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Comparative Advantage Analysis on Self Dependent and Business Partnership of Dairy Farmers

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Abstract: The purpose of this paper was to analyze the advantage production of fresh milk on the self-dependent and business partnerships of dairy farmers in South Sulawesi Province, Indonesia. A purposive sampling and secondary data collection from the Regency, District and Villages were conducted in May- June 2010. The primary data was o btained by direct interviews with the sampled respondents in addition to an in-depth interviews using questionnaire surveys while the secondary data was collected from some selected institutions. The self-dependent sampled population was based on the dairy farmers in Enrekang Regency, South Sulawesi Province, while the farmers who relied on business partnerships were from Sinjai Regency. A Policy Analysis Matrix (PAM) was used to analyze statistically of the data obtained. The results of this study showed that the production of fresh milk entrepreneurs was not that competitive and less profitable compared to the self dependent dairy farmers. It can be concluded that the current Indonesian government policy on dairy farming business partnerships did not favor the local farmers. It implies that a new bureaucratic reform in the current government policy for such business enterprises needs to be urgently revised. Future work is recommended to study on how to improve the local production of individual small scale farmers who did not rely on government partnerships.

Key words: Analysis Advantage · Reforms · Dairy Farmers · *Dangke*

INTRODUCTION

Livestock as one of the agricultural sub-sector is an integral part of the success of the agricultural sector in Indonesia. The vision of agricultural development is a cultured livestock industry by industrial base, productivity and sustainable. Agriculture future is faced with fundamental change because of the changes in the global economy, biological technology development, various international agreements, product demand, product packaging and environmental sustainability. Concretely, Indonesian livestock will be competing with other countries livestock not only seize the international market but also the domestic market in Indonesia. The main problems of livestock sub-sector are the current inability to provide optimally the livestock products such as meat, eggs and milk and to fulfill the nutritional needs of the community of animal protein. This is probably due to the increasing productivity of livestock which is unable to keep pace with high public demand for livestock products. In addition, construction of livestock sub-sector should be implemented in stages and planned to improve the welfare of society. This is done through increased livestock production to increase the farmer's income. It is necessary to encourage the farmers to be able to compete in local, regional and international [1,2].

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In order to achieve these development goals, today's livestock have been directed towards developing in more advanced livestock with the area approach the production center which is concerned development in certain areas, using appropriate technology and implementation of a new runway; efficiency, productivity and sustainability. Dairy cattle business is an intensive labor that can absorb the labor force as well as generate economies of rural communities. Value ratio of domestic consumption in imported products is 1:2 which opens the opportunities to increase the production of domestic milk to fulfill the needs of milk nationally. Since the development of dairy cows in Indonesia is focused only on Java which is the densest area of ??population that is relatively difficult to improve, the best way is to encourage the development of the dairy cattle outside of Java and as the spirit of decentralization and regional autonomy.

Deciding whether to sell farm output or not should also be seen in the context of solving an optimization problem. Not only do ceasing milk sales reduce the number of available income sources, it is also likely to result in a need to find an alternative to top-up the household budget. Again, given the heterogeneous impact of different modes of market participation on farm performance, it seems that the restructuring along the supply chain might play an important role in determining the optimal decision. Probably the most challenging aspect of making any business profitable is marketing the final product successfully. It can be particularly challenging for those in animal agriculture who not only have the primary job of working with their animals but then have to figure a way and find the time to sell what they have produced in order to make a profit [2,3]. Considering the consumption of milk as a source of nutrition by the community of South Sulawesi, the Government develops a dairy farm business in Enrekang and Sinjai to support the decentralization and development of dairy cattle farming business. The development of dairy farming in Enrekang was largely supported by the local culture to consume milk as *dangke* (a type of cheese product from milk) because the locals are not accustomed to drink fresh milk. Dairy cattle business has been developed independently and largely conducted in the lowlands. Meanwhile, the cattle procurement was done through the regional government with a sharing system of 65% by farmers and 35% by local government in Enrekang.

The development of dairy cattle in the district of Sinjai is a commodity that is fully supported by the government in partnership. The development was carried out since 2001, but there was a decrease of 104 cattle in 2007 amounting to 501 and 397 cattle, respectively in 2008. Procurement of dairy cattle through the assistance of the Directorate General Livestock to implement a partnership in order to produce pasteurized milk for public consumption to the Makassar city. Therefore, the development of dairy cattle in South Sulawesi needs to be done with increase in the processing and marketing as well as institutional.

MATERIALS AND METHODS

The study was conducted in Enrekang and Sinjai districts, South Sulawesi Province, Indonesia. Primary and secondary data were collected. The primary data was obtained from respondents with direct and in-depth interviews using questionnaires comprising of the farmer's characteristics; production costs including fixed costs and variable costs. The secondary data was obtained from relevant research agencies. The population comprise of all 350 and 164 dairy farmers in Enrekang and Sinjai districts, respectively. A total of 30 dairy farmers were randomly sampled from Cendana Village, Pundilemo Village and Lekkong Village in the Cendana Sub-District, while 30 dairy farmers were also sampled in Sinjai District in Gunung Perak Village, Tassililu Village, Arabika Village and Balakia Village in West Sinjai Sub-District. The data was analyzed using a PAM tool.

RESULTS AND DISCUSSION

Analysis Advantage Dairy Farmer Self Dependent and Business Partnership: PAM (Policy Analysis Matrix) is an analytical tool that aims to determine the efficiency and magnitude of financial incentives or the impact of government intervention in business activities of fresh dairy cattle systematically. The output is the value of personal and social value of profit, efficiency, input transfers, transfer factor, as well as net transfers between the transfers of the business output of dairy farmers. Concentration of research assess and measure the competitiveness of fresh milk from dairy farms business independent systems in Enrekang District and partnership system in the District of Sinjai by analyzing comparative advantage, competitive advantage and government policy analysis (input and output). The income, expenses tradable, domestic costs and benefits can be seen on the PAM matrix values in which can be used to determine the comparative and competitive advantage and influence government policy on output and input. Table 1 showed

Table 1: Calculation of PAM Fresh Dairy Business Systems Partnership and Independent System in South Sulawesi

		Cost			
District	Revenue	Tradable	Domestic	Total	Profit
Enrekang					
· Private	1,322,350	231,340	661,826	875.166	447,184
· Social	823,350	265,000	11,140,226	1,405,226	-581,876
· Divergence	499,000	-51.66	-478,400		1.029,060
Sinjai					
· Private	478,867	0	459,401	459,401	19,465
· Social	718,300	433,867	585,682	1,019,549	-301,249
· Divergence	-239,433	-433,867	-126,281		320,714

Table 2:Counting Analysis of PAM

		District	
No	Indicator	Enrekang	Sinjai
1	Private profit (Rp)	447,184	19,465
2	Social profit (Rp)	-165,876	-301,249
3	Output Transfer (Rp)	499,000	-233,433
4	Input Transfer (Rp)	-51,660	-433,867
5	Factor Transfer (Rp)	-62,400	-126,281
6	Net Transfer (Rp)	613,060	320,714
7	Private Cost Ratio (PCR)	0.597	0.959
8	Domestic Resources Cost Ratio (DRCR)	1.297	2.059
9	Nominal Protection Coefficient Output (NPCO)	1.606	0.667
10	Nominal Protection Coefficient Input (NPCI)	0.805	0
11	Effective Protection Coefficient (EPC)	1.986	1.684
12	Portability Coefficient (PC)	-2.696	-0.065
13	Subsidy Ratio to Producers (SRP)	0.745	0.446

that the private cost on dairy farm in Enrekang is higher than private cost on dairy farm in Sinjai. On the other hand, the social cost to the both systems are negative with the different values of the dairy farmers in both districts are shown in Table 2.

Competitive Advantage: Competitive Advantage Analysis consists of competitive financial profit advantage (profit private, PP) and the Private Cost Ratio (PCR). Financial profit in a dairy farm is the difference between revenue receipts from the sales price of fresh milk (liters) / month with the cost incurred by using the actual prices that have influenced government policy. The total profit cost/month of independent dairy cattle in Enrekang was Rp 875,166 to Rp 213,340 of tradable inputs and domestic input costs Rp 661,826, with a revenue/month of financial gain amounting to Rp 1,322,350 to Rp 447,184. Meanwhile, the Sinjai district dairy production systems business partnership earn a profit of Rp 19.465/month. This indicates that the financial exploitation of independent dairy cattle farmers in Enrekang is more profitable than the partnership dairy cattle in Sinjai.

Comparative advantage of a commodity can be seen by the allocation of resources is directed to achieve financial efficiency in an effort to produce the milk dairy cattle. Financial efficiency can be measured by using the Private Cost Ratio (PCR). PCR is the ratio between the cost of domestic inputs with added value or the difference between revenues and tradable inputs on the actual price level. An activity will be financially efficient if the PCR value is less than 1. PAM matrix analysis results show the value of dairy cattle business PCR Enrekang is 0.597 where in Sinjai District is 0.959. The smaller the value of PCR obtained the greater the level of competitive advantage possessed by the prevailing government policy. PCR value of 0.597 for independent dairy cattle business means to get value-added output in the private prices of domestic factors is required additional fees of Rp 0.597 which means the use of domestic factors is efficient. Thus, the dairy cattle milk business in Enrekang is more efficient in financial and competitive advantages. It is similar with Enrekang Regional government policy by setting the price of processed fresh milk that is *dangke* which considerably higher than its cost of production

compared to the business of the partnership system dairy cattle in the district of Sinjai which has influenced the government policies, this consistent with the work of Fałkowski [4] who reported the factors that cause households not to participate in the market and then estimates farm orientation effects on revenues, using semi-parametric methods. The key finding is that farms maintaining commercial dairy business were better off than those who ceased milk sales. However, detailed analysis shows that this difference could be attributed to supply chain modernization and becomes insignificant once subsistence farmers are compared to commercial farms supplying the traditional marketing channel.

Comparative Advantage: The value of comparative advantage is measured by using the social profit (Social Profit, SP) and Domestic Resource Cost Ratio (DRCR). Social profit is the profits occur in a perfectly competitive market without government support and market failure. In contrast to the analysis of private profits, in the analysis of economic benefits (social) component input and output can be assessed using social prices. Table 2 shows a lot of the social profits derived from the independent system of milk dairy cattle in Enrekang and Sinjai has negative value which means the exploitation of dairy cows is not economically profitable without government policy in these two districts so it is not able to compete with fresh milk in Java. This is in accordance with the results obtained by Irawan and Rusastra and Smith and Riethmuller [6,14] who reported that Indonesia does not have a comparative advantage to produce milk. But more in-depth study needs to be done for each province to evaluate the comparative advantages of each province. This is consistent with the study of Pearson *et al.* [5] which reported that if the social line for all businesses shows a positive profitability of the business of chicken poultry in Tasikmalaya is an efficient business

Apart from the economic benefits, comparative advantages of the dairy cattle business can be know from the ratio of Domestic Resource Cost Ratio (DRCR) is the ratio between the cost of domestic factors to the difference and acceptance of the social cost decreases in the price of traded without government investment. DRCR declares an undertaking economically efficient if the value is less than one and vice versa. DRCR value <1 means in order to obtain additional output value of Rp1 additional domestic factors that will cost less than US$1 which is assessed from the social price. The opposite would result in a waste if DRCR is more than one. The DRCR analysis of 1.297 in Enrekang dairy cattle and 2.059 for dairy cattle business in Sinjai indicated that both businesses are economically inefficient and has no comparative advantage. So, without government support or government intervention or in a perfectly competitive market conditions then the milk commodity would not economically inefficient. This results differed with the study of Adnyana and Kariyasa [7], Rahman [8] and Rusastra and Yudsja [9] that the dairy cattle business in Malang district with a DRCR of 0.813. It has also been showed that dairy cattle business in Garut and Bogor highland had a DRCR 0.90-0.98 and 0.99-1.25 in each scale On the other hand, it was reported that in each business systems, the DCRC is less than 1 (0.365-0.698) in West Java, Indonesia.

Dairy cattle business in Sinjai and Enrekang showed some financial benefits which is greater than an economic benefit (PP>SP). This implies that dairy cattle breeding are more profitable when the government intervention is in the form of market distortion with both inputs and outputs. PCR values which are greater than DRCR show that there are government policies that increase the efficiency of producers in production. Since 2001, the government subsidies animal feed (concentrates) and bovine parent so that the business is more efficient than if the government reduces subsidies for cattle feed as well as the parent.

Impact of Government Policy: Government policy in economic activity provides a positive and negative impact on economic behavior. The impact of this policy may reduce or improve production and productivity of economic activity. By using PAM, the transfer of some indicators such output (OT) and the coefficient of nominal output (NPCO) can be known how much influence the government. The analysis shows that the transfer value of output (OT) amounting to Rp499.000 for dairy cattle independent system in Enrekang and US$239,433 for the dairy cattle partnership system in Sinjai. In Enrekang, output prices in domestic market on the exploitation dairy cattle is higher than the price in markets outside the region or there is a transfer from consumers to producers output of Rp499.000/month so that consumers or traders have to buy commodities at higher prices if the market is distorted or without government policy. While in the Sinjai output prices in domestic market of dairy cattle is lower or there is a transfer of the output from producers to consumers is Rp 239,433/month.

NPCO value of dairy cattle partnership system in Enrekang is 1.606 while for the partnership in Sinjai district is 0.667. In Enrekang, NPCO is greater than one because

its price protection so prices received by farmers is higher than the price should be so there is transfer from consumers to producers / breeders. In Sinjai, NPCO is smaller than one indicates the absence of government protection, because the price received by local dairy farmers are much lower so all consumers and producers get lower prices. Government policy on the input-output is an analysis combination of input and output policies. Overall policies towards the input or output can be seen from the effective protection coefficient (EPC), the net transfer (NT), profit coefficient (PC) and the subsidies ratio of producer (SRP).

Effective protection coefficient (EPC) is used to see the extent to which government policies in protecting or inhibiting domestic product. EPC is the difference between revenue and cost tradable inputs on the actual price difference between revenues and tradable input costs in social prices. EPC value of less than one indicates the government's policy on output prices and input subsidies are not be able to protect domestic producers and manufacturers to have hampered production. Meanwhile, if the EPC is more than one then the government policy provides incentives for manufacturers to produce. The results with PAM show EPC value > 1 for both of district, that is 1.986 for dairy cattle business in Enrekang and 1.684 for dairy cows partnership in Sinjai. It means the government policies to input-output caused an additional profit for farmers in 198% in Enrekang and 168% in Sinjai from social cost. Thus, the Government's policies have to provide an adequate protection in dairy cattle business system. In Enrekang, producer gets out a higher price more than the price efficiency due to high demand of *dangke*. Meanwhile, farmers' supplies are low while the Government managed to improve the productivity of farmers. Although the Sinjai breeders receive assistance of state policy in the form of traded cost cows, concentrate and milk can. Both indicate that the search for producers of milk in two districts get benefit from subsidies, as a result of government policy which protects milk producers. The program implemented is the parent productive cows' assistance, capital assistance for Koperasi, increased processing tool (milking machines and ice cream making machines). This is consistent with Rusdiana and Sejati [11], Pattinson and Lindgreen [10], Wilson[12] that the commissioner in cooperation with relevant parties to extend the market such as by drinking fresh milk movement programs nationwide. The dairy processing companies, milk collection co-operatives and milk groups was examined in the south west of England to assemble reasons for success and failures and comparing them with north west France with similar traditional dairying The contribution of strong branding and new product development to commercial success featuring some state-of-the-art approaches to segmentation and brand positioning are likely to become critical to dairy product companies' success or failure in achieving their full added values in the 1990s.

The results PAM analysis show the advantages coefficient (PC) is the ratio between the actual net profits with net economic benefits. The ratio of the PC used to view the impact of policies that lead to differences in financial and economic benefits. PC value 2.696 obtained for dairy farmers in Enrekang and 0.065 for farmers in the district of Sinjai. In Enrekang, benefit dairy farmers obtained when there is intervention or influence government policy at 269.6% of the profits earned without the policy. Partnership dairy cattle in Sinjai district shows that PC value <1 which means farmers benefit when there is government policy is 6% of the profits earned in the absence of policy. In other words, the benefits of farmers are smaller than the net social benefits. In order to observe the value of surplus producer of the government's policy, the net transfer (NT) which is the difference between net private benefits with social net profit was used where if the NT is negative, it means that an intensive policy making producer surplus decreases and vice versa, with a positive value of NT (Rp613,060) for an independent dairy cattle business in Enrekang and Rp320,714 for dairy cattle business in partnership in Sinjai District. This value indicates that there is already government policy in the two districts to input and output that provides an economic incentive to increase milk production.

Subsidies ratio of producers (SRP) is the ratio between net transfers with the revenue based on social price. SRP value is negative (<0) indicates the existence of government policies that apply during this led to manufacturers cost of production inputs is greater than the cost of production while the balance for the SRP value positive (> 0) means that government policies led to manufacturers cost of production to lower input balance of the cost of production. SRP values ??in Table 2 are 0.745 for the business of independent dairy cattle system in Enrekang and 0.446 for dairy cattle business in partnership in Sinjai. Both districts have a positive value means that the SRP of government policy which is valid for this cause milk producer is lower production cost 74.5% for the business of dairy cattle and 44.6% self-contained system for dairy cattle systems venture partnership of the opportunity cost to produce. The

policy pursued in a partnership system that is an improvement on the deposit system and the procurement of milk pasteurization machine is effective and supported by good packing machine for milk sachets and glass packing machine. Besides, with the cooperation with universities such as UNHAS should be able to develop diversification of dairy products especially the manufacturing of crackers.

CONCLUSION

The business in South Sulawesi fresh milk (*pasteurized*) partnership system does not increase its competitiveness compared to the individual farmers. However, the business of fresh milk (*dangke*) independent systems can enhance its competitiveness. The overall business profits of a independent system is higher than pasteurized milk business in a partnership system. It implies that the government policy with subsidies and pricing for dairy cattle business partnerships can be made a standalone system.

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