

The performance of credit program for smallholder's dairy cattle development in Indonesia¹

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ABSTRACT: The research aims to study the performance of credit program on smallholder dairy cattle covering the scheme of credit, its implementation, and the financial feasibility of the dairy farming. The research adopts survey method with 136 respondents who were smallholder dairy farmers in milk production centers in West Java, Central Java, Special Region of Yogyakarta and East Java taken with multistage sampling methods. The primary data from the respondents were collected with questionnaire. Qualitative analysis was carried out to study the process of credit implementation, while cash flow analysis, NPV and B/C ratio were carried out to determine the financial feasibility of the dairy farmers. The research concludes that there are four credit schemes of smallholder dairy cattle development: (1) the lending of three months pregnant cows with return of two adult female at 15 months old, (2) lending of money for purchasing three months pregnant cows with a return of monthly cash money, (3) similar to first scheme but it was non pregnant cows, which is ready to be mated, with return of two females at 15 months old, (4) similar to second scheme but the cows purchased have not been pregnant, however ready to be mated. Cooperatives and groups of dairy farmers play the biggest role in obtaining and dropping the credit. Based on the cash flow analysis, NPV and B/C ratio using technical and economical parameters which has been achieved by the respondents, on the interest rate of 8 % in 4,5 – 5 years period of credit, it was shown that financially, scheme 1, 2 and 3 were feasible or profitable to be implemented, nevertheless scheme 3 has relatively small profit whereas scheme 4 is not feasible. Generally, the improvement of technical and economical parameters on the dairy cattle farming is expected to be able to increase the profit of the dairy farmers.

Key words: financial feasibility, credit program, smallholder dairy cattle

INTRODUCTION

Agricultural credit programs have become an essential part of development strategies in nearly all developing countries, including Indonesia. Since those development programs were implemented, they have been requiring a large national budget. Therefore it is important to study their performance and its implementation to estimate the costs and benefits.

In the livestock sub-sector policy in 1982 formulated dairy agribusiness development programs through cooperative units by providing loans or credit in the form of imported dairy cattle to the smallholder dairy farmers that dominates more than 90% of dairy cattle in Indonesia. The dairy products, mainly milk, are marketed and organized through the cooperative marketing of milk and Milk Processing Industry (IPS). Ever since, the production of fresh milk in Indonesia has increased and developed a variety of loan programs through government and private institutions. However,

¹ The authors wish to thank Research and Development Agency of Agriculture, Ministry of Agriculture which has provided funds for the implementation of this research through the cooperation of agricultural research partnerships with universities for budget year 2009.

these programs have not yet resulted a powerful development of dairy cattle business. It appears that until now the imported milk is still around 75% of overall milk consumption in Indonesia (Directorate General of Animal Husbandry, 2008). According to YUSDJA (2005), unsuccessful agribusiness development of dairy cattle was resulted from Government policy which is focused only on cooperatives and milk marketing regulation through the IPS, whereas the production management strategies at farmer levels are not considered so important. Animal feed industry and the IPS as the backbone of the dairy farming business, are still dependent on imported raw materials, so that the input prices and production prices at the farmer levels are not based on the production costs, but are rather based on the price of imports by industry.

Innovations in agriculture/livestock to increase production and productivity for developing countries which is limited funds depends on the loan or credit, so that the domestic investment behavior in the farm households need to be managed and properly understood. The purpose of this research was to understand the performance of the implementation of dairy business credit program in dairy cattle farming, including the scheme of credit and its implementation, profitability and financial feasibility of dairy cattle farming through credit programs.

MATERIALS AND METHODS

The materials of the research were 136 dairy farmers as respondents who are the members of farmer groups (*klotan*) in dairy cooperatives located at milk production central in East Java, Central Java, Yogyakarta and West Java, which was taken with multi stages sampling method, in accordance with Amir and Knipscheer (1989). The study was conducted in March until September 2009 with a survey method, using a questionnaire as a means of collecting primary data from respondents. The secondary data relevant to the focus of this study were taken from the relevant agencies and previous studies. The primary data collection was conducted on the field using two approaches as well, both quantitatively and qualitatively. This data was used as the main references in the analysis, to answer the purposes of this research. The analysis was done qualitatively and quantitatively. According to Silverman (2004), qualitative analysis is generally more focused on the process of approaching the object of research rather than the product. Meanwhile, quantitative analysis is more concerned on the products. Qualitative analysis was applied to observe the implementation of the credit process of dairy cattle which was developed in the research location, the kinds of institution involved, the procedures in accessing credits, loan disbursements, loan repayments. From this process, the variables that can be measured as interval data were obtained and used as the basic for financial feasibility analysis in the following manner: (1) Measuring variables to determine the technical parameters of the implementation of dairy cattle enterprise credit (such as calving intervals, mortality, milk production, the total use of inputs or factors of production, the amount of credit, manners and time of return and the amount of output in the form of milk products, the calf birth, and manure products, as well as economic parameters such as input and output prices). (2) Estimating the operation projections based on the technical parameters have achieved and the settlement of various existing credit schemes. The calculation of the projected business is in accordance with Brown (1979) and Webster (1992). (3) Analysis on the estimation of cash flow projections is based on economic parameters or by entering input prices and output. From this analysis the amount of credit and a payback period can be determined. (4) Based on the cash flow budget, the dairy farmers' financial condition from time to time can be known and the assessment of financial feasibility of the dairy cattle farmers with various credit schemes using the criteria of net present value (NPV) and benefit cost (B/C) ratio can be subsequently conducted (Amir and Knipscheer, 1989; Armstrong and Taylor, 2000; Brown, 1979; Kay, 1981).

RESULTS AND DISCUSSION

Identity of Sample Farmers

The samples of dairy farmers were formal educated on around averagely eight years of formal education or equivalent to junior high school. However, majority of the respondent farmers joined

non-formal education and had experience on keeping dairy cattle for more than 13 years. They have an average grass land of 3700 m² to meet the needs of forage. All of the sample sites are upland areas, hilly or dry areas so that the average of land possession is relatively more extensive than farmers in the irrigated plains (Widiati, 2006). Average numbers of dairy cow owned was 5.43 Animal Unit (AU) so that the farmers realize that high forages were required, although they do not have sufficient capital to purchase those forages. In dairy farming, the feed that consisted of forages and concentrates takes the highest operational cost, it was 70-80%.

The Credit Program in Dairy Farmers

Until now, the development of smallholder dairy cattle business with credit capital are still growing through commercial banks, private institutions or through government and individuals in the form of aid or loans (Table 1). The average of the highest loan was in East Java while the lowest was in DIY. Average amount of the loan from all samples was Rp 20.05 millions, the range was Rp 4 millions to Rp 125 millions. Based on the interview, large numbers of loans from formal institutions (banks) was not based on the dairy farmers need, but the amount of the collateral being held and considered by the creditors. Besides, the manager of cooperatives/farmer groups generally was also required by the lenders to assess the personal character of the dairy farmers who will apply the credit.

Table 1. The conditions of credit in smallholder dairy cattle at the research location

Item	Location			
	West Java (n=45)	Central Java (n=23)	DIY (n=15)	East Java (n=53)
Source of Funding	Bank Mandiri, Bank BRI, Bank BNI, Bank BHS, KUD, KKPE, Individual, Cooperative	Bank Mandiri, Bank Bukopin, Bank BRI, KUD, GKSI, Individual, Cooperative	Bank Bukopin Pertamina GKSI Individual Cooperative	Bank BNI, Bank BRI, Bank Syariah, Bank Niaga, Bank Danamon Bank BCA, KUD. Pertamina, KKPE, Cooperative, Individual
Dairy Farmer Loan (in Million Rupiahs)				
Average	21,46	17,39	15,97	25,42
Range	4-75	5-25	7,1-68	6-125
Interest Rate (%/year)				
Average	9,2	7,5	6,5	7,6
Range	6-18	6-12	6-8	6-11
Loan repayment (% of respondents) in the form :				
1. Money (through cooperative)	25,0	34,3	31	15,1
2. Milk (through cooperative)	65,6	58,8	44	63,7
3. Livestock (through group of farmer)	9,4 100	6,9 100	25 100	21,2 100
Total (%)				

Description: The data were processed in November 2009.

Note : KUD (Village cooperative units)

 KKPE like a KUD

According to Kay (1981) and Budiantoro (2005), the essential factors to be considered in building and develop business loan service are: (1) Personal character, (2) Management ability, (3) Financial position and Progress over time, (4) Repayment capacity, (5) Purpose of the loan, and (6) Collateral. These factors need to be considered by both the borrower and lenders in making decisions. Besides that, the management of cooperatives/farmer groups is also generally required by the lenders to assess the personal character of the dairy farmers who will take the credit.

The results of this research show that the average of interest rate of the loan or credit for the business in smallholder dairy cattle farming is 7.7% per year with a range of 6-18%. This average interest rate has been in accordance with government programs for small and medium enterprise development in Indonesia. The period of loan repayment desired by the lender is between 2-5 years, but in fact most of the respondents did not know the actual repayment of their credits.

Briefly, based on the allocation of credit usage and repayment scheme, the credit programs in dairy cattle farming can be distinguished into four schemes, namely:

1. Scheme 1: Loan in the form of about three months pregnant cows, with return of two adult female aged on 15 months,
2. Scheme 2: Loan or credit in the form of money for purchasing of three months pregnant cows with a return of monthly paying money, or by deducting the amount of money remitted to cooperatives in the form of milk.
3. Scheme 3: similar to scheme 1 but the cow have not been pregnant, however ready to be mated with return of livestock of two adult females aged about 15 months,
4. Scheme 4: similar to scheme 2 but the cow purchased have not been pregnant, however ready to be mated.

Scheme 1 and 3 are generally government's special programs in the form of assistance through a cooperative, non-governmental organization (NGOs) and limited individuals. Meanwhile, scheme 2 and 4 are held by the investor through formal banks using collateral.

The procedure in accessing credit is very closely related to the institution involved, such as IPS, cooperatives and dairy farmer groups. Generally, it is found that in getting credit, cooperatives and farmer groups have much involvement in accessing and disbursing loans, but unfortunately the dairy farmer groups generally do not have a clear Articles of Association Bylaws (ADART). Therefore, in handling credit the dairy cattle farming institution in the level of farmer group needs to be strengthened, because this is where the dairy farmers are directly related to the most competent institution. It is better that the group administrators fully understand the personal characteristics of each individual member. A strong institutional group requires reliable human resources, and this is actually the role of government or related formal institutions to conduct coaching groups and provide facilities to support the development of the smallholder dairy farming.

Financial Analysis of Smallholder Dairy Cattle with Credit Program

Profitability and financial feasibility from each of the credit scheme are greatly influenced by the technical efficiency and economical parameters achieved by farmer. The technical efficiency and economical coefficient achieved by farmer is presented in Table 2. The coefficient of technical parameters reflects the achievement of certain production and its technology management. Webster (1992) stated that technical performance and economic performance are factors affecting the profitability of dairy cattle farming. Therefore, technical coefficient is used as the basis to create the projection of dairy cattle business in each credit scheme. Furthermore, its technical projection, carried out by entering the economical parameter or the input and output prices, can be used as the basis to generate cash flow analysis, farm income and financial feasibility as seen in Table 3.

From Table 3, it can be explained that scheme 1 and 2, with the interest rate of 8% per year and terms of credit 4.5 - 5 years, give profit and are financially feasible to be developed based on NPV positive and B/C ratio which are more than 1. Scheme 1 gives a little bit more profit per year compared to scheme 2, since scheme 1 is generally governmental or social institution program. Therefore, its nature is aid which has to be given to the beginner dairy farmers who do not have capital but possess experience. They receive a loan in the form of pregnant cow so that there will be certainty of results (milk and calf products) as what expected and the actual flow of money can be

realized soon. The average of farm income/year which is the component of Family Labor Income and Family Management Income on scheme 1 and 2 is approximately Rp 2 millions per year/cow.

Table 2. Technical and economical coefficient of the smallholder dairy cattle

No	Information	Location				Average (n=136)
		West Java (n=45)	Central Java (n=23)	Special Region of Yogyakarta (n=15)	East Java (n=53)	
Technical Parameters		Coefficient				
1.	Milk prod. /head (in liters per day)	11.72 ± 3.76	9.80 ± 2.58	8.92 ± 2.14	11.80 ± 3.78	10.53
2.	Average of lactation on month ...	4.58	4.47	4.27	3.56	4.13
3.	Service per conception (S/C)	2.38±1.02	2.57±1.75	3.27±2.19	2.68±1.60	2.73
4.	Calving interval /C.I (months)	14.27±1.87	14.39±2.49	14.59±2.19	14.31±1.61	14.34
5.	Average number of calf mortality (%)	7.44	8.69	8.67	5.66	7.61
6.	Average number of forage (in Kg per cow per day)	40	39	38.5	43	40.12
7.	Average number of concentrate feed (in Kg per head parent per day)	7.6	6.5	6.25	7.9	7.06
Economical Parameters (Average Price)						
8.	Cow (in thousands rupiahs per head)	13 670	12 960	12 800	13 404	13 208
9.	Weaned calf (3 months old) (in thousands rupiahs)	4 430	4 270	3 890	4 080	4 160
10.	Forage (in rupiahs per kg)	400	250	300	375	330
11.	Concentrates (in rupiahs per kg)	1500	1450	1450	1621	1505
12.	Rice bran (in rupiahs per kg)	1420	1680	1350	1223	1418
13.	Fresh milk (in rupiahs per litter)	2902	2725	2830	2900	2840

¹The data were processed in 2009.

Table 3. The result of farm income analysis, cash flow analysis and financial analysis from 4 credit schemes

Scheme:	Average net farm income (Family Lab. Income + Family Management Income), Rp/yr	Period of credit/loan repayment based on technical feasibility, yr	Credit Interest rate based on financial feasibility, %/yr	Total net cumulative cash flow during the grace period of credit, Rp	Financial Feasibility	
					NPV, Rp	B/C ratio
1	2,193,431	4.5	8	13,409, 200	9,870,441	1.397
2	2,023,667	5	8	15,188,641	10,118,336	1.251
3	466,855	5	8	4,031,018	2,334,276	1.043
4**)	(818,566)	(5)	0	(2,737,447)	(4,092, 829)	0.928

***) Net cash flow up to the fifth year remains negative so it is not profitable.

Based on technical and financial feasibility, grace period of credit in scheme 1 and 2 (minimum 0.5 yr), and scheme 3 and 4 (minimum 1 yr).

Scheme 3, based on NPV and B/C ratio criteria with the interest rate of 8% and period of credit 5 years, is feasible to be carried out, but the farm income is very small: Rp 466,855 per year. Meanwhile, in scheme 4, the dairy farmers suffer from financial loss or is not feasible. This can be seen on the 0% interest rate, the NPV remains negative and B/C ratio is less than 1.

The results of cash flow analysis with applied price conditions at the period of research indicated that the amount of credit required for scheme 1 and 3 was each per cow of dairy cattle which have been pregnant added by operational cost of 4 millions rupiahs to operational cost until the dairy cow produce milk, whereas for scheme 2 the credit required was Rp 18 millions per head productive cow.

CONCLUSIONS

Credit for developing smallholder dairy cattle farming is greatly needed by the most of dairy farmers in Indonesia who mostly weak of capital. The that profitable or feasible credit is credit to operate pregnant or ready to be mated cows so that there will be certainty of results (milk and calf products) as what expected and the flow of money can be soon realized. Nevertheless the realization of this program required government support for investment in dairy cattle breeding which can be produce qualified cow to the farmers' easiness in getting mature cow. The loan or credit program in the form of mature or pregnant cows is required and should be supported by cash credit to smooth the farming operation until the dairy cow produce milk.

The improvement of technical and economical coefficient can increase the profit of dairy cattle farmers. Improvement of technical coefficient can be conducted by socialization of credit, financial administration and production management assistance, while the improvement of economical coefficient can be carried out through the macro policies which can influence the input and output prices so farmer incomes can be improved.

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