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ANALYSIS ON COMPARATIVE ADVANTAGE OF AGRICULTURAL SECTOR IN KULONPROGO REGENCY

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ABSTRACT

Comparative advantage is measured using economic and social values. Comparatively superior commodities mean that they are produced in an economically efficient way. Agricultural sector is the one that is prioritized in Kulonprogo Regency and, thus, purposively that region is employed as the sample of this study. Research is based on the analysis of secondary and primary data collected through interviews with 60 respondents. The respondents consist of 2 groups of rice field farmers in Lendah Sub-district, Kulonprogo Regency, which constitutes the predominant crop field area. The analysis is conducted descriptively using the Policy Analysis Matrix method. Based on the cost-benefit analysis, rice commodity agribusiness in Kulonprogo regency has privately generated average financial profit amounting to Rp. 2, 18 million per season. Meanwhile, it is socially and economically generating relatively large profit amounting to Rp. 4.58 million per season. The level of rice field economic efficiency amounts to 0.747. These values demonstrated that rice agribusiness has comparative advantage which means that producing rice commodities in Kulonprogo Regency is more cost effective than importing them.

Key words: comparative, advantage, agricultural, sector

INTRODUCTION

The main issue in regional development lies in the prioritization of regional specialty-based developmental policies (endogenous development) by mobilizing the potentials of human resource, institution and local physical resources. This

orientation leads to initiatives taken from the area in the process of development to create new employment and to stimulate economic activities.

Agricultural sector which is the basis of people's economy in rural areas has dominated the majority of Indonesian's earnings, capable of absorbing half of the total working force and serves as 'securing valve' for the people's livelihood. The analysis of structure and progress of Gross Regional Domestic Product (GRDP) in Bantul, Gunungkidul and Kulonprogo Regencies demonstrated that agricultural sector is the predominant sector in those areas [*Harini et al.*, 2003]. This favorite sector serves as the main propeller with its multiplier effects capable of dominating the economy of certain areas and, therefore, might increase the people's wealth as their economic empowerment.

The issues of agricultural sector include the farmer's wealth and how to increase production, especially in the decentralization and free trade era. While retaining its status as the largest employment provider, its contribution to national production remains less than 19% [*Soetrisno*, 2003]. The establishment of value-added of agribusiness that only 47% has already decreased compared to other sectors. Agriculture as the family's economic resource, food provider, and food resiliency has increasingly played a smaller role in those aspects. In fact, family agriculture is far less capable of sustaining a reasonably comfortable life in comparison with other sectors [*Pemda Bantul,* 2004]. Such circumstance unveils s that the objective of agricultural policies needs to be reformed, especially in smaller sectors that include agricultural sub-sectors. Therefore, financial and economic feasibility representing the indicators of comparative and competitive advantages of agricultural sector, prioritized in regional development, need to be evaluated. By identifying the advantage of each agricultural sub-sector, the agricultural sector will be optimally managed, especially to empower the peoples' economy in rural areas. The objectives of the research comprises of: 1) Identify what the agricultural sector has to contribute to the regional income in Kulonprogo Regency. 2) Measure the comparative advantage of agricultural commodities in Kulonprogo Regency.

Crop Agribusiness is a very strategic business enterprise for the present and the near future. The need for food self-sufficient is one of stimulants that propel this crop agribusiness. The domestic demand currently met through import must be the stimulant for the government to increase domestic food production, considering that meeting those needs through import will bring many consequences especially those related to trade liberalization. Actually, trade liberalization brings about new opportunities as the market becomeswider as the consequence of the elimination of inter-state barriers. However, trade liberalization brings with it new problems if the commodities produced cannot compete with their counterparts in the world market.

Superior commodities are basically dynamic in nature, selected according to their potential to increase income and mainly based on existing domestic resources. Therefore, the criteria or the main considerations in selecting superior commodity are, among others, having competitive export quality, having local resource potentials which include land, labors, facility and infrastructure, favorable socioeconomic and cultural conditions, technological breakthrough and excellent management [*Murder* and *Brent*, 2006].

There are five criteria underlying the fact that agricultural sector can be positioned as 'the' superior sector of a region [*Simatupang*, 2001]. The five criteria are: (1) contributive, which is direct contribution to the achievement of national objective to effectively alleviate poverty; (2) articulate, that is ability to propel the economic growth of other sectors through synergetic correlation among industries; (3) promotional, that is, capable of encouraging conducive situation for economic growth and development of other sectors; (4) progressive, that is, ability to grow rapidly and continuously; and (5) resilient, that is, strong enough to face any shocking situations resulting either from economic, social or political disaster.

The competitiveness of a commodity can be measured using the indicators of competitive and comparative advantages. Both are indicators of competitiveness that late to continuous aspects [*Rosegrant et al.*, 1997]. Different researches study the competitiveness of agricultural products included not only comparative advantages measured economically but also competitive advantages measured financially. In economy, competitiveness results from the increase of productivity and efficiency. Productivity is strongly connected to the quality of human resources and application of technology. Efficiency is strongly associated to the as minimum as possible allocation of available human resources to achieve the optimal output.

One region must invariably trade with other regions based on working division and specialization of prioritized activities, which is the comparative advantage of that region. Comparative advantage, as previously mentioned, is measured using economic and social values. The calculation of economic value is conducted using shadow price which represents the economic value of cost elements and the result. Comparative advantage might change as the influencing factors, which include foreign and domestic economies and technology, might also change [*Gorton*, 2006]. The theory of comparative advantage state that one country must specialize in exporting goods with relatively lower production cost compared to those in other countries in order to be profitable [*Basri*, 1992].

Comparative advantage might bring about specialization in certain commodities. A country with lower alternative cost (opportunity cost) for certain commodities means that it has comparative advantage for these commodities and comparative disadvantage for other commodities [*Chacholiadies*, 1990].

Alternative cost (*opportunity cost*) can be represented with Possible Production Curve (PRC) or product transformation curve. This curve shows different alternatives of combined commodities that might be produced by one country using completely limited production factors and the best technology it ever had.

One of instruments to measure the comparative advantage of certain commodities is the value of Domestic Resource Cost Coefficient (DRCC) or economic cost and return calculation [*Masyhuri*, 1988]. From his study he obtained DRCC value less than 1. It shows that comparative advantage of rice production in Java Island is efficient to save the foreign exchange. The most efficient production is that of irrigated wet rice field in East Java, while those in West Java are found to be the least efficient.

Deoranto [2001] note that agribusiness in farming (both wet rice field and non-irrigated agricultural field) have their respective competitive and comparative advantages, since they efficiently utilize domestic resources and, therefore, economically and financially feasible to develop. *Monke* and *Pearson* [1995] state that private profitability represents the competitiveness of a commodity and its social profitability reveals its comparative degree. *The World Bank* [1994] presents another way to measure comparative advantage, which is by ranking several alternative commodities. The comparative advantage of each alternative commodity can be compared against its counterparts from different areas. Evaluation might also change [*Gorton*, 2006]. The theory of comparative advantage state that one country must specialize in exporting goods with relatively lower production cost compared to those in other countries in order to be profitable [*Basri,* 1992]. Evaluation of this information is useful to determine which commodity is more efficient based on comparative advantage and which commodity is considered as better based on income distribution, the creation of employment, and import diversification. All of these results will guide the selection of commodity that will be designated with investment.

THE METHODS

The study is based on the primary data obtained from the questionnaire-assisted structured interview with 2 groups of 30 farmers in the crop center area (Lendah subdistrict, Kulonprogo Regency). The collection of primary data is mainly to collect information on input and output, financial and social cost-benefit, opportunity cost from various non-tradable inputs (land, laborer, and capital), input market structure and institutions that influence the market mechanism.

The study is focused on rice commodity based on the significance of this commodity either on national or regional scale. Secondary data are also employed in conducting the comparative analysis of crop sub sector. These are production and productivity data and the data of inter-regional or international commodity trading of agricultural sub sector. It is purposively selectedin Kulonprogo Regency (Fig. 1).

The reason for choosing this site is that Kulonprogo is one of the basis of agricultural areas in Yogyakarta Special Region. In addition, agricultural sector confer significant contribution to the revenue of local administration and, moreover, the majority of local people are farmers.

As far as the competition in the free market is concerned, agricultural commodity is one of the commodities facing even stricter competition. Therefore, analysis of comparative and competitive advantage of agricultural products is absolutely needed to determine whether certain product is potential only for domestic consumption, export oriented, or, whether such product can be more efficiently procured through import.

To determine the contribution of agricultural sector to the revenue of Kulonprogo regency, the analysis is conducted descriptively from the secondary data, which is the data of Gross Regional Domestic Product (GRDP) of constant fixed price. To measure the comparative and competitive advantage of agricultural sector in Kulonprogo Regency, Policy Analysis Matrix [*Monke* and *Pearson,* 1995] is used. Using this matrix (hereinafter referred to as PAM), information on profitability competitiveness (competitive advantage), economic efficiency (comparative advantage) of certain commodities and the government policy on these commodities will be obtained.

The analysis using PAM is performed based on the following assumptions: (1) the current market price is used as the basis in financial analysis, (2) shadow price that represents the real social and economic values is used for economic analysis, (3) tradable output, which means that the output can be traded and the input is separated into tradable input and domestic factor.

Phases in PAM include determining physical input and output from the analyzed economic activities, the estimation of shadow price from the input and output of the economic activities, the division of cost components into domestic and foreign components, and calculating and analyzing the indicators obtained from PAM. For the details of PAM, see Table 1.

Table 1. The Policy Analysis Matrix

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

Source: [*Monke* and *Pearson*, 1995]

Note: D = Private profit, H = social profit, I = Transfer Output, J = Transfer Input, K = Transfer Factor, L = Net Transfer

The first row of PAM provides the calculation based on market price or the price actually paid by economic actors.The second row provides the cost representingthe actual economic or social value. The third shows the difference between private and social prices as the result of the government policy or market distortion.

Indicator of PAM Results

1. Profit Analysis

a. Private Profitability (*PP*): $D = A - (B+C)$
Private profitability is the difference between private return and total private cost, either the cost of tradable or non-tradable input. Private profitability represents the indicator of competitiveness of certain commodities in terms of technology, output value, input cost, and the policy imposed by the government. If D>0, it means that such commodities are profitable to produce domestically, except that the commodities are limited or there are alternative commodities that are more profitable.

b. Social Profitability (*SP*): $H = E - (F+G)$
Social profitability is the difference between the social return and the total social cost, either the cost of tradable or non-tradable input. Social profitability is the indicator of comparative advantage of certain commodities. If H>0, it means that such commodities gain the profit from the normal cost in social price and can be prioritized for development.

Financial and Economic Efficiency

a. Private Cost Ratio (*PCR*) = $C/(A-B)$ is the indicator of private profitability that shows the potential of certain commodities to pay the cost of domestic resources and to remain competitive. If $PCR<1$, it means that the commodities under study have comparative advantage, on the contrary, if PCR>1, it means that the commodities have no competitive advantage.

b. Domestic Resource Cost Ratio (*DRCR*) = $G/(E-F)$ is the indicator of comparative advantage that represents the number of domestic resource to

save one unit of foreign exchange. A commodity is said to have comparative advantage if the $DRCR<1$. On the contrary if the $DRCR>1$, it means that the commodity has no comparative advantage.

The Impact of the Government Policy

a. Output Policy

(1) Output Transfer: $OT = A-E$ is the difference between the return calculated on the basis of financial price (private) and the return calculated on the basis of shadow price or social price. If $OT>0$, it means that transfer from the society (consumer) to the producer has taken place. However, if $OT<0$, the transfer is from producer to consumer.

(2) Nominal Protection Coefficient on Output ($NPCO$) $=A/E$ is the indicator that illustrates the degree of government protection to the domestic rice output. The policy imposed by the government is protective to certain commodity if $NPCO>1$. In contrast, the policy is disincentive if $NPCP<1$.

b. Input Policy

(1) Input Transfer: $TI = B - F$ is the difference between tradable input price on private price and tradable input price on social price. If $IT>0$, it means that the transfer has taken place from the farmer producing certain commodity to the producer of tradable input, and from the latter to the former if $IT<0$.

(2) Nominal Protection Coefficient on Input ($NCPI$) $= B/F$ is the indicator that illustrates the degree of government protection to the price of domestic agricultural. Input: The policy is protective if $NPCI<1$, indicating that there is a policy to subsidize the tradable input, and it is disincentive if $NPCI>1$.

(3) Transfer Factor: $TF = C - G$ is the value that indicates the difference between private price and social price received by the producer to pay the non-tradable production factors or domestic input. If $TF>0$, it means that the transfer is from the producer of non-tradable input to producer-farmer.

c. Input-Output Policy

(1) Effective Protection Coefficient (EPC) $= (A-B)/(E-F)$ is the indicator that illustrates the degree of simultaneous protection to the tradable output and input. If $EPC>1$, it means that the policy imposed remains protective. The larger the value of EPC, the higher the degree of government protection to the domestic agricultural commodities is.

(2) Net Transfer: $NT = D - H$: is the difference between the actual net profit received by the producer and the net social profit. If $NT>0$, it

means that the producer gain the surplus as a result of the government policy of input-output.

(3) Profitability Coefficient: $PC = D/H$: is the comparison of actual net profit received by the producer to the social net profit. If $PC>0$, it means that the government policy provides incentive to the producers.

(4) Subsidy Ratio to Producer (SRP) = $L/E = (D-H)/E$: is the indicator of return proportion on social cost necessary when the subsidy or tax is utilized as the substitute of the policy.

Determining the Domestic and Foreign Cost Component

The study divides the cost component into foreign and domestic components using direct approach. The approach is based on the fact that when the demand of tradable input, either imported or domestic products, is decreasing, such decrease will be offset by the offer in international market.

In this study, the tradable good is rice, where the decrease of its domestic demand is quite possible to be offset by the demand of international market. The input includes paddy seeds, urea fertilizer, SP-36, SP-27, KCL, ZA, NPK, ZPT, insecticide and herbicide. And the input assumed as domestic factors include rent value, land, laborer, capital and interest on capital, and manure.

RESULTS AND DISCUSSION

Contribution of Agricultural Sector in Kulon Progo Regency

The development of a region depends, to greater extent, on its economic resources that can be measured from the amount of local revenue or the Gross Regional Domestic Product (GRDP). The GRDP comprises of the total value of goods and service produced in a year encompassing 9 economic sectors. The contribution of each economic sector has different amount depending on the income of that economic sector.

The data on the above table is based on the constant price, with the expectation that this will monitor the real economic growth without any impact of inflation. Table 2 illustrates that, compared to the other 8 sectors, agriculture provides the largest contribution. This is the case in almost all sub districts, except Wates, Sentolo and Pengasih. In these three sub districts, the sectors that contribute the largest to the local revenue are processing industry and commerce. On the whole, the economic contribution in Kulonprogo regency, in ascending order, is provided by the sectors of agriculture (29,26%), commerce (18,3%), and electricity, gas and pure water (0,66%).

Table 2. Contribution of GRDP per Economic Sector in Kulonprogo Regency in 2007

Subdistrict	Economic Sector (%)								
	1	2	3	4	5	6	7	8	9
Temon	38,24	0,01	8,13	0,53	4,41	21,31	5,49	6,89	14,95
Wates	23,13	0,13	7,75	1,15	692	29,35	24,67	1,41	5,44
Panjatan	34,27	0,06	28,04	1,68	5,51	18,18	0,76	0,55	11,91
Galur	27,32	6,14	17,18	0,53	0,43	19,35	12,63	6,13	10,24
Lendah	30,05	3,1	16,16	0,73	5,96	12,71	9,63	7,65	13,96
Sentolo	22,15	1,22	27,01	0,56	3,5	13,16	18,88	4,74	8,73
Pengasih	16,71	0,95	20,54	0,54	4,49	11,61	10	5,08	30,03
Kokap	29,96	1,15	15,13	0,65	8,57	14,94	8,81	7,04	13,71
Girimulyo	36,51	0,02	25,6	0,51	6,17	21,31	4,74	4,97	0,13
Nanggulan	40,22	0,42	14,86	0,54	4,12	20,85	4,44	4,84	9,67
Kalibawang	37,26	0,67	10,02	0,66	5,79	19,48	8,04	6,74	11,52
Samigaluh	41,26	0,08	11,04	0,65	7,36	20,79	2,3	5,69	10,78
Regency	29,26	1,21	14,28	0,66	5,01	18,3	10,73	4,89	12,62

Table Notes: 1. Agriculture, 2. Mine Works, 3. Processing Industry, 4. Electricity, gas and pure water, 5. Construction, 6. Commerce, 7. Transportation, 8. Financial, Rent, 9. Services

The grouping of economic sectors based on production aspect is divided into 3, primary, secondary and tertiary. The primary sector consists of agriculture in broader sense and excavation. The secondary sector is a mix of industrial, electricity, gas and pure water, and construction sectors. And the tertiary sector is the sector not included in the primary and secondary sectors. Based on the production, Kulonprogo Regency is dominated by the primary sector (30,47%), and this occurs in almost all sub districts (Table 3 and Fig. 2).

Agricultural sector is the mainstay in Kulonprogo Regency. Therefore, to enlarge its contribution to the local revenue, it is necessary to focus on the management of agricultural sector. The selection of agricultural commodity in the current study, which is the commodity of crop, is a strategy to achieve this goal. Paddy is the commodity that mostly cultivated by the vast majority of farmers in Kulonprogo Regency. The research intended to study the crop sub sector of agricultural sector, especially paddy.

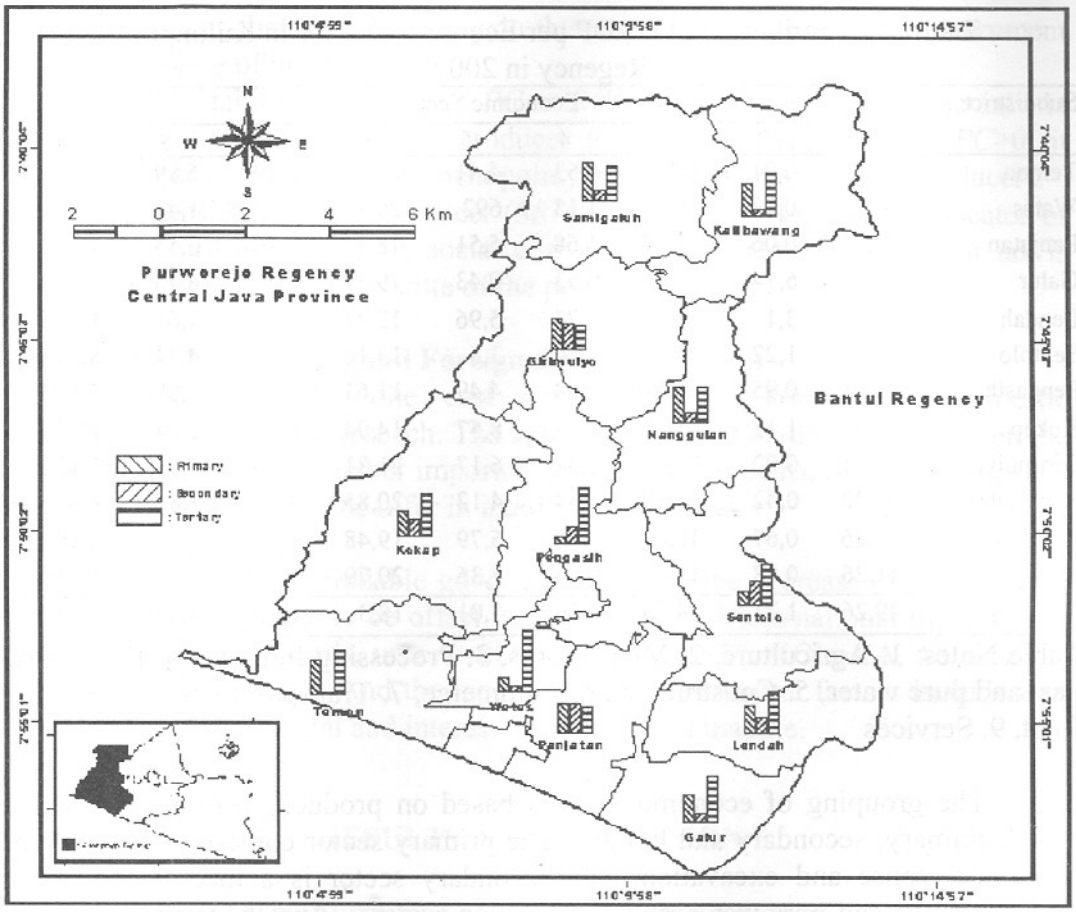

Figure 2. Percentage Distribution of Gross regional Domestic Product per productuion sectors at Kulonprogo Regency in 2007

Illustration of Rice Production, Market Input and Market Output

Paddy in Indonesia is one of the important crops having political significance. It is important because it represents one of the basic needs of Indonesia and politically significant since every policy related to this commodity sometime bring about polemics. Whereas rice production in Indonesia keeps on increasing, it remains unable to persuade the government to meet the domestic demand self-sufficiently (Table. 4). Consequently, the domestic demand must be met from international market through the import policy which tends to be increasing. This issue becomes more significant since the free trade is leaning more toward the liberalization trend.

In the local area under study, the production is fluctuating adequately (Table 5). In earlier periods, that is in 1996 to 2000, rice production in Kulon Progo Regency ranges from 78.949 to 64.414 tons. At the same period, the need for rice

ranges from 37.567,43 to 38.306,34. In such condition, Kulonprogo Regency enjoyed a surplus of rice production. It explains the different need for rice in local and national level. Thus, rice commodity in Kulon Progo Regency remains potential for local, regional, national and even international market.

Table 4. Harvest Area, Production, and Rice Production Growth in Indonesia

Year	Harvest Area (Ha)	Production (Ton)	Growth (%)
2003	11.488.034	52.137.604	1.26
2004	11.922.974	54.088.468	3,74
2005	11.839.060	54.151.097	0,12
2006	11.786.430	54.454.937	0,56
2007*)	12.165.607	57.048.558	4.47

Source: [*BPS*, 2006]

Table 5 Condition of Rice Center in Kulonprogo Regency

No	Decriptions	2004	2005	2006
1.	Acreage (Ha)	17.383	18.887	12.860
2.	Harvested Area (Ha)	17.754	17.732	16.550
3.	Produktivity (kw/Ha)	58,10	58,31	58,00
4.	Paddy Productioni (Ton)	103.208	103.438,5	99.946,2
5.	Rice Production (Ton)	37.624	37.824	38.112
6.	Demand for Rice (Ton)	29.423,84	29.371	26.853
	Population	452.812	455.689	458.674
	Demand for Rive/Year	83,09	83,09	83,09

Source: [*Department of Agriculture and Fisheries Kulonprogo Regency*, 2006]

Almost all of the paddy cultivated land constitutes private properties and only 10% of them are rented or sharecropped. However, the land properties are relatively narrow, with 0,24 hectare in average. Rice planting on the site under study (Lendah sub district, Kulonprogo regency) is managed three times within a year. The variety being planted is IR 64 and Ciherang. The selection of rice seeds is performed anticipatorily by a joint farmer groups before the planting season. Some of them also plant soybeans and red onions. Despite the more promising harvest of those two plants, farmers would prefer plant rice for its lower production cost.

Information on marketing channel and market structure is imperative in determining whether the existing market structure constitutes the perfect competition or imperfect competition which in turn will determine the input price the farmers must pay. The varieties of input market for paddy is relatively perfect as there are so many kiosks that sell agricultural production equipment spreading

from urban to rural areas. In addition, there is a tendency towards monopoly and other market distortions. However, the farmers prefer to buy the input from farmer groups. Moreover, other inputs such as fertilizer and pesticide in the research site are reasonably available, despite the price distortion amounting to 15%. The distortion includes the difference between buying and selling prices which consists of transportation, storage, etc. This margin enables the sellers to take above average profits.

On the other hand, rice output market runs relatively stable. In time of great harvest, price stabilization program implemented by the Office of Agriculture and Maritime, in collaboration with local farmer groups is effective to anticipate the drop in selling price. Farmers sell their harvest to brokers who hail from Kulonprogo and surrounding areas, even to those who come from Boyolali and Klaten. Although the selling prices of the rice harvest were relatively the same from one season to another, the production cost farmers must incur is higher and thus resulting in relatively lower return.

Analysis of Comparative Advantage of Rice Commodity

Policy Analysis Matrix (PAM) provides indicators of profitability, potential, and competitiveness of certain commodities, and the effect a policy has on them. To see the social profitability or the profit margin obtained when the market distortion does not exist as the consequence of market structure and government policy, the input and output prices used to perform the analysis constitute shadow prices. To determine the financial profitability level, input and output prices used are actual prices the farmers must pay. The results of PAM as the basis of calculation in this study are provided in Table 6.

Table 6. The Results of PAM Analysis of Agribusiness in Lendah Sub District, Kulonprogo Regency

	Revenue	Domestic factor				Profit
		Tradable input	Labour	Capital	Land	
Private	9.040.217	1.360.359.61	3.840.000	1.000.000	658.000	2.181.857
Social	11.404.719	1.149.840.424	3.840.000	1.170.000	65.8000	4.586.879

The analysis of private cost and profit revealed that the agribusiness of rice commodity in Kulonprogo Regency provides private financial profit amounting to Rp. 2.18 million per season in average. This amount of private agribusiness profit is significantly correlated to the productivity and paddy price. Based on quantitative data obtained from interviews with farmers group, such amount of profit is associated with the program they implement to stabilize the price. At the same time, analysis of cost and benefit demonstrated that rice agribusiness socially provides relatively large profit, amounting to Rp. 4.58 million per season. The result shows that the social and economic profitability of rice commodity is higher

than the financial profit. It is strongly correlated with the price level of tradable input. Distortion in input market has elevated the actual tradable input higher than the social price that reflects the actual price the farmers must pay. This distortion tends to give higher profit for those who sell tradable input compared to the profit obtained by the farmers.

Table7. PAM Coefficient of Rice Agribusiness in Kulonprogo

Description	Coefficient
PCR	0.747
DRCR	0.553
Output Policy	
OT	-2364502.000
NPCO	0.793
Input Policy	
TI	210519.186
NPCI	1.183
FT	70000.000
Input-Output Policy	
EPC	0.749
NT	-2645021.186
PC	0.423
SRP	-0.232

Table 7 shows that the level of economic efficiency of rice agribusiness in Kulonprogo is indicated by the *DRCR* value of 0.553. This value indicates that to obtain one value-added unit of social price, less than one unit domestic resource usage is needed, and it is what provides the rice agribusiness its comparative advantage. The coefficient means that managing rice production in Kulonprogo Regency is more efficient than to import them. Another coefficient obtained from PAM analysis is private cost ratio (*PCR*). The *PCR* can be used to determine the competitive advantage of a commodity. If the value of *PCR* is less than 1, it means that the commodity has its own financial advantage since less than 1 unit of domestic resource is needed to obtain one value-added unit of the extant price. The PAM provides the *PCR* value of 0.747, thus it is assumed that rice commodity is advantageously competitive.

On the other hand, the market structure, the government policy, or both, are responsible for the difference between financial and social profitability. For tradable input, the government policy that continues to be imposed is value added tax for imported commodities including fertilizers and pesticides. Therefore, if a difference exists between financial and social profitability, the culprits are the government policy and the market structure. Market structures that constitute

imperfect competition and segmented markets are among the factors responsible for the difference between the financial and social profitability.

In PAM, the impact of the government policy is represented in the difference between financial and social values. It is represented as output transfer, input transfer, factor transfer and net transfer. At the same time, the impact of the government policy and market structure are represented also in the financial to social values ratio that reflects the Nominal Protection Coefficient (*NPCO*), Nominal Protection Coefficient on Input (*NPCI*), Effective Protection Coefficient (*EPC*), profitability coefficient (*PC*) and Subsidy Ration to Producers (*SRP*).

The impact of distorted market structure and the government policy related to input can be measured using several parameters in PAM such as *NPCI*, Input Transfer (*IT*), and Factor Transfer (*FT*). Coefficient of *NPCI* and *IT* is used to see the tradable input and *FT* to see the domestic input. Coefficient of *NPCI* is the difference between financial and social value of all tradable inputs, while the *IT* is the ratio of the two. Finally, *FT* represents the difference between financial and social values of all domestic inputs.

The analysis indicates that the value of *NPCI* is larger than 1, which is 1,183. It demonstrates that market structure of tradable input is not profitable for rice agriculture since the price of this financial input is higher than the social price, and, consequently, the farmers must pay the input price higher than the shadow price. In absolute sense, the farmers have to pay the input price higher than the social price, amounting to Rp. 210,519.186 (see Table 7). From the domestic input, the difference between financial and social value is referred to as the Factor Transfer (*FT*), which is indicated as amounting to Rp. 70,000. This difference between financial and social values is the result of the difference between financial capital interest of 27% and social capital interest as much as 20%.

The impact of market structure and the government policy can be measured using parameters such as Output Transfer (*OT*) and Nominal Output Protection Coefficient (*NPCO*). Output Transfer is the difference between financial and social values of the output, while the *NPCO* is the ratio of both. Table 7 illustrates that the coefficient of *NPCO* is 0.793 and the *OT* has negative value, which means that is still another government policy that makes the actual price smaller than the shadow price. For the farmers as producers, the situation inflicted a loss upon them, but for the consumers it is a beneficial situation.

To see whether or not the market structure and the government policy related to the input and output are simultaneously beneficial for the rice production, the criteria of Effective Protection Coefficient (*EPC*), Net Transfer (*NT*), Subsidy for Producer (*SRP*) are needed. Net Transfer (*NT*) is the difference between the

profit on financial price and the profit on social price, while the profitability coefficient is the financial to social profit ratio. Table 7 indicated that the net transfer value is -2,645,021.186. Since the *NT* value is negative, the *PC* value will be less than 1 that is 0.423. It means that the government policy or the market distortion in rice agribusiness has inflicted a loss to the farmers since they obtain smaller profit than should have been. . All this mean that the market structure and the government policy were simultaneously less profitable for the producers. This position is supported also by the *EPC* value comprising less than one (0.749), which means that the value added in financial price remains smaller than that of social price. The coefficient value of *EPC*<1 indicates no government protection for the farmers or producers. The value of Subsidy Ratio for Producer (*SRP*) indicated the coefficient of -0.232. This means that, in general, the government policy and the market distortion bring about adverse effect to the farmers, since received negative subsidy.

Despite the fact that the analysis of input and output incentive policy for the rice commodity indicated that, in general, farmers suffer losses; they seemingly prefer to plant them from time to time. Among the reasons for their preference are the relatively high productivity level supported by the additional capital that can be utilized for the development of seedling, cultivation, harvesting and post-harvesting periods, and the processing technology.

The government policy which remains disincentive for the rice agribusiness has led to the alternative strategy to support the position of rice commodity as the superior one. The distorted market structure demanded the institutional empowerment of agriculture and financial support for agribusiness so that the distorted price of tradable input can still be accessed by the farmers without any reduction on the surplus the consumer have enjoyed thus far.

CONCLUSIONS

Base on discussion above, some conclusion can be drawn as follow:

1) Agricultural sector provides the biggest contribution (29,26%) compared to other economic sectors in Kulonprogo regency.
2) Based on the cost-benefit analysis of agribusiness, rice agribusiness provides relatively high profitability or above the normal profits, thus the input of this agribusiness is distorted.
3) The result of the analysis demonstrated that the rice commodity agribusiness in Kulonprogo Regency has its own comparative advantage indicated by the coefficient value of *DRC*<1 and, simultaneously, competitive advantage indicated by the coefficient value of *PCR*<1.

4) Although rice agribusiness in the location under study indicated its comparative advantage, but, if it is left without any corrective measures, it will no longer be comparative, especially if the commodity is projected to be export-oriented. The coefficient value of *NPCO* of 0.793 and the negative value of *OT* indicate that there is a government policy that causes the extant price to be smaller than the shadow price that in turn inflicted a loss upon the producers.
5) Distortion in the input and output markets has placed the farmer in the position to pay higher input price and to get the lower output price. The *SRP* coefficient of -0.232 indicated that, in general, the government policy and the distorted market inflicted a loss upon the farmers, since they received negative subsidy.

Several weaknesses needed corrective measure in rice commodity include the institutional empowerment of agriculture and financing support for agribusiness, productivity, extension of cultivated land and production security.

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