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THE SUPPLY, UTILIZATION AND ECONOMIC RATIONALE OF CREDIT USE ON PROGRESSIVE AND LESS PROGRESSIVE FARMS

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INTRODUCTION

With the technological break-through in Indian agriculture, the farmers are tempted to use more of the capital to meet the cash requirements for different types of farm inputs such as high-yielding varieties (HYVs) seeds, fertilizer, irrigation, machinery, etc. Inadequate and inefficient use of capital is the major cause of low productivity per unit of land area on Indian farms. In order to sustain and accelerate the technological change in agriculture, the availability of adequate amount of credit and its use in proper direction is of urgent importance. The empirical knowledge of the productivity of credit is important for government, farmer and the lending agencies which are interested to know how the farmers shall utilize the credit and what would be their resultant increase in income. This would help in fixing the priorities for giving the credit for various purposes on different types of farm situations. An attempt has, therefore, been made in this study to examine the level of use of credit and the rationale of its allocation between different farm inputs on the progressive and the less progressive farms in Varanasi district of Uttar Pradesh during the year 1968-69.

METHODOLOGY

The data used in this study are based on a survey of 146 farms comprising 76 progressive and 70 less progressive farms of 12 *gaon sabhas* of Chirai *gaon* and Gyanpur blocks in Varanasi district. All the progressive farms and 10 per cent of less progressive farms representing three size-groups of holdings, *viz.*, small 0—5 acres, medium 5—10 acres and large 10 acres and above were interviewed by personal interview method.

To qualify as progressive for our selection the cultivator had to fulfil three of the following four criteria : (1) 20 per cent of the sown area is under HYV; (2) 20 per cent of the area is under the use of chemical fertilizers; (3) 50 per cent of his sown area is irrigated; and (4) he has independent irrigation facilities.

In order to evaluate the economic rationale of the agricultural credit use on each type of farm, two equations were fitted which are as follows:

$$1. Y = a X_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4}$$

$$2. C = AX_1^{B_1} X_2^{B_2} X_3^B$$

where

Y = Total farm crop returns in rupees.

X₁ = Rupees invested on owned irrigation equipment.

X₂ = Investment on draft cattle.

X₃ = Expenditure on fertilizers.

X₄ = Operated area in acres.

C = Total amount of credit.

b₁ and B₁ are the regression coefficients.

The first equation indicates the impact of farm resources on farm productivity and the second denotes the impact of changes in the level of different agricultural inputs for which the credit was mainly procured, on the volume of credit utilized.

FINDINGS¹

Supply of Credit

Table I reveals that the block and co-operative societies are the major source of finance on progressive and less progressive farms respectively.

TABLE I—SOURCEWISE PROPORTION OF TOTAL CREDIT BORROWED ON DIFFERENT TYPES OF FARMS

Type of farm	Co-operative societies	Grant and loan from Government	Block	Land development bank	Local money-lenders	Neighbours and relatives	Total
PFS	35	—	39	—	30	6	100
PFM	37	—	45	8	10	—	100
PFL	15	44	12	2	4	23	100
All PF	24	23	27	4	10	12	100
FS	39	9	9	—	21	22	100
FM	78	9	—	—	5	8	100
FL	3	83	7	—	7	—	100
All F	41	35	5	—	10	9	100

PFS = Progressive small;
 PFM = Progressive medium;
 PFL = Progressive large;
 FS = Less progressive small;
 FM = Less progressive medium; and FL = Less progressive large.

1. The empirical findings with reference to Tables III, IV, and V are based on the actual number of farmers who borrowed money.

Indigenous sources such as local moneylenders, neighbours and relatives met only 20 per cent of the credit used by farmers on the progressive and the less progressive farms on an average. However, these sources supplied a substantial proportion of the total credit to small size farms under both groups (36 per cent on the progressive small and 43 per cent on the less progressive small farms). The obvious reasons could be attributed to the easy accessibility of these farmers to indigenous sources of credit and their present less creditworthy financial position which stands as an obstacle to procuring credit from other sources.

Credit Utilization by Borrowers

Table II indicates that a large proportion of the less progressive farmers borrowed money for the purchase of bullocks followed by fertilizers whereas in the case of their progressive counterpart the majority obtained credit for investment in developing owned irrigation equipment. As against 30 per

TABLE II—PROPORTION OF TOTAL FARMERS OF EACH TYPE USING CREDIT FOR DIFFERENT PURPOSES

Total number and types of farmers		(percentage)									Total* farmers borrowed
		Draft cattle	Seeds	Fertilizers	Irrigation equipment	Machinery	Purchase of land	Social ceremonies	Business	Consumption	
PFS	(31)	13	—	35	29	—	3	3	3	6	71
PFM	(26)	4	—	35	62	—	—	4	—	—	88
PFL	(19)	16	10	16	63	5	5	5	—	—	89
All PF	(76)	11	3	30	49	1	3	4	1	3	82
FS	(55)	30	—	16	5	2	4	11	2	5	60
FM	(11)	27	—	27	18	—	9	9	—	9	73
FL	(4)	—	—	75	25	—	—	—	—	—	100
All F	(70)	27	—	21	9	1	4	10	1	6	64

*Many farmers borrowed money for more than one purpose.

cent and 27 per cent of the farmers under the less progressive small and medium groups, only 13 and 14 per cent of the progressive counterparts borrowed credit for the purchase of bullocks. As we move from small to medium or medium to large, the proportion of farmers taking credit for owned irrigation facilities increases both on the progressive and the less progressive farms but the proportion of these farms is significantly higher in the progressive group as compared to their less progressive counterparts.

Table III indicates that the importance of developing owned irrigation facilities is more realized on the progressive farms as compared to that on the less progressive counterparts in each size-groups of holding as reflected

TABLE III—PER FARM AMOUNT OF CREDIT INVESTED ON DIFFERENT INPUTS BY BORROWING FARMERS

(in Rs.)

Type and number of farmers	Draft cattle	HYV seeds	Fertilizers	Own irrigation equipment	Machinery	Purchase of land	Social ceremonies	Consumption	Education	Business and small scale crafts
PFS (22)	77	—	154	936	—	45	23	109	—	45
PFM (23)	44	—	98	2,198	—	—	87	—	—	—
PFL (17)	118	47	188	3,923	353	59	23	—	—	—
All PF (62)	77	13	145	2,244	98	33	47	39	—	17
FS (33)	233	—	38	159	15	48	182	74	—	24
FM (8)	266	—	175	683	—	87	187	125	125	—
FL (4)	—	—	438	1,000	—	—	—	—	—	—
All F (45)	218	—	98	314	11	51	167	77	22	18

Note : We found that 6 owned irrigation equipment on small size farms which were installed jointly and the loan was repaid on the basis of share in own irrigation equipment by the individual farmer.

through the volume of credit devoted for this purpose under different size-groups of holding on the two types of farms. The second importance in the allocation of credit has been given to fertilizers on the progressive farms and to draft cattle on the less progressive farms. A considerable amount of the total credit was devoted for meeting out the social ceremonies on the less progressive small and medium farms. Due to their low financial position and surplus family labour, small size farms of both the categories have begun to invest in non-farm ventures such as purchase of raw material for carpet weaving and other small scale handicraft activities with the help of credit. However, the progressive small and the less progressive small and medium farmers have also made use of credit for consumption.

Economic Rationale of Credit Use

Table IV indicates that investment on irrigation and fertilizers has significant and positive impact on the level of total credit availed on the progressive farms but on the less progressive farms the volume of credit was also influenced significantly by the level of investment for draft cattle in addition to that of the level of own irrigation equipment and fertilizers. On the progressive farms there is no significant response of the level of investment for draft cattle on total credit.

It is reflected in Table V that on both the progressive and the less progressive farms investment in the form of owned irrigation equipment, fertilizers and operated area have significant and positive impact on farm crop returns. The impact of bullock labour was found to be non-significant on

TABLE IV—REGRESSION COEFFICIENTS AND COEFFICIENTS OF MULTIPLE DETERMINATION

Type of farms	Owned irrigation resources	Draft animal	Fertilizer	R ²
PF (62)	0.1287* (0.0550)	0.2049 (0.2825)	0.1630* (0.0623)	0.48
F (45)	0.1748** (0.0471)	0.1221* (0.0504)	0.2034* (0.0875)	0.53

* Significant at 5 per cent level of probability.

** Significant at 1 per cent level of probability.

Note. Figures in parentheses are the standard errors of respective coefficients.

TABLE V—REGRESSION COEFFICIENT, MARGINAL VALUE PRODUCT AND RATIO OF MARGINAL VALUE PRODUCT TO FACTOR COST ON PROGRESSIVE AND LESS PROGRESSIVE FARMS

Resource	Type of farm	Regression coefficient	Mean level of resources	MVP	Ratio of MVP to factor cost
Owned irrigation equipment (Rs.) X ₁	PF	0.1494* (0.0626)	3077.03	0.24	1.27
	F	0.2216* (0.0893)	470.88	1.26	6.63
Draft animal (Rs.) X ₂	PF	0.0432 (0.0789)	1128.16	0.20	1.01
	F	-0.0480 (0.1325)	719.00	-0.18	-0.94
Fertilizer (Rs.) X ₃	PF	0.1690** (0.0438)	524.68	1.53	1.45
	F	0.2170* (0.0780)	197.85	2.94	2.80
Operated area (acres) X ₄ ..	PF	0.5293* (0.2308)	9.40	298.93	1.49
	F	0.3682@ (0.1982)	6.36	155.25	0.75

* = Significant at 5 per cent.

** = Significant at 1 per cent level.

@ = Significant at 10 per cent.

Note: Figures in parentheses denote standard errors of respective coefficients. R² for the equation of PF and F respectively is 0.68 and 0.56.

Acquisition cost of credit for owned irrigation equipment and draft animal is Re. 0.19 per rupee investment and for fertilizers Re. 1.05 per rupee of expenditure, Rs. 200 is taken as the acquisition cost for one acre of land.

both the types of farms. The productivity per rupee investment on irrigation is considerably higher on the less progressive farms as compared to that found on the progressive counterpart. Also fertilizer productivity was found to be higher on the less progressive farms than that on the progressive farms relatively. This indicates that the level of investment of irrigation equipment and fertilizer is higher relatively on the progressive farms than that on the less progressive farms,

Since farm productivity and the volume of credit both are significantly and positively affected by the level of investment in owned irrigation facilities

and fertilizers, both types of farms are conscious of putting the credit in the right direction. However, the less progressive farms are not rational in the use of credit for draft cattle, because its impact on farm return is not significant.

¶ Thus it could be concluded that the progressive farmers are using the credit in the right direction along with its nearly rational allocation between fertilizers and owned irrigation equipment as reflected through nearly equal marginal return per unit of cost of credit in these two resources. But the less progressive farmers are making rational use of credit in the purchase of draft cattle. Although they are channellizing credit for the purchase of fertilizer and developing owned irrigation facilities, they are not making rational allocation of credit fund between these two resources because the marginal return per unit of credit cost is not equal.

Since the productivity level of owned irrigation equipment and fertilizers on the less progressive farms is considerably higher than the credit cost, it would be appropriate for these farms to increase the credit level and chanelize it to these two resources to maximize farm net returns. For the lending agencies it is safer to lend the money for these two purposes as they are sure of the return of the loan from the less progressive farm.

FORMULATION, EVALUATION AND FINANCING OF A PROJECT FOR AGRICULTURAL DEVELOPMENT

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Irrigation is one of the key parameters of output expansion and increase in resource productivity in agriculture. For lack of rivers for watershed development in a substantial way, Tamil Nadu faces serious problem of water shortage for irrigation. Sustained efforts are, therefore, being made to tap groundwater resources in this State. Investment in minor irrigation projects is steadily increasing over the past two decades.

The need for sound investment strategies for developing irrigation potential of the State becomes imperative in recent times since funds for investment are provided at economic cost.

The financing institutions would like to have minor irrigation projects proposed be subject to careful scrutiny for its technical and economic feasibility. An investment appraisal is a pre-condition for financing a particular project of agricultural development.