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FARM GROWTH WITH EQUITY—BENEFITS  
AND BURDENS

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Equity can be considered either in terms of egalitarian distribution of the means of production or of the output and income generated in the given production system. While most of the traditional models of economic growth rely on the broad sweep of the rate of economic growth, to eventually result in everybody sharing a portion bigger than before of the bigger cake, the welfare economists suggested deliberate policy of income transfers through tax and other fiscal measures. Underlying most of the assumptions used in these models has been the classical view that equal or near equal distribution of the means of production in small scale, diffused and decentralised production has the effect of reducing aggregate savings and thus investment and capital formation. In the case of the farm sector, the organization of agricultural production in very small holdings (if distributed near equitably) would generate far less surplus over consumption, for re-investment than the bigger farms operating larger areas of land. It was thought that egalitarian reforms carry the cost of retarding economic growth. The preconception was that such reforms were costly in terms of increased national production forgone and that they would have to wait until there was more to distribute. In this thinking, equity was a sort of residual consideration, the main concern being with achieving rapid and high rates of growth.

The egalitarianists were persuaded to accept this course and give a chance to the theory of growth resulting in everybody being happier than before (may not be relatively). The 'tunnel effect' and 'hope factor' meant to assure the have-nots that since some are moving ahead in the tunnel, their turn would also come, were introduced into discussion.<sup>1</sup>

Whether this thesis of growth first and equity later on has worked or not has generated a lively discussion in which, apart from the economists, several other disciplinarians participated and contributed. The need was urgent

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1. Albert O. Hirschman in his paper on "The Changing Tolerance of Income Inequality in the Course of Economic Development," *World Development*, Vol. 1, No. 12, December, 1973 says "In the early stages of rapid economic development, when inequalities in the distribution of income among different classes, sectors and regions are apt to increase sharply, it can happen that society's tolerance for such disparities will be substantial . . . But this tolerance is like a credit that falls due at a certain date. It is extended in the expectation that eventually, the disparities will narrow down again."

because the have-nots hoping for their turn to reap the harvest of economic growth were getting restive and angry at the non-realisation of their hopes. In the Indian farm situation which has more or less been reeling under the unbearable conditions of near stagnancy in productivity (apart from some gains in production of which a substantial proportion was due to additions to the cultivated area), the technological innovations were to be the most potent source of growth in farm output. In the traditional farm technology, increase in working force as a result of increasing population has nearly exhausted its capacity to bring about further, any substantial step-up in production (in the absence of complementary non-labour resources). Under such situation, it was worthwhile to achieve growth anyhow, leaving the question of equity to be considered later on or relying on the assumption that everybody would have a larger cake to eat when the size of cake itself is increased. It was believed that the new technology along with irrigation, and partial mechanization, which was to be the main instrument of securing growth in farm output would not only ensure higher output but would increase employment and real wage rates leading to some sort of greater satisfaction and eventual equality. Although, it must be said that apparently, the new technology has very little bias in favour of large farms. The neutrality of the seed-cum-fertilizer technology to farm size popularly or immaturely named as 'green revolution' was widely discussed, proved and acclaimed. In the din of putting growth over equity and proclaiming farm size neutrality of the new technology, the question of the redistribution of means or factors of production notably land and thus of ensuring some amount of equity was relegated to the background.

#### THE TWO POINTS OF VIEW

Now, when the new strategy has gratified us neither with growth (as expected whether rightly or wrongly), nor employment and had in fact is known to widen the inequalities than before, the entire gamut of issues are being reopened and discussed, once again. As a reaction, the alternative of ensuring equity in the first place as an objective worthwhile in itself is being put forth forcefully. The possibility of such 'equity' being a factor contributing rather than competing with the overall growth in the aggregate farm production is being explored and discussed. It must, however, be said in fairness to the new strategy of super-imposing technology on the existing highly skewed distribution of land that the proof of the strategy having failed to produce either growth in output or equity or both is as yet far from conclusive. Randhawa and his associates<sup>2</sup> argue on the basis of data taken from the cradle

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2. M. S. Randhawa, *et. al.* : Green Revolution—A Case Study of Punjab, Vikas Publishing House Pvt. Ltd., Delhi, 1974, pp. 171-172, 48-49 and 146. He also dubs the critics of capitalist farming in Punjab which has filled the bread-basket of India as, "One can also not forget the class and caste war between the agriculturists and the urban middle classes. It is only now that the agriculturists are coming up in the field of education and are proving serious competitors to their former exploiters, who lose no opportunity to damage their rivals and are gleefully contemplating their economic ruin." (p. 50).

of green revolution that wages, employment and production have all risen *pari passu* with the tractorisation, mechanization and modernization of agriculture. "Thus, they emphasize, substitution of machinery took place not for human labour but for bullock labour which is a highly desirable development because it saves land put under fodder to feed bullocks." The authors come out with the existence of complementarity between labour and capital and point out that employment has increased under mechanization. Randhawa also argues strongly on the basis of his vast and practical experience that, "If redistribution assumes the shape of a process of atomization of land holdings, there would be little scope for the introduction of elements of modernization and improved technology." Crown and Nagadevara<sup>3</sup> after analysing the data on farm output and efficiency in Tamil Nadu, Uttar Pradesh and Punjab over about 12 years observed that while analysis indicates that except for one or two groups, the operators in analytic classes demonstrate measurable increases in efficiency over time, the second biggest class of farmers have increased their efficiency during this intervening period, the most. There is thus a real possibility of efficiency-loss, if ceilings on operational holding (a most important measure of equity in farming or rather in rural areas) size are too low. The results suggested that land ceiling below 4.5 acres in Tamil Nadu, 31 acres in Punjab and 17 acres in Uttar Pradesh would create an opportunity cost in efficiency. Their finding indicates that in the context of new technology being used as source of growth in output, the programme of land redistribution cannot be taken too far without sacrificing efficiency. Sen<sup>4</sup> believes that with the provision of irrigation being almost a precondition for the exploitation of production potential of new technology and small farms having a larger proportionate area of their farms under irrigation, the new technology would reduce rather than aggravate the relative disparities in the incomes of small and big farmers. Singh<sup>5</sup> after studying the impact of the Intensive Agricultural District Programme (IADP) in Aligarh during 1963-64—1968-69 strikes a similar note. He observes, "... the increasing mean level of farm income associated with the declining farm income inequality indicates that the goal of raising mean farm income and reducing farm income inequality are not necessarily competitive." Aggarwal<sup>6</sup> on the basis of his study in Ludhiana (Punjab) emphatically denied the facile generalisation that the green revolution has made the condition of rural labour worse than before. He finds that the gains of rural labour have been substantial : wages have risen and number of days of employment has gone up. Socially too, their condition has improved remarkably. There is no *begar*,

3. Robert W. Crown and V. Nagadevara, "Tendencies in Relative Economic Efficiency and Their Consequences," *Indian Journal of Agricultural Economics*, Vol. XXVIII, No. 3, July-September, 1973, pp. 9-11.

4. B. Sen, "Opportunities in Green Revolution," in *Comparative Experience of Agricultural Development in Developing Countries of Asia and the South-East Since World War II*, Indian Society of Agricultural Economics, Bombay, 1972, pp. 262-280.

5. Kartar Singh, "The Impact of New Agricultural Technology on Farm Income Distribution in Aligarh District of Uttar Pradesh," *Indian Journal of Agricultural Economics*, Vol. XXVIII, No. 2, April-June, 1973, p. 11.

6. Pratap C. Aggarwal : *The Green Revolution and Rural Labour—A Study in Ludhiana*, Shri Ram Centre for Industrial Relations and Human Resources, New Delhi, 1973.

no *jajmani* and the relationships are more commercialised based as they now are on the added bargaining strength of the labourers derived out of its relative scarcity.

The main burden of some of the arguments on this side, a sample of which has been given above, is that the new technology in the existing structure of farm size distribution has attained growth in output through a process of modernization and use of new inputs and also helped increase employment and reduce inter-farm disparities. The twin objectives of ensuring growth and equity are not really competitive unless the ceilings are brought down too low. Bardhan<sup>7</sup> refutes these claims and cites evidence to suggest that neither employment nor wage rates have kept pace with the rise in farm production in Punjab. Only in Kerala where the farm labour is more organized, there has been a real increase (at constant prices) as opposed to apparent increases (at current prices). By implication, the gains of green revolution in Punjab have not percolated to the landless labourers. Adelman and Morris<sup>8</sup> analysing data from a large number of countries nailed the issue, when they concluded, "In general, the results do not support the hypothesis that economic growth raises the share of income of the poorest segments of the population. On the contrary, . . . suggests that economic dynamism at low levels of development worked to the relative disadvantage of lower income groups." Their elaborate study confirmed the dichotomy between growth and equity and underlined that the policy instruments that are most effective in improving income distributions are different from those that are best for raising economic growth rates. Frankel<sup>9</sup> analyses in detail the gains and the losses of new farm technology in IADP districts of Ludhiana, West Godavari, Thanjavur and Burdwan on different size and types of farms as well as the labourers. Her comments are very critical of the impact of new farm technology. On the whole, she observes that the new technology has failed to benefit the small farmers and has only succeeded in widening the disparities in incomes and other measures of power and authority among the different strata of the people. In most of the places, the situation of landless labourers has become worse. Her observations<sup>10</sup> for Palghat (Kerala) are particularly sharp and revealing. For example, ". . . small farmers are afraid of incurring large debts to the co-operative society. In fact some have already become defaulters and are no longer eligible for loans. Moreover small farmers

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7. Pranab K. Bardhan, "Green Revolution' and Agricultural Labourers" in Rural Development for Weaker Sections, Seminar Series—XII, Indian Society of Agricultural Economics, Bombay and Indian Institute of Management, Ahmedabad, 1974, pp. 23-39. He also observes that even in the IADP districts, where government has concentrated much of its efforts towards agricultural modernization, movements in the real wage rates for agricultural labourers have been disappointing. *ibid.*, pp. 27-28.

8. Irma Adelman and Cynthia Taft Morris: *Economic Growth and Social Equity in Developing Countries*, Stanford University Press, Stanford, California, U.S.A., 1973, pp. 160-185. They further add (p. 186), "In short our analysis supports the Marxian view that economic structure, not level of income or rate of economic growth is the basic determinant of pattern of income distribution."

9. Francine R. Frankel: *India's Green Revolution—Economic Gains and Political Costs*, Princeton University Press, Princeton, New Jersey, U.S.A., 1971.

10. Francine R. Frankel, *ibid.*, pp. 132-133.

cannot afford minor irrigation facilities and are particularly vulnerable to the vagaries of monsoon, they hesitate to make large investment." Parthasarathy<sup>11</sup> also makes a seething criticism of the impact of green revolution on weaker sections.

#### WHAT WENT WRONG AND WHERE

The instrument of growth in agriculture, *i.e.*, the new and modern farm technology typified by the seed-cum-fertilizer revolution was supposed to be highly divisible and thus neutral to farm size. The new technology at the same time was much more labour intensive and hence on this score also, it did not disfavour the small farms with abundant supply of fixed family labour with them. Even in the traditional technology, the small farms were generally known to be producing more output per unit of land than the bigger farmers.<sup>12</sup> They also had a certain amount of unutilized capacity in bullock power, implements, etc., to pounce upon any opportunity of increasing production with greater use of idle capacity of fixed farm resources including family labour. In general, they also had better irrigation facilities than the larger farms. What is important, the marginal utility of even smaller additions to output was more to the small farmers than to the bigger ones, to enthuse them to mobilize all their energy and resources to adopt yield-increasing technology. It is said that the small farmers were slow to adopt but once convinced, put in a larger proportionate area of their holdings under high-yielding varieties than their bigger counterparts. A number of studies conducted to unravel this question have come out with a set of explanations. One important reason often cited is that although the core components of new technology, *e.g.*, seed and fertilizer were highly divisible, the institutions, services and infrastructure required to support and absorb the new technology were not neutral to size. Reliable and efficient sources of irrigation identified with the personal ownership of an irrigation well, are indivisible. Small farms could not afford such investment. Similarly, the credit system, in spite of all the recent enactments, favouring the small man, was appropriated, by and large, by the influential members of the society. Chauhan and Mundle<sup>13</sup>, on the basis of their study in Sangli district of Maharashtra found that neither the improvements in the managerial ability and skills (including allocation efficiency) nor the new high-yielding farm technology is capable of making small farm viable. Credit can do that and in combination with modern technology can bring about substantial improvement in their economic position and viability. Chakrabarty<sup>14</sup> cites the lack of capital and lower risk propensity

11. G. Parthasarathy : Green Revolution and the Weaker Section, Thacker & Co. Ltd., Bombay, 1971.

12. Studies in the Economics of Farm Management, Ministry of Food and Agriculture, Government of India, conducted in several regions of the country, in mid-fifties, generally revealed, barring few cases, an inverse relationship between output per acre and size of farm.

13. K. K. S. Chauhan and S. Mundle, "Possibilities of Increasing Farm Incomes on Small Farms", in Rural Development for Weaker Sections, Seminar Series—XII, *op. cit.*, p. 121.

14. Rajendra M. Chakrabarty, "Some Limiting Factors to an Agricultural Revolution," Paper read at the Indian Economic Conference, Gauhati, 1970, Popular Prakashan, Bombay.

of the small farmers as the important reasons for the non-exploitation of the opportunity to increase farm output afforded by the green revolution. A host of other reasons can also be marshalled. For example, under the scarcity conditions prevailing for most of the critical inputs like fertilizer and seed, these elements of new technology were generally out of reach of the small farmers. The big farmer, on the other hand, could use his influence and contacts to secure or rather appropriate almost all the available supply and in turn resell the surplus to the smaller ones at higher prices.

#### THE ISSUE

The issue now boils down to this : Under the prevailing conditions of increases in population and scarcity of wage-goods, prices of food and other things are under constant and irresistible pressure to hook up. This is producing snow-balling inflation. Growth in farm production is an imperative which cannot be sacrificed or even delayed. This being the over-riding compulsion, one may agree with Randhawa<sup>15</sup> that there is hardly any example in the world where agriculture has progressed without modernization. Neither the capitalist nor the communist countries offer an example where quantum leaps in farm output have been realised from primitive technology. Japan is often quoted as an example of successful small-scale farming. It would however be pertinent to recall that in Japan, the use of mechanical power (tractors included) and human labour and the realised production are all among the highest in the world. In Japan, the mechanical power and the human labour are mutually complimentary rather than substitutive. In China, the great leap forward (1959) was launched and substantially achieved not by primitive tools but through the efficient combination of managerial and human labour resources with successful mechanization over large sized farms (communes) of generally more than 1000 hectares. The process of agrarian reorganization there, was completed in three phases. It started with the redistribution of land. But, soon the weaknesses and limitations of small peasant economy became apparent. In the second stage, mutual aid teams were formed between 1949-1952, which were followed up by elementary and advanced co-operatives (100-500 hectares). In 1958, the final stage of agrarian reform was introduced by converting and regrouping all the advanced co-operatives into people's communes using advance technology and equipment.<sup>16</sup> Our difficulty is of achieving equity in the more or less existing system of private ownership and ensuring growth. Several alternatives could be discussed here. One is of making the supporting and enabling infra-structure, institutions and agencies of distribution of inputs and marketing of produce, etc., also neutral to farm sizes. This is however better said than done. The irrigation provided by the Government is still far inferior and inefficient than the one available to the larger farmers from self-owned and controlled wells. The other is to rearrange the ownership of land, the basis of most of the in-

15. M. S. Randhawa, *et. al., op. cit.*

16. Sartaj Aziz, "The Chinese Approach to Rural Development," *World Development*, Vol. 2, No. 2, February, 1974, pp. 87-91.



equality in farm output, income, absorption and adoption of modern farm technology. This may have the additional advantage of releasing the human, cultural and social forces for all-round development. There are difficulties here too. Rao<sup>17</sup> concurring with the findings of Dandekar and Rath<sup>18</sup> observes, "Owing to the growth of population and to the resulting sub-division of holdings, the amount of land potentially available for redistribution after the imposition of ceiling is not significant even if the ceilings are not evaded and the requirements of uneconomic holdings and the landless are too great to be capable of adjustment with any reasonable levels of ceilings." So long as the small farmers produced higher output per acre and obtained higher response to scarce inputs like fertilizer, a programme of land redistribution in favour of small and landless people would have, at least in the short run, (in the long run, the problem of inadequate savings and investment might have led to stagnation unless the farms were regrouped into bigger units as a result of faster growth in non-farm job opportunities) met with the twin objectives of growth with equity. There are indications that this inverse relationship between farm size and productivity valid rather tenuously even under traditional agriculture is undergoing changes under the stress and impact of new technology. One possible reason: in the new technology, the predominant sources of growth in output are non-labour forms of inputs evolved through scientific research in contrast to the labour under traditional agriculture. For example, Singh and Patel<sup>19</sup> concluded that "... in the context of new technology there is no indication of the decrease in output per hectare with an increase in farm size and therefore, the hypothesis of inverse relationship is rejected in the area of study" (Meerut in West Uttar Pradesh). A compromise between the requirements for growth and equity is inevitable and inescapable if the existing frame of private ownership of land as of other property is not to be given up. If the new technology, which as the main instrument of growth in farm output, has tilted the balance of productivity (output per unit of land) in favour of larger farms, a doctrinaire approach to equity has more or less to be ruled out. Such are the compulsions of the given frame of private ownership of land and the play of accompanying socio-political power polarization in the country.

#### THE EQUITY THAT MEETS THE CRITERIA OF GROWTH — AN ILLUSTRATIVE EXERCISE

The two, growth and equity, however, can still not forsake each other. Between the range of extreme inequality and perfect equity lie various points

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17. C. H. Hanumantha Rao, "Socio-Political Factors and Agricultural Policies," *Economic and Political Weekly*, Vol. IX, Nos. 32-34, Special Number, August, 1974, pp. 32-34.

18. V. M. Dandekar and Nilakantha Rath, "Poverty in India—II, Policies and Programmes," *Economic and Political Weekly*, Vol. II, No. 2, January 9, 1971, pp. 106-146. They also observe, "However simple it may appear, it is futile to try to resolve the problem of rural poverty, in an over-populated land, by redistribution of land, which is in short supply." (pp. 121-122.)

19. Rajvir Singh and R. K. Patel, "Returns to Scale, Farm Size and Productivity in Meerut District," *Indian Journal of Agricultural Economics*, Vol. XXVIII, No. 2, April-June, 1973, pp. 43-47. G. S. Saini and Harpal Singh also came to similar conclusions.

of compromise. There is no gainsaying that in the absence of an expanding and viable non-agricultural sector in the economy, the distribution of available land among the various people in villages, by and large, determines the skewness of income distribution. A sharply unequal distribution of land leads to consequent unequal distribution of income. In some cases in fact, as discussed above also, attempts to build up institutional, technological, research and extension support around the present agrarian structure aggravate and bias the income inequalities in favour of large landowners. The inequalities in income may, therefore, tend to increase rather than decrease over the inequitous distribution of land. The burden of the other argument notably represented by Randhawa, Kartar Singh, Aggarwal, Singh and Patel<sup>20</sup> seems to be that a complimentary relationship between growth and equity is not unthinkable. In the pages that follow, an attempt is made to verify this hypothesis and to find out if and at what level the equity ceases to hinder growth.

It is well-known that the modern technology has made the most of its impact in the areas of green revolution particularly in the case of wheat in certain localised areas notably Punjab, Haryana and West Uttar Pradesh. The term, green revolution, even allowing for its simplistic use or rather misuse is different from all the other approaches aimed at modernization of agriculture including the IADP, commonly known as the package programme. The impact of a more equitable distribution of land on production, employment, and surplus of output over cost can serve as a rough indicator of the relationship between this measure of equity on certain economic variables including growth. Recent Studies into the Economics of Farm Management sponsored by the Ministry of Food and Agriculture in the district of Ferozepur in Punjab and Muzaffarnagar in Uttar Pradesh provide data to attempt such an exercise. The data for Muzaffarnagar refer to 1967-68 and for Ferozepur to 1969-70.<sup>21</sup>

The size distribution of holdings included in the farm management studies is neither representative of the State nor of the district concerned. The data for Ferozepur in Punjab given in Table I suggest that the variations in output per hectare of cultivated area over different size of farms are rather small indicating a phenomenon of constant returns to scale. If anything, the output per cultivated hectare is higher on the smallest as well as the third size-group of farms. On the other hand, the value of output per cropped

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20. See references in footnotes 2, 5, 6 and 19.

21. (i) Studies in the Economics of Farm Management in Muzaffarnagar District (U.P.), Report for the Year 1967-68, Directorate of Economics and Statistics, Ministry of Food and Agriculture, Government of India, 1974.

(ii) Studies in Economics of Farm Management—Ferozepur District (Punjab), Report for the Year 1969-70, Directorate of Economics and Statistics, Ministry of Food and Agriculture, Government of India, 1973.

There is no particular rationale behind choosing these years except that the reports of the studies for these years were readily available to us. The exercise would have been much more fruitful if based on the disaggregated individual farmwise data contained in Part II tables. The non-availability of Part II tables, however, hampered the taking of recourse except to this source of data.

TABLE I—RELATIONSHIP BETWEEN SIZE DISTRIBUTION OF FARMS AND SOME IMPORTANT ECONOMIC VARIABLES

| Size-group<br>(hectares)                   | No. of<br>farms | Total<br>cultiva-<br>ted<br>area<br>(hectare) | Average<br>cultiva-<br>ted<br>area<br>(hectare) | Output<br>per<br>hectare<br>of cul-<br>tivated<br>area<br>(Rs.) | Output<br>per<br>hectare<br>of crop-<br>ped<br>area<br>(Rs.) | Employment in adult<br>men-equivalent days<br>per hectare |                 |   | Net income<br>(Rs.) |  | Farm business<br>income (Rs.) |  | Yield of important<br>crops<br>(quintal per hectare) |               |                         |
|--|-----------------|---|---|---|--|---|-----------------|---|---------------------|--|-------------------------------|--|--|---------------|-------------------------|
|  |                 |   |   |   |  | Family<br>labour  | Hired<br>labour | Total<br>per hec-<br>tare of<br>culti-<br>vated<br>area | Per<br>farm         | Per hec-<br>tare of<br>culti-<br>vated<br>area | Per<br>farm                   | Per hec-<br>tare of<br>culti-<br>vated<br>area | Mexican<br>wheat                                     | Desi<br>wheat | Ameri-<br>can<br>cotton |
| Punjab (Ferozepur)<br>(1969-70)            |                 |   |   |   |  |   |                 |   |                     |  |                               |  |  |               |                         |
| Below 6 ..                                 | 34              | 143   | 4.2   | 2,055   | 1,381  | 86.8  | 29.8            | 116.6   | -267                | -67  | 4,252                         | 1,011  | 20.57  | 13.17         | 11.74                   |
| 6 — 9 ..                                   | 34              | 256   | 7.5   | 1,947   | 1,456  | 52.1  | 38.2            | 90.5  | 1,505               | 207  | 7,601                         | 1,005  | 21.30  | 16.58         | 11.36                   |
| 9 — 14 ..                                  | 31              | 348   | 11.2  | 2,055   | 1,542  | 36.1  | 45.7            | 81.8  | 1,583               | 338  | 16,115                        | 1,128  | 25.23  | 15.42         | 13.52                   |
| 14 — 24 ..                                 | 37              | 637   | 17.6  | 1,944   | 1,487  | 29.5  | 47.0            | 76.5  | 5,176               | 296  | 17,887                        | 1,007  | 23.68  | 17.05         | 12.82                   |
| 14 and above ..                            | 14              | 471   | 33.6  | 2,012   | 1,704  | 14.5  | 43.4            | 57.9  | 17,398              | 483  | 40,790                        | 1,180  | 25.23  | 11.61         | 14.85                   |
| Total/Average ..                           | 150             | 1855  | 12.4  | 2,009   | 1,503  | 45.7  | 41.0            | 86.7  | 1,956               | 222  | 8,598                         | 1,055  | 23.81  | 15.62         | 13.29                   |
| Uttar Pradesh (Muzaffarnagar)<br>(1967-68) |                 |   |   |   |  |   |                 |   |                     |  |                               |  |  |               |                         |
| Below 2.87 ..                              | 32              | 62  | 1.97  | 4,538   | 3,039  | 127.8   | 20.0            | 147.8   | 4,465               | 2,304  | 6,770                         | 3,493  | 510  | 20.89         |                         |
| 2.88 — 4.71 ..                             | 30              | 117   | 3.91  | 4,177   | 2,837  | 87.3  | 27.6            | 114.9   | 9,101               | 2,327  | 13,395                        | 3,426  | 508  | 18.98         |                         |
| 4.72 — 6.96 ..                             | 30              | 169   | 5.64  | 3,986   | 2,797  | 73.7  | 41.9            | 115.6   | 12,500              | 2,216  | 18,525                        | 3,284  | 434  | 21.35         |                         |
| 6.97 — 10.65 ..                            | 31              | 250   | 8.05  | 3,752   | 2,655  | 45.8  | 34.3            | 80.1  | 17,203              | 2,136  | 25,432                        | 3,159  | 410  | 21.13         |                         |
| 10.66 and above ..                         | 27              | 381   | 14.12   | 3,710   | 2,765  | 34.8  | 47.0            | 81.8  | 30,012              | 2,125  | 43,922                        | 3,109  | 383  | 20.61         |                         |
| Total/average ..                           | 150             | 979   | 6.53  | 3,877   | 2,770  | 56.5  | 38.8            | 95.3  | 14,230              | 2,179  | 20,990                        | 3,215  | 422  | 20.69         |                         |

hectare is generally higher on the bigger farms. The variation in the trends of output per cultivated and cropped area, over different farm size-groups reflect the impact of intensity of cropping which varies inversely with farm size. The figures of output per cultivated area in the table, to the extent they represent the relationship between farm size and production per unit of cultivated land, prevailing in other area and farms, fail to substantiate the fear that an equal distribution of land would lead to reduction in output. As a first impression, the redistribution of land in Punjab therefore has little cost in terms of reduction in output and would in fact additionally lead to the generation of far greater employment in the farm sector. The wage paid employment would diminish but the farm family employment would increase resulting in smaller supply of labour for off-farm employment. Notwithstanding the clearance of equity criteria from these lacunae, there is another side of the issue. First, in addition to the output per cropped area, the output per hectare of major and specified crops involving particularly the use of new technology, *e.g.*, Mexican wheat and American cotton is higher on the bigger farms than on the small ones. The highest output of Mexican wheat per hectare is realised on the farms of 14 hectares and above as well as on farms in the size-range of 9-14 hectares. In the case of *desi* wheat, which too is cultivated with improved methods and inputs, the output per hectare is highest in the second biggest farm size-group. The biggest farms again fare better in the case of American cotton. This suggests that an equitable distribution of land in Punjab entails a definite cost in the form of reduction of aggregate output, from the given land resources, of specified crops involving the availability of new and modern technology for producing them. Further, the surplus of output not only per farm but per hectare over all actual and imputed cost (net income) is not only low but negative on the smallest farms below 6 hectares as compared to the biggest ones which reap the highest net profit per hectare apart from earning the highest profit per farm family. Even the farm business income per hectare representing the residual surplus of output over paid out cost and a catch-all concept including returns to owned farm land, capital and family labour is highest on the largest farm size-group. The implications are that the negative net profit as well as smaller farm business income not only per farm but even per hectare on the small farms would dry up the sources of savings and investment in agriculture and may in fact lead to disinvestment as reflected in the inability of the small farmers to replace old, obsolete and in-serviceable bullocks, implements, etc., and to keep the family labour in healthy working conditions. This may finally lead to stagnation and even back sliding on the production curve. Unless compensatory actions to replace, augment and support these zero or even negative saving farm households are devised, serious consequences may follow under conditions of increasing demand for food. In a predominantly agrarian economy, surpluses from the non-agricultural sectors sufficient to support such a programme of spoon-feeding the teeming multitude of small and the marginal farmers are simply not available. Such an equitable redistribution of land in the existing frame of private ownership and operation, and in the

absence of adequate growth of non-farm jobs, can lead to total disaster. The table conveys another subtle but significant incipient point. The old relationship of output per unit of cultivated land varying inversely with farm size or at best being neutral to farm size has undergone such a significant change as to get reflected even in the aggregated farm size-groupwise data used in the table. The table, none-the-less suggests that a redistribution of land allowing not more than 9 to 14 hectares may well meet the demands of equity without jeopardizing either gross output per cultivated as well as cropped hectare or the production of major crops involving the use of higher technology, *e.g.*, Mexican wheat. A ceiling of that order would also leave enough surplus of net profit and farm business income to be available for reinvestment. Farm business income is quite high on this class of farms. There would be some reduction in employment but it would be offset partly, fully or even more than fully (depending upon the actual redistribution into different size-groups) by the transfer of low labour intensive land from the larger holdings to the high labour intensive use on the smaller size of farms. The table brings out a case and scope for reducing the range of existing inequalities in land distribution and hence income without sacrificing any significantly, production and the potential for growth.

The inequality in farm size distribution in the other case of Uttar Pradesh apparently appears to be smaller than in Punjab. Gross farm output per cultivated hectare shows a secular decline with an increase in farm size, but is fairly high as compared to Ferozepur in Punjab. The decline in output per hectare of cropped area over different farm sizes is much less marked. The labour input per cultivated hectare, though higher than in the case of Punjab discussed above, follows the predictable trend of varying inversely with farm size. Net income (surplus of output over all costs) per hectare is also considerably higher on the small as compared to the large farms. The farm business income per hectare which determines the welfare, and the standard of living of the farm family as well as his investment ability also varies inversely with the farm size. This tendency, to an extent, may provide some cushion for mobilizing savings for investment on the small farms, although the effect of smaller overall income on such farms may not be significantly offset by the realisation of higher income and output per hectare on them. Small farms produce more sugarcane (planted) per hectare than their larger counterparts. In wheat, however, no such clear trend is visible. The farms in the size-groups of 4.7 to 6.96 hectares are obtaining higher output of wheat per hectare than either of the extremes. All in all, the example of Muzaffarnagar in Uttar Pradesh, the farm economy of which is though operating at a higher plane of production per hectare, etc., than Ferozepur in Punjab, does not reflect any great economies or efficiencies in organizing production on larger farms. A lower ceiling covering the second and the third size-class upto say 7 hectares can be considered. Employment of human labour per hectare remains quite high upto this class before slumping low in the next higher farm size-classes.

The two illustrative examples,<sup>22</sup> discussed above while falling short of achieving complete equity in land distribution without reducing aggregate production and sapping the potential for investment and growth do indicate considerable scope for redistribution of land and reduction of inter-farm disparities, at the same time serving the cause of stepping up farm output and ensuring growth. In fact, one can discover in this two dimensional plane of growth and equity, a central zone of complementarity between equity and growth where equity reinforces the conditions of growth and ensures at the same time higher productivity. It is only at the extremes that the two become inimical and competitive to each other. Neither extreme equality nor even inequality is conducive to growth. These derivations and much of the discussion on the illustrations however, we hasten to add, hold good under a given state and type of farm technology and the given frame of agrarian structure and relationship. The growth and equity relationships can be substantially and significantly altered particularly when the given frame of socio-political ownership and organization is considered revokable. Options are necessarily limited under the given frame. A flood-gate of alternatives is opened up when this constraining frame is no longer assumed to be sacrosanct. The example of Chinese approach to growth with equity just illustrates the point. As Abel<sup>23</sup> has aptly remarked that unless the leadership deals with the plight of the poor quickly and humanely, the poor may deal with the leadership quickly but not necessarily humanely, the time is running out and hence a fresh look on the available options both within as well as outside the frame has to be considered.

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## DISPARITIES IN AGRICULTURAL GROWTH AND EQUITY IN INDIA

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The introduction of the dwarf varieties of wheat, bajra and maize, and the high-yielding varieties (H.Y.V.) of paddy brought about the green revolution in foodgrain production in the country during the latter part of 1960's. The impact of green revolution has however, not been uniform in all the States. There is therefore, a growing feeling that it has caused regional disparities

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22. These have little value beyond serving as illustrations. The estimates of output, net income, farm business income, physical yields of crops, etc., are highly variable and thus unstable over different years as well as over different farms within a particular size-group.

23. Martin E. Abel, "Agriculture in India in the 1970's," *Economic and Political Weekly*, Vol. V, No. 13, March 28, 1970, p. A-13.

\* The interpretations made and views expressed in this paper are those of the authors only.