DISCUSSION

In this chapter, the key issues to be discussed on production finance (which ought to cover borrowings from institutional agencies for meeting production expenditure and the portion of earned surplus diverted for production purposes on the farm) have a special significance to the proper understanding and implication of the study. The Indian Rural Economy is passing through such a phase where magnitude of production credit requirements as well as the total earned surplus of the farms are at an all time high. There are enough evidences to prove this dilemma. As far instance, the All India Rural Credit Review Committee (1969) asserted that a new agricultural strategy based on the cultivation of high yielding varieties and involving sizeable cash outlays on improved seeds, chemical fertilizers, pesticides etc. itself justifies a review of earlier estimates as the aggregates size of farm outlays and, as related to it, the volume of demand for credit is likely to go up substantially.

As regards earned surplus, with the inception of 'Green Revolution' a farmer today has more money to save. This is indicated by the facts that in the first year of nationalization of commercial banks ending June, 1970, the new branches which were opended mostly in rural areas, had mobilized total deposits of about Rs. 79.0 crores. In the following few months of the same year, another sum of Rs. 35.0 crores was tapped from the villages and unbanked areas.
Moreover, the review of the deposits in the co-operative credit societies also reveals the same fact. The total deposit in these societies which was of the order of only Rs. 871.97 crores in 1968-69 increased to a sum of Rs. 954.41 crores in 1969-70, showing an increase of Rs. 82.44 crores. As against this situation, the total deposit in 1970-71 was to the tune of Rs. 1115.04 crores which was Rs. 160.63 crores higher over the preceding year. This indicates that the rate of deposits was almost double of the previous year.

This situation was visualized earlier by the Credit Review Committee in 1969 when it projected the credit demand with an optimistic remark on the portion of savings diverted towards production. The Committee asserted that out of the total requirements of fertilizers and pesticides in the irrigated area, a sizeable part will be accounted for by 1973-74 by the farmers who will have reached a stage of self-financing to a substantial extent. Regarding purchase of seeds of hybrids and exotic varieties, the Committee went on advocating that on past experience, the farmers may be expected to make their own arrangements for obtaining the supply of local strains of improved seeds or draw from their own harvest for seed of traditional strains. Similarly, in arriving at the quantum of production credit to be given in cash, it was further assumed that 'large farms' (i.e. above 20 acres) would not require any cash component because they would be in a position to meet it from their own resources. For other sizes, it was, however, estimated to be ranging from Rs. 30.00 per acre in unirrigated areas to a maximum of Rs. 100.00 per acre.
for paddy in irrigated areas.

The above Committee, though, projected the demand of production credit on the assumptions enumerated earlier, warranted that a big gap would exist in supply of and demand for agricultural credit and it advised to the institutional agencies to put every strain upon their nerves in meeting the credit gap if the high yielding varieties programme is to be seen successful. Consequently, several institutions were brought into the fray of supplying production credit to the farmers. However, when the supply of production credit is stepped up and simultaneously when the total farm income reaches a new high (level), there is hardly any exaggeration in saying that rational use of available limited resources, be it from borrowings or self financing, should get top priority. In the light of the above brief discussion, the basic questions which merit attention of the planners and policy maker are:

1. What capital inputs do get more attention when the supply of production credit is stepped up on the farms?
2. Where does the owned production fund (O.P.F.) channelise when credit is made available to the farms?
3. From the standpoint of MVP's of capital inputs, do there exist any maladjustments in the level of resource use of different important input factors? And if yes,
4. What would be the level of different important capital inputs which would correspond with the optimum level of production?
5. What is the precise nature and extent of production credit requirements on the farms against the background of rapidly changing farm savings? and finally,

6. In which direction should the credit policy be made more effective so that the effective recovery of the production credit is ensured?

Before proceeding to discussion on the questions raised above, a reference to the role of production credit in changing the productivity level of different capital inputs on the farm is necessary. It is a matter of experience that types of capital needed on many low income farms are often complementary to the resources already in hand. Fertilizers, improved varieties of seed and other technical improvements may not only bring forth a product of their own but also to the productivity of the land and labour. As a matter of fact, the improvement in productivity is an issue which encompasses the entire problem of economic development. It is probably due to this that eminent economists like Kuznets asserted that the low productivity and excessive dependence of labour force on agriculture are the two main causes of low income in several developing countries. He brought out differences between underdeveloped and developed countries due to lower productivity of labour force in the former and vice-versa. Among labour force also, Kuznets paid much attention on the productivity of family labour force, because, in his opinion, it is the major source causing to the lower per capita income due to its lower productivity. As regards India, it is necessary to mention here that
in 1961-62, the family worker constituted to the tune of 25.0 per cent to the total gainful employed person in the rural area. Unfortunately, the productivity of family worker in our country, though it is nevertheless important, did not receive any attention. Although, the question of productivity of family and hired labour can not be fully discussed within the limited scope of this study, but this analysis does bring some useful guidance regarding productivity of labour force in the area and as such the productivity of family and hired labour is another issue which has been covered within the purview of this discussion.

It has already been discussed that when a change in technique of agricultural production takes place, there happens to be a change in the level of productivity of different input factors which is also reflected on the demand for a production credit. This is due to this reason that the requirements of production credit which were worked out roughly at about Rs. 300.00 - 400.00 crores for whole of the British India in 1930's by the Central Banking Enquiry Committee was much lesser when it is compared with Rs. 2,000.00 crores putforth for 1973-74 by the Credit Review Committee of 1969. Thus, even though, the earned surplus of the farms has considerably increased, still production credit requirements did not slacken over their previous mark. This change occurred due to technological changes which were brought forth during these periods. Thus, it stands to reason that the discussion on the questions raised earlier be cast within a technological-historical context rather than normative terms to have
a meaningful analysis of the problem.

The dynamics of technological changes in the district Aligarh may be studied into following three heads:

(a) Before launching of I.A.D.P. (i.e. before 1960-61),
(b) Before introduction of HYV Programme but after I.A.D.P. in operation (i.e. 1960-61 to 1965-66), and
(c) After introduction of HYV Programme (i.e. after 1965-66).

The dynamics of agricultural technology in the pre-I.A.D.P. period can only be discussed from the viewpoint of the debt burden. When the magnitude of indebtedness was as high as eighteen times the total assets possessed by the cultivators as was indicated by the Riots Commission of 1875, and nearly two-thirds of the debt was secured by mortgage of land, the productivity of resources to their capacity is a distant possibility. Moreover, the temporary land title and prevalence of forced sale of agricultural produce further aggravated the picture. In the meantime, several relief measures were enacted to reduce the burden on indebtedness. But the All India Rural Credit Survey Committee in 1956 again came out heralding about 69.2 per cent family under debt with an average debt per family of Rs. 526.00. As for the case of Western Uttar Pradesh, the above two figures stood at 62.2 per cent and Rs. 563.00 respectively.

On one hand, the magnitude of indebtedness was to such an extent, the role of institutional agencies, on the other, in meeting the credit requirements of the farmers for meeting even the production expenses, was incredibly below and what to talk about advances for
payment of old debt. The All India Rural Credit Survey Committee (1954) elaborated that Government and Co-operatives together met only to the extent of 6.4 per cent of the total credit requirements supplied from all sources. The follow-up surveys conducted during 1956-57 to 1961-62 by the same department revealed slight improvement over the situation spelt out earlier.

The studies conducted during this period came out with a conclusion for the supply of loan at cheaper rates and utilizing it for productive purposes. As far instance, the Royal Commission on Agriculture in India (1928) remarked "In a country in which holdings are so small as they are in India, the question of providing the cultivators with the capital he requires and with guidance as to the manner in which it should be spent, if he is to utilize his land to the best advantage and to maintain an adequate standard of living, becomes one of the crucial importance". A study conducted by Driver (1947) also revealed that low productivity of resources was one of the most important causes of rural indebtedness and failure of agricultural credit in India. Dantwala (1947), Sivawami (1947) and Dandekar (1956) endorsed the view expressed by Driver (1947) and stressed the need to examine if the credit is used for productive or unproductive purposes.

Agrawal (1954-55); Basak and Choudhary (1955-56); Rao (1957-58) and Agrawal and Foreman (1959) asserted that productivity of land and labour was below its acquisition cost and future use of these resources would decrease the total value of the output.
Agrawal and Foreman (1959), however, observed that profitability could be increased by increasing the level of human and bullock labour in sugarcane and seed, manures and irrigation in wheat. Thus, during pre-I.A.D.P. period, it was realised that though inadequate lending was India's main problem, the solution was not more credit but more controlled credit.

A new era in the agricultural development became possible when under the I.A.D.P. plan, the provision of a whole set of inputs including improved seeds, fertilizers, pesticides, irrigation water etc. were made available in one 'package'. A 'package' of services was also provided simultaneously which included strengthening of field extension agency, water use and management etc. All these efforts paid dividend and farm income of the farmers of the area went high as has been depicted by the several evaluation studies on the I.A.D.P.

A comprehensive study of the productive use of credit was undertaken by Mrs. Srivastava (1967), who, after using the I.A.D.P. data of Shahabad (Bihar) for 1962-65, observed that the credit enhances the use of cash inputs on the farms. However, she elaborated that the use of cash inputs was not in accordance with their marginal productivity. The contemporary study undertaken by other research workers in other parts of the country also came with certain conclusions. Raj Krishna (1964); Ram Saran (1964) and Hopper (1965) postulated that the level of farm income can be increased by increasing the resource level of the farm. Misra (1967) asserted...
that co-operative credit enhances the use of fertilizers on the farms. The other changes brought about in the form of land reform, market control and payment of remunerative prices during these periods paved way for a technological break through in the Indian agriculture.

In brief, the review of the early 1960's reveals that during these periods, the level of productivity of different input factors changed considerably in the right direction mainly because of the change in the art of agriculture.

The gigantic and stringent effort of agricultural scientists in evolving the strains of exotic and hybrids of cereals brought a real break through in the agricultural technology. The old concept of I.A.D.P. was changed into the new concept of HYV where the focus was on increasingly adoption of seeds of high yielding varieties and a requisite doze of conventional inputs like fertilizers and pesticide and assured irrigation water. Due to short duration strains of high yielding varieties crops the multiple cropping scheme also assumed a new dimension. The saving situation of the farmers began to change year by year. Ironically enough, simultaneously with the increase in the farm savings which, generally, reduce the level of borrowings, the production credit requirements reached a new hike. The rural social strata which have been branded rather instatic showed a stream of profound changes and it was thrown in a rapid transitional stage. In brief, the technological changes opened a new challenge and opportunity to the rural masses. Several studies
were conducted during this transitional period each having certain merits and limitations. However, no single study can claim its relevance in providing all the informations on productive use of credit, productivity of resources and their rational use, magnitude of owned production fund and its utilization for production and in giving a precise projection of needed production credit to achieve an optimum level of production. This study comes to answer all the questions pertaining to economic production problems.

In the background of the aforesaid technological changes alternating the level of productivity of capital inputs and other farm resources and production credit requirements, the attention is now turned to the basic issues for discussion. It is evident from the result of the study that as long as there is an increase in the supply of production credit through institutional agencies, the use of two capital inputs, namely, manures and fertilizers and irrigation is stepped up to a much significant level. The increase in the level of manures and fertilizers may be attributed to two reasons. Firstly, the fertilizer is supplied in the form of kind rather than cash and secondly, the farmers are aware about the profitability of this input. As regards increase in irrigation, it may be stated that district Aligarh is rich enough in relation to irrigation facilities. About 80.0 per cent of the sown area is covered by irrigational facilities. And, therefore, it is possible for the farmers, to irrigate their fields with their own means or by hiring of irrigation water.
The insignificant association of production credit with employment of bullock labour and tractor and machinery, seeds and pesticides reveals that any increase or decrease in the amount of production credit does not bring any change in the level of use of these inputs on the farm. Low level of pesticides, the MVP of which is greater than its factor cost, indicates that it has not created confidence among the farmers or may be that they are not aware of its use.

Another interesting aspect of the study brings forth a conclusion that institutional credit replaces the use of hired human labour on the farms. This factor was attributed to two reasons, namely, surplus of family labour on the small farms (viz. 0.0-2.5 hectare) and more employment of tractor and other heavy machinery on the large farms (viz. 5.0 and above hectare) a reference to which may be made in appendix IV. In this context, it may be stated that the year 1970-71, which has reaped a record yield of foodgrains, was accompanied by an unprecedented rainfall during the harvesting and threshing seasons. The large farms were seen using heavy post-harvest equipment like combine thresher hired from the I.A.D.P. Head-quarters. In another analysis where the availability of family labour was taken as an independent variable, it was noticed that the MVP of family labour on the borrowers farms was obtained to the tune of Rs. 4.95 whereas it was only Rs. 0.23 on non-borrowers farms (the factor cost for family labour was put at Re. 1.0). The lower productivity of
family labour on the non-borrowers farms was due to over economization of the uses of crucial inputs like manures and fertilizers, pesticides and irrigation as is also evident from the functional analysis where the MVPs of the above inputs are exceptionally high (see Table VII-3). Thus, it is contended that the borrowers’ farms try to optimize their resources and production credit with its higher marginal productivity raises the productivity of family labour resources of the farm as well.

The research works undertaken by Bandopadhyay (1967); Misra (1967); Chowdhary and Singh (1969); Athawale, Yadav and Misra (1971); Bansil (1971); Mrs. Shukla (1971); Singh, Bhatia and Jain (1971); Singh and Kahlon (1971) and Nikkiran and Gopalan (1972) noticed in one way or the other that production credit does enhance the level of capital inputs on the farms. However, most of the findings were based merely on crude estimates and results were ambiguous.

The earned surplus on the farm which has shown an increasing trend during the recent years was also examined in this study. As a matter of fact, when the production credit is made available on a farm, certain short term adjustments in the level of capital inputs use take place. A certain amount of owned production fund (O.P.F.) which ought to cover, say, irrigation, manures and fertilizers in absence of any borrowings is incurred on other capital inputs. Thus, the attempt to identify the kind of capital inputs, which receive greater attention than what it could have in the absence of borrowings, is also a subject of discussion.
The functional analysis where owned production fund (O.P.F.) was taken as dependent variable and all the capital inputs as independent, postulated that borrowers incurred a significant portion of their owned production fund in the form of seed (home produced or purchased), hiring of human and bullock labour and tractor and heavy machinery. As against this, when credit is not available, the owned production fund is used for meeting the fundamental crucial capital inputs like seeds (home produced or purchased), irrigation and employment of tractor and machinery as is evident in the case of non-borrowers. The other capital inputs, which did not show any significant relationships with the magnitude of owned production fund (O.P.F.) receive lesser attention probably because of the paucity of the funds on these farms (i.e., non-borrowers).

The study of Directorate of Economics and Statistics, Ministry of Food and Agriculture, Government of India (1967); Singh and Sharma (1968); Athawale, Yadav and Misra (1971); Bansil (1971); Deasi and Naik (1971) and Nakkiran and Gopalan (1972) supported that a certain portion of current savings of the farm is involved in production purposes. But, since, none of them tried to identify the kind of capital input, which is financed by the farmers themselves, was a question to be examined with a view to introducing sound policy decisions.

The study further sheds light on the productivity of input resources of the farm separately and collectively against the background of their source of finance. In other words, whether they are financed by borrowings or by earned surplus of the farm themselves. The examination of production elasticities of different capital inputs on borrowers’ farms reflected that only irrigation, manures and fertilizers (combined)
and hired human labour have significant and positive regression on the farm income. One per cent change in the level of farm income coincides with 0.823 per cent and 0.012 per cent change respectively in the level of use of the above two capital inputs. Similarly, on the non-borrowers farms, the production elasticities of irrigation, manures and fertilizers (combined), of tractor and machinery and of cost of pesticides was significant and positive, showing their impact on the level of farm income. One per cent variation in the level of farm income was a function of 0.694, 0.011 and 0.10 per cent change respectively in the change of the above three input factors.

The analysis of marginal value product (MVP) of different important capital inputs and their comparison with respective factor cost of the input factor showed that borrowers can increase their farm income by stepping up the level of irrigation, manures and fertilizers and pesticides on their farms. But they should observe restraint in employing the hired human labour and instead employ their family labour to perform the agricultural task. As regards non-borrowers, they are in position to increase their farm income by increasing the use of irrigation, manures and fertilizers, pesticides and employment of tractor and the machinery. The production elasticities of non-borrowers farms, however, indicate that when amount of owned production fund increases, it would be used in the right direction.

In the next attempt, the productivity of input resources was examined collectively. Here, it was assumed that the gross income on the farm as a whole is the function of area under HYV, size of holding, availability of family labour, investment in fixed capital, total amount of production credit supplied on the farms and the amount of earned...
surplus put in the production process. This was done with view to examining the productivity of production credit vis-a-vis owned production fund. In case of non-borrowers, however, production credit could not be examined. Here, it was observed that one per cent change in the gross income was due to 0.522 per cent, 0.258 and 0.161 per cent change in the use of owned production fund, imputed value of family labour and that of availability of production credit respectively on the borrowers' farms. In the case of non-borrowers farms, one per cent change in gross income was obtained on account of 0.633 per cent, 0.024 and 0.021 per cent change in the use of production fund (O.P.F.), imputed value of family labour and investment in fixed capital respectively. The picture, however, was seen reversed when the ratios of MVPs to their factor costs of different variables were worked out. In case of borrowers, the highest ratio of MVP was obtained for imputed values of family labour (Rs.4.95) followed by production credit (Rs.4.71) and owned production fund (Rs.3.50) indicating the superiority of production credit over owned production fund (O.P.F.). In the case of non-borrowers also, the owned production fund showed the highest ratio of MVP (Rs.6.14). The other variables were observed accruing to the losses on the farms. This observation strongly support the view that use of production credit and owned production fund should be stepped up to a new high level.

The study undertak fishermen, Tripathi and others (1969) and Chowdhry and Sharma (197) did observe that the amount of owned production fund (O.P.F.) might be increased to achieve still greater level of farm income but, since, their production elasticities of production credit was not significant, therefore, they did not proceed further to work out the MVP of credit.
This study asserting the prevalence of maladjustment among resources and importance of production credit in raising their productivity level advocated for resource adjustments and aimed at working out the precise nature and extent of credit requirements in the technological conditions of 1970-71 to obtain the optimum level of production. It was estimated that out of Rs. 2,393.00 available to devote to irrigation, manures and fertilizers and hired human labour, the farms should have allocated only a sum of Rs. 262.00 on employment of human labour and rest, i.e. Rs. 2,131.00 ought to have been incurred on irrigation, manures and fertilizers (combined). Pesticides, which has not caught the attention of the farmers, would have also been increased from the existing level of Rs. 8.00 to Rs. 139.00 per farm.

However, the existing level of resource use can not be altered overnight. Therefore, efforts should be made to step up the use of these inputs in the form of production credit which give more returns than their factor costs. From the earlier analysis (Chapter IX), it was seen that there existed a gap of Rs. 737.00 for irrigation, manures and fertilizers (combined) and Rs. 131.00 for pesticides between existing and desired levels on the borrowers farms. Therefore, the total gap in the level of the uses of these inputs per farm in the case of borrowers came to Rs. 868.00. If we add the actual advance of production credit for each farm (i.e. Rs. 454.00) during the year, the corresponding production credit requirements for whole of the district in 1970-71 came to about Rs. 15,103.10 thousand which are Rs. 11,612.22 thousand more than the present level of production credit supply. This total estimate of production credit, however, covers each hectare of the arable land by providing a sum of Rs. 388.82 in the district during 1970-71.
A review of credit estimates by Kahlon and Kapur (1968); Bansil (1971); Deasi and Naik (1971); Sharma and Bansil (1971) and Singh and Kahlon (1971) which is ranging from Rs. 280.00 to Rs. 995.00 per hectare is misleading and enormous. Most of the estimations were defective as they pertain to budgeting technique. None of them did try to optimize the level of inputs against the background of MVP’s obtained from them.

One point which strikes in mind from the foregoing discussion based on the functional analysis, needs further explanation. Though, the two functional analyses (viz. analysis of resources separately and collectively) may not be used interchangeably, even then, it may be stated that the hired labour has much lesser productivity when it is compared to the productivity of the family labour on the borrowers farms (being Re. 0.17 and Rs. 4.95 as against the factor cost of Re. 0.45 and Re. 1.00 respectively for hired and family labour). It is, therefore, advised that as far as possible, the family labour should substitute the hired labour to increase the efficiency of resources on the farms.

Moreover, in the light of the above statements, the concept of the productivity of credit when it is used for consumption requires recasting. If a definite portion of production credit is consumed by the family of small farms (viz. 0.0-2.5 hectare) which invariably increases the availability of family labour to work on the farm, it is productive. Contrary to this, the payment of wages from production credit which is lent by the most of the institutional agencies to larger farms may be termed as unproductive on the ground that MVP of hired labour is much below to its factor cost. Thus, based on the above facts, the assertion made by the Crop Loan Evaluation Committee of the Bombay State Co-operative Bank is not far from truth when it elaborates that...
the small farms have to sustain themselves and their families till the harvest of crops and for this sustenance they require some cash. This cash amount is as essential for growing a crop as any production expenditure.

The portrait of foregoing discussion provides sufficient clue to generalize the fact in order to implement sound policy decisions. It may, however, be concluded as under:

1. The level of agricultural output in future will largely hinge over the availability of production credit and production requisites and their use in the right direction.

2. The use of tractor, machinery and other post-harvest equipments in the offering is a healthy sign. It would increase the farm income by replacing the hired labour on the farms which has low productivity.

3. Marginal productivity of family labour depends upon the level of technology existing on the farm and the level of technology largely depends upon the level of borrowings. Therefore, it would not be far from truth that the production credit raises the productivity level of family worker on the farm.

4. There is a big gap between demand for and supply of production credit in the district and only one-fourth of the total requirements of the production credit are being met by institutional sources.

5. The use of yield boosting inputs like manures and fertilizers, pesticides and irrigation is much below the requirements of the existing technology.

6. The owned production fund (O.P.F.) is not being allocated in a judicious way on the borrowers farms. And there is a greater need to curb the use of such funds on payment of wages to the hired labour.

7. From the viewpoint of social justice, the small farms (viz. 0.0-2.5 hectares) though having higher producing potential, do not get proper attention with respect to advances of production credit and the credit gap on these farms is highest (Table VII-12).

8. The medium farms (viz. 2.5-5.0 hectares) have reaped the greatest advantage of new agricultural technology and Government's efforts of raising food production in the I.A.D.P. district Aligarh by providing production credit.