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FEASIBILITY ANALYSIS OF DAIRY DEVELOPMENT LOANS

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The study aimed at judging the economic viability of ADBP's small farmers Dairy Development Loans. The data collected from Sialkot area were analysed by using discounted measures of project worth. At 15%, the net present worth was calculated to be 3953 and IRR was 39.9%. The results of the study provided enough evidence to conclude that Dairy Development Scheme was viable and economically feasible. It is, therefore, suggested that institutional financing for Dairy Development should be organized on a wider scale in the country for improving income and employment situation of the small farmers.

INTRODUCTION

Dairy enterprise has been considered as an important activity to enhance income levels of rural families especially the small farmers and landless agricultural labourers. The spread of income over the lactation period, availability of family labour and crop residues make dairy animal raising particularly suitable to low income families. Majority of our farming population consists of small farmers, who constitute about 75% of the total number of farms and operate nearly 39% of the total cultivated area in Pakistan. There is a need to improve the economic conditions of this huge segment of our farming sector. Dairy enterprise can be taken up as one of the alternatives to raise the income level of this poverty stricken group. However, in view of the fact that buffalo and cattle prices have increased manifold in recent years, starting a dairy enterprise even on a small scale requires substantial initial investment which many small farm households cannot afford from their own resources. Therefore, the organization of an effective credit programme for the acquisition of dairy animals by small farmers becomes an important activity. Number of studies conducted previously have shown that loaning activity for dairy development has significant impact on farmers income and employment level (Blishter, 1988; Sexena and Mathur, 1988; Singh and Singh, 1989). Agricultural Development Bank of Pakistan is advancing loans to small farmers for dairy development. Little information is available under our conditions to precisely know the economic viability of such loans. The present study is an endeavour in this direction and aims at generating information for organizing an appropriate credit policy for small farmers Dairy Development Programme in the country.

METHODOLOGY

The study was based on primary data collected from District Sialkot. Using random-cum-multistage sampling technique, 30 respondents were selected for final study from six villages located at the radii of 5, 10, 15 kilometers from tehsil headquarter. The technique of discounted measures of project worth was employed to determine economic

Table 1. Projections of net cash flows per buffalo

Item	Lactation No.						
	0	1	2	3	4	5	6
Value of milk @ Rs. 5/- litre	0	12386	13170	13745	14360	12661	11547
Value of young stock	0	950	950	950	950	950	950
Value of F.Y.M.	0	202	202	202	202	202	202
Terminal value	0	0	0	0	0		1000
Terminal cash inflow (1 to 4)	0	13538	14322	14987	15512	13813	13699
Initial investment	3335	0	0	0	0	0	0
Operating expenses	0	10085	10085	10085	10085	10085	10085
Loan installment	0	2665	2665	2665	2665	2665	0
Total cash outflow (6 to 8)	3335	12750	12750	12750	12750	12750	10085
Net cash flows (5 to 9)	3335	788	1272	2147	2762	1063	3614

feasibility of Dairy Development Loans. Following equations were used to estimate NPV and IRR values.

$$NPV = -INV \quad \frac{P1}{(1+i)} + \frac{P2}{(1+i)^2} + \ldots\ldots \frac{Pn}{(1+i)^n} + \frac{Vn}{(1+i)^n} \qquad (1)$$

$$IRR = -INV \quad \frac{P1}{(1+i)} + \frac{P2}{(1+i)^2} + \ldots\ldots \frac{Pn}{(1+i)^n} + \frac{Vn}{(1+i)^n} \qquad (2)$$

where

NPV = Net present value: The sign and size of NPV determines the acceptability of a project. If NPV is positive, project is accepted, if NPV is negative, it is rejected.

INV = Initial investment: It refers to the initial equality committed to a project by an investor at the start of the project.

Pn = Net cash flows: Net cash inflows equal all cash inflows relating to an enterprise minus all cash outflows for operating expenses, capital expenditure, income tax and financing costs of the project, etc.

Vn = Terminal value: It refers to residual value/scrap value of the assets involved in the project at the end of its productive life.

N: It refers to the number of years of pro-

ductive life of a project/the length of the planning horizon.

I = Discount rate: It refers to investor's required rate of return (RRR) or expected rate of return on its equity capital. It is also called opportunity cost of capital or discount.

IRR = Internal rate of return: It refers to that discount rate which equates the net present value of the projected series of cash flow payments to zero. The feasibility of a project is judged using the following decision rules. If IRR exceeds required rate of return (RRR), project is accepted. If IRR is less than RRR, the project is rejected.

RESULTS AND DISCUSSION

All the respondents in this study were small farmers. Of these, 17% were having farms from 1 to 4 acres, 63% from 4 to 8 acres and 20% from 8 to 12 acres. The average herd size was 2.8 buffaloes per farm. Average size of loan advanced to each farmer was Rs. 27,434 and purchase price per buffalo was Rs. 9,798. Primary benefits to the farmers were measured in terms of increased income through dairying. Productive life of a buffalo and milk production estimates were taken from Cockrill (1974). Since most of the farmers purchased buffaloes in the second lactation, a further productive life of 6 lactations was considered for analysis as shown in Appendix 1. The details of the outcome data, NVR and IRR estimates are given in Table 1 and are discussed as under:

Initial investment: As shown in Table 1, initial investment made by a farmer generally consisted of animal sheds, equipment and expenditure incurred for securing loan. All of these items amounted to Rs. 3335 (Appendix 2).

Appendix 1. Farmer's initial investment per buffalo

Item	Rupees	Rupees
Farm buildings and equipment		2655.00
Cost of loaning		
a. Official	23.00	
b. Unofficial	653.00	
c. S. total		676.00
G. total		3331.00

Cash inflows: As indicated in Table 1, cash inflows to a project were calculated by adding value of milk production, farm yard manure, sale of young stock at the end of its period and scrap value of milk animal at the end of its productive life period. It may be mentioned, however, that natural increase in milk production over productive life of milk animal was estimated from Cockrill (1974). Cash inflows estimated over time were Rs. 13,538, 14,322, 14,397, 15,512, 13,813 and 13,699.

Appendix 2. Operating expenses for buffalo per annum

Cost items	Rupees
Green fodder	2320.00
Dry fodder	254.00
Concentrates	1970.00
Labour	5125.00
Miscellaneous	150.00
Mortality	260.00
G. total	10,085.00

Cash outflows: Cash outflow items included operating expenses and annual instalment (Interest + Principal) to repay the loan. These amounted to Rs. 12,750 per annum for 5 successive periods and Rs. 10,085 for the 7th lactation period (Appendix 3).

Appendix 3.Predicted milk yield over time

Lactation No.	Dry period (days)	Per cent increase in yield over first lactation	Total production of milk per lactation (litres)
1.	110	100.00	1991.80
2.	110	122.50	2477.20
3.	110	137.22	2634.00
4.	110	143.23	2749.00
5.	110	143.23	2479.00
6.	110	131.90	2532.20
7.	110	120.30	2309.40

Net cash flows: Net cash flows were found out by deducting cash outflows from cash inflows. These amounted to Rs. 788, 1572, 2147, 2762, 1063 and Rs. 3614 over the project period.

Required rate of return: Required rate of return of 15% was used to represent opportunity cost of farmer's capital.

Planning horizon: Seven years planning horizon was assumed for the maturity of the project.

Net present value and IRR: To determine the viability of the loans, the investment worth was calculated by using two criteria: (a) net present value, and (b) internal rate of return method. Following equations were used to determine NPV and IRR estimates:

$$NPV = -3330 + \frac{788}{1.15} + \frac{1572}{(1.15)^2} + \ldots\ldots \frac{3614}{(1.15)^6} \quad (3)$$

$$IRR = -3330 + \frac{788}{1.15} + \frac{1572}{(1.15)^2} + \ldots\ldots \frac{3614}{(1.15)^6} \quad (4)$$

NPV and IRR values are given in Table 2.

As shown in Table 2, NPV and IRR values turned out to be Rs. 3593 and 39.9%, respectively. Hence dairy development loan scheme was an acceptable investment based on the positive net present value @ 15% discount rate and the IRR which exceeded the required rate of return (RRR).

Table 2. Measures of investment worth per buffalo

Item	Value
NPV @ 15% discount rate	Rs 3593
IRR	39.9%

CONCLUSIONS AND SUGGESTIONS

The findings of the present study provided enough evidence to conclude that dairy development loan scheme was viable and economically a feasible proposition from the point of view of its impact on its direct beneficiaries i.e. farmers and the bank. Net present value was positive and amounted to Rs. 3593. Internal rate was 39.9% and it was greater than required rate of return of 15%. The results of the study support the view that dairying could play an important role to improve the economic well-being of a vast majority of small farmers if adequate institutional finances were provided to them. It is strongly recommended, therefore, to organize institutional

financing for dairy development in the country and to create infrastructural facilities for higher production, procurement, processing and marketing of milk and milk products.

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