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RAPPORTEUR'S REPORT

ON

INVESTMENT ON FARM AND CAPITAL FORMATION IN AGRICULTURE

Rapporteur : SHRI V. M. JAKHADE*

The scope of the subject is outlined as under :

"There are two concepts involved, *viz.*, investment on farm and capital formation in agriculture. The former covers creation of or additions to capital assets on farm. The volume and structure of capital assets on the farms of different sizes, the sources of financing capital expenditure, the role of savings and of credit may be discussed on a village, regional or national basis. The discussion may also refer to creation of assets through family labour, labour on exchange basis and materials available on farm or village common lands, etc., without involving any money payment. Agricultural policies which could stimulate capital formation on farms may also be discussed."

"The concept of capital formation in agricultural sector comprises of investment in irrigation, land improvement, soil conservation, rural roads, etc. The adequacy or otherwise of such investment, criteria for priorities, capital-output ratios, optimum utilisation, etc., may be discussed."

"Papers may deal with theoretical and analytical issues as well as with empirical research on the problems."

In all, 25 papers have been received. These papers may broadly be divided into four groups as under :

1. Papers based on field investigations in a few selected villages.
2. Regional studies based on published sources by either Government, universities or other research institutions.
3. Papers based on published sources by either Government or universities or other research institutions dealing with the problem at all-India level.
4. Papers dealing with some methodological problems.

It may be stated at the outset that none of these papers specifically discuss the problems relating to 'adequacy or otherwise of such investment (*i.e.*, investment in irrigation, land improvement, soil conservation, rural roads, etc.), criteria for priorities, capital-output ratios, optimum utilisation, etc., on regional or all-India basis. The discussions, therefore, relate mainly to volume and composition of investment, capital formation and sources of finance as revealed by village surveys

* Deputy Economic Adviser, Reserve Bank of India, Bombay.

or based on data available in reports published by Government, universities and other institutions.

The main points brought out in these papers are summarised below. While doing this some queries have been raised mainly with a view to focussing attention on some of the points which could be usefully discussed in the meetings of the Working Group on this subject. The main angles from which these queries have been raised are as under :

(i) The approach adopted to the measurement of capital formation; (ii) Concepts and definitions of investment and capital formation; (iii) Coverage of enquiry; (iv) Sampling techniques and procedures; (v) Methods of investigation; (vi) Presentation of data; (vii) Findings of enquiry; (viii) Conclusions and recommendations; and (ix) Comparisons with findings of similar other enquiries. In presenting a summary of the papers submitted, it is proposed to follow the order of grouping made above.

I. *Village Studies*

In some of the papers, the definition of capital formation adopted as 'net addition to the means of production' is not in conformity with that generally adopted. The terms 'income', 'net income' are used but not defined and the procedure adopted for their measurement is not given. The period of reference for data are not given in some cases. This raises the problem whether data were collected in one round for previous five years on items like 'income' (investment, etc.). This has much significance from the point of accuracy of data. The sampling procedure and the basis of classification raise many points of methodology.

Dr. D. C. Sancheti after reviewing the trends in agricultural production and productivity in Rajasthan and the public sector capital outlays on agricultural development during the First and Second Plan periods comes to the conclusion that the rate of agricultural growth in Rajasthan needs acceleration and that may be brought about by the State by initiating certain projects of long maturity and of high initial expenditure.

Then he presents findings of a survey conducted by himself of 240 households in ten blocks. It is rather surprising that his capital expenditure included 'non-productive capital expenditure of permanent nature.' His definition of capital expenditure also included 'ornaments, utensils, furniture, etc.'

Dr. Bidyadhar Misra, Sarvashri Ajit Kumar Mitra and Benudhar Misra have made a study of farm investment in three villages in Orissa in the year 1963. The main finding is that the medium and big cultivators reported larger investment. They have invested larger amounts in non-agricultural sectors but the paper does not explain them anywhere.

The pattern of investment was purchase of land followed by ornaments and purchase of livestock. Investment on irrigation, equipment and storage was insignificant It is interesting to note that the investment of larger amount was made in the village which was subject to risk of floods and that too in purchase of land. The main source of finance was current income and savings. The farm families were not production-minded and did not invest on projects which would increase the productivity of land and agriculture.

In the selection of villages, two were selected on the basis of stratified random sampling but the third 'on the basis of convenience of collection of data', which is an arbitrary criterion, affecting the representative character of the villages, particularly when totals for three villages are presented. If convenience was criterion, it is not explained why a lower proportion of families were interviewed. In calculating income of families, income from 'trade, services and professions' is included. It would have been better if the concept and procedure adopted for their measurement would have been stated. Another question is whether sale of assets can form part of the current income or should be treated as 'disinvestment'?

On the expenditure side data on family expenditure on food and non-food items were collected for one year. In view of the lack of any records kept by the cultivators and day to day nature of expenditure in small amounts, the accuracy of figures needs to be carefully checked with data collected on a more rigorous basis.

Dr. B. Misra, Sarvashri H. K. Dasgupta and Jagannath Mishra have presented a paper based on a study of two villages from which 20 households were investigated. The object was to study the relationship between irrigation, size of holding and capital formation. The data show that the amount of total income per farm did not show much variation between the two villages because of sizable income from non-crop sources in the unirrigated village. However, the level of family consumption expenditure is high in the unirrigated village because of population pressure and therefore the level of capital formation was lower. The proportion of capital formation as percentage of total income rises with increase in size of holdings.

Tables VI and VII present data on capital formation and capital investment. Surprisingly, both the averages per farm are equal. This raises basic problems regarding concepts. Another point which arises is what about investment in non-crop husbandry activities from which the cultivators in non-irrigated village get a good bit of income.

Shri Prasanta Kumar Bhanja's paper gives his findings of a field survey in tnree villages, one in Orissa, one in West Bengal and one in Bihar. It covers a period of five years 1956-61 and data were collected in 1961. In the selection of households care was taken to make the sample fairly representative of the cultivating community of each village. The author has taken the liberty to widen the definition of capital formation to include expenditure on 'working capital' and 'durable consumer goods', 'gold and ornaments', which departs totally from the conventional definition adopted by the economists. Again, investment in industry or business is included in calculating 'the total capital expenditre per farm.'

Dr. D. Singh and Shri S. D. Bokil present their findings on investment pattern in agriculture in villages selected from 20 cotton and oilseeds producing districts from Punjab (4), Gujarat (7), Maharashtra (6) and Mysore (3). The data are presented for one year 1961-62. The enquiry reveals significant regional variations in investment in agriculture, the level of investment per holding was highest in Punjab followed by Gujarat, Maharashtra and Mysore. The level of investment was broadly in the same order as per acre yields of principal crops in the respective regions; thus productivity of land seemed to increase with increased capital investment. Investment per holding went up with increase in holding sizes. Investment per acre was highest in Punjab, followed by Gujarat, Maharashtra and Mysore. Investment per acre declined with increase in holding sizes indicating the magnitude of economy that might be expected by an enlargement of the holding sizes.

Table I presented show assets, which are generally as at a point of time. The total investment shown is the total value of assets and not additional investment during the year. What was the size of investment during the year may have been usefully given in the paper, preferably for different classes of cultivators.

Shri M. L. Patel's paper deals with the problem in relation to tribal economy. For this purpose he conducted an enquiry in one tribal village in Madhya Pradesh. The reference period was 1963-64. His main finding is that the pattern of farm investment is income-oriented in big and medium farms while it is subsistence and quick return-oriented in small farms. Size of family bears a direct relationship with size of farm since family labour is preferred to hired labour. The volume of investment per household varies directly with the size of holdings but investment per acre shows an opposite trend. An interesting feature of income pattern was that the farmer got nearly Rs. 100 per holding from livestock and poultry farming. The low per holding income of medium and big farmers, it is stated, was due to inventory changes on account of loss of cattle. Can such capital losses be treated as inventory changes in the strict sense of the term ?

Dr. C. P. Shastri's paper presents the results of analysis of data collected in six villages in Bihar in respect of 108 holdings, *i.e.*, 18 from each village, for the year 1963-64. The net investment in these villages tended to increase with the increase in the size of holdings. But the investment per acre showed an opposite trend. While explaining this trend the author has stated that it was due to very high investment in small size-group on construction and repair of farm house as compared to that in other two groups. The big cultivators invested more on land and livestock, the medium on livestock and farm house and the small on construction of farm house, land and livestock. An analysis of investment on a regional basis shows that there was correlation between the agro-climatic conditions and the level of investment. The level of investment was highest in North Bihar, followed by South Bihar and Chotanagpur.

In regard to the sources of finance, it was observed that past savings and current income accounted for a major portion of investment in all groups. The paper ends with some useful suggestions for increasing investment and capital formation.

Shri Harpal Singh adopted another approach to the measurement of capital formation. All the above paper writers have adopted the expenditure approach. Shri Harpal Singh adopts the inventory approach and measures capital formation by variations in value of stocks held at two points of time at constant prices. The study covers 30 farms located in Block Swar in the Rampur district in Uttar Pradesh and refers to the period 1951-52 and 1962-63. The data revealed an annual rate of growth of 2.5 per cent. The rate of increase showed variations within different size-groups, the highest being in the group of 10 to 20 acres at about 9 per cent per annum. He states however that from the output side it is change in the pattern or the structure of capital which assumes greater importance than the changes in the magnitude of capital. On the farms surveyed during the period covered a larger proportion of investment was made on irrigation followed by farm housing and cattle shed and new equipment. This indicates a shift from low income yielding old technology to high income yielding new technology. The small farms however showed a tendency to over-capitalisation because of investment in old fashioned tools, livestock and farm housing. In the case of big farmers there was larger investment in machinery and tools and a fall in that on livestock. The pattern of investment showed that improved tillage, technology and irrigation works accounted for 62.2 per cent of the total additions in the value of capital stock, leading to increased productivity. Nearly 46 to 71 per cent of investment was from savings and between 8 to 28 per cent from borrowings from institutional agencies and Government. According to him, small size of farms and their fragmentation are the main obstacles to capital formation. Similarly, the returns to investment in agriculture relative to other channels are relatively lower. The need for investment in social capital in order to provide a critical minimum has also been emphasised.

II. *Regional Studies*

Shri S. N. Sen's paper is the only paper which deals with the problem on a State basis. He has attempted to estimate overall investment and capital formation in agriculture in Bihar State. According to him, the public sector investment in agriculture per year worked out to Rs. 1.93 crores, Rs. 6.58 crores and Rs. 9.90 crores during the First, Second and Third Plan periods respectively. For estimating the rate of investment in agriculture in the private sector he takes a ratio of 1:4 based on an estimate of public and private sector investment in agriculture during the Second Plan period by the Reserve Bank of India. Thus, his estimate of private sector investment in agriculture worked out to Rs. 20.09 crores, Rs. 26.32 crores and Rs. 36.00 crores per year during the First, Second and Third Plan periods respectively. The rate of investment thus comes to 7 per cent of total gross value of output in agriculture.

The method of estimating private savings from public savings has many severe limitations. Further data on investment and capital formation for some years are available in the Rural Credit Survey for Bihar, and for some districts in the Follow-Up Survey. The results of the All-India Rural Debt and Investment Survey published recently also give estimates for Bihar. It would have been better if the author had tried to compare data from these various sources to have a check on his estimates.

III. *All-India Studies*

Shri K. Ramachandran Nair after enumerating some structural, technological and financial obstacles to increase in investment and capital formation in a general way, has quoted from the Reserve Bank of India Bulletin figure showing the saving-income ratio for rural households at 2.6 per cent for the period 1950-51 to 1958-59. This ratio compares unfavourably with the ratio 7.1 per cent for the country as a whole and 14.1 per cent for urban households. Quoting again the Reserve Bank of India and Uma Datta, he stated that the rate of growth of reproducible tangible wealth in agricultural sector between 1949-50 to 1960-61 was 67.3 per cent and 49.6 per cent respectively as against 88.1 per cent and 55.9 per cent respectively for the whole economy. Further quoting Uma Datta, he stated that the average capital-output ratio for agriculture increased from 1.19 in 1949-50 to 1.31 in 1960-61 and the incremental capital-output ratio stood at 1.66. The percentage increase in capital stock and net output in agriculture was 49.66 and 35.8 respectively. The addition to capital stock was highest in the form of improvement of land and irrigation works and lowest in livestock. He then gives ratio between land, machinery, buildings, livestock, irrigation, labour and agricultural output.

Shri Suhas Chattopadhyay in his paper states the need for developing institutional credit. He refers to data on estimates of fixed capital formation in farm business from National Sample Survey (15th round) and Rural Credit Survey. Then he calculates Kendall's rank correlation coefficients between loans by co-operative societies per member and per household expenditure on fixed capital formation and concludes that the States having larger amounts of co-operative loans tended to show larger amounts of fixed capital formation.

Dr. (Mrs.) Tara Shukla's study is based on a study of capital formation in durable physical assets in agriculture in India from 1935-36 to 1960-61. She has adopted the inventory approach. Her findings are that between 1935-36 and 1950-51 the total gross capital formation did not vary materially. It, however, spurted up by 45 per cent between 1950-51 and 1955-56 and by 19 per cent between 1955-56 and 1960-61. That the largest single contribution came from bullocks. However a trend towards larger investment in irrigation has been observed recently. The ratio between net capital formation and gross capital formation shows that in earlier years capital formation in agriculture was mainly to maintain the existing capacity. A change from this trend was noticed during the last decade. Capital formation was mainly in the private sector though in the last decade the contribution of the public sector shows some improvement. Gross capital formation formed 10 to 14 per cent of gross agricultural income. Net capital formation formed between 1.15 to 2.14 per cent of gross agricultural income between 1935-36 to 1950-51; this proportion rose to 4.76 per cent during 1950-51 to 1955-56. Her conclusion is that the rate of capital formation is inadequate for self-sustained growth; still it is sufficient to match growth in labour and maintain the level of farm production. This is borne out by the fact that the capital-output ratio has remained more or less constant between 1920 and 1960.

IV. *Technical and Methodological Studies*

Dr. S. G. Madiman's paper is the only one which deals with some technical and methodological aspects. The important point he has made is that in the interpretation of data on investment and capital formation in agriculture, adequate consideration should be given to institutional factors and regional variations. He then points to certain gaps in the available statistics on the subject. Firstly, no data on contribution to capital formation in agriculture by urban sector are available. Criticising the 'size of holding' criterion for selection of sample in investigation for this purpose he points out the various factors that influence the level of capital formation on individual farms. But if the various factors he has mentioned are to be taken into account for purpose of stratification particularly in large-scale surveys, that itself will be a separate and time consuming enquiry. This is not to underestimate the importance of these factors in the interpretation of data collected.

Then he questions the method of taking 'family' as a primary unit of sampling. Instead he prefers the 'cultivated plot' as a primary unit of sampling. Admitting the merits of the latter approach for some specific types of enquiries like implementation of tenancy reforms, it has serious limitations for multipurpose types of enquiries. For instance, when the enquiry is directed towards studying borrowings, repayments, debts, savings, investment, etc., some of these items are not related to individual plots but the creditworthiness of the 'family' as a whole. To isolate the additional investment in a new well for plot A or B would be rather difficult. Then there is the aspect of management which cannot be related to a particular plot but to the enterprise as a whole. He urges the need for an urgent study of research methodology and survey techniques, but in which particular areas or directions has not been mentioned. He pleads for providing 'incentives' to cultivators through suitable institutional reforms and also 'incentives' to officials for effective implementation.

SUMMARY OF GROUP DISCUSSION

Chairman : SHRI V. M. JAKHADE

On this subject 25 papers were received. The main findings of these papers were circulated and therefore the papers were taken as read. A large number of papers were based on field investigations conducted by the paper-writers covering a few villages each. All these village surveys, except one, adopted the expenditure approach. One paper-writer has followed the inventory approach. Those who adopted the former approach collected data on amounts spent on items of capital expenditure on farms by a selected number of cultivators for a period of one to five years. The survey method was adopted by all of them. In view of the importance of village studies on this subject both from the methodological as also from policy formation aspects, the need for uniformity in regard to concepts and definitions was admitted. As wide variations were noticed in the definitions adopted by the paper-writers, the Group devoted some time for a discussion of basic concepts and definitions.

It was pointed out by some of the participants that improvement in efficiency of the operator leads to increase in ouput on farm. This increase in efficiency can be brought about by education and technical training. The expenditure incurred for this purpose is, therefore, investment on development of human capital and thus may be treated as an item of capital formation. Most of the participants agreed with this view in principle. It was pointed out, however, that depending on the purpose for which the statistics were to be used, the range of items included in capital formation may vary from a narrow one, as for example, physical plant and equipment, to one which included also current expenditures for research, health and education which improve technology and increase productivity of the labour force. While it is desirable to obtain data on such expenditures there are difficulties in valuation. Sufficient methodological and measuremental experience is not available so far.

A point was made out that in agriculture an increase in production may be brought about by increasing inputs like improved seeds, fertilizers, pesticides, etc., as also by land improvements, development in irrigation facilities, increase in equipment and machinery, etc. Following this line of argument, some of the paper-writers have included expenditure on purchase of fertilizers and manures, improved seeds under capital formation. It was argued that if out of the current income of the agriculturist a certain portion was set apart for expenditure on manures, fertilizers, etc., this should be treated as capital and therefore accounted for capital formation. It was pointed out that according to the accepted terminology on this subject all goods produced for use in future productive processes—machinery, equipment plants, buildings, other constructions and works and producers' stocks of raw materials, semi-finished and finished goods—were called capital goods. Domestic capital formation is that part of a country's current output and imports which is not consumed or exported during the accounting period but set aside as additions to its stock of capital goods. Net capital formation is distinguished from gross capital formation in that it measured after allowances are made for depreciation, obsolescence and accidental damage to fixed capital. Conceptually, net capital formation represents the additions to fixed capital (buildings, other constructions and works, equipment and machinery) and working capital (producers' stocks) available for future production. The studies on capital formation on farms may therefore devote attention to changes in inventories with particular reference to inventories.

The Group then discussed the problems in measurement of investment and capital formation in agriculture. The two approaches, namely, inventory approach and the expenditure approach were considered in this context. It was pointed out that the inventory approach at the all-India/regional levels may, apart from the question of reliability of data as we go back in years, face the handicap arising from non-availability of data on certain items or from lack of comparable data over a period of time in some others. There may arise problems of valuation and weightages to be given to different items. The estimates will have to be on the basis of certain assumptions which may be questionable. On the other hand, the expenditure approach at the farm level may give more reliable results. But unless the surveys are conducted over a period of years, it may not be possible to find out long-term trends. There are certain problems of measurement in this approach. Firstly, the surveys conducted so far have taken account of money-expenditures only. It is necessary that the value of materials used for which no monetary payment is made or value of family labour and labour on exchange basis employed may also be included. Secondly, for purpose of netting, it is necessary to note separately the expenditure on repairs and maintenance particularly in respect of items like bunding and other land improvements. Although it will be possible to make some allowance for depreciation in respect of tractors, electric pumps it may not be possible to do so in respect of small tools and equipment. The Group noted the difficulties of allocating the expenditure on purchase of cattle under annual purchases and sale replacement purchases, etc.

The Group then devoted some time to the discussion of factors that impede or accelerate the growth of investment and capital formation in agriculture. The discussion was confined largely to investment in private sector. It was pointed out that the institutional factors have an important bearing on this problem. The cultivator should have adequate incentives to save and invest. He must feel assured about the return to his capital on land. One of these factors is the pattern of land ownership. There had been a land reforms programme in practically every State. Still its implementation had not been really effective in many of them. Thus it was observed that in certain States like Maharashtra, Gujarat, where the reforms have achieved relatively more success, the rate of investment and capital formation has shown an up-trend. On the other hand, as pointed out by Dr. Ladejinski, in areas where land reforms have not been successful, the entire programme of agricultural development had suffered.

Size of holding is another limiting factor. Apart from the low level of savings, because certain minimum equipment is necessary for carrying on cultivation operations on such holdings even at the traditional technical level, the available savings cannot be invested with a view to getting optimum returns. There is a sort of over-capitalisation on these dwarf or small holdings. The remedy lies, to some extent, in consolidation of holding and enlarging the size of holdings but ultimately in changing land-man ratio from what it is at present.

Risk and uncertainty factor also has an impact on the level and rate of investment on farms. It was pointed out that in certain areas where drought and other natural calamities occur frequently, the cultivator's saving capacity is low and that he is reluctant to undertake risk with borrowed funds. Recent studies in newly irrigated areas have shown that following the development of irrigation facilities, the rate of investment has shown a notable upward trend.

Fluctuations in agricultural prices is another factor. There was a general consensus of opinion that a policy for price stabilization would help in removing one of the reasons for insecurity in the cultivator's mind which has an adverse effect on his investment programme.

The provision of incentives have definitely good effects particularly on some more enterprising farmer. As qualities of labourers are basically important in any enterprise the provision of incentives should be backed up by adequate extension service, and education.

Credit is another instrument for encouraging investment and capital formation. In this connection it was pointed out by some participants that because of the withdrawal of professional moneylenders due to the moneylending legislation, there was stringency of credit in rural areas adversely affecting agricultural production and investment. On the other hand, it was pointed out that because of rise in agricultural production and prices during the last few years, the money incomes of the agriculturists have increased, particularly those of the big cultivators. These big cultivators have been filling the gap created by the withdrawal of professional moneylenders. Actually the total borrowings of the cultivators have nearly doubled during the last decade and the proportion of non-institutional credit agencies has not shrunk to a very large extent. It was therefore stated that a large portion of agricultural savings has been utilised for intra-village lending, a large part of which goes for consumption purposes.

In this connection it was stated that it was necessary to take account of the institutional changes and its impact on distribution of cultivator's income. If as a result of these changes, the balance that is left with him increases, he might be able to invest more. If he feels secured regarding his right in land and the portion of farm income that he would have to surrender, in addition to monetary investment there may be investment through employment of family labour in an intensive manner.

Another aspect that was discussed was the maximum utilisation of available credit facilities. It was pointed out that in regard to short-term credit, the contents of the programme of increasing agricultural production, *e.g.*, use of fertilizers, improved seeds, etc., are well-spelt out by the agricultural department and the extension agencies. In case of medium and long-term finance, such programmes are not worked out systematically and in greater details and thus the cultivator's response was poor. Formulation of such programmes area-wise is an important pre-requisite.

Whether the rate of interest charged at present by the institutional agencies is an obstacle to larger use of credit was another question discussed in this connection. A participant stated that for all cultivators who need credit Government may come forward and lend without going into the assessment of their credit-worthiness in traditional manner interest free. On the other hand, another participant stated that easy credit leads to misutilisation and therefore cost of credit should be raised. The issue of subsidy on interest as also on the other inputs therefore drew attention in the discussion. It was generally agreed that in regard to such activities or purposes which are considered socially desirable and which are technologically possible, they be made financially feasible. If this approach is adopted subsidy on interest, particularly the credit that flows through institutional channels could be justified. However, there is need for the credit institutions to reorientate their loan policies and procedures. It is equally important for such credit policy to succeed that land reforms are effectively implemented.

The Group for want of time could not discuss some topics such as criteria for allocation of priorities in investment, capital-output ratios, incentives for non-agriculturists to invest in rural areas.