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FARM PRODUCTION CREDIT IN CHANGING AGRICULTURE : CONCLUSIONS*

/The following extract is the concluding chapter of a recent study of farm production credit completed at Indian Institute of Management, Ahmedabad. The conclusions relate to characteristics of sampled farms, their performance in changing agriculture, farm production credit use and policy implications for institutional credit./

Sample characteristics

Although our sampling design for the selection of talukas was based on the type of farming areas in Baroda district, an examination of a few agricultural features of the four selected talukas and also the eight sample villages led us to conclude that the agricultural economy of Baroda and Sinor talukas which represented "cotton-tobacco" type of farming areas was more developed than that of Waghodia and Chhota-Udepur talukas which represented "cotton-cereal" type of farming areas. This in turn enabled us to classify the sample farmers into two groups, viz., one as belonging to the more developed region (MDR) and the other, to the less developed region (LDR).

The average availability of working capital per farmer in the MDR was more than double that in the LDR. More significantly, in the MDR, 16 of the 24 selected farmers had more than Rs 4,000 of available working capital, whereas in the LDR, only 6 farmers had this amount.

The percentage share of owned funds in the total available working capital was also higher in the MDR (69%) than in the LDR (37%). But the share of institutional

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*B.M. Desai and D.K. Desai, Farm Production Credit in Changing Agriculture, Indian Institute of Management, Ahmedabad, April 1971, Chapter VII, pp. 98-104

credit in available working capital was much higher in the LDR (35%) than in the MDR (14%). The proportions of owned funds and funds from relatives were higher in available working capital groups of Rs 4,001-8,000 (III) and Rs 8,001 and more (IV), in both the regions than in the groups of Rs 2,001-4,000 (II) and less than Rs 2,001 (I).

The extent of tenancy with the sample farmers of both the regions was negligible.

what about fertilizer

Both the average owned and operational area per farmer in the LDR was higher than that in the MDR. However, inasmuch as the soils of the former region are poor in fertility the larger holding size did not have any significant impact on farm income.

In both the regions, farmers with large amount of available working capital had also larger operational land. This relationship was more clearly marked in the MDR than that in the LDR. But the classification of farmers according to size of farms and according to working capital groups was not of the same pattern in the two regions. Indeed, in the LDR 5 of the 10 farmers having more than 15 acres of land had working capital of less than Rs 4,000. This shows that the criterion of size of farm alone may not identify the "customers" of credit properly.

Wells were the only source of irrigation with the sample farmers of the MDR, while in the LDR tank was also an important source of irrigation. The source of water for tank irrigation being rains the farmers of the LDR faced more risk and uncertainty. Further, well irrigation in the LDR was much less reliable and inadequate than in the MDR because of low and poor water table in the former region.

The need for investment for boring wells was, therefore, higher in the LDR than in the MDR. In both the regions, farmers with smaller amount of available working capital were dependent on purchased source of water, either well or tank, to a greater extent than those with larger amount of available working capital. It is obvious from this discussion that the extent of (net) irrigated area to operational land was higher in the MDR (64%) than that in the LDR (26%). As a result, the farmers in the MDR had better irrigation equipments.

The sample farmers of the two regions did not differ significantly in respect of their family size. Thus, the LDR was poorer on the basis of per capita resources.

The availability of working capital had no relationship with the age of a farmer in both the regions but it had relationship with education of a farmer. Although, in the LDR, a large number of selected farmers were illiterate, farmers with larger amount of available working capital had higher education.

A large number of selected farmers of the MDR belonged to Leuwa Patel caste which is known for its enterprising farming. Against this, a majority of the selected farmers of the LDR belonged to socially backward castes and tribes like Rajput, Baraiya, and Koli whose attitudes to change are non-progressive and whose economic horizons are limited.

In the MDR, a large number of sample farmers held progressive attitudes toward use of credit. However, even in the LDR one-third of the sample farmers held such attitudes. This shows that attitudes toward credit will not prove a great barrier for the business of

agricultural finance to enter such backward regions.

Performance of farms in changing agriculture

In both the regions the gross cropped area under the programmed conditions[1] was higher than that under the non-programmed conditions. This was particularly marked in the MDR where under the programmed conditions multi-cropping system of paddy followed by vegetables and paddy followed by wheat substituted the single cropping of long duration crops like tobacco and cotton. However, the expanded irrigation resource conditions, (i.e., NTE) did not seem to increase the gross cropped area substantially in this region. This shows that when the farmers would adopt the plans of the ET conditions, they would use irrigation resources to the fullest extent. Under the NT conditions, the gross cropped area in the MDR decreased. This is a trend

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1 Three programmed conditions considered in the study are defined as follows:

(a) ET conditions (II) : Optimization of crop activities on a farm with the existing levels of resources including available credit, but within the framework of existing technology

(b) NT conditions (III) : Optimization of crop activities on a farm with the existing levels of resources including available credit, but within the framework of the adoption of new technology.

(c) NTE conditions (IV) : Optimization of crop activities on a farm with expanded resources of irrigation (but with the restriction of available credit and other resources),

(contd. on p.5)

which one should expect with the adoption of new technology under which there will be substitution of new inputs for land.

In both the regions, the scope for increasing the gross cropped area particularly because of multiple cropping which is recommended in programmed conditions can be more easily adopted by the farmers with more working capital than others.

Under the non-programmed conditions, although the cash crops predominated in both the regions, the area under food crops was higher in the LDR than in the MDR. But, the optimum plans under the ET conditions indicate that in the MDR, the area under food crops increased substantially, whereas in the LDR, it decreased considerably. Thus, the cropping pattern of the LDR will follow the existing pattern of the MDR when the readjustment for optimization occurs. This effect appears similar to the "Sanskritization" effect observed in sociological factors.

With the adoption of new technology (i.e., NT conditions) food crops obtained much higher importance in the MDR than in the LDR. In the LDR, although the area under food crops under the NT conditions did increase it did not reach the level it has in the NP condition. Thus, if the relative price structure for different crops remains as at present and new technology gets adopted in near future, it is likely that the major shifts towards food

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(f.n. No.1 contd.) within the framework of the adoption of new technology.

Against this, non-programmed condition (i.e., NP) is defined as <u>cropping pattern as actually followed</u> on a farm with the existing levels of resources including credit, within the framework of existing technology.

crops may begin to take place in the MDR. The credit programme which is biased towards food crops may accelerate this change.

An examination of changes in cropping pattern in different groups of available working capital in the two regions reveals an order of changes in the adoption process. The farmers with the working capital of more than Rs 8,000 in the MDR were the leaders followed by the farmers of the smaller working capital in the same region. The farmers with the high amount of working capital in the LDR seemed to follow the farmers with the smaller amount of working capital of the MDR and those with the smaller amount of working capital in the LDR followed the farmers with higher working capital in the same region.

Under the NP conditions, the per farmer farm business income (FBI) in the MDR was nearly three and a half times that in the LDR. However, as we moved from the NP conditions to the NTE conditions this gap in income between the two regions narrowed down. This was also true for farmers having different amounts of available working capital within both the regions. Thus, the changing conditions in agriculture would help decrease the inter-regional as well as intra-regional disparities in incomes of farmers.

The comparison of the two regions from the productivity point of view (i.e. FBI/acre) also leads us to conclude that the differences which existed between the LDR and the MDR under the NP conditions got narrowed down under changing conditions in agriculture. Again, this was true for farmers having varying amounts of working capital within a region.

In the MDR, the working capital used in the optimum plan of the ET conditions was less than the working capital used in the NP conditions. Further, in the MDR, even for the adoption of new technology the additional working capital used per acre was very small (about 6% more of working capital used under the NP conditions). In the LDR, however, the working capital used per acre went on increasing as the changes in agriculture took place from conditions I (NP) to IV (NTE). The total increase in the per acre working capital used under condition IV over that under I was of the order of 40 per cent.

The comparison of input use in the two regions shows that the MDR was far advanced in the use of new inputs such as fertilizers even in the NP conditions. The adoption of new technology took fertilizer use to a higher level in both the regions, but in the LDR the per acre use remained less than half of that in the MDR.

Farm production credit use and MVP of working capital in changing agriculture.

In the LDR, as many as 22 (out of 24) farmers used farm production credit, while in the MDR, only 15 out of 24) farmers used such credit. But the proportion of credit in the working capital used by these farmers under all the four conditions of changing agriculture was much lower in the MDR than that in the LDR.

Per farmer as well as per acre credit use increased continuously as we shifted from conditions I to IV in both the regions. But, the increase in per acre credit use in the LDR was much higher (56 percent under ET, 73 percent under NT and 84 percent under NTE) than that in the MDR (2 per cent under ET, 29 per cent under NT and 52 per cent

under NTE). The increased credit use in changing agriculture would result in increased farm incomes and hence the business of farm credit would be remunerative in changing agriculture. Average amounts of existing credit use per (credit using) farmer and per acre (of his net sown area) under the four conditions of changing agriculture are given below:

Conditions	MDR		LDR	
	Per farmer	Per acre	Per farmer	Per acre
	(in Rupees)			
NP (I)	1,457	134	1,119	78
ET (II)	1,592	137	1,749	117
NT (III)	1,881	174	1,939	131
NTE (IV)	2,207	205	1,966	140

The above conclusion on the profitability of credit business gets further support from the findings on marginal value productivity of working capital. Thus, under the NP conditions, the MVP of (used) working capital worked out to Rs 1.44 and Rs 1.40 for the sample farms of the LDR and the MDR, respectively. Since the existing rate of interest on institutional credit was about 10 per cent, the cost of credit can be considered as 1.10 for every rupee of credit. And as the MVP of working capital which included credit was much higher than the marginal cost of credit, we can infer that the profitability of credit was fairly high in both the regions even under the NP conditions. Under the programmed conditions, the number of farmers having MVP

of available working capital[2] greater than 10 percent also increased as we moved from conditions II to IV.

The MVP of available working capital under the programmed conditions further reveals that quite a few farmers in both the regions had adequate working capital including credit not only for the optimum situation in the existing technology but also for advanced technology. This finding contradicts the general notion that the existing availability of short-term credit is not adequate. The finding on MVP of available working capital also suggests that the farmers would not be able to make profitable use of additional working capital including credit.

In both the regions not more than one-third of the sample farmers had "demand for additional credit" even under new technology with expanded irrigation resources conditions. The magnitude of such demand was also not very large.

Policy implications for institutional credit.

The number of farmers who required additional institutional credit and the amount of such credit required was quite small in both the regions, although they increased with the optimization of cropping pattern under existing technology and also with the adoption of new technology. This is shown below:

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2 The available working capital is much different from the working capital used in the NP conditions and hence the MVP of available working capital is also different from the MVP of working capital used in the NP conditions.

Conditions	MDR		LDR	
	No. of farmers who required additional institutional credit	Average amount of such credit required/ farmer (Rs)	No of farmers who required additional institutional credit	Average amount of such credit required/ farmer (Rs)
NP (I)	5	240	3	510
ET (II)	6	1,196	10	1,275
NT (III)	7	1,533	14	1,030
NTE (IV)	10	1,356	15	1,102

However, there were also quite a significant number of farmers who had excess available institutional credit in both the regions. If the excess credit were reallocated among the farmers who required additional institutional credit, the scope for fresh pump-in of institutional credit would be limited. Thus, under the NP conditions there did not exist any scope for expansion of institutional credit to substitute non-institutional credit in both the regions. In the MDR, this was true even for the ET conditions. Interestingly enough, in the MDR, under the ET conditions there remained a surplus of institutional credit even after meeting the additional institutional credit requirements of some farmers. Hence this indicates the scope for reallocation of existing credit resources between different regions. Both the total and average amount of new institutional credit required to be pumped-in under different conditions were much higher in the LDR than in the MDR. This is clear from the table given on page 11.

Details	MDR				LDR			
	NP (I)	ET (II)	NT (III)	NTE (IV)	NP (I)	ET (II)	NT (III)	NTE (IV)
1 Total amount of new institutional credit required to be pumped-in (Rs)	-	-	1,280	6,167	-	4,719	13,587	16,166
2 Average amount of new institutional credit required to be pumped-in per farmer using credit (Rs)	-	-	85	411	-	215	618	703
3 Average amount of new institutional credit required to be pumped-in per farmer in the sample (Rs)	-	-	53	257	-	196	566	674

The above conclusion with regard to the scope for expanding institutional credit to substitute non-institutional credit has significant policy implication. The policy implication is that the institutional agencies would have to make credit available conveniently and in time which are the two merits of using non-institutional credit.

The study also revealed that the scope for increase in the supply of total credit resources of sample farmers of the two regions was very limited. This means that the existing supply of credit was sufficient. This was true

even for the adoption of new technology. It was only in the situation of new technology with expanded irrigation resources that one-third of the sample farmers needed additional credit resources. But, the magnitude of such credit was not high, although it was higher in the MDR than in the LDR.

Considering the repaying capacity, it appears that there would be some difficulties in recovering loans particularly in the case of those farmers having smaller amounts of working capital. Under the present conditions (i.e., NP conditions) the degree of risk in recovering loans was much greater in the LDR than in the MDR. However, under the programmed conditions of ET, NT and NTE, this risk continuously declined in both the sample regions. This implies that the credit agencies can reduce the risk of recovering loans by helping farmers adopt better management of their resources and new technology. While this role can be played by credit agencies by merely maintaining the existing supply of credit, yet another important role can be played by them by judiciously expanding term loans to add to and to improve the resource base of farmers. It is in this total context that the demand for credit is considered productivity-oriented instead of security-oriented. Thus, instead of discontinuing loans to farmers whose repaying capacity is inadequate to repay loans the credit agencies should assume an unconventional role of a catalystic agent of development. Such role played by the credit agencies would not only improve the repaying capacity of farmers but would also strengthen the production process, besides generating investible surpluses for further development. In determining and playing such role the study recommends disaggregative approach as the basis for formulating credit policies.

The examination of actual supply of credit in the district revealed that the more developed areas like Baroda, Padra, Karjan, Dabhoi and Sinor tended to receive more credit--short, medium, and long-term---than the less developed areas. But, as the findings of the study indicate that both the areas exhibit promising repaying capacity under changing technological conditions. Consequently the credit agencies need not discriminate between the two areas but should assume the role outlined in the preceding conclusion.

The developmental role by credit agencies can be adopted only if they adopt a disaggregative approach in financing. Instead of following a "scale of finance" rigidly, the credit needs of farmers should be found out taking into consideration their available resources and also assuming that a farmer would be induced to adopt new technological changes.

The experience of the present loaning programme as observed in this study indicates that there was a considerable amount of over-supply of credit which leads to the difficulties of recoveries. This became evident when we studied the repaying capacity of farmers in the existing farming practices. It is necessary therefore to adopt a dsicriminatory approach in the loaning programme by selecting those farmers who do not have adequate owned sources of finance and have the potentialities of increasing farm income with the help of additional credit supply. This can be done by a disaggregative approach where it is

necessary to know the farmer and his farming situation. Aggregative approach to credit supply leads to over-supply of credit in many cases and under-supply in some cases. Perhaps the difficulties of recovery of the cooperative loans may be due to this non-discriminatory aggregative approach.

Finally, along with the disaggregative approach in loaning policies if credit agencies would shift their emphasis from the well developed areas to the less developed areas and from "rich" to "poor" farmers, this would help in decreasing the income disparities without impeding agricultural development.