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RAPPORTEUR'S REPORT

ON

FACTOR SHARES IN INDIAN AGRICULTURE

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Twenty-nine papers have been accepted for discussion in the Conference under this topic. The plan of the report includes a review of the methodology used by different authors for the estimation of factor shares followed by the discussion on factor shares. In the end, issues for discussion are summarised.

METHODOLOGY USED FOR THE ESTIMATION OF FACTOR SHARES

Different authors have used different methods to work out the factor shares in farm output. In one of the approaches, factor shares have been worked out in the value added wherein the value of intermediate inputs has been deducted from the output. In the value added, land, labour and capital get shares equal to their shares in the cost of production. The share of management was worked out as a residual. Papers by M. V. George *et al.*, K. Sain, and T. S. Walker *et al.* fall in this category. Another variant of this approach is the one used by T. Haque *et al.*, and J. P. Singh. In this case, the entire expenditure on intermediate inputs has been attributed to the capital factor. The shares of land and labour were worked out as in the first case. The management share was worked out as a residual by deducting the total cost of inputs from the gross revenue.

Some authors have used the Cobb-Douglas type of production function to estimate the factor shares. In this case the relative increase or decrease in each factor share was determined by comparing the elasticities of factors at two points of time. H. K. Bal *et al.* have followed this approach. Another way of estimating the factor shares in this case was that the output was allocated in proportion to the production elasticities. The assumption here was that the factor shares were proportional to the factor elasticities. Bal *et al.*, K. S. Birari and D. V. Kasar, and Balishter have followed this approach. It was difficult to understand how on the basis of negative elasticities for human labour, Balishter would explain the share going to human labour. M. R. Alshi *et al.* have used the Normalized Profit Function and Labour Demand Function to estimate the factor shares. V. Rajagopalan and S. Varadarajan have used functional analysis along with parity between indices of rent/wage, rent/fertilizer cost and wage/fertilizer cost to determine the factor bias.

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P. S. Khattra and B. S. Hari have used the marginal value productivity of each factor to represent the reward of that factor. One could question the appropriateness of this methodology.

K. C. Borah, J. P. Singh, Ram Iqbal Singh *et al.*, S. R. Yadav and I. U. Ansari, and G. N. Singh *et al.* have simply worked out the share of each factor in the total cost of production for particular crop/farms. This approach, however, does not throw much light on the factor shares in output.

ESTIMATES OF FACTOR SHARES IN AGRICULTURE

We now give below the views of the different authors on the shares of different factors of production.

(a) Land

The share of land in the value of output was worked out both at a point of time and over a period of time. Walker *et al.* have worked out the land share for the Semi-Arid Tropics of south India based on the data of six villages covering the period 1975-76 to 1979-80. The share of land is shown to vary from 33 to 55 per cent of the value of output in different villages. D. V. Singh has also estimated the share of land under rainfed conditions for *kharif* crops in Rajasthan State for the period 1977-78 to 1979-80. His estimate of land share is comparatively low (18.8 per cent). Sain has estimated the mean share of land at 25 per cent for the period 1971-72 to 1979-80 for West Bengal.

George *et al.* have worked out the share of land for paddy, wheat, sugarcane and jute crops in different States. The share of rent in the gross value of output in the case of paddy crop declined from 28.60 to 27.90 per cent in Andhra Pradesh, from 24.50 to 24.30 per cent in West Bengal and from 24.90 to 24.70 per cent in Orissa between 1971-74 and 1978-81. In the case of wheat crop, the decline in Punjab State was from 28.50 to 25.90 per cent between the period 1970-73 and 1978-81 and there was a decline of almost similar magnitude in Uttar Pradesh although in Madhya Pradesh there was a slight increase. The proportion of rent in the gross value of output between the period 1973-75 and 1979-81 for sugarcane and jute crops, however, did not indicate any definite trend. J. P. Singh has estimated the share of land for the aggregate of the crops for Punjab, Maharashtra and Tamil Nadu States. In Punjab, the share of land declined from 35.94 to 31.93 per cent during the period 1954-57 to 1967-70. However, in Maharashtra and Tamil Nadu States, the share of land increased from 16.08 to 25.97 per cent during 1955-57 to 1969-72 and from 25.97 to 36.45 per cent during 1954-57 to 1970-73 respectively. Haque *et al.* have compared the factor shares in the production of wheat and rice for the period 1971-74 and 1978-81. In the case of wheat crop, the land share declined in Punjab, Madhya Pradesh and Uttar Pradesh States from 27 to 25.08 per cent, from 25.08 to 24.4 per cent, and from 22.5 to 21.1 per cent respectively in the

second period but there was a marginal increase in the case of Haryana State. A similar trend of declining share was noticed for rice crop in Andhra Pradesh, Assam, Orissa, Tamil Nadu and West Bengal States and the exception was Bihar State where there was a marginal increase.

Some other papers also provided evidence to the contrary—that of increase in the share of land over time. Papers by Alshi *et al.*, Rajagopalan and Varadarajan, and Bal *et al.*, fall in this category. The weight of evidence is, however, in favour of decline in the share of land in the gross value of output particularly in States with better agricultural performance. This decline seems to be the result of a much rapid increase in the share of capital.

(b) *Labour*

Walker *et al.* have shown that labour share varied from 20 to 30 per cent in the Semi-Arid Tropics of south India in the six villages studied by them. Another estimate of labour share given by D. V. Singh for rainfed areas of Rajasthan puts it at 40.5 per cent. Bal *et al.* have worked out the labour share for the central districts of Punjab. They found that the relative share of labour in output declined from 43 per cent in 1972-73 to 22 per cent in 1981-82. S. K. Chakravorty has studied the impact of minimum wage legislation on the share of labour and found that this legislation failed to improve the share of labour. However, the method used to arrive at this conclusion is questionable. Alshi *et al.* in their study for the year 1979-80 relating to Akola district of Maharashtra State found that the high-yielding varieties of cotton favoured land and capital much more than labour with evident implications for income distribution. In another study relating to Maharashtra, R. E. Waghmare and M. P. Dhongade also noticed a decline in the share of labour for high-yielding varieties of wheat and paddy compared to the local varieties as well as for improved varieties of jowar and cotton compared to the local strains.

J. P. Singh in his paper based on farm management studies covering Punjab, Maharashtra and Tamil Nadu States, found that labour share in late sixties/early seventies compared to mid-fifties decreased marginally from 27.03 to 27.0 per cent in Punjab, and from 34.1 to 26.40 per cent in Maharashtra. It increased from 20.80 to 22.02 per cent in Tamil Nadu. The increase in the latter case was attributed to introduction of more labour intensive crops like paddy and groundnut. George *et al.* found that for paddy crop in the States of West Bengal and Orissa, the percentage share of labour increased from 21.70 to 32.80 and from 22.10 to 26.30 respectively for the triennium 1978-81 compared to 1971-74. In Andhra Pradesh, the increase during the same period was from 18 to 22.90 per cent. For wheat crop, however, in Punjab, the percentage share of labour declined significantly from 21 in 1967-70 to 13.80 in 1978-81. There was, however, a marginal increase in other wheat growing States of Uttar Pradesh and Madhya Pradesh. In the case of sugarcane crop, the percentage share of labour in 1979-81

compared to 1973-75, was low both in Maharashtra and Uttar Pradesh. In the case of jute, however, the share of labour showed improvement towards the close of the decade of the seventies compared to the early seventies.

Haque *et al.* noticed an increase in the share of labour in the late seventies compared to the beginning of this decade. The labour share increased from 18.02 to 20.8 per cent in Haryana, from 14.06 to 15.1 per cent in Madhya Pradesh and from 14.7 to 15.7 per cent in Uttar Pradesh. The Punjab State, however, showed a decline from 15.5 to 13.8 per cent during the same period. One can understand the declining share of labour in the State of Punjab where this happened as a result of increased mechanization but the different trend for Haryana State needs to be explained. The share of labour in rice output during the same period indicated an increase in the States of Andhra Pradesh, Assam, Bihar, Orissa and West Bengal. The only exception was the State of Tamil Nadu where it declined. The increase in the share of labour in the above studies is attributed to increased use of labour as well as rise in wage rates.

Regarding the relative share of family labour and hired labour, the study gives mixed evidence for wheat crop. Family labour share increased in the States of Haryana, Madhya Pradesh and Uttar Pradesh and showed a significant decline in the Punjab State. In the case of rice, there was a decline in the share of family labour in the States of Andhra Pradesh, Assam, Orissa and Tamil Nadu. The States of Bihar and West Bengal witnessed a marked increase in the share of family labour. This differential behaviour in the pattern of family labour use needs proper explanation.

The above appraisal gives mixed evidence regarding change in the share of labour over time. However, most of the studies indicated a decline in the labour share and this was particularly true in areas having higher degree of mechanization.

(c) Capital

The share of capital in the value of output was found to vary from 19 to 30 per cent by Walker *et al.*, for semi-arid villages of south India. D. V. Singh estimated this share at 40.7 per cent for rainfed crops in Rajasthan State. Some authors have simply given the trend in the share of individual inputs like fertilizer and irrigation to denote the change in the share of capital over time. Papers by Bal *et al.*, Balishter, and Borah fall under this category.

Alshi *et al.* concludes that high-yielding varieties of cotton were biased in favour of capital. Another study in Maharashtra State by Waghmare and Dhongade also reported an increase in the share of capital for high-yielding varieties of wheat and paddy. Rajagopalan and Varadarajan found that in the State of Tamil Nadu, the shift from local to high-yielding varieties of paddy did not cause any appreciable change in the share of capital.

George *et al.* studied the share of capital through change in the share of interest over time and noted an increase in its share in different States. J. P.

Singh found significant increase in the share of capital in the State of Punjab and Tamil Nadu. The increase was from 16.15 to 27.88 per cent in Punjab and from 28.37 to 34.98 per cent in Tamil Nadu in the late sixties and early seventies respectively compared to the decade of mid-fifties. However, in the case of Maharashtra State, there was a marginal decline. Haque *et al.*, who also attributed the expenditure on all intermediate inputs to capital, concluded that the share of capital in the late seventies compared to the early seventies increased from 39.9 to 50.8 per cent in the case of Punjab, from 44.6 to 60.8 per cent in Haryana and from 38.9 to 53.7 per cent in Uttar Pradesh for wheat crop, but there was some decline in Madhya Pradesh. Almost a similar trend of increase in the share of capital was witnessed in the major rice growing States with the exception of Tamil Nadu.

The overwhelming evidence regarding the share of capital in the value of output was in favour of increased share of capital through time.

(d) *Management*

Very few studies have explicitly worked out the share of management in the value of output. Walker *et al.* estimated the mean share of management to vary from 3 to 14 per cent in five of the six villages studied by them. It was —11 per cent in the sixth village. Sain has noted that in West Bengal, there was a decline in the share of management over time. The figures worked out by George *et al.* show that the profitability in agriculture in most of the States for the crops studied by them was on the decline and this was particularly true in technologically advanced regions. The position of profits was relatively better for commercial crops (sugarcane and jute), which was attributed by the authors to favourable price policy pursued in the respective States. Similar conclusions of declining profitability are derived by Haque *et al.* for wheat and rice crops in most of the States. These authors on the basis of declining entrepreneurial share apprehend an adverse effect on the growth of agriculture.

ISSUES FOR DISCUSSION

On the basis of foregoing review of the papers, the following issues need discussion:

1. Since different approaches have been used by the authors to work out the factor shares and they have come out with different results, it would be desirable to discuss the most appropriate methodology of estimation of factor shares. Since the share of capital in the gross value of output after netting out the value of intermediate inputs was much less compared to the situation when the entire expenditure on inputs like fertilizers, insecticides and irrigation was attributed to capital, it is necessary to discuss the merits and demerits of each approach.

2. Since many of the studies have indicated a decline in the share of land over time, the implications of this trend need to be discussed. What are

the implications of this trend for the tenant class, a large number of owner operators and the absentees ?

3. Is the Group in agreement with the decline in the share of labour over time as reflected in several studies ? If so, does this decline essentially mean economic deterioration of the labour class and the widening income inequalities particularly when an increase in the share of capital was noticeable in most of the situations ? How far is it meaningful to make a generalisation on the economic conditions of the labour class on the basis of their share in agricultural output alone without taking into account the indirect employment opportunities which the growth of agriculture generates in the process ?

4. The available evidence has indicated that the share of capital in the value of output has invariably increased over time. Does it mean emergence of capital intensive farming ? If so, what are its implications vis-a-vis the interest of the labour class.

5. How does the increased share of capital affect the interests of the suppliers of capital such as the large number of non-institutional agencies, institutional sources and the category of capitalist farmers themselves ? Its impact on price of capital may also be examined.

6. How is the decline in the share of management to be viewed in the context of future growth of economy ? What bearing this trend would have on the growth of agriculture ?

7. To what extent the ownership of factors of production goes with the distinct classes in the society ? How is the change in relative shares of different factors to be viewed when the majority of the farm operators happen to be the suppliers of each factor of production partly or wholly ?

8. Is it possible to indicate the lines along which the factor rewards in agricultural sector should move in the interest of growth with social justice ?