

Agricultural Policy In India Since Independence

My paper deals with agricultural policies adopted from time to time in India and the context in which they were adopted. My acquaintance with agricultural situations in other Most Seriously Affected Countries (MSA) is very limited, and I felt that one should refrain from expressing views on countries and people with whom one's emotional and intellectual involvement is, at best, remote.

The theme of this session covers a wide field — The Relationship Between Agricultural Policy, the Economy and Economic Policy, on the National Level in Different Economic Systems and at Varying Stages of Economics Development. I have taken the view that a detailed account of the agricultural policy of a country, describing the nature of conflicts and the choices available in the context of specific situations, and a critique of the decisions made by the policy-makers, will implicitly serve the purpose of the programme; and that it is not necessary to refer everytime to the varieties of relationships mentioned in the theme. For example, during the latter half of the 1960's, when the food situation was critical and the High Yielding Varieties of cereals became available, the policy-makers in India faced a conflict; The adoption of HYV's would augment food production but was likely to aggravate inter-class and inter-regional disparities. Were they right in the decision they took? If not, what were the available alternatives? Such are the issues discussed in this Paper.*

India's agricultural policy, and perhaps that of most LDC's, has often been criticised for its "neglect" of agriculture. The criticism acquires legitimacy because of what is generally characterised as the "failure" of agriculture. The alleged failure may have a reference to either the growth of agricultural production or the promotion of social justice, or both. It is, therefore, necessary to get a more precise idea of the performance of Indian agriculture in both these fields and identify policies related to this performance.

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A reference to agriculture's performance in the pre-Independence period (approx. 1901–1950) may not be considered quite relevant, but legacies do matter and the state of agriculture as inherited from the colonial days — whether it be in India or Taiwan — is not quite irrelevant for the assessment of the post-Independence performance. George Blyn's study has revealed that between 1891 and 1947, aggregate grain output in British India increased at an average rate of 0.11 per cent per year. In fact, in the latter half of the period, the growth rate was a negligible 0.03 per cent. Rice output, constituting half of the total output, actually declined over the 56 year period at an average annual rate of 0.09 per cent [1]. During this period, population increased at a mercifully low rate of 0.67 per cent per annum in British India. Even so, between 1911 and 1941, per capita availability of foodgrain — taking into account international trade flows — declined by as much as 26 per cent.

This was from where agriculture in Independent India took off. Its subsequent performance though not a shining example of success is not as dismal as is sometimes depicted. Between 1951 and 1971, foodgrains production increased from 55.0 million tonnes to 108.4 million, or at the annual rate of 2.7 per cent, keeping slightly ahead of the growth rate of population. The growth was, however, not smooth and there were quite a few years — particularly 1966, 1967, 1973 — when the country experienced a severe food crisis. Throughout the period — with the exception of the year 1972 — foodgrains had to be imported, the maximum being 10 million tonnes in 1966. After 1971, foodgrains production started declining again, dropped to 97 million tonnes in 1973, and rose to about 104 million tonnes in the next two years. In 1975–76, it regained its momentum and reached 115 million tonnes. The Economic Review 1974–75 of the Reserve Bank of India observes: "Notwithstanding the expansion of irrigation since 1951, the degree of vulnerability of the agricultural sector to vagaries of climate does not seem to have diminished significantly" [22].

Equally germane to the assessment of agriculture's production performance is the fact that in these two decades (1951–1971), India's population increased by 187 million, and by 1976 another 60 million will have been added. It is worth noting that in spite of this tremendous increase, this backward agriculture has been able to provide a per capita availability of foodgrains — with marginal imports — of about 450 grams per day.

The above should not be interpreted as reflecting a sense of complacency about India's agricultural production performance. Indeed, in years to come, India will have to do much better than its best performance in the past. According to the "medium" projection, by the end of the century India's population will be about 1,000 million. Making a few balanced assumptions regarding the growth of population, the growth rate of national income and its (more equitable) distribution, V. M. Rao has estimated that by the year 2001, India's requirements of foodgrains (assuming low population growth) would be 2.5 times its consumption in 1964–65; requirements of "other foods" would be as high as 4.35 times [20]. We can ignore at our peril, the warning sounded by David Hopper. Presumably reflecting the world

opinion and employing "whom to save, whom to abandon" life boat analogy, he has warned: "India, along with some of its neighbours in South Asia, is *seldom considered a candidate for salvation*" [6] (emphasis added).

Let us revert to the post-Independence period, and briefly review agricultural policies germane to agriculture's performance. We shall confine our review of agricultural policy in India to a few specific issues which have figured prominently in the literature on the subject. These may be listed as below:

- (a) inadequacy of plan investment for agricultural development,
- (b) price policy and terms of trade,
- (c) urban bias,
- (d) "Green Revolution" and inegalitarian growth, and
- (e) failure of agricultural policy to make significant contribution to the reduction in rural poverty and unemployment.

I

Plan Expenditure on Agriculture

The "neglect" of agriculture for which the Indian policy-makers have often been criticised is generally identified with the failure to allocate an adequate share of public expenditure to agriculture. Every one was happy that agriculture was given pride of place in India's First Five Year Plan (1951-1956). The share of agriculture and community development in the Public Sector¹ Outlay in the First Five Year Plan was 15.1 per cent, as against 6.3 per cent for industries and minerals. The Second Five Year Plan reversed the ranking by allocating 14.4 per cent to "industries" and 11.8 per cent to "agriculture". Apart from this, the major sin of the Second Plan was alleged to be its preference for "rapid industrialization with particular emphasis on basic and heavy industries". We shall not discuss here whether for a country of India's size and geo-political situation it would have been wiser to ignore the establishment of basic industries. Apart from that, the accent on rapid industrialization does not *ipso facto* prove neglect of agriculture; modernization of agriculture is incompatible with such a sectoral view. In any case, the importance attached to a sector should not be judged by its share in the public sector outlay. The absolute quantum of public expenditure on agriculture in the Second Plan was raised to Rs 568 crores from Rs 357 crores in the First Plan. Besides, it may as well be argued that the First Plan "neglected" industrial development, as the planners were not yet ready with a plan of industrial development and allocated to it a meagre share of 6 per cent. Had the First Plan provided for a steel mill or better still a few power generation units and fertiliser factories, the allocation to "industries" in the First Plan would have been larger and the appearance of reversal of priorities would have been avoided. Besides, industry-agriculture linkages make it inappropriate to talk in term of "shares" of sectors in public expenditure. What is relevant is investment *for* agriculture, rather than investment *in* agriculture.

Our contention is not that investment on agriculture has been adequate. Our submission is that the charge on inadequacy needs a more substantial proof. There is no sector of Indian economy which has not — perhaps justifiably — complained about inadequacy of public investment, be it power, transport, family planning, education, social services, and even coal, cement and steel. Scarcity of investible resources is chronic in all developing countries and no sector of the economy should use inadequacy of funds to explain away its poor performance. In fact, it should look inward and examine whether it has used the resources made available to it efficiently. This imposes an unpalatable self-scrutiny and needs more rigorous analysis than a populist demand for more funds.

II

Agricultural Prices

One of the most persistent criticisms of agricultural policy in India and other poor countries is that they have been deliberately “forcing producers’ prices down”. In 1964, T. W. Schultz [23] asked: “Why are so many poor countries (including India) placing a low economic value on their farm outputs?” Edward Mason [12] wrote that the prices of foodgrains and some other farm outputs were held down by Government action. Michael Lipton [10] asserted “farm prices have been systematically kept down since 1960 in India”. He reiterates the charge in his most recent article and quoting S. R. Levis avers that in Pakistan, in the early 1960’s, producers’ food prices were forced down by as much as two-thirds of their real value [10]. An exactly opposite view is expressed by Walter Falcon [3] : “With the new wheat-fertiliser technology and a government-guaranteed price in West Pakistan almost double the world market price at official exchange rate, wheat was extremely profitable The Government tied up more than \$ 75 million in supporting the prices of wheat. These funds delayed, perhaps even precluded, other expenditures that were more productive”. Writing about the same time as Lipton, Keith Griffin [5] complains that “in many cases the cost of innovation has been heavily subsidised by the government. The innovating farmers have not only *high* prices for their products but also low prices for their inputs”. And more specifically, “at the moment, however, the governments of several countries, e.g. Pakistan and India, are supporting domestic grain prices at levels which exceed world prices by a considerable margin” [5]. Whom should one believe? In any case, it seems that both those who allege high prices and those who allege low prices are agreed that LDC’s are following a wrong price policy.

As will be seen from the facts presented below, the relative prices of agriculture in India have remained consistently high and agricultural price policy in India has been on the whole favourable to the surplus producing farmers. Year after year, the Government of India gave higher procurement prices than those recommended by the Agricultural Prices Commission, appointed by the Government to advise it on price and procurement policies.

Table 1 — *Index Number of Wholesale Prices : Relative Prices of Manufacturers and Agricultural Commodities*

(Base : 1961-62 = 100)

	General index of wholesale prices	Index for manufacturers	Index for agricultural commodities	Prices of manufacturers as per cent of the prices of agricultural commodities
Weights	100.00	32.26	33.20	
(1)	(2)	(3)	(4)	(5)
<i>Average of months</i>				
1965-66	131.6	117.0	141.7	82.6
1966-67	149.9	125.3	166.6	75.2
1967-68	167.3	129.1	188.2	68.6
1968-69	165.4	132.8	179.4	74.0
1969-70	171.6	139.7	194.8	71.7
1970-71	181.1	149.7	201.4	74.3
1971-72	188.4	160.5	199.6	80.4
1972-73	207.1	168.8	219.7	76.8
1973-74	254.2	189.3	280.6	67.6
1974-75	313.0	240.7	350.8	69.5

Source: See ([9], Table 5.4, p. 97).

Tables 1 and 2 show that the terms of trade as judged by (a) Relative Prices of Manufactures and Agricultural Commodities and (b) Relative Prices of Agricultural and Non-agricultural Commodities have been, by and large, favourable to agriculture. A more sophisticated exercise by R. Thamarajakshi [26] pertaining to inter-sectoral terms of trade (all agricultural products purchased by non-agriculture: non-agricultural products purchased by agriculture) also clearly indicates favourable terms for agriculture. Thamarajakshi has also calculated the index of income terms of trade (by correcting the indices of net barter terms of trade with the value at constant (1960-61) prices of the actual marketed surplus) of the agricultural sector to the domestic non-agricultural sector for all uses. The index of income terms of trade has risen at a rate of 4.53 per cent per annum during 1951-52 and 1973-74 (see Table 3).

Information regarding the farmers' terms of trade, i.e. the ratio of prices paid and prices received is fragmentary. However, we find that while the weighted index of paddy input prices increased by 18.2 per cent between 1971-2 and 1973-4, the increase in the wholesale price index of rice was as much as 60 per cent between July 1972 and July 1974. The increase in the price of diesel oil in March 1974 and in the prices of fertilisers in June 1974 would lead to a further rise of 9.5 in the input index [7]. However, in 1975, prices of fertilisers were reduced in two successive instalments. A further substantial reduction has been made in March 1976².

Table 2 — *Relative Prices of Agricultural Commodities and Non-Agricultural Commodities*

Year (July-June)	General index of wholesale prices		Index for agricultural commodities		Index for non-agricultural commodities		Prices of agricultural commodities as percentage of non-agricultural commodities
Weights	1000		332		668		
	Index	Per- centage increase	Index	Per- centage increase	Index	Per- centage increase	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Annual average</i>							
1961-62	100.6	—	100.4	—	100.7	—	99.7
1962-63	105.2	4.6	102.9	2.5	106.4	5.7	96.7
1963-64	112.3	6.7	112.4	9.2	112.3	5.5	100.1
1964-65	124.6	11.0	134.0	19.2	119.9	6.8	111.8
1965-66	135.9	9.1	147.5	10.1	130.1	8.5	113.4
1966-67	155.2	14.2	174.0	18.0	145.9	12.1	119.3
1967-68	167.0	7.6	185.2	6.4	158.0	8.3	117.2
1968-69	166.6	(-) 0.2	183.1	(-) 1.1	158.4	0.3	115.6
1969-70	174.3	4.6	198.8	8.6	162.1	2.3	122.6
1970-71	182.1	4.5	198.9	0.1	173.8	7.2	114.4
1971-72	191.2	5.0	200.7	0.9	186.5	7.3	107.6
1972-73	216.2	13.1	234.3	16.7	207.2	11.1	113.1
1973-74	271.0	25.3	299.5	27.8	256.8	23.9	116.6
1974-75	316.8	16.9	352.6	17.7	299.0	16.4	117.9

Source: Derived on the basis of Index Numbers of Wholesale Prices (Base: 1961-62 = 100). See ([21] [22]).

Table 3 – *Composite Price Indices and Inter-Sectoral Terms of Trade : 1951-52 – 1974-75*

Years	Agricultural products purchased by non-agriculture for inter-mediate consumption	Agricultural products purchased by non-agriculture for final consumption	All agricultural products purchased by non-agriculture	Non-agricultural products purchased by agriculture for intermediate consumption	Non-agricultural products purchased by agriculture for final consumption	All non-agricultural products purchased by agriculture	Net barter terms of trade of all products Col. (4) over col. (7)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1951-52	99.13	93.23	95.44	81.65	96.50	94.76	100.72
1955-56	70.92	75.57	73.83	82.86	77.24	77.90	94.78
1960-61	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1965-66	132.42	141.64	138.18	125.42	120.08	120.71	114.47
1970-71	195.34	200.53	198.58	159.89	155.45	155.97	127.32
1971-72	189.40	202.92	197.85	165.85	164.63	164.77	120.08
1972-73	200.72	222.96	214.61	179.99	180.57	180.50	118.90
1973-74	289.61	275.25	280.64	209.21	204.30	204.87	136.98
1974-75	324.86	355.16	343.79	268.25	255.17	256.71	133.92
Compound rate of growth	5.89	5.96	5.94	4.53	4.43	4.45	1.43

Notes:— (1) These composite price indices have been prepared by combining the relevant indices of wholesale prices (Government of India Economic Adviser's Index Numbers) of the individual items identified as being purchased from or sold to the non-agricultural sector by the agricultural sector for different uses, and using as weights the estimated value in 1960-61 of the actual purchases or sales as the case may be.

(2) Composite indices using the estimated value of the actual purchases or sales in 1968-69 as weights are being separately prepared by the author.

Source: See Thamarajakshi ([26] and [27]).

The impression that the Government of India has been deliberately keeping the prices of agricultural commodities low is perhaps due to the fact that in some years foodgrains procurement prices fixed by the Government were below the prevailing market prices, though in quite a few years of good harvest, the Government has also prevented foodgrain prices from falling below the same procurement price as was fixed in deficit years. (For all practical purposes, the distinction between procurement price and the minimum support price has been obliterated). Thus, when both good and bad years are reckoned together, the accruals to the farmers from levy and non-levy sales would not be generally less than under free market conditions. Further, it should be noted that the Government does not procure the entire marketable surplus of foodgrains. Even in the best years, foodgrains procurement has not exceeded 8.8 million tonnes or 10 per cent of the net foodgrains production. Till 1964, it did not exceed 2 per cent and varied between 5 to 8 per cent between 1965 and 1970. For particular crops and regions, the incidence would, however, be higher.

It is our contention that the rise in the post-levy free market price, consequent upon the withdrawal of a part of stocks from the market through procurement, more than compensates the farmer for the "loss" suffered by him from selling to the Government at below the market price. In other words, the weighted average price of levy and non-levy sales is likely to be higher, and certainly not less, than the price the farmer would have received in the absence of the levy. The magnitude of the difference between the two would depend on (a) the price flexibility coefficient, (b) the proportion of the marketable surplus procured by the Government and (c) the relative level of the open market prices before the procurement operations commence and the levy price.³

While considering the question of price policy it is necessary to examine carefully the price effect on (a) production and (b) income distribution. While it is true that a change in the relative prices of two substitutable crops is likely to have a favourable effect on the production of the crop in whose favour the price is changed, it will simultaneously have an adverse effect on the production of the competing crop. In other words, the aggregate supply elasticity for the agricultural sector as a whole is considerably lower than that for individual commodities. Thus in a situation such as that prevailing in India where almost all agricultural commodities are in short supply — and also the critical inputs, including land — price is not an appropriate instrument for augmenting agricultural output. Mahar Mangahas and his colleagues [11] also confirm that "there is little evidence to indicate that price changes are an effective device for influencing *aggregate* agricultural output". This is particularly so in the context of traditional technology.⁴ As John Mellor [13] points out "even if increase in production takes place (as a result of higher prices), it would be a movement along the production function, hence at increasing real cost in resources".

More important for our present purpose is the income distribution effect of the increase in foodgrains prices. Mellor has shown that an increase in foodgrain prices actually reduces the income of small farmers belonging

to the lowest three deciles of expenditure classes, as they are not purchasers of foodgrains. (Many Western writers probably do not know that the majority of rural households are net purchasers of food, otherwise they would not have confused consumer bias with urban bias). Income transfers resulting from increased prices of foodgrains cause the largest declines in the income of low income consumers and the largest increase in the income of high income producers. "A ten per cent increase in foodgrains prices compels the bottom two deciles to reduce their real expenditure on foodgrains by 5.9 per cent and consumption of milk and milk products by 18 per cent".⁵ Mellor concludes: "an increase in foodgrains prices has a substantial income effect in reducing consumption of high nutritive value".

To sum up, the facts are that, far from "forcing down producers' food prices", the policy-makers in India have kept food prices high and displayed a big farmer and anti-urban and anti-poor bias and *thereby* "damaged" the nutrition of the poor. As such, those vicariously concerned with the LDC's "wretched on earth" would do well to advise policy-makers against the folly of high prices of food. The (big) farmers in India have enough incentives from the negligible agricultural taxation and heavily subsidised critical inputs like irrigation water and electricity for the pump sets.

To the extent that any bias can be deduced from price policy, one can as well discern an anti-industry bias on the part of Indian policy makers. For several years, the controlled prices of cement and steel were kept so low that the manufacturers were unable to plough back adequate funds for replacement and modernisation of their units.

III

Urban Bias

Before commenting on urban bias in India's (and all LDC's) agricultural policy, let us admit that such a bias does exist in several fields of Indian policy, particularly in health, education, and organised labour. In regard to agricultural policy, however, the allegation of urban bias seems to be based on misinformation. On the count of deliberate underpricing of foodgrains we have adduced enough evidence to dispel the impression of urban bias. We shall here deal with only one more misleading example of urban bias, namely "encouraging farmers to devote more resources — especially land — to rich men's food". Specific instances mentioned are shift from millets to rice (sic), maize to wheat and to milk production. Apart from the facts, which we shall presently cite, it may be mentioned that the most potent factor influencing changes in the cropping pattern in recent years has been the availability of cost reducing technology. In India, the highest increases in agricultural productivity have taken place in wheat and bajra (bulrush millet) — the latter being the most important millet. The rate of increase in the production of bajra has been markedly and consistently higher than that in rice. So much for the shift from "millets to rice". As for maize, the rate of increase in its acreage has been next only to wheat.

True, hybrid jowar (*Sorghum*) has not been a success, and in pulses there is complete stagnation. The failures in these crops are mainly attributable to the non-availability of suitable high yielding varieties. According to our information, however, neither funds nor scientific efforts have been lacking for evolving suitable varieties.

Milk no doubt is a rich man's food at present, but in areas where milk production has increased, consumption of milk in poor households has increased both in rural and urban households. In cities like Bombay, perhaps for the first time in recent history, cheaper milk has become available to the low income households, though not yet to the very poor. More importantly, many scholars and policy-makers consider production of milk, poultry and vegetables as the most promising source of additional income for the smaller farmers and the landless [8]. The following facts may be of interest in this connection. Several field investigations indicate that about 70–75 per cent of households owning cattle belong to the category of small farmers and agricultural labourers [24, 18]. A study by V. S. Vyas and his colleagues [29] reveals that in Nadiad Taluka (Kaira District, Gujarat), the share of income from dairying in total farm income was as high as 78 per cent in farms below 5 acres. In dryland agriculture, animal husbandry provides substantial additional employment to agricultural labourers, particularly to women in the form of self-employment [15]. In a recent study of milk production and marketing, it was found that the landless labourers and small farmers accounted for 57 per cent of milk producers in "dairy" villages, 48 per cent of total milk production, and more than 50 per cent of the marketed surplus of milk and milk products. This, however, did not deprive them of the requisite home consumption of milk of more than 200 milli litres per capita per day [16].

Milk consumption is not a mere urban luxury; it is an important source of income and employment to the poor households in rural India and a valuable source of animal protein in near future, if the discernible trend in lowering the cost of production and distribution of milk is maintained. There would be little hope for the small farmers if they were restricted to growing poor man's food. With state-sponsored irrigation, extension and marketing facilities, they should be encouraged to grow what is most profitable for labour intensive small-scale farming. In India cattle are fed with fodder and oilcakes (and seldom with inferior cereals) and the encouragement of milk production does not involve any significant diversion of land capable of yielding more calories (or nutrition) per acre of land.

It may also be pertinent to mention that in Kerala whereas the per capita availability of rice from internal production remained most stationery, the production of tapioca (poor man's potato) increased from 1.6 million tonnes in 1961–62 to 5.4 million tonnes in 1971–72. An authentic report from Kerala states [2]: "The drop in the availability of cereals (mainly rice) would have produced under-nourishment among the low income families, say, even the middle class families, who could not afford to buy sufficient quantities of rice at the going price. The sharp increase in the output of tapioca has not only averted a deterioration of the situation, but even

improved the average level of calorie intake in the State". It adds "It may be presumed that, by and large, the increase in the production of tapioca, has made a greater impact on the diet of the lower income households".

While Lipton criticises the policy which encourages shifts towards "inappropriate foods" such as meat and dairy products, Carl Gotsch [4] is unhappy over the fact that "relative prices skewed in the direction of cereals through Government support mechanisms have discouraged diversification and further expansion of acreage under vegetables, fodder for dairying, pulses, etc" [4]. Since cereals require a relatively low labour input, such policies reduce the aggregate demand for labour significantly. As pointed out earlier, a shift towards dairying, within reasonable limits, is likely to promote both nutrition and employment.

IV

The Green Revolution: A Bimodal Development

The two successive severe droughts in 1965–66 and 1966–67, gave rise to international apprehensions about India's capacity to feed her huge and growing population. The harshest critics [17] recommended the application of the "triage" formula to countries like India which were considered beyond redemption. Fortunately for the country, at this very time the High Yielding Varieties (HYV) of cereals became commercially available. India's policy-makers plumped for it with alacrity. Dr. Norman Borlaug complimented the then Minister for Agriculture as "the first high officer to recognise the significance of the new wheat strains and willing to take the risk involved in importing 18,000 tonnes of dwarf Mexican varieties". The Pearson Report [18] characterised the speedy adoption of HYV as "one of the authentic marvels of our time". Others described the process of agricultural transformation as "one of the most amazing stories of our time". While this was the general observation, the economists, who had neither anticipated the Green Revolution nor played any part in its adoption by way of even policy advice, did not take kindly to it. Their reaction varied from scepticism ("Cornucopia or Pandora's Box") to downright condemnation on the ground that it was leading towards the emergence of dualism. Let us accept that technological changes ushered through the application of HYVs "as such have contributed to the widening of the income disparities between (1) different regions, (2) small and large farms and (3) landowners on the one hand and tenants and agricultural labourers on the other". But the question is: situated as the country was in the mid-Sixties, when its capacity to feed its people was seriously being questioned, and some critics were advocating the application of "triage" and "life boats" formula to food aid, what was the choice before the policy-maker? Highest priority had to be assigned to augmenting food production and the HYVs offered an excellent means of doing so. The possibility of its inegalitarian effects — assuming that these could be clearly perceived at that time — had to be weighed against the

obvious inegalitarian effects of food shortage and high prices, under which the poor suffer the most.

Did the adoption of HYV technology increase food production? It is contended that "the so-called Green Revolution has failed to raise the overall rate of growth of agricultural output in the country above the level achieved in the 15 years prior to 1965" [19]. It is also asserted that "despite technological changes, the growth of agricultural output in India slowed down in the 1960's compared to 1950's". Such statements are, at best, half truths based on selective time spans. Let us accept the suggestion that "the comparison of output between successive peaks (in production) would give an idea of output growth adjusted for weather". According to the data provided by the critic himself, the annual percentage difference between the three pairs of pre-green revolution peaks (1953-54 to 1958-59; 1958-59 to 1961-62 and 1961-62 to 1964-65) was 1.8, 1.7 and 2.7 respectively. As against this, the two post-Green Revolution pairs (1964-65 to 1967-68 and 1967-68 to 1970-71) gave the annual percentage change of 2.1 and 4.5 or an average of 3.4 ([19], Table 1.2). How then does one say that the Green Revolution has failed to raise the overall rate of growth? Let us look at the statistics differently. The impact of the "Green Revolution" was first felt in the year 1967-68, after the two successive drought years. The linear rates of growth — based on Index Numbers of production — in the five years preceding the year 1964-65 (the year 1964-65 was the best year till then) and the five subsequent years were 1.81 and 3.86 per cent per year respectively.

Nanumantha Tao maintains "there are reasons to believe that even without the Green Revolution, the growth rate would have been maintained at 2-2.5 per cent per annum". The reasons he adduces are: "The growth of population at about 2.2 per cent per annum has been exerting an upward pressure on prices of agricultural commodities. This would have provided incentives to the farmers for expanding output and would have induced the Government to invest in irrigation, fertilisers, etc". Apart from the fact that under static technology, high prices have little impact on aggregate production, it is surprising that one so deeply concerned with the poverty of the Indian masses should recommend, or prefer to rely on, high food price path of growth of production instead of welcoming the cost reducing technology for achieving increased production! Besides, his argument that "some of these inputs including fertilisers which were known before the onset of the Green Revolution would have been used at a certain rate even in its absence" is equally questionable. As is well known, application of higher doses of fertilisers to the traditional seeds was unremunerative, since it resulted mainly in vegetative growth and subsequent lodging and did not increase output. Thirdly, there is clear evidence to indicate that the growth in cropped area was slowing down, from 2.1 per cent per annum during 1949-50 — 1960-61 to 0.6 per cent during 1960-61 — 1970-71. Under the circumstances, adoption of the HYV's was the only solution to the food problem of the country.

Many studies of the distribution of gains of technological changes are vitiated by the fallacy of single factor analysis. There are at least two

components which determine the additional gains of different classes of producers over time: (1) change in production and (2) change in prices. There could be a third, namely changes in the shares of different classes of growers in the total area cultivated. The second and the third have nothing to do with the technological change *per se*. They reflect the effects of (imperfect) market structure or market behaviour of different classes of growers and the land market.

There is substantial evidence which indicates that big farmers obtain much higher prices for their produce either because of their bargaining power or capacity to withhold stocks in a rising price situation. But even if the same price is obtained by all classes of producers, the gain from the price rise — which was substantial in the post-Green Revolution period and had nothing to do with it — would be much larger for the big farmers because of the higher percentage of their marketable surplus.

Geoffrey Swenson [25] has analysed the production and the price effects in the distribution of benefits in a situation of technological change. Analysing the sources of change in the total value of paddy production between 1965–66 and 1970–71 for a sample of farm operators in survey villages, by farm size, Swenson found that the small farmers (2.5–5.0 acres) and the very large farmers (20 acres +) had gained almost equally (21.7 and 22.3 per cent) from changes in production. The main difference in gains emanated from price changes. The smaller farmer gained from this source by only 17.9 per cent, while the very large farmers gained by as much as 47.6 per cent. Swenson sums up the position by observing: “Looking at the Gini ratios, it is evident that the change in the distribution of paddy income would have been in the direction of greater equality *with equal paddy price for all operators* in 1970–71” (emphasis added).

Input Revolution

The contribution of HYV technology should not be judged exclusively in terms of the increase in output which is often distorted by the vagaries of the weather. Its impact on the behavioural response of farmers judged by a sharp step-up in investments in irrigation and increased purchases of modern inputs is an equally relevant criterion for judging its contribution. The number of private tubewells increased from 0.1 million in 1965 to 0.47 million in 1971 and the number of pump sets — diesel and electric — from 0.88 million to 3.24 million during the same period. The net area irrigated by wells (mostly private) which had increased prior to the advent of HYV technology from 6.5 million hectares in 1951–52 to 8.6 million hectares in 1965–66, sharply increased in the next four years to 11.1 million hectares, and its share in the total net irrigated area increased from 32.8 per cent to 36.7 per cent. Similarly consumption of chemical fertilisers per cropped acre increased from 4 kg.–16 kg. or by 400 per cent. It is estimated that expenditure by agriculture on modern inputs in real terms (1960–61 prices) increased from Rs 207 million to Rs 734 million during the first decade ending 1960–61. In the second decade ending 1970–71, it went up to Rs 4,355 million and has further gone up to Rs 6,181 million in 1972–73. The percent-

age of expenditure by agriculture on modern inputs to total expenditure on all inputs at constant (1960–61) prices, has increased sharply from 6.19–21 [27]. There is, therefore, no doubt that the Green Revolution has made a significant contribution to the modernisation of Indian agriculture.

Reverting to the issue of the inequalitarian effects of the strategy of agricultural development in India, let us accept that it has led to the acceleration of (a) inter-regional and (b) inter-class disparities. When one refers to the aggravation of inter-class or inter-regional disparities in the context of the Green Revolution, let it be clearly understood that the Green Revolution *per se* has not made any class or region poorer than what it was or would have been in its absence. As a matter of fact in several regions many small farmers have adopted the HYV's and improved their incomes. In many districts of Punjab, for example, the adoption rate has been as high as 90 per cent. Besides, the fact that HYV's are technologically — as distinct from economically — neutral to scale has lowered the threshold of non-viability. Similarly, there is hardly any region which has not benefited at least to some extent from the HYV's. All that the charge of inequalitarian distribution effect of technological change means is that the better endowed farms and regions have benefited relatively more than small farms (farmers) and regions with low irrigation and/or low rainfall.

It is in the very nature of all innovations that they tend to be adopted first by the more resourceful or, more simply, the rich. This by itself need not be a cause of alarm, *provided* the innovation is inherently capable of more universal adoption, if not autonomously through a deliberate public policy.

As for the removal of inter-class and inter-regional disparities, it may be said that while the latter needs a long-term programme involving large-scale investment, the former needs above all political will to undertake appropriate institutional reforms. Major policy measures relevant for preventing or reducing inter-class disparities are (1) more equitable distribution of land ownership and land tenure reforms to abolish exploitative tenancy arrangements, (2) expanding institutional arrangements for provision of credit and other inputs, extension and marketing.

In the matter of equalising land ownership and protecting the sharecroppers and tenants from exploitative arrangement, in spite of the plethora of legislation, the Government's performance to date is admittedly unimpressive. Yet a sombre thought keeps simmering in our mind. Given the heavy and constantly growing pressure of population on land, no restructuring short of collective or co-operative ownership of land can eradicate inequalities, and even then it would be well-nigh impossible to accommodate *productively* the entire labour force in agriculture, more so two or three decades later. Perhaps, the collectives can conceal redundancy from the public view.

The second line of action was to adopt countervailing measures in favour of the class of farmers who are incapable of benefiting from the technological change with their own resources. The policy-maker in India can claim to have taken several such measures, such as the establishment of the Small Farmers' Development Agency (SFDA) and the agency for Marginal Farmers and Agricultural Labourers (MFAL), orienting co-operative credit towards small

farmers — it is mandatory to provide at least 20 per cent of the total credit to small farmers — and the more recent decision to establish a chain of Regional Rural Banks which would cater exclusively to the credit needs of the small farmers. It is beyond the scope of this paper even to attempt to evaluate the achievements of these programmes.

As against this, there is a widely shared view that most of the benefits under the scheme have been diverted and appropriated by better-off farmers with political influence. From this a general conclusion is drawn that in the absence of a radical change in property relations and socio-political power structure, such reformist measures as outlined above will make little impact on the conditions of the rural poor and in fact “tend to be unproductive and as such add to the inflationary pressure in the economy”. We shall revert to these two questions later.

As regards the aggravation of inter-regional inequalities brought about by the Green Revolution it is obvious that the disparities arise from differences in natural endowments like soil, climate, underground water and river flows which could be harnessed for canal irrigation. It is admitted that there are limits to what public policy can do to reduce the inequality arising from natural endowments. “Public investment in irrigation including the exploitation of ground water potential” is suggested as having “the largest prospect” for equalising opportunities of growth. Subject to technical feasibility and a judicious view of social benefits and costs, we would fully support the plea for larger investments in flow and lift irrigation. But a few facts about irrigation in India may be noted. During the last 25 years, public investment of around Rs 35,000 million has been made in the construction of major irrigation projects. Apart from the fact that there is considerable under-utilisation of the irrigation potential, “costly irrigation waters, impounded at great expense to the community, have not only not yielded the benefits expected of them, but have in many cases been allowed to destroy or lower the fertility of large tracts of land”. Approximately 7 million hectares of once fertile land have been affected by waterlogging and salinity or alkalinity. Besides, “the gap between the (irrigation) potential created and “utilised” is over 3.8 million acres. Considering the fact that the cost of creating irrigation potential works out on an average at Rs 900 per acre, the unutilised potential of 3.8 million acres represents an investment of nearly Rs 3,500 million, on which no return is being presently obtained”. Our purpose in drawing attention to these facts is to emphasise better planning and management of investments.

V

Rural Poverty and Unemployment

In the preceding sections we have attempted to refute some of the charges against India's agricultural policy, such as neglect of agriculture, deliberate under-investment, under-pricing of agricultural commodities and urban bias. We have also contended that the Green Revolution, or more modestly the

HYV's, has helped to step-up cereal production, stimulated investment and substantially increased the use of modern inputs. While it is accepted that the technological change has led to a widening of the inter-regional and inter-class disparities, we are not sure that any region or class would have been in a better position, had the policy-maker decided to forgo it. Besides, its price restraining effect — more than negated by monetary inflation — has relieved to some extent the burden of poverty. As against these positive aspects, agricultural policy has not contributed significantly to the removal of rural poverty and unemployment or to making the agrarian structure more egalitarian. Thus, while Indian agriculture has slightly improved the per capita consumption of foodgrains, in spite of the addition of 287 million people since 1951, it has failed to provide land or employment to a large segment of the additional labour force. Only one question may be asked: Was it the sole responsibility of Indian agriculture to provide employment to all and as many people born in rural India, or atone for the failures of population policy or for that matter industrial and monetary policy? Our dissent is mainly with this fragmented view which looks at agricultural policy, isolated from the totality of economic policy.

As pointed out earlier, efforts have been made to help the weaker sections of the rural population through programmes like SFDA, MFAL, DPAP, Employment Guarantee Schemes, and the earmarking of a percentage of co-operative advances to small farmers. Apart from a few exceptions, their overall impact has not been very perceptible. The recent 20-Point Programme enunciated by the Prime Minister gives pride of place to agriculture and especially to the problems of the rural poor. The programme includes items like bringing under irrigation at least 5 million more hectares of land, provision of drinking water especially in drought-prone areas, implementation of (land) ceiling laws and redistribution of surplus land among the landless with redoubled zeal, vastly expanded programme of providing house sites to the landless in rural areas, abolishing the practice of bonded labour, liquidation of rural indebtedness by stages, enhancement of minimum wages of agricultural labourers wherever necessary. It is too early to judge the performance of the programme.

The failure of agricultural strategy — and its economic policy content — to make any impact on rural poverty and unemployment or equitably distribute the gains from technological change has been variously attributed to socio-political factors such as lack of political will, the elitist composition of political leadership and bureaucracy — no less than that of its critics — structural inequalities in the ownership of land and other assets, a bias in favour of big farmers, etc. There is a strong element of truth in each of these criticisms. Yet perhaps this is not the whole explanation. Agricultural growth has not taken place in many countries where such socio-political factors as inequality and unemployment have been eliminated and more surprisingly agricultural growth has taken place in several countries where social inequality exists in various degrees. While the economists know enough about stimulating growth, perhaps their knowledge and understanding are not adequate enough to suggest solutions to the problems of poverty and unemployment.

Economics is dubbed a dismal science. It would, however, be more appropriate to transfer the epithet to the practitioners of this science. They are a difficult lot to please. At the time when agricultural production in the LDC's was stagnating and dependence on food aid appeared unending, they prophesied doom and advised the USA to apply "triage". When the HYV's of seed held promise of a Green Revolution, they highlighted the consequential accentuation of inter-class and inter-regional disparities. Some even apprehended such abundance as would lead to adverse terms of trade for agriculture and ruin farmers. Some criticised food aid as detrimental to farmers' incentive others considered LDC's desire for self-sufficiency in food as nutritionally damaging to the poor. Low foodgrains prices — a rare phenomenon — were considered as damaging farmers' incentives and an indication of urban bias — though there are more poor consumers in rural areas. Others felt that food prices were being supported at too high a level, tying up funds and delaying, or even precluding other more productive expenditure. Subsidising inputs was denounced as inappropriate pricing, but since profitability should not be "squeezed", restraint on product prices was considered inadvisable. Encouragement of dairy production was exposed as catering to the rich men's food, but others considered concentration on cereals production as inhibiting a cropping pattern with higher employment potential. However, when the economists traverse (sometimes unknowingly) into other disciplines — sociology or politics — they become more cheerful and confidently recommend — the remoter the country, the greater the confidence — "deep structural change" and convincingly expose "reformism" as faint hearted and "modernization" as an elitist ploy.

NOTES

¹ "Public Sector Outlay" should be distinguished from Investment. The latter excludes "current outlay" but includes (estimated) private sector investment.

² "It has been estimated that farmers would benefit to the extent of Rs 1,050 million as a result of the cut in the prices of fertilisers" [28]. Since then there have been further reductions in fertiliser prices.

³ Thamarajakshi has estimated the coefficient of flexibility of the price of rice with reference to changes in availability of the grain at - 1.10, given other things equal [27]. Mellor and Dhar estimate price flexibility coefficient for all cereals at - 2.0 [14].

⁴ In spite of the persistently steeper increase in the prices of pulses relative to wheat since 1960-61, production of pulses has declined over the years.

⁵ See Mellor ([13], pp. 28-35).

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DISCUSSION OPENING — J. W. Mellor, U.S.A.

Professor Dantwala brings to us further opportunity to learn from the extraordinarily rich and varied development experience of India. One of the obvious, but often ignored, changes in the world is the accumulation of two or three decades of post-colonial experience with many approaches and many forms of development effort problems. There has also been a vast increase in experience that rises from a direct, continuous contact with those processes on the part of nationals of the developing countries, who include in their number persons highly involved in policy as well as those more removed from commitment to specific positions and views. One can only deplore that the view of these processes and observations from the industrialized nations is so often clouded by current political fashions that exaggerate general tendencies, one way or the other, and make it difficult to sort out divergent pieces of the development puzzle for answers to sub-questions. If we are to accelerate development we must increase our capacity to dissect, within a broad conceptualization, and to judge policies in a broad socio-political context.

Important lessons can be learned, relevant to other countries, by understanding why Indian grain production growth rates accelerated so radically from the negligible growth rates (0.11 per cent or less) in the colonial period, to the close to 3 per cent rates of the post-colonial period, the problems of the broad coverage rural development efforts of community development of the 1950's — so similar in concept and practice to the currently fashionable Integrated Rural Development Programs — and from the complex political economy of price and taxation policy vis-a-vis the agricultural sector.

Professor Dantwala demonstrates throughout his paper how the many aspects of agricultural policy interact one with another, how change in one part changes a general equilibrium which implies change in the others, and how all relate to the broader political context. It is probably failure to recognise these points, as well as the effect of divergent and unstated political perceptions and objectives, which explains the extraordinary inconsistency of so much of foreign analysis and comment on the Indian scene. Professor Dantwala notes the common Western criticism that India, and other low income countries as well, have set agricultural prices too low for adequate incentives to farmers and conversely that the government of India, and others, have favored "rich farmers" by subsidizing technology and inputs and supporting farm prices above international levels. Professor Dantwala

feigns confusion at this conflicting criticism — although one suspects that he knows perfectly well what the correct positions are and what motivates the conflicting positions. In any case the detailed discussion of price policy is perceptive, broad and useful, despite the pressure to deal with what must eventually be considered the straw men of much currently conventional wisdom.

In addition to a thoughtful treatment of the “old” issues of agriculture-industry balance in development, Professor Dantwala provides a thoughtful treatment of the equity issues. He rightfully shows impatience with the extreme shift from criticism of lack of emphasis on agriculture to gross criticism of equity effects which resulted from the very production increasing policies essential to producing more food for the poor as well as others. He draws attention to the particularly difficult regional aspects of the problem, the complexity of specific programs for including the poor in production processes, and illustrates the overall complexity by the role of milk production as an intensive employer of labour, thereby distributing income and access to calories to the poor and as a product to be consumed largely by relatively higher income people.

From Professor Dantwala’s edifying exposition one senses future possibilities for studying and learning more of the class conflicts relating to agricultural production and equity, the specifics of operational problems and solutions incident to pursuing now known policy directions, and the potentials for solving regional aspects of growth and equity. Analysis of the complex and diverse historical record with the benefit of the insights of the practitioners and close observers offers us opportunity for accelerated growth in the quality of understanding and, we may hope, in the quality of practice as well.