Determining the Cost of Beef Production from Cattle Fattening in the Smallholder Farming

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ABSTRACT

Cost of production is a key piece of information needed to make the best to economic decision when selling animal. The objective of this research was to determine cost of production of beef that was produced by the smallholder farming. The research was carried out from October 2016 to February 2017, with the method of case study on fattening cattle at two of farmers group at Sleman Yogyakarta who directly sell to livestock market. Thirty cattle fattening that ready to sale for slaughter from the two groups of farmers taken as a sample. Data collecting related of cattle price, fixed costs and variable costs during fattening period using survey method with deep interviews to farmers with questionnaires , as well as cattle body weight was estimated using a tool of measure tape. Cost of production analysis by using full costing method performed in this study. The results showed , (1) the cost of production for fattening cattle was IDR 40,509;00/kg live weight, and (2) the selling price of live cattle from farmers were IDR 44,579.00, farmers have got profit from cattle fattening amount of IDR 4,070.00/kg live weight. Farmers will suffer losses if the price of cattle under market condition drops below of production costs.

Key words : Cost of production, Cattle fattening, Full costing method

INTRODUCTION

Around of 30% of Indonesian beef consumption was fulfilled from imports and the rest (70%) of local beef. More than 90% of the local beef supply comes from smallholder farmer with small-scale enterprises resulting in a slow increase in production (Directorate general livestock and animal health, 2015; Widiati and Widi, 2016). The tendency to increase the slow production of beef, if there is no appropriate government policy support then domestic production will decrease and beef import will continue to increase (Widiati, 2014). The issue of the fulfillment of beef consumption is often faced with controversy related to the large amount of beef imports and the price of beef. The price of imported beef is cheaper than the price of local beef (APPHI, 2013), so if the import of beef is not restricted then the price of beef in the domestic market will be affected by the cheap imported beef prices and will harm the farmers, as well as threaten the existence of smallholder farming. As an illustration the price of beef in India is exported at a price of US $ 2.88 / kg or IDR 36.864 / kg. While Brazilian beef exported at an average price of US $ 4.52 / kg or IDR 57.856 / kg, and beef from Australia US $ 4.73 / kg or IDR 60,544 / kg, compared to the price of beef in Indonesia reached IDR 100,000.00 / kg (Anonymus, 2015). Furthermore, the local beef price compared to import in 2005 until 2013 as in Table 1 below.

Table 1. The price of local beef vs. import in 2005-2013 (IDR/kg live weight)

Kinds of Beef	Year								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Local beef	40,000	47,500	50,500	54,500	61,500	62,500	65,000	72,700	92,000
Import	36,411	44,610	46,740	48,472	57,940	55,842	42,000	44,000	54,000

Source**:** APPHI (2013)

It becomes a dilemma that high local beef prices will lower people's purchasing power. On the other hand, if the local beef price adjusts the cheap of imported meat, the farmer will loss and affect the decrease of farmer's welfare so that the farmers are less enthusiastic to raise beef cattle. As a result of further dependence on beef imports will more increasing. Under such conditions, the price policy should be based on local beef production costs, not on imports.

The cost of Production is an important part of the information needed to make the best economic decisions when selling livestock. The cost of production can determine the cost of goods sold, the method of determining the production cost is a way to calculate the elements of cost into the cost of production. In calculating the cost elements to be used in the calculation of cost of production, there are two approaches: full costing and variable costing (Aurora, 2013). It is said further that the full costing method applied in accordance with the rules of cost accounting in the calculation of a product enough to help reduce the occurrence of over costing or under costing caused by the occurrence of the distortion in calculating the cost. The calculation of production cost by using the method of Full Costing is an information of a factory that is needed to determine the cost of production and selling price determination. The aim of this study was to determine the cost of beef production that produced in small farmers farming by using full costing method.

MATERIALS AND METHODS

The research was conducted on October 2016 to February 2017. The object of this research is fattening cattle kept by farmers belonging to livestock group Purwo Mulyo and Sedyo Makmur of Sleman Regency Yogyakarta. Taken 30 fattening cows by purposive, based on the age of age 2-2.5 years and ready to be sold to butcher as samples. Some of the data used is part of data from thesis (Wardani 2017). Most of the fattening cattle in the market are Ongole breed (PO), Limpo and Simpo cattle and there is no difference in the price of beef in the market based on the types. Therefore, to get the average of the product and the cost of beef production, the sample is taken from the three types of livestock with each sample of 10 heads from 26 respondent farmers who sell fattening cattle to Butcher as consumers. Primary data collection to determine the value of the elements of production costs, the sale price of livestock using survey method, with direct interviews to the farmers of respondents by using of questionnaires.

Livestock that sold to butchers are generally not weighed, therefore to measure the fattening cattle production is measured chest diameter and body length, which then calculated the weight of sales (kg live weight) based on Lambourne formula (Djagra, 2001) as follows:

$W = 0{,}000368\ G^{1,95} \times L^{0,75}$ .....(1)

Where.

W = Estimated weight (kg); G = Chest diameter (cm); L= Body length (cm)

Determination of selling price per kg live weight of beef, used approach as follows,

Selling price per kg live weight of beef (IDR/kg live weight) = $\frac{\text{Selling price (IDR/head)}}{\text{Body weight (kg)}}$ ..... (2)

Production cost in beef cattle fattening farming using full costing method with the following approach (Kay *et al.*, 2004)

TC = FC + VC ..... (3)

where,
TC = Total Cost (IDR/kg live weight/length of fattening)
FC = Fixed Cost (IDR/kg live weight/length of fattening)
VC = Variable Cost (IDR/kg live weight/length of fattening)

Production cost of beef (IDR/ kg live weight) = $TC : \frac{PS-PF}{SP}$ ..... (4)

Where,

PS = Price of cattle ready to be slaughtered (IDR/head)
PF = Price of cattle to be fattened (IDR/head)
SP = Selling price (IDR / kg live weight)

RESULT AND DISCUSSION

Profile of Cattle Fattening Samples

The types of fattening cattle that dominate in selected farmer groups are PO, Simpo and Limpo. The average cattle samples condition of the PO, Simpo and Limpo cattle types of each 10 heads, 2-2.5 years old were as follows Table 2.

Table 2. Profile of cattle fattening sample in average (n = 30), year 2016/2017

Item	Average	Standard deviation
Price of cattle to be fattened (IDR/head)	14,232,333.00	3,240,996.00
Prices of cattle ready for slaughter (IDR/head)	18,113,333.00	4,186,862.00
Estimated selling weight (Kg / head) (lambourne formula)	406.32	86.21
Selling price (IDR / kg live weight)	44,579.00	
Length of fattening (days)	130	32

From Table 2 it can be explained that the average price of beef cattle to be fattened in 2016/2017 is IDR 14,232,333.00 / head and the selling price after fattened for 130 days (4.27 months) is IDR 18,113,333.00 /head. Average estimation of selling weight according to Lambourne formula is 406 kg / head, so the estimated average selling price is IDR 44,579.00 / kg of live weight. Based on the research of Malewa (2009), showed that there is no significant difference in the live weight of livestock based on the Lambouurne formula compared with the weight based on the scales in real terms.

Calculation of The Production Cost of Beef

Preparation of production costs is a very important to determine the cost of production or cost of goods sold. In this research the determination of production cost based on full costing method with total cost approach consist of fixed cost and variable cost. The calculation of production cost of cattle fattening that produce beef in the form of live weight as in Table 3.

Table 3. Cost of production / head of cattle fattening / 130 days, in 2016/2017

Item	IDR	
Fixed cost		
Cash contribution for farmer group*)	20,000.00	
Land lease for cattle pen	59,733.33	
Depreciation of cattle pen	159,253.50	
Capital interest (Price of cattle to be fattened, fixed capital and operational capital)(6%/year)	406,371.67	
Total fixed cost		645,358.50
Variable cost		
Labor**)	1,246,910.739	
Concentrat feed	1,189,761.667	
Equipments	85,333.33	
Transport	325,966.6667	
Medicine	33,333.33333	
Total variable cost		2,881,305.74
Total cost		3,526,664.24
Cost of beef production (per kg of live weight) ***)		40,508.93

Note :
*)contribution per sale per cattle
**) labor to graze forage and cattle raising
***) Cost of beef production (per kg of live weight), using formula (4)

The result of calculation in table 3 can be shown that the total cost of fattening was IDR 3,526,664.00 /head/130 days. Of the various cost components, the cost of medicine is the smallest because the farmers get subsidies from the government in the form of worm medicines and medical assistance from the local animal health posts. Furthermore, the total cost can be used to calculate the cost of beef production, which in this study also referred to as the cost of good sold amounted to IDR 40,509.00 per kg of live weight. When compared to the selling price per kg of live weight of IDR 44,579.00 (Table 2), the farmer gets an excess sale price of 10% of the cost of production (IDR 4,070.00/kg live weight). In determining the selling price of the product, the farmers can be used the cost plus pricing method, where the excess of the selling price to the production cost is a profit for the producer / farmer (Downey & Erickson, 1987).

CONCLUSION

The results of this study can be concluded that for current condition, cattle fattening farming can generate income for farmers. To support the existence of smallholder cattle farming, the government's policy of setting beef prices should be above IDR 40,508.93 / kg of live weight. The bigger difference between the selling price and the cost of production will improve the welfare of the farmers and is expected to increase of domestic production. Farmers will suffer losses if the price of cattle under market condition drops below of production costs.

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