Impact of Government Policy on Advantages and Competitiveness of Corn (Case Study in Tigo Nagari District, Pasaman District West Sumatera Province)

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Abstract

This study aims to analyze the level of private and social benefits of corn farming, the competitiveness of corn through comparative and competitive advantages and the impact of government policies on the benefits and competitiveness of corn commodities in Pasaman Regency. This study uses a quantitative survey method that uses questionnaires and interviews. The sampling method is simple random sampling with a sample of 40 respondents. Data analysis method used is Policy Analysis Matrix (PAM) and sensitivity analysis. The results showed that the advantages of corn commodities per ha per season were seen from the value of private profits of Rp. 6,937,437 and social profit value Rp 8,947,076, which shows that corn farming is profitable, then corn commodity in Tigo Nagari District Pasaman District has competitive advantages and comparative advantages (PCR = 0.53 and DRC = 0.47), the impact of policy on inputs, so as to reduce costs farming (NPCI = 0.73). However, the output price received by farmers is still lower than the shadow price (NPCO = 0.87). The output policy cannot protect local farmers, and this policy on corn farming is not effective (EPC = 0.88).

Keywords: Competitiveness; Profit; Policy Analysis Matrix; Corn Farming.

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1. Introduction

The agricultural sector is the main pillar of Indonesia's economic development because almost all of Indonesia's economic activities are centered on the sector. The agricultural sector has a strategic role in maintaining the stability of the country through the availability and food security. Food security is a prerequisite for a nation including Indonesia. Therefore, development in the food sector is a national development priority in the 2015-2019 Working Cabinet period. This was followed up by the Ministry of Agriculture by establishing seven major food commodities that were prioritized to be developed in the next five years, three of which were food crops, namely rice, corn, soybeans [1].

Corn is one of the agricultural commodities that have high economic value and potential to be developed. Increased demand for corn in the country related to the development of the feed industry. Corn is the main raw material for poultry feed (about 50% of the ration) so that the price of corn will greatly affect the cost of poultry production [2]. In increasing corn productivity, the government continues to encourage increased production through the dissemination of superior seeds and improved site-specific maize cultivation techniques. Efforts to encourage national corn production are also appropriate through the provision of output price stimuli to corn farmers. The fact in the field is that corn prices are often low and tend to be unilaterally suppressed by feed factories / traders, not giving enough stimulation to farmers to use better production technology, so that productivity is still low. Low corn prices also do not stimulate farmers to plant corn in a wider area [3]. The government is currently making a policy and program to increase the production of rice, corn, soybeans in 2015 by issuing the Minister of Agriculture Regulation No. 03 / Permentan / OT.140 / 2/2015 concerning the guidelines for UPSUS (Special Efforts) to increase the production of rice, corn and soybeans (UPSUS PAJALE) through an irrigation network repair program and its supporting facilities [4]. This shows that the government's attention to food self-sufficiency, especially corn, is of considerable concern.

West Sumatra is a province that is rich in agricultural development potential, this is supported by natural resources and local governments that always facilitate and offer opportunities to any party to be able to develop this potential. Plants other than rice that are also relied on in West Sumatra are corn plants. Corn production in West Sumatra in the last 5 years has increased, where for 2012 the production was 471,849 tons while in 2017 the production was 711,532 tons [5]. The regional government of West Sumatra Province has established Pasaman Regency as one of the corn production areas in West Sumatra that participates in taking market opportunities. The District of Pasaman was designated by the West Sumatra Provincial Government as a corn buffer regency through the Governor's Decree Number: 521.305.2013 concerning the establishment of food crops and horticulture farming areas. In order to increase corn production, the government carries out various policies which include input and output policies [1]. Policies related to corn farming inputs include fertilizer subsidies.

The Government In implementing self-sufficiency in food for rice, corn, soybeans (Pajale), made a policy and program to increase Pajale production in 2015 by issuing Regulation of the Minister of Agriculture of the Republic of Indonesia Number 03 / Permentan / OT.140 / 2/2015 concerning UPSUS guidelines (Special Efforts) improvement production of rice, corn and soybeans Through the Upsus program three main

commodities of rice corn soybean (Pajale), In Upsus Pajale activities, all strategies and efforts are made to increase planting area and productivity in food production areas. Existing government policies will affect the input and output in corn farming. Policies that cause input costs to decrease and add value to output will increase the competitiveness of corn farming, while policies that cause input costs to rise and the value for decreasing output will reduce competitiveness [6]. Changes in corn prices and input prices such as fertilizer often affect the use of inputs and production decisions. In addition, it will also affect the income received by corn farmers, because the sustainability of corn farming depends on the size of the profits. The low selling price of corn followed by high production costs has caused the ability of corn farmers to obtain declining profits.

A commodity will be able to compete in the domestic and foreign markets if it has high competitiveness and this is reflected in the good price and quality and the existence of government intervention in the form of policies carried out. By seeing a huge opportunity for increasing production and development of Indonesian corn commodities to meet domestic and foreign needs, and as a buffer district for corn commodities in West Sumatra which has the potential to increase the amount of corn production, thus, it is important to question 1) How does corn farming in Pasaman Regency still benefit privately and socially, 2) How is the value of corn competitiveness seen from competitive and comparative advantages, 3) What is the impact of government policy on corn competitiveness in Pasaman Regency.

2. Research methods

The research method that will be used is the survey method. The research location was determined intentionally (purposive) in Pasaman District, Tigo Nagari District, on the consideration that Tigo Nagari District was one of the central corn production in Pasaman Regency and Pasaman Regency, including in the area designated by the West Sumatra Provincial Government as a corn crop buffer Regency through Governor's Decree Number: 521.305.2013 concerning the establishment of food crops and horticulture farming areas. The research was conducted on April 15 2018 to May 14 2018.

Based on the information obtained, the number of farmers in Pasaman district in Tigo Nagari District was 893 people. The number of samples taken was 40 people. Sampling techniques used by using formulas [7] as follows:

$$n_i = \frac{N_i}{N} \times n$$

Where :

n_i = Sample $_i$ N = Total population

N_i = Population $_i$ n = Total Sample

The population will be grouped into 3 Nagari spread in Tigo Nagari District including Nagari Binjai, Ladang

Panjang and Malampah. Then from each Nagari a proportional sample of corn farmers was taken as follows:

Table 1: Total Samples of Corn Farmers in Tigo Nagari District, Pasaman Regency

No	Nagari	Total population	Sampling	Total Sample
1	Binjai	266	266/893 x 40 = 11,9	12
2	Ladang Panjang	290	290/893 x 40 = 12,9	13
3	Malampah	337	337/893 x 40 = 15	15
	Total	893		**40**

The approach using Policy Analysis Matrix (PAM) is an analytical tool used to determine comparative advantage and competitive advantage and the impact of policy interventions in the exploitation of various farming activities as a whole and systematically. There are several stages before the approach using Policy Analysis Matrix (PAM), namely 1) determining the input of corn farming, 2) determining the price of shadow input and output, 3) sorting costs into tradable and domestic groups, 4) calculating the income from corn farming, 5) calculating and analyzing various indicators that can be produced by PAM [8].

2.1. Determination of shadow prices

In this study, for each output and input set two price levels, namely market prices and shadow prices. Market price is the level of market price received by an entrepreneur in the sale of his products or the price level paid in the purchase of production factors. According to [9], shadow prices are prices that occur in an economy in conditions of perfect competition and equilibrium conditions. The condition of the equilibrium cost is the same as the market price, it is difficult to find, so to obtain a value that is close to the equilibrium cost or shadow price, it is necessary to adjust the prevailing market price.

Calculation of shadow prices in this study uses adjustments such as [9]. Shadow prices are generally determined by issuing distortions due to government policies such as subsidies, taxes, determining minimum wages, price policies and others. In this study, the traded commodities will be approached with a border price.

- Price of Output Shadows

  Shadow output prices are output prices that occur on the world market if the free market is applied. Price of shadow output for export commodities or potentially export is used at border prices, namely FOB (free on board) prices. While the shadow output price for imported commodities is used as border price, namely the price of CIF (cost insurance freight).

- Price of shadow of agricultural production facilities

  The calculation of the shadow price of agricultural production facilities and equipment that are tradeable is the same as the calculation of the output shadow price, namely by using the border price, ie for export commodities the FOB (free on board) prices are used and for imported commodities are used as border

prices ie CIF prices (cost insurance freight). While the calculation of saprotan shadow prices and non-tradeable equipment is used at domestic prices after issuing several domestic factors.

- Price of shadow labor

If the labor market competes perfectly, then the prevailing wage rate in the market reflects the value of marginal productivity [9]. In this situation the level of wage that occurs can be used as the shadow price of labor.

- Price of shadow of land.

Determination of land shadow prices can be approached through: (1) net income of the best alternative crop that is usually planted on the land, (2) the rent value applicable in the local area, and (3) the value of land lost due to the project, and (4) not included in the calculation so that the profits obtained by farmers are return to management and land. In this study the shadow price of the land will be used as proposed by [9], ie with the rent value.

- Price of shadow currency value.

The price of the shadow of the exchange rate is the price of domestic money in relation to foreign currency that occurs in the exchange rate market in perfect competitive conditions. One approach to calculating the shadow price of the exchange rate is that the shadow price must be at the level of the balance of the exchange rate. Balance occurs if in the money market all restrictions and subsidies on exports and imports are eliminated [9].

Calculation of the matrix in the row and column row in PAM as follows:

Table 2: Components of the Policy Analysis Matrix (PAM) compiler

No		Revenues	Cost		Profit
			Tradable Input	Domestic factors	
1	Private Prices	A	B	C	D
2	Social Price	E	F	G	H
3	Divergences	I	J	K	L

Source: [10]

- Calculating Profits

Private profit

PP = D = A - B – C

Financially, farming activities will be feasible to continue, if the private profit is greater or equal to zero, on the

contrary if it is less than zero then the farm loses.

Social benefits

Economically the exploitation of a commodity deserves to be continued.

PS = H = E - F – G

if the value of social benefits is more than one or equal to zero and if the value is less than zero then the farming activity is not feasible to continue because it can cause losses.

- Calculating comparative and competitive advantages

Private cost ratio (PCR)

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

If PCR has a value smaller than one, then a commodity will have a competitive advantage, which means that to increase the added value of one unit, additional domestic factor costs are required which are less than one unit.

Resource Cost Ratio (DRC)

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

If the DRC has a value smaller than one, then a particular commodity business will have a comparative advantage, which means that the exploitation of the commodity has economic efficiency.

- Calculating the impact of government policies

Output Policy

Transfer Output (TO)

OT (I) = A-E

Transfer Output shows government policy that is applied to output which causes different private and social output prices. The value of the output transfer shows the amount of intensive society towards producers. The positive value of output transfer means that the public must buy at a price that is more expensive than the price that should be paid and the producer receives a price greater than the price received.

Nominal Output Protection Coefficient (NPCO)

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

Protection Coefficient Nominal Output is used to measure the impact of government policies that cause differences in output values measured by private and social prices. If the value of NPCO is smaller than one, it indicates that there is a government policy that inhibits the export of output in the form of taxes.

Input Policy

Transfer Input

(TI) TI = J = B − F

Positive Transfer Input values indicate government policy on foreign inputs causing greater profits than without policies. Negative IT values indicate that government policies are financially less profitable than without policies.

Nominal Input Protection Coefficient (NPCI)

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

More than one nominal input protection coefficient indicates protection against input producers, while sectors that use these inputs will be disadvantaged by high production costs. If the NPCI value is smaller than one, it indicates that there is a constraint on input export, so that production uses local input.

Factor Transfer (TF)

TF = K = C − G

Factor Transfer Value indicates the amount of subsidies for non-tradable inputs, where if the TF value is positive then there is a negative subsidy or tax on non-tradable inputs, whereas if TF has a negative value then there is a positive subsidy on non-tradable inputs.

- Calculate Input-Output Policy

Effective Protection Coefficient (EPC)

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

Effective Protection Coefficient values show the direction of government policies whether they are effective in protecting or inhibiting domestic production. The EPC value is greater than one indicating the high protection of the government in the production system of a commodity, whereas if the EPC value is less than one indicates

the government's protection against the production system is very low.

Net Transfer (TB)

TB = L = D – H

Net transfer values indicate inefficiencies in the production system.

If TB has a value greater than zero then this value indicates an additional producer surplus caused by government policies carried out on inputs and outputs.

TB values smaller than zero will indicate the opposite.

Advantage Coefficient (PC)

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

The profit coefficient value shows the impact of government policy on profits received by producers.

If the value of a PC is less than one, it shows a government policy that results in smaller profits received by producers than without policies.

Conversely, if the value of a PC is more than one, it means that government policies result in greater profits received by producers.

Subsidies Ratio for Producers (SRP)

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

SRP values less than zero indicate that government policies cause producers to issue production costs less than the cost of production to produce.

However, if the SRP value is more than zero, it shows that the current government policy has caused the producer to issue producer costs greater than the cost of production.

3. Results and discussion

This study measures the competitiveness of whether the corn farming system at the research location has a competitive and comparative advantage.

 The analysis tool used is Policy Analysis Matrix (PAM). The results of the analysis based on PAM calculations can be seen in Table 3.

Table 3: Corn Farming Policy Analysis (PAM) in Pasaman Regency

No		Revenues	Cost		Profit
			Tradable Input	Domestic factors	
1	Private Prices	15,665,350	784,597	7,943,316	6,937,437
2	Social Price	17,959,304	1,068,912	7,943,316	8,947,076
3	Divergences	-2,293,954	-284,315	0	-2,009,639

Private Profit	: 6,937,437	Private Cost Ratio	: PCR = 0.53
Social Profit	: 8,947,076	Domestic Resource Cost Ratio	: DRC = 0.47
Output Transfer	: -2,293,954	Nominal Protection Coefficient Output	: NPCO = 0.87
Input Transfer	: -284,315	Nominal Protection Coefficient Input	: NPCI = 0.73
Factor Transfer	: 0	Effective Protection Coefficient	: EPC = 0.88
Net Transfer	: -2,009,639	Profit Coefficient	: PC = 0.78
		Subsidy Ratio for Producers	: SRP = -0.1118

The data in Table 3 shows the results of Policy Analysis Matrix (PAM) for Corn Farming in Pasaman Regency. Based on these data, farming for corn is beneficial, both financially and economically. This is because it has positive private and social income. These financial benefits and economic benefits are influenced by farm income, the cost of foreign inputs or inputs traded in the international market, the cost of domestic inputs or domestic factors as well as private prices and social price of output.

3.1. Competitive Advantage Analysis

Competitive advantage analysis is used to measure the financial feasibility of farming. Analysis of the competitive advantage of corn farming farming in Pasaman regency can be seen from private profits (KP) which are calculated based on the prevailing prices on the market (actual prices), and private cost ratios (PCR) which are indicators to show that the commodities produced are efficient in use resources and benefit financially.

Private Profit (KP)

Private profit (KP) shows the difference between income and price or actual costs incurred in the market. The value of Private Profit (KP), which is greater than zero, means that the activity sought is profitable financially. Based on the results of the calculations above, the private profit or financial benefits of corn commodities are positive or above zero, which is Rp. 6,937,437. The more than zero private profit value shows that corn farming in Pasaman Regency can compete at the private price level.

Private cost ratio (PCR)

Private Cost Ratio (PCR) is an indicator of how resource allocation is directed to achieve efficiency in corn farming. The private cost ratio is the ratio between the costs of non-tradable inputs or domestic factors with the difference between tradable input income and costs at the actual price level. Less than one PCR value (PCR <1) indicates that the farm is run financially. The smaller the PCR value obtained, the higher the level of

competitive advantage it has. The PCR value of corn farming is 0.53. That is, to get an additional value of output of one unit, it is necessary to increase the domestic factor cost by 0.53.

3.2. Analysis of comparative advantage

Analysis of comparative advantage can be seen using the value of social benefits (KS) and domestic resource cost ratio (DRC) which are indicators of competitiveness without government assistance. The difference in analysis of economic benefits with financial benefits is that lies in the input and output components. Where economic benefits use social prices in a perfectly competitive market (international markets are regarded as perfect competitive markets), while financial benefits use actual prices that have experienced government intervention.

Social Profit (KS)

The social advantage shows that the exploitation of a commodity deserves to be continued economically, if the value of social benefits is more than one or equal to zero then this corn farming is feasible to be cultivated. Social Benefit Value (KS) is Rp. 8,947,076. . The positive or more than social value of social benefits (KS) shows that the cultivation of maize at the research location is economically beneficial even without interference from government policies.

Domestic resource cost ratio (DRC)

The domestic resource cost ratio (DRC) is the ratio between non-tradable costs or domestic factors with the difference between income minus foreign costs at shadow prices or social prices. If the DRC has a value smaller than one, then a certain commodity exploitation will have a comparative advantage, which means the exploitation of the commodity is economically efficient. The DRC value obtained from corn cultivation is 0.47. That is, to produce or add value to the output of one unit in Pasaman Regency, additional domestic resources are needed at 0.53.

PCR value (0.53) which is greater than the DRC value (0.47) means that corn farming can be comparative or competitive without policy intervention or government intervention in increasing the efficiency of farmers to produce corn. So that the right decision for farmers not to involve or depend on the government, either seed assistance or subsidized fertilizer.

3.3. Government Policy Analysis

- Impact of input policy

The impact of input policy is the same as the impact of output policy because both are based on a comparison between private prices and social prices. Government policy on input can be seen from the value of Transfer input (TI), Transfer factor (TF), and nominal input protection coefficient (NPCI). The value of the transfer of corn farming inputs was negative, namely Rp. 284,315. The value of negative input transfers shows the social

price of tradable inputs is higher than the private price. This shows that there is a policy of subsidies on inputs because subsidies at input prices will cause the costs incurred for inputs at private prices to be lower than the level of social prices. While the level of government protection against tradable input at the research location, which can be seen in the NPCI value obtained is smaller than one, which is 0.73. This value shows the existence of subsidies to farmers on tradable inputs, so as to reduce the cost of farming. This means that the influence of government policy by implementing the input market mechanism as it is now, has a positive impact on the total cost of corn production.

- Impact of output policy

Government policy (in the form of subsidies or taxes) on an agribusiness commodity can have a positive or negative effect on the perpetrators. Indicators of the impact of government policies on output can be seen using the value of TO (Transfer Output) and NPCO (Nominal Protection Coefficient on Output). The transfer value of corn farming output is Rp. 2,293,954. The value of TO corn commodity shows a negative value, this means that the private price of corn is lower than the social price.

The NPCO value for corn farming is 0.87, this means that corn farmers in Pasaman Regency only receive 87 percent of the price they should receive. Based on the value of NPCO which has less than one value. This means that the protection from the government for corn farmers has not been implemented in an affective manner, resulting in a reduction in producer revenues.

4. Conclusions

Based on the research that has been done can be concluded as follows: Based on the results of the analysis of the benefits of corn commodities per ha per season which is seen from the value of the private profit of Rp. 6,937,437 and the value of social benefits is Rp 8,947,076, which indicates that corn farming is profitable. This shows that corn farming is feasible to be developed both from the point of view of the parties directly involved and the community as a whole.

Corn commodity farming in Tigo Nagari District, Pasaman Regency has a competitive advantage and comparative advantage (PCR = 0.53 and DRC = 0.47) which is capable of financing its domestic inputs.

The results of the study indicate that there is an impact of the policy on inputs, so as to reduce farming costs (NPCI = 0.73). However, the output price received by farmers is still lower than the shadow price (NPCO = 0.87). The output policy cannot protect local farmers, and this policy on corn farming is not effective (EPC = 0.88).

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