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**"EXPLORING RESEARCH POTENTIALS"**

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Judhiastuty Februhartanty (Indonesia); Misnaniarti (Indonesia);  
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**COMPETITIVENESS AND MINIMUM REGIONAL PRICE OF ARENGA-PALM SUGAR**  
 (Case Study Of Small Palm Sugar Industries In Rejang Lebong Regency, Bengkulu Province)

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**ABSTRACT**

*This Research is aimed to determine the competitiveness and estimate the minimum regional price of palm sugar in Rejang Lebong Regency. This research is conducted in August 2011 at Air Meles Atas in Subdistrict of Selupu Rejang and Sindang Jaya in Subdistrict Sindang Kelingi in Rejang Lebong Regency. Respondents in this research are 86 palm sugar producers selected using simple random sampling and who are interviewed to collect primary data. Analysis method used are cost unit approach to measure competitiveness level as proposed by Coochurn and Siggel (1998) and Minimum Regional Price as suggested by Darwis (2011) to determine minimum regional price of palm sugar. The research shows the average of unit cost ratio of palm sugar is less than 1, that is, 0.41. This indicates that palm sugar in Rejang Lebong has high competitiveness degree. The research also find that with current price, the palm sugar producers still get profits even if their production decrease 10 %, or the production cost increase 20 %. With the current production, their businesses are still profitable. Even if these three simulations occur simultaneously, the palm sugar industries are still profitable. With these conditions, governments are unnecessary to intervene. The MRP of palm sugar in Rejang lebong is Rp. 8,176.87 with assumption of 30 % profit level. Since the MRP is far below the current market price, it is unnecessary government to intervene. It is better that price is formed under market mechanism.*

*Key Words: Arenga, Palm Sugar, Competitiveness, Minimum regional Price.*

**INTRODUCTION**

Arenga palm sugar (gula aren) has been known for long time and has a good prospect as an export commodity. The development of this commodity is potential not only in domestic market but also in foreign markets due to increasing food manufacturing industries. Arenga palm sugar (gula aren) is one of the main commodities in Rejang Lebong. The existence of this commodity not only can be seen the area under arenga palm trees, but also from the numbers of households involve in this small industries. Recognizing this commodity significances, the local government has been implemented various policies to improve palm sugar productivity and quality. However, this commodity is still unable to exploit its open marked opportunity and tend to experience decelerate growth. This problem could be determined by many factors, one of which is its competitiveness degree.

For this reason, study on measuring the competitiveness level of palm sugar is significant. In line with this study, determining minimum regional price is also important to conduct in order to supply information to local government for better policy design. Departing from this discussion, this study is intended to measure competitiveness level of palm sugar and determine minimum regional price of palm sugar.

## RESEARCH METHOD

This research use survey approach intended to collect as much as possible information related to small palm sugar industries management including their cost, benefit and marketing. Research area is determined using two-stage cluster area sampling. First stage is selecting two subdistricts purposively based on the numbers of small palm sugar enterprises. Two subdistricts selected are Sindang Kelingi and Selupu Rejang. From each subdistrict, then, one vilage is selected purposively based on similar criteria. Two villages sected are Sindang Jaya and Air Meles atas in Sidang Keling and Selupu Rejang subdistricts repectively. Population of this research are small palm sugar industries, and using Simple Random Sampling, 86 small palm sugar enterprises are selected as respondents. Interview is conducted in August 2011.

Cost Unit approach proposed by Cockburn and Sieggel (1998) is applied to quantify Palm sugar Competitiveness. Cost Unit formula can be written as follows:

$$UC_d = \frac{TC_d}{VO_d} = \frac{TC_d}{Q \times P_d}$$

where  $TC_d$  is total production cost at domestic price,  $P_d$  is domestic price of palm sugar (price received by small industries),  $Q$  total palm sugar produced and sold. If  $UC < 1$  ( $UC < 1$ ), production cost is less than production value, this implies that palm sugar has a high competitiveness degree.

Determining minimum regional price (MRP) of palm sugar begin with calculating production cost per unit of production following closely to Darwis (2011).

$$PC = \frac{\sum(X_i P_i) + FC}{Q}$$

where  $PC$  is production cost per unit of production,  $X_i$  is  $i^{\text{th}}$  input production,  $P_i$  is price of input  $i^{\text{th}}$  and  $FC$  is fixed cost.

After calculating production cost per unit production, MRP is determined by conducting sensitivity analysis. This sensitivity analysis include (a) decreasing in production 10 percent, (b) palm sugar price decrease 20 percent, and (c) production cost increase 10 percent. If with this simulation, the small industries still get profit, MRP price is not necessary to set. Conversely, if with this simualtions, small palm sugar industries experienceshortfall, then MRP has to set up. To set up MRP, selling price of palm sugaris assumed to be particular percents above its production cost per unit, for instance, 20 percent. Therefore, MRP is calculated by  $MRP = 1.20 \times PC$ . This is the minimum price receive by small palm sugar industries.

## RESULT AND DISCUSION

### *Respondent Characteristics*

From survey, it is found that palm sugar producers' age is 44.74 years on average with rang of 27 – 80 years old. With this average, it is suprisingly that they have long experinces in producing palm sugar, that is, 18.81 years. However, looking at educational background, more than 95 percent of palm sugar producers have low formal education background. This condition could become an obstacle in introducing a new technology to them. This is indicated by processing technology

applied by majority of palm sugar producers that is un change for long time. Marsigit (2005) also found that palm sugar producers still used simple processing technology to produce palm sugar reflected by the use of firewood to cook sugar. Looking at the numbers of palm trees, 13 palm trees are harvested for their Nira.

Table 1. Respondent Characteristics

No	Item	Frequency	Percentage	Mean	Range
1	Age (years)			44.74	27 - 80
	>56	12	13.95		
	35 - 55	61	70.93		
	<= 34	13	15.12		
2	Formal Education (years)			6.63	0 - 12
	>12	0	0.00		
	10 - 12	3	3.49		
	7 - 9	24	27.91		
	<=6	59	68.60		
3	Bisnis Experience (years)			18.81	6 - 41
	>=27	13	15.12		
	12 - 26	57	66.28		
	<=11	16	18.60		
7	Number of trees harvested (trees/hari)			12.38	4 - 30
	>=18	15	17.44		
	7 - 17	58	67.44		
	<= 6	13	15.12		

Source : Primary data (August 2011)

#### Competitiveness Analysis

Cost of palm sugar production can be categorized into variable and fixed costs. Variable cost consist of expenses for Nira, ingredient, firewood, and labor while fixed cost includes depreciation. Average variable cost paid by palm sugar is Rp. 64,306.60 per production process (10.35 kg palm sugar on average) or Rp.6,968.05 per kg palm sugar. Palm sugar producers spend their cost of production mostly on labor and firewood which is approximately 84 percent of total production cost. Meanwhile, the fixed cost have to be paid by producer per production process is only Rp. 793.88 or Rp. 90.06,- per kg of pal sugar production. Hence, total cost of production paid to produce 10.35 kg (per production process) of palm sugar is Rp. 65,100.48,- or the total unit production cost is Rp. 7,058.11 per kg of palm sugar (See Table 2 for detail).

From research also found that average production per production process is 10.35 kg and price received by palm sugar Rp. 11,894.19,- This informs that total revenue of palm sugar producer earned is Rp 122,718.14 per process of production. With this revenue, palm sugar producers get a profit of Rp. 57,617.66. This means that firm efficiency denoted by revenue and cost ratio is 1.69. Thus, it can be conclude that palm sugar production conducted by producers in Rejang Lebong is efficient. This ratio also informs that every Rp. 1,- spent by producers to produce palm sugar will create Rp. 1.69,- revenue.

**Table 2** *Cost, Revenue, Profit And Competitiveness Level Of Small Palm Sugar Enterprises In Rejang Lebong Regency, 2011*

No	Item	Per Process	Per kg
1	Production (kg)	10,35	1
2	Price		11.894,19
3	Revenue	122.718,14	
4	Variable Cost		
	Nira	9.793,26	1.007,48
	Ingredient	114,46	12,23
	Firewood	30.277,96	3.220,83
	Labour	24.120,93	2.727,52
	Total Variable Cost	64.306,60	6.968,05
5	Fixed Cost (depreciation)	793,88	90,06
6	Total Cost	65.100,48	7.058,11
7	Profits	57.617,66	4.836,07
8	Efficiency		
	R/C ratio		1,69
	B/C ratio		0,69
9	Competitiveness		0,41

Source: Primary data (2011)

As mentioned above, economic cost unit is used as an indicator of competitiveness of small palm sugar enterprises in Rejang Lebong regency. Economic cost unit is defined as ratio between total production cost divided by total production. As presented by Table 2, the cost unit ratio is 0.41. This ratio indicates that palm sugar competitiveness level is relative high. Siegel, et al (1998) said that if production cost per unit is more than one, it implies that this product has a high competitiveness degree. The reason is that palm sugar producer is able to produce a kg of palm sugar with cost spent less than its revenue per unit of production. This finding is relatif high compare to Asri (2009) finding. Asri (2009) found that competitiveness degree of palm sugar in Rejang Lebong is 0,54 in average. Argument that can be proposed to explain these dissimilarity findings is that the palm sugar price in 2011 increase twice those of in 2009, meanwhile price of inputs is relatively stable.

#### *Minimum Regional Price Assessment*

Price is one of the main incentive for palm sugar producers to maintain its business or to alter to other businesses. If the price is low, producer will not motivate to sustain his business, and conversely. Generally, price can be formed when the supply and demand are in equilibrium condition. This price is formed in competitive market. However, palm sugar market is unlikely in competitive manners. Limited number of buyers at village level and upper level tend to create oligopsony market. This type of market can cause price distortion due to lack of competition among buyers as a result of limited buyers at village level and upper level. Price distortion can also be caused by asymmetric information given by wholebuyers. That is why the establishing MRP is important to give palm sugar information the minimum level of palm sugar price with the intention that they are able to get profits.

As discussed in research method, the estimating MRP is began with the calculation of production cost per unit. Table 3 show the cost unit of production which is calculated from total production cost divided by total production per process. Total production cost required to produce 10.35 kg palm sugar is Rp. 65,100.48. This means that cost unit of production is Rp. 6,289.90 per

kg of palm sugar. Cost unit of production itself informs that selling price of palm sugar is in break even point. It means that if the price is in the unit cost level, producers do not gain profits but they also do not experience lossess. This price level, actually, can be used as an indicator for government to intervene or not. If the market price is similar or below cost unit of production, government should intervene so the palm sugar producers still have incentives to produce, *conversely*.

*Table 3 Total Production Cost, Totap Production per Process and Cost unit of Production of Palm sugar inRejang Lebong Regency, 2011*

No	Item	Production Cost (Rp)	
		per process	per kg
1	Variable Cost		
	Nira	9,793.26	1,007.48
	Ingredient	114.46	12.23
	Firewood	30,277.96	3,220.83
	Labour	24,120.93	2,727.52
	Total Variable Cost	64,306.60	6,968.05
2	Fixed Cost (depreciation)	793.88	90.06
3	Total Cost (Rp.)	65,100.48	7,058.11
4	Production (kg/process)		10.35
5	Production Cost Unit (Rp./kg)		6,289.90

*Source: Primary data (August 2011)*

After estimating cost unit of production, followed stage is measuring MRP by conducted several simulations. In this research, 3 simulations are performed, namely, production decrease 10 percent, palm sugar price decrease 20 percent, and production cost increase 10 percent. The simulation results are showed by Table 4 as follows.

*Table 4 Sensitivity Analysis*

No	Simulation	Production Value	Production Cost	Profit	
				Rp.	percenta ge
1	Existing Condition	122,718.14	65,100.48	57,617.66	88.51
2	Production decrease 10 %	110,794.34	65,100.48	45,693.86	70.19
3	Price decreases 20 %	98,483.86	65,100.48	33,383.38	51.28
4	Cost of Production increase 10 %	122,718.14	71,610.53	51,107.61	71.37
5	Combination of 2,3 and 4	88,635.47	71,610.53	17,024.95	23.77

*Source: Primary Data (2011)*

From Table 4, it can be concluded that even the palm sugar production decrease 10 percent palm sugar price decrease 20 percent, and production cost increase 10 percent as well as combination of those three simulations, palm sugar producers still get profits or their businesses are still profitable. For this reason and as long as profits are positive, it is unnecessary for government to intervene in order to stabilize palm sugar price. It is reasonable to let palm sugar price formed under market mechanism. The question is that when the government should intervene palm sugar market?. This question can be responded by conducting other simulations. For instance, the price of palm sugar decrease 50 % or palm sugar production decreases 50 %. This problem will cause palm sugar producer experiencing lossess. If the palm sugar price decreases 50 percent, producers will lossess



as much as Rp. 3,548.07. if this happen, the MRP should be set up. Then if producers want to get 30 percent profits, the MRP should be:

$$\begin{aligned} MRP &= 1.30 \times PC \\ &= 1.30 \times 6289.90 \\ &= \text{Rp. } 8,176.87 \text{ per kg} \end{aligned}$$

This MRP is far below actual market price of palm sugar. This implies that as far as market price is above MRP, it is needless for government to intervene even if the market price is similar to MRP. With this method, several simulation can be conducted to determine MRP based on level of profits wished by producers as follows.

*Table 4 Profit Simulation and MRP*

N	Simulation	MRP	Production Value	Production Cost	Profit
1	Profit 30 %	8,176.87	84,630.62	65,100.48	19,530.14
2	Profit 20 %	7,547.88	78,120.58	65,100.48	13,020.10
3	Profit 10 %	6,918.89	71,610.53	65,100.48	6,510.05

*Source: Primary data (2011)*

With this information, governments know when they have to intervene to stabilize palm sugar price. Darwis (2011) noted that this method is simple and easy to apply for determining minimum price at regional level. She also said that this method can be applied for any commodity, especially agricultural commodities and MRP can be applied for several crop seasons as long as the production cost per unit changes insignificant.

## CONCLUSION AND RECOMENDATION

Two conclusions can be drawn from this study as follows:

1. Palm sugar competitiveness measured by unit production cost is 0.41. This competitiveness degree is quite high. To produce a kg of palm sugar, it is only required 41 percent of price received by palm sugar producers.
2. With current price of palm sugar, palm sugar producer still get profits even their production decrease 10 %, production cost increase 20 % and palm sugar price decrease 10 %. The minimum regional price is Rp. 8,176.87 per kg. This MRP is far below current market price so, it is unnecessary for government to intervene.

Departing from these findings, it is recommended that the government intervention should be directed to providing price information to palm sugar producers. This is intended to eliminate asymmetric information due to oligosopnitic market of palm sugar. Government should also supported producers in improving quality continuously so that they will get maximum price.

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