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Competitiveness and Government Policy Implications of corn commodities in Belu Regency

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ABSTRACT

Corn is a staple food for farmers in East Nusa Tenggara, especially Belu regency. The cultivation of corn commodities is still limited to meet the food needs of farmers's households and not yet fully commercialized by farmers. The study is aimed at examining: 1). profitability of corn farming activities; 2). corn competitiveness; 3). policy impact (market distortion) on input and output of corn commodities. The sampling technique was carried out by purposive sampling for area samples and farmer samples. The data obtained was analyzed using the Policy Analysis Matrix (PAM) method. The results showed that the corn commodity in Belu regency reached high competitiveness. The NPCI value < 1 indicates that government policies on inputs increases the competitiveness of corn commodities. The NPCO value < 1 indicated that the current condition of local corn prices was lower than the social price which means it relatively does not provide maximum incentives for the development of corn farming in Belu regency. Whereas the influence of government policy instruments which is currently applied in the input-output market has a disincentive effect on the development of corn in Belu regency, because the added value obtained by farmers (private) was lower than what should be accepted (social), which is only about 78% and 57%. This was reflected in the EPC value of hybrid corn and local corn, which is 0.78 0.57 respectively.

Key words : *corn, farming, Government policy, Belu*

Introduction

The business of corn cultivation for East Nusa Tenggara Province is very strategic economically. Corn is not only one of the second important cerelia commodities after rice in supporting national food security, but olso corn is farmers' staple food in Belu regency. Corn can be used as food supplement for livestocks and industrial raw materials, so it has bright market proscpects. Corn farming in Belu Regency is located in 12 sub-districts with the total harvest areas of 14.853 hectares and 39.651,7 tons of harvest products. The average productivity of corn cultivation in Belu Regency is 2.7 tons per hectare. The farmland of 2018 is wider than 2017. The farmland increased to 0.7% and the harvest product increased by 0.8% (BPS, 2017).

Nationally, corn cultivation has good competitiveness, as indicated by the value of Domestic Resource Cost Ratio (DRCR) and Private cost Ratio (PCR) which is less than one. This means that corn cultivation has a comparative advantage and is efficient in the use of domestic resources. The national DRCR coefficient value of corn cultivation is 0.48, which means that to get a value added output of corn commodities of IDR 1 million, additional domestic resource costs of IDR 480,000 are needed. Based on the analysis of competitive advantage, the

corn commodity in national level has a competitive advantage as indicated by the PCR coefficient of 0.54 (Suryana, 2014)

As a comparison with corn cultivation in other countries; Briones (2016) claimed that corn farming in the Philippines has a comparative and competitive advantage, with relatively similar DRCR and PCR values (0.54). This advantage is generated from the utilization of hybrid corn varieties that have been very distributed widely in the country.

According to this information, corn trade issues in Indonesia is inseparable from regional, national and international trade market situation. Therefore, corn competitiveness in Indonesia especially in Belu Regency as one of corn production centres should be studied. The study focuses on competitive and comparative advantages of corn production and also policy impacts on corn commodity. This is in line with local government support that already provided more public fund to accelerate welfare improvement with the program called ANGGUR MERAH (Fund for Community Welfare) and Medium-Term Development Plan (RPJM) NTT outlined in Strategic Plan (Renstra) of Regional Work Unit (SKPD) to develop corn in NTT. This research is aimed at examining conpetitiveness and policy impact such as market distortion on input and output of corn commodity in Belu regency.

Methods

This research was conducted on April to November 2018 in some areas in Belu regency such as Lamaknen district, Raihat district and Raimanuk district. The location was purposively selected for areas that have bigger farmland and higher corn production than other districts in Belu regency. The farmers' sample was selected using Simple Random Sampling where every population has equal opportunity to get selected as samples. The number of selected samples was 90 respondents where 45 respondents grew hybrid corns and the rest 45 respondents grew local corn varieties.

This research used PAM method developed by Monke and Pearson (1995). Policy Analysis Matrix (PAM) was used to analyse the competitiveness and comparative advantage and the effect of government policies on the corn commodities. The PAM is a Matrix of two accounting identities; one set defines the profitability and the other defines the difference between private and social values of a commodity system (Mamza, *et al.,* 2014).

Results and Discussion

The analysis of private and social profitability

Private profitabilty analyis, revenue and costs are calculated based on prices that are actually received and paid by farmers/producers of a commodity. Calculation of social profitabilty analysis, revenue and costs are based on prices that occur in perfectly competitive market conditions by assuming that there are no market failures/market distortions and government policy interventions. Based on calculations, a PAM matrix for hybrid corn and local corn commodities, can be seen in Table 1.

According to the calculation of private profitability and social profitability, corn commodity in Belu regency should be developed, this is indicated by profit gained by farmers of hybrid corn. Private profitability (PP) gained by the farmers was IDR 6.616.192 and social profitability (SP) gained was IDR. 9.317.797 for one ha land. The farmers of local corn gained Rp. 2.088.478 of private profitability (PP) and IDR 6.492.839 of social profitability (SP) for one ha land.

Table 1. Matrix analysis of corn farming policy in Belu regency in 2018

Description	Revenue (per hectare)	Cost (per hectare)		Profit (per hectare)
		Tradable	Domestic	
Hybrid Corn				
Private Price	11,636,000	1,090,000	3,929,808	6,616,192
Social Price	15,083,815	1,578,228	4,187,790	9,317,797
Policy Impact	(3,447,815)	(554.650)	(257,982)	(2,701,605)
Local Corn				
Private Price	7,071,000	1,052,714	3,929,808	2,088,478
Social Price	12,221,572	1,540,942	4,187,790	6,492,839
Policy Impact	(5,150,572)	(554,650)	(257,982)	(4,404,362)

The research analysis showed that farmers gained higher social profitability than private profitability. This because of the different prices of the commodity in the market where the output price accepted by the farmers for hybrid corn was IDR 4.000/kg and local corn was IDR 3.000/kg, while, the prices for those commodities at international market was 5.185,2/kgThe difference between private profitability and social profitability indicated a divergence where the price received by farmers lower than social price (the price that should be received by the farmers). The table also indicated that farmers who grew hybrid corn receive higher private profitability than farmers who grew local variety.

The Analysis of Competitive and Comparative Advantages

Competitive advantage can be seen from the value of the private cost ratio (PCR), whereas comparative advantage is indicated by the value of the domestic resource cost ratio (DRC) (Setiawan, 2014). The value of PCR and DRC of corn farming presented in Table 2.

Table 2. DRC and PCR value of corn farming in Belu regency, 2018

No.	Indicator	Value	
		Hibrida corn	Local corn
1.	PCR	0.37	0.65
2.	DRC	0.31	0.39

According to Table 2, it is obvious that PCR value of corn farming were 0.37 and 0.65 or lower than one (PCR < 1). This value indicates that added value of IDR 100 can be reached if domestic input cost spent by farmers IDR 37 and IDR 65. This shows that hibrida corn has a competitive advantage. Low PCR score indicates that competitive advantege (finance efficiency) of farming in the Belu regency is more efficient.

Domestic resource cost ratio (DRC) < 1 indicates that corn farming has reached economic efficiency because without government policy, producers can produce one unit of added value with lower domestic factors 0.31 and 0.39 of DRC value means that added value of IDR 100 requires non-tradeable inputs (domestic factors) of IDR 31 and IDR 39. In other words, corn farming has a comparative advantage. These results indicate that it wouldbe more profitable to increase domestic production than import the product from overseas.

Based on the value of PCR and DRC of corn farming, it can be concluded that corn farming has been efficient both financially and economically. In the research areas, businessmen are able to remove smaller domestic factor to develop corn commodity because it has comparative and competitive advantages. Overall, hybrid corn farming in Belu regency has a comparative and competitive advantages.

Assesment Matrix of Corn Farming Competitiveness

According to the analysis and interpretation above, each indicator of competitive and comparative advantages has positve and negative values. The indicators are private profitability (PP), social profitability (SP), private cost ratio (PCR) and domestic resources cost ratio (DRCR).

For example, positive value is given if PP shows profits. Conversely, if it is loss, negative value is given. The combination of positive and negative values of those four indicators is used as criteria to asses competitiveness of corn farming as shown in Table 3.

The assessment above shows that corn farming in Belu Regency has a high competitiveness because the value of PP, SP, PCR dan DRC is positive. The commodity that has a very high competitivness is prioritized to get developed by increasing the added value of corn processing.

Analysis of Policy Impact on Input

Government policy on input production can be seen from Nominal Protection Coefficient on Inputs

Table 3. Assessment of corn farming competitiveness in Belu regency, 2018

Indicator	Value		Criteria	Meaning	Value	Competitiveness
	Hibrida Corn	Lokal Corn				
PP	6,616,192	2,088,478	(+)	Competitive	4+	Very High
SP	9,317,797	6,492,839	(+)	Competitive		
PCR	0.37	0.65	(+)	Competitive		
DRC	0.31	0.39	(+)	Competitive		

Table 4. Parameter value of policy impact on corn commodity in Belu regency, 2018

Parameter	Value	
	Hibrida Corn	Local Corn
IT	(554,650)	(448,228)
FT	(257,982)	(25,982)
NPCI	0.66	0.65

(NPCI). The implementation of this policy is inseparable from the government's effort to protect producers.

The results of the analysis shows that the value of the Input Transfer (IT) produced in this study was IDR 554,650 for hybrid varieties and IDR 448,228 for local varieties. This indicates that in the cultivation of corn commodities in Belu Regency, tradable input prices incurred are lower than the tradable input costs that must be spent on economic prices. In other words, the social price of tradable inputs is higher than the private price so that corn farmers pay a smaller input of IDR 554,650 and IDR 448,228 due to government divergence.

Factor Transfer (FT) is the difference in social prices with private prices received by both hybrid and local corn farmers for payment of domestic production factors. The results of the analysis show that the value of FT in this study is negative (-257,982) which indicates that the price of domestic inputs issued at the private price level is lower than the domestic costs incurred at the economic price level. This means that there is no government policies to protect domestic inputs. This condition makes corn farmers in Belu regency as corn producers obtaining cheaper domestic inputs than their social prices, while domestic input producers suffered losses of IDR 257,982.

Nominal Protection Coefficient Inputs (NPCI) is a ratio between tradable input cost based on private price and tradable input based on social price. NPCI value on research areas is 0.66 for hybrid variety an 0.65 for local variety. This means that the government sets tradable input price in local market lower than world market price. In other words, government policy about input can increases competitiveness of corn in the research areas. NPCI < 1 indicates barriers for exporting input that makes production uses local input.

Impact Analysis of Government Policy on Output

Government policy on input can be seen from an indicator of Nominal Protection Coefficient Outputs (NPCO), as presented in Table 5.

Table 5. Parameter value of policy impact on corn commodity in Belu regency, 2018

Parameter	Value	
	Hibrida Corn	Local Corn
Output Transfer (OT)	(5,150,572)	(3,447,815)
Nominal Protection Coefficient Outputs (NPCO)	0.58	0.77

Value of Output Transfer (OT) is the difference between income calculated on private price and revenue calculated based on social prices. Output Transfer value produced in the cultivation of corn commodities in Belu regency is negative, -5,150,572 for hybrids and -3,447,815 for local corn. This means that the community or consumers buy at a price lower than the price that should be paid to producers so that farmers lose money (Mantau, 2012). In other words, the receipts received by hybrid corn farmers and local corn farmers were smaller (IDR. 5,150,572 and 3,447,815 respectively) than actual revenues without government policy.

The value of NPCO is a ratio between revenue based on private price and revenue based on social price. Private revenue in this research is IDR 6,616,192 while social revenue is IDR 9,317,797. Therefore, NPCO value is lower than one (0.58). NPCO value that is lower than one indicates that domestic price is lower than international/world price.

Analysis of Net Impact of Government Policy on Input-Output

The impact of government policy and input-output market mechanism is analysed using Effective Protection Coefficient (EPC) to reveal whether it gives incentives or disincentives to corn farming in Belu Regency, as presented in Table 6.

Effective Protection Coefficient is an indicator of overal policy impacts on input and output toward production system of corn commodity in Belu Regency. The EPC value describes how far government policy protects and inhibits domestic production. The results of EPC analysis shows that corn farmers in Belu regency (relatively) have not received the effectiveness of protection from existing government policies, as reflected in the EPC values of 0.78 and 0.57. In other words, the influence of

Table 6. Parameter value of policy impact on input-output of corn commodity in Belu regency, 2018

Parameter	Value	
	Hibrida Corn	Local Corn
Effective Protection Coefficient (EPC)	0.78	0.57
Net Transfer (NT)	(2,635,183)	(4,337,939)
Profitability Coefficient (PC)	0.72	0.32
Subsidy Ratio to Producers (SRP)	(0.17)	(0.35)

government policy instruments in the input-output market currently applied has a disincentive effect on the development of corn in Belu regency, because the added value obtained by farmers (private) is lower than what should be accepted (social), which is only about 57 % and 78% respectively.

Net Transfer (NT) illustrates the impact of the overall government policy on the acceptance of corn farmers, whether it is detrimental or beneficial to farmers. Net transfer value is the difference from the value of private profit with the value of social benefits. The net transfer value for exploiting corn commodities is negative. Net transfer values are -2,635,183 and -4,337,939. This shows missing producer and unseen economic incentives to increase corn production in Belu regency.

Profitability Coefficient (PC) is a comparison between private net profits and social net benefits. The profit coefficient is an indicator that shows the impact of incentives from all output policies, foreign input policies, and domestic input (net policy transfer). The value of the PC colleccted in this study is 0.72 and 0.32 or positive, which means that the profit of farmers depends on government policy (72% and 32% of the profits received without policy). This figure shows that the private net profits received by farmers are smaller than the net social benefits.

Subsidy Ratio to Producers (SRP) is a combination of all transfer effects that occur. This ratio is a comparison between the net transfer value and the output value (revenue) which is calculated at the world price level (social acceptance). Thus, SRP shows to what extent the revenue increases or decreases due to the transfer. SRP values of hybrid and local corn farming were negative (0.17 and 0.35 respectively). This means that the divergence between financial and economic benefits in corn farming is around 17% and 35% of gross income. Generally, the negative transfers above indicates that government policies or existing market distortions have a detrimental effect on corn farmers, because corn farmers receive negative subsidies (without government policy).

Conclusion and Suggestions

The results of this research reveal that the corn commodity in Belu regency has high competitiveness. The NPCI value < 1 indicates that government policies on inputs increases competitiveness of corn commodities in this research areas. The NPCO value < 1 indicates that the current condition of local corn prices is lower than the social price which means it relatively does not provides maximum incentives for the development of corn farming in Belu regency. Whereas the influence of government policy instruments that is currently applied in the input-output market has a disincentive effect on the development of corn in Belu regency, because the added value obtained by farmers (private) is lower than what should be accepted (social), which is only about 78% and 57% respectively. This is reflected in the EPC value of hybrid corn and local corn which is 0.78 and 0.57 respectively.

The government needs to manage the development of corn commodity businesses and their derivatives with technology and processing facilities. This is because the competitiveness of corn commodity is no longer on the primary product but downstream industry where the potential domestic added value on downstream product can be doubled from the primary product. In addition, the government also needs to fix infrastructure problems, especially transportation. So, an adequate agricultural products in rural areas can be easily transported to urban areas. This is not only benefit the farmers but also industry that manage agricultural products because the supply of raw materials will be more easily accessed with low prices.

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