policies (divergence) (Lestari et al. 2020) (Table 1). The PAM method explains the divergence effect as an effect of the government policies. As in research (Septarisco and Prihtanti, 2019), divergence effect are divided into government input policies (IT, NPCI, and FT), government output policies (OT and NPCO), and government input-output policies (EPC, NT, PC, and SRP). Calculations from this analysis are in the notes of Table 1.

Apart from being caused by government policies, divergence effect is also caused by market failure. Market failure of cassava in this study can be identified through the market structure analysis in the terms of marketing channels. Market structure defined as market characteristics based on the number of producers and consumers, several types and characteristics of the products produced, freedom and barriers of entry and exit of the market, and market price information for the products (Rumallang et al. 2019).

The competitiveness of cassava is highly dependent on the use of inputs from cassava farming which are tradable and non-tradable to produce output in the form of cassava tubers which can be distributed according to valid prices at the farmer level. This marketing activity will be resulting revenue which will determine the amount of cassava farming income that also will indicate whether the cassava farming has competitive and comparative competitiveness which can be shown from the value of private profits and social benefits by using PAM method. In addition, PAM can explain government policies based on the divergence effects that has an impact on the input, output, and input and output of cassava farming. The divergence effect can also explain cassava marketing activities by using market structure analysis that aims to increase income which is influenced by farmers' receipts from the sale of cassava. The size of the farmer's income is influenced by the efficiency or not of the marketing activities of the cassava itself. The framework can be seen in Figure 1.

Table 1. Policy Analysis Matrix (PAM)

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

Source: Monke & Pearson (1995)

Notes Cassava Farming:

Private Profits	D	= A – (B+C)
Social Profits	H	= R – (F+G)
Output Transfers (OT)	I	= A – E
Input Transfers (IT)	J	= B – F
Factor Transfers (FT)	K	= C – G
Net Transfers (NT)	L	= D – H
Private Cost Ratio (PCR)		= C/(A-B)
Domestic Resources Cost Ratio (DRCR)		= G/(E-F)
Nominal Protection Coefficient Output (NPCO)		= A/E
Nominal Protection Coefficient Input (NPCI)		= B/F
Effective Protection Coefficient (EPC)		= (A-B)/(E-F)
Profitability Coefficient (PC)		= D/H
Subsidy Ratio for Producers (SRP)		= L/E

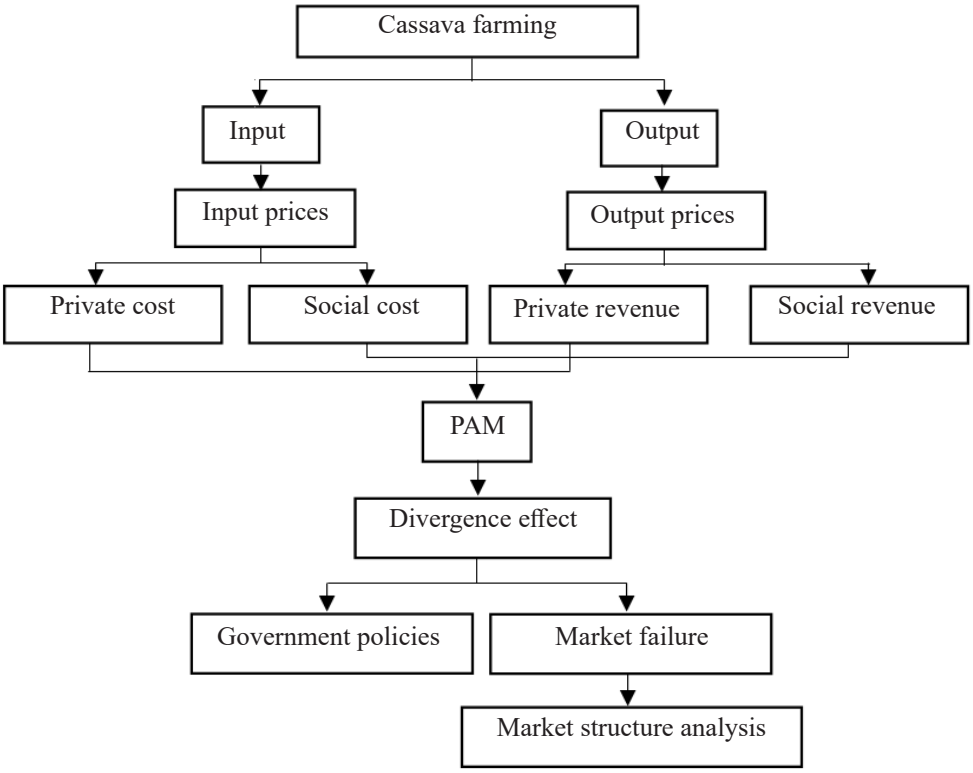

Figure 1. Framework of the divergence effect of cassava competitiveness as an effect of government policies and market failures in South Lampung

RESULTS

Cassava Respondents Characteristic

The characteristics of respondents in this study were classified into three, that are farmers, collectors, and tapioca industry as shown in the following Table 2. There are 64 farmers in this study, based on age is on evenly distributed because most farmers are in the age group of 38–54 years. The level of education received is the high school level of 59.38% which is classified as a moderate level of education. The largest number of family responsibilities is in the group of 3-5 people with 15–27 years of farming experience. Land area with a range of 0.5–2 hectares is 84.36% which is classified as medium land with 78.12% of farmers having their own land.

Besides farmers, there are 8 cassava collectors who in productive age with an education level is high school of 63.5%. There are 50.00% of cassava collectors have selling cassava experience in a range of 16–25 years so they have sufficient experience. In addition, there is a tapioca industry named PT. Darma Agrindo that located in Jati Agung. PT. Darma Agrindo applies cassava prices in an integrated manner with all tapioca industries under PT. Bumi Waras with a total of 18 tapioca industries in Lampung Province. The increasing or decreasing cassava prices was influenced by the price of tapioca flour in the market.

Identification of Inputs and Outputs of Cassava Farming in South Lampung

Cassava farming uses inputs as tradable inputs and non-tradable inputs. The tradable inputs consist of chemical fertilizers and pesticides. While, the non-tradable inputs consist of land, seeds, manures, agricultural tools and machines (ATM), and labors. The output produced is cassava with have matures between 7–9 months with a different types of seed varieties (Bayeman, Thailand, Garuda, and Cassesart). The different types of seed varieties are not affecting the production and productivity because these are suitable for cultivation in South Lampung climate conditions.

Table 2. Characteristics of farmers and cassava collectors

	Farmers			Collectors		
Variables	Categories	Number (People)	%	Categories	Number (People)	%
Age (years)	21 – 37	7	10.94	40 – 50	5	62.50
	28 – 54	45	70.31	51 – 55	2	12.50
	55 – 71	1	18.75	56 – 65	1	25.00
Education (levels)	ES	12	18.75	ES	3	36.50
	JHS	13	20.31	SHS	5	63.50
	SHS	38	59.38			
	(-S)	1	1.56			
Family Responsibilities (years)	0 – 2	12	18.75	5 – 15	2	25.00
	3 – 5	52	81.25	16 – 25	1	50.00
				26 – 40	2	25.00
Experience (years)	2 – 14	28	43.75			
	15 – 27	32	50.00			
	28 – 40	4	6.25			
Land Area (hectares)	> 2	2	3.12			
	0.5 – 2	54	84.36			
	< 0.5	8	12.25			
Land Ownership (Status)	Own	50	78.12			
	Rent	14	21.88			

Notes: ES = Elementary School, JHS = Junior High School, SHS = Senior High School, (-S) = Not Studying

Determination of Input and Output Private Prices of Cassava in South Lampung

The private prices used in this study is the price that used at the time the research was conducted (planting season in 2021) (Table 3). The private land prices use the actual price of land rent and land tax in cash per hectare per year. The private seed prices use the actual prices of seed for one cassava seed. The private labor prices use the actual wage paid by farmers to labor in one working day. The private fertilizers, herbicides, and ATM prices use the actual prices of them. The private cassava prices use the prices received by farmers when selling cassava.

Determination of Input and Output Social Prices of Cassava in South Lampung

The social prices of cassava in this study are calculated based on its border prices that consists of CIF (Cost Insurance and Freight) prices and FOB (Free on Board) prices (Table 4). The social price of currency exchange rates is the price of domestic money that is associated with foreign currencies on the money market, so it is obtained the SER (Shadow Exchange Rate) value. The SCF (Standard Conversion Factor) value is obtained from the calculation of the export value minus export taxes and the import value plus import taxes (Nursalam et al. 2018) then resulting the SCF value of 1.00. Furthermore, the SER value obtained by dividing the rupiah exchange rate of Rp14,265 (Bank Indonesia, 2021) with the SCF value of 1.00 so that the SER value is Rp14,265.73/US$.

The social price of urea (890 US$/ton) and NPK Phonska (745 US$/ton) is based on FOB prices (The Pink Sheet, 2022). This value is multiplied by the social price of the currency exchange rate then added by loading and unloading, warehouse, depreciation, etc (3% of FOB), transportation (Rp10/kg), and distribution costs to farmers (Rp55/kg) (Zulkarnain et al. 2021), so its obtained the urea social price of Rp13,032.39/kg and NPK Phonska of Rp10,901.81/kg. The social price of manures used manures private price (Rp673/kg) because manures is a non-tradable input. The social price of herbicides is based on its private price which is reduced by a 10% import tariff and a 10% value-added tax (Kata et al. 2020) (Rp539,355/liter). The social price of land is the actual land rent value of Rp6,843,750/ha/year) because land can't be traded internationally (Sukmaya et al. 2017). Meanwhile, farmers are required to pay Land and Building Taxes (PBB) that social price is the same as the private price (Rp47,768/ha/year).

The social price of seeds is the same as the private price (Rp129/stem) because seeds are obtained from local seeds (Iswara et al. 2021). The social price of the agriculture tools and machines is the same as the depreciation value per year (Rp186,595/year) (Rosanti et al. 2018). The social price of capital is calculated by adding the interest rate value to the average inflation (Alghoziyah et al. 2016). The interest rate working capital for a commercial banks in 2021 is 8.72% and the average inflation rate in 2021 is 1.87% (Bank Indonesia, 2021) so the social price for capital interest is 10.59%. The social price of labor is estimated to be 80% of the private price is Rp63,375/day (Suryana, 1980). This is because labors in the Indonesian agricultural sector is generally uneducated (unskilled) and have low productivity, yet the level of wages provided often exceeds the opportunity cost (Zulkarnain et al. 2010). Thus, the wages that should be paid are lower than the labor wages paid by farmers (Suryana, 1980 in Rosanti et al. 2018).

The social price of cassava uses the FOB price of tapioca Bangkok (US$ 483.30/ton) for the period January to December 2021 (Thai Tapioca Starch Association (TTSA), 2022). The price of tapioca is the price of an imported commodity in Indonesia so that the FOB of tapioca added with shipping and insurance costs will produce a CIF price of US$ 52.72/ton (Zulkarnain et al. 2021). These results then are converted into domestic currency and multiplied by the social price of the currency exchange rate to obtain a CIF price in the domestic currency of Rp7,646.72/kg. Furthermore, these results are added to the cost of loading and unloading, shrinkage, etc (3% of FOB) (Zulkarnain et al. 2021) and transportation to the province (Rp100/kg), so that the CIF value in domestic currency is Rp7,976.12/kg. The quality of cassava is equal to the quality of imports so that the conversion process to tapioca is calculated (Rosanti et al. 2018). The conversion value is 25% of the CIF value in domestic currency (SKKNI Bidang Pengolahan Tapioka Kementerian Perindustrian, 2019 in (Zulkarnain et al. 2021)) so that the social export price in a trader is Rp1,994.03/kg. This value is added by distribution from the farmers (Rp100/kg) so that the social price of cassava in farmers is Rp2,094.03/kg.

Table 3. Input and output private prices of cassava

Descriptions	Units	Private Prices (Rp/Units)
Land rent	Ha/year	6.843.750
Land tax	Ha/Year	34.040
Seeds	Stem	129
Labors	HOK	79.219
Herbicides	Liter	674.193
Manures	Kg	673
Ureas	Kg	2.680
NPK	Kg	2.795
ATM	Year	186.595
Cassava	Kg	1.158

Table 4. Input and output social prices of cassava

Descriptions	Units	Private Prices (Rp/Units)
SER	US$	14,265.73
Urea	Kg	13,032.39
NPK	Kg	10,901.80
Manures	Kg	672.00
Herbicides	Liter	539,355.00
Land rent	Ha/years	6,843,750.00
Land tax	Ha/years	34,040.00
Seeds	Stem	129.00
ATM	Year	186,595.00
Capital	%	10.59
Labors	HOK	63,375.00
Cassava	Kg	2,094.03

Competitiveness of Cassava in South Lampung

The results in Table 5 showed that cassava farming in South Lampung is financially and economically profitable in one hectare with the value of private and social profits that are positive of Rp 12.436.706 and Rp35,579,607 respectively. According to Nurfaizah in (Ramadan, 2018), the value of social profit which is higher than the private profit can be caused by the FOB price of cassava on the international market which is higher than the domestic price. Divergence effect of profit has a negative value of (Rp23,142,901), which means that farmers received lower profits than they should. In addition, there is a transfer income to consumers from farmers at Rp26,434,045/hectare. This is due to oligopsony practices that resulted a market failure because the cassava collectors and tapioca industry control the cassava price in the market, while the farmers only act as price takers. Therefore, the government's policy regarding determining a cassava minimum price of Rp900/kg does not make an effective contribution to farmer's revenue.

Divergence effect of tradable input occurred due to input policy (fertilizer subsidies) which resulted in transfers of production inputs from input traders to farmers of Rp5,016,016. This situation does not occur in the non-tradable input market because farmers pay the non-tradable input higher than the social prices. These results are compatible with the research (Mubarokah and Tamami, 2019), the cost of non-tradable inputs is higher than the tradable inputs. It happened because the inputs used in cassava farming come from domestic. This means that Indonesian is still able to provide input this cassava farming. Based on the PAM table in Table 5, cassava competitiveness can be determined through PCR and DRCR calculations. The results of PCR and DRCR were 0.58 and 0.30. The PCR value was higher than the DRCR value, which means that without government policies, cassava farming requires fewer domestic factors to produce a unit of added value compared to with government policies. In the other words, fulfilling the demand for cassava is better if it is cultivated domestically rather than importing it.

Divergence Effect of Cassava Competitiveness as an Effect of Government Policies in South Lampung

The impact of government policies can be seen from three indicators, that are input policies, output policies, and input-output policies (Table 6). The results showed that the IT value has a negative sign (-5.016.016) with the NPCI value < 1 (0.3441), which means that there were no transfers from farmers to tradable input traders due to the fertilizer subsidy policy. These results are compatible with the research of (Fadli et al. 2017) that the impact of input policies is that farmers receive lower prices due to the form of input subsidy policies. Besides input subsidies, government policies affecting tradable inputs and domestic factors may consist of trade policies, interest rate subsidies, regional minimum wages (UMR), and value added tax.

The FT value is 1,724,872, which means the costs incurred by farmers to pay for non-tradable inputs are higher than they should be. The result indicates that there are government's interventions resulting in market distortions observed by variable detrimental to cassava farmers. According to the research of (Rahman et al. 2016), increasing the wage labor market must be done. This is an effort that will enable farmers to get benefits from increased production through wages because labor is the main variable input in the production process of agricultural commodities.

Table 5, Competitiveness of cassava in South Lampung

Description	Revenue (Rp)	Cost (Rp)		Profit (Rp)
		Tradable Input	Non-Tradable Input	
Private Price	32,707,564	2,630,955	17,639,903	12,436,706
Social Price	59,141,609	7,646,971	15,915,032	35,579,607
Divergence	-26,434,045	-5,016,016	1,724,872	-23,142,901

Table 6. The impact of government policies in inputs and outputs of cassava in South Lampung

Input Policies		Output Policies		Input-Output Policies	
Indicators	Value	Indicators	Value	Indicators	Value
Input Transfers (IT)	-5,016,016	Output Transfers (OT)	-26,434,045	Effective Protection Coefficient (EPC)	0.5841
Nominal Protection Coefficient Input (NPIN)	0.3441	Nominal Protection Coefficient Output (NPON)	0.5530	Net Transfers (NT)	-23,142,901
Factor Transfers (FT)	1,724,872			Profitability Coefficient (PC)	0.3495
				Subsidy Ratio for Producers (SRP)	-0.3913

The OT value is negative (26.434.045) with the NPCO value < 1 (0.5530), which means there is no transfer from consumers to farmers. It is caused the income received by farmers to be lower than it should be due to the imperfect market structure of the cassava (oligopsony). This condition is the same as the research of (Meliyana et al. 2013) that the incentives provided by the government to farmers have not been able to increase cassava production and competitiveness in North Lampung. Therefore, government must make policies to keep cassava selling prices at a low level is detrimental to producers and profitable to tapioca industries and consumers.

The EPC value is positive of 0,61 but less than 1, which means there are market failure and the government's policies are not protective the cassava domestic, so the farmers do not get a real benefit due to the low cassava price. Existing government policies should be able to protect farmers and encourage exports. According to (Handayani et al. 2020), the EPC value > 1 indicates that farming activities must be increased to be more competitive. Efforts can be made by increasing production, improving production quality through post-harvest technology, and increasing product added value (development of derivative products) so that government policies are more in favor to farmers.

The NT value is negative, which means the government policies do not reach the target because of farmers suffer a loss of Rp23,142,901. This condition occurs in the research of (Lestari et al. 2017), the negative NT value caused loss for farmers due to government policies applied to inputs and outputs so that the private profits earned by farmers are lower than social benefits. The PC value is positive (0.39) but less than 1, which means the market failures and government policies have a negative impact because they reduce cassava farmers income by 64.0%. According to (Novia et al. 2017) even though the profits received are lower than they should be because of the value of PC > 0, they still do not run into big losses.

The SRP value is negative (0.3913), which means government policies have a negative impact on the production cost structure because the production costs paid by farmers are higher than the profits that should be received. The SRP value is negative because farmers have limited knowledges and abilities for cultivation and technological adaptation so the use of resources and government assistance is not as efficient as in the research of (Halimah et al. 2021).

Divergence Effect of Cassava Competitiveness as an Effect of Market Failure in South Lampung

The traders in this study were cassava collectors, who bought cassava directly from farmers, and tapioca industry, who bought cassava from collectors or farmers, who were both in the same location. The marketing channels in this study can be seen in Figure 2. There are two marketing channels which have many producers than consumers, which means the market

structure is oligopsony. The oligopsony market structure is a market structure that is not perfectly competitive because consists of several consumers who are facing many producers, so the market structure is inefficient. The marketing channels are free to entry and exit the market as seen from the fact that there is no regional division of purchasing and buying cassava by farmers, collectors, and tapioca industry. Although there are no barriers to entry and exit the market, barriers are still occurred in each marketing channel.

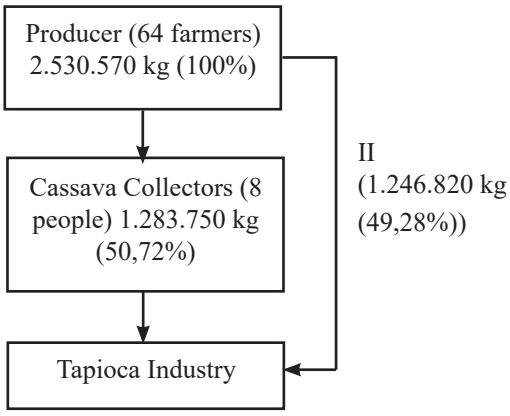

Figure 2. The marketing channels of cassava in South Lampung

The farmers barriers are the low price of cassava that is setted by the tapioca industry followed by the refraction of cassava tonnage. This result is compatible with the research of (Abriani et al. 2022), that farmers can only accept the price offered by traders because farmers do not have power in setting prices. In addition, farmers do not have adequate transportation, so they must carry out a harvesting system with collectors. This condition can be overcome by coordination between agencies that can regulate the availability of the required facilities and infrastructure. Cassava sales by producers occur to information on prices and refraction as well as pressure on household needs. The source of information regarding prices comes from tapioca industry so that this becomes a benchmark for cassava collectors in determining prices to farmers.

Furthermore, the weather became another barrier perceived by farmers. When it's rainy season, the cassava rot more quickly and farmers do not want to sell it because the water content is very high, so they are worried that the refraction given will be even bigger. This is compatible with the research of (Zakaria et al. 2019) that cassava has characteristic that is easily damaged but still has to sell because of household pressure. The weather barrier is not only perceived by farmers, but also collectors and tapioca industry to carry out the harvest will be hampered if the weather is inadequate. During the rainy season, it is difficult for vehicles that transport cassava to enter the land because the roads are muddy. During the dry season, cassava is difficult to harvest because of the hard soil condition.

Managerial Implication

Divergence effect of cassava competitiveness is caused by government policies on cassava input-output and cassava market failure. The results showed that the government policies did not reach the target because the income received by farmers to be less than it should be. This is supported by the market distortion of the market structure of cassava in the form of oligopsony (there are more farmers than traders) so that farmers only act as price taker. Although cassava farming in South Lampung is already competitive, it still needs to be improved considering that Lampung Province is one of the cassava producers that supports world cassava's demand. Therefore, the best policy is needed to increase the competitiveness of cassava. This policy can be pursued by increasing cassava production and productivity through a good agribusiness system.

According to the research (Endaryanto et al. 2022) increasing cassava production can be carried out with strategies, that are improving technology by increasing seed quality, balancing the access of fertilizer subsidies, increasing access to irrigation infrastructure facilities, and developing human resources. Besides that, farmer cooperatives organize farmers and increase their negotiating powers so that can help farmers save money by lowering transaction costs and adding value. The policy to increase the competitiveness of cassava in Lampung Province that can be done is to increase output by 20% even though the cost of fertilizer increases by 20%.

The main effort to increase cassava production can be done by increasing harvested area and productivity. According to Taslim & Rifin (2020) land expansion by utilizing idle land can be done to increase the productivity of cassava. Intensification in increasing production and productivity of cassava can be done by using technology, fertilizers, and superior seeds. The volume of production and productivity from tapioca processing also needs to be improved. Based on Saptana et al. (2021) research, the government can

develop the farming activities in production centers with an agricultural area approach to achieve an efficient business scale. Therefore, it is necessary to support agricultural infrastructure, the use of certified seeds, complete and balanced fertilization, organic fertilizers, and using agricultural mechanization with rotary hand tractors.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Divergence effect of cassava competitiveness on inputs (fertilizer subsidies) causes farmers pay less for tradable inputs but pay more for non-tradable inputs. Divergence effect of cassava competitiveness on output (cassava minimum price of Rp900/kg) causes the income received by farmers are lower than it should be due to imperfect market structure (oligopsony) and cassava private prices is lower than the social prices, so it caused a transfer income from farmers to consumers. Divergence effect of cassava competitiveness on input-output did not reach the target because of the selling price of cassava is low so it caused losses for farmers due to reduced revenue and the costs paid by farmers higher than the profits earned. However, cassava farming has a competitiveness with the value of comparative advantage (DRCR = 0.30) which smaller than the value of competitive advantage (PCR = 0.58). For the changes from comparative to competitive advantage require government policies to control the market failure and to reduce the high transaction cost economy.

Recommendations

Based on the results and discussion, the recommendations that must be carried out by farmers are continuing cassava farming so that they can still fulfill domestic demand and contribute the export activities considering that Indonesia is one of the largest cassava's producing countries in the world. For the tapioca industries are to continue to follow government policies regarding to cassava minimum price and maximum refraction so that it does not harm farmers and provide option for discussion and collaboration with industries to handle it. For the government, the supervision needs to be carried out as an effort to increase the performance of cassava farming through a good agribusiness system, make policies that do not harm farmers, and encouraged to promote the farmers-industries collaboration with both moral and financial assistance. For other researchers is that further research is needed regarding finding the right strategies to increase the competitiveness of cassava in South Lampung.

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