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INCENTIVES AND DISINCENTIVES IN INDIAN AGRICULTURE

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The Charge Sheet

The slow pace of growth of agricultural production in India, further retarded by two successive disastrous harvests has cast a shadow on the entire agricultural policy of the Government and the planning authority. Nothing fails like failure and the chorus of criticism from the lengthening queue of critics has risen into a crescendo. The belief that the slackness in agricultural production was a consequence of wrong policies has been strengthened by the relatively better performance in Pakistan, presumably a result of a radical revision in her agricultural policies since 1960. The issue of agricultural policies in the developing countries has an importance and relevance over a much wider area than India and Pakistan. As such, it is of utmost importance that the successes and failures in agricultural production are properly evaluated and their relationship with particular agricultural policies clearly established.

Several eminent foreign and Indian scholars have recently commented on India's agricultural policies. Professor Theodore Schultz, writing in the context of a wider canvas of "the poor performance of agriculture in so many poor countries" has advanced a comprehensive thesis which deserves close attention.[1] To begin with, he absolves some popular villains of the piece who are generally held responsible for the poor performance of agriculture. He observes : "It has been convenient to conceal the mistakes in economic policy that account for the failure in modernising agriculture by blaming the poor performance of the agricultural sector in poor countries on the adversity of Nature, or the perversity of farmers. or the fecundity of man."[2] Regarding Nature, he says : "as one who was reared in the Dakotas with its volatile weather, I look upon this aspect of Nature as perfectly natural, and as such should be considered as an integral part of any normal expectations with respect to agricultural production."

We should agree with him that in South Asia, bad monsoon should be considered as an integral part of normal expectations, but it would be highly misleading to equate crop failures in Dakota in the agriculturally surplus and affluent U.S.A. with a succession of bad harvests in a country like India living at a barely subsistence level. What may be a set-back in one case would be a disaster in the other. As for the perversity of farmers, there need be no dispute with Professor Schultz. Apart from "some economists and urban oriented intellectuals," no public leader of any stature has blamed poor performance of Indian agriculture on the perversity of farmers. This does not, however, mean that there are no problems of education and extension in modernising agriculture. Let us agree that even a subsistence farmer would respond to innovation if it is demonstrably profitable, and he has the resources to adopt it. Fecundity of men, however, is a much more complex problem than Professor Schultz would have us believe. For one thing, it is the timing of the excessive growth of population that is crucial. If it synchronises with the early developmental effort, it may constitute a serious drag on growth. India's population has grown by 150 million since the planning effort began in 1951. During this period, the work force in agriculture has

increased probably by 50 million.* It would be a folly to ignore the impact of such a massive growth on the efficiency of organization of Indian agriculture. It is not only the need for more food, but also for more land and more work, which may bedevil the development in agriculture.

Having absolved the spurious villains, Professor Schultz makes a positive identification of the culprit. The root cause of the trouble according to him is "the policy preference for industrialization, agriculture's contribution to its attainment being cheap food, as a source of cheap labour and public revenue." "This policy preference implies a low regard for agriculture as a source of economic growth. It means that low farm product prices and cheap food are an integral part of this type of economic policy." He adds : "when countries such as Nigeria, Chile or India want to keep their farm product prices low, the investment incentive for increasing the capacity of agriculture is thereby reduced."† He illustrates this more elaborately by reference to the pricing of inputs. Observing that the necessary economic requirement in modernising and increasing the capacity of agriculture in poor countries is a system of efficient prices, he asserts that most of the less developed countries have inefficient system of prices. "The input prices are not only high, but they are also distorted one to another in most poor countries."

Professor Edward Mason writing on the Economic Development in India and Pakistan endorses most of Professor Schultz's criticism. He states, "Both countries (India and Pakistan), despite appropriately worded paragraphs in their Five Year Plans assigning high priority to agriculture, neglected this overwhelmingly important sector."[3] "Agricultural development in both countries was characterized during this early period, by declining incentives to farm output as the internal terms of trade moved against agricultural products." Professor Mason repeatedly emphasizes the point that "as prices of farm inputs and of consumer goods used by the agricultural population rose, the prices of foodgrains and of some other farm outputs were *held down by Government action.*" (Italics ours.) Both Professor Schultz and Professor Mason believe that the ready availability of agricultural surpluses from the United States have something to do with maintaining cereal prices at the low level and postponed serious attention to the question of agricultural productivity. Professor Mason repeats, "PL 480 shipments had something to do with reducing farm incentives and in quantifiable degree must share the blame for the relative stagnation of agricultural output." More importantly, he believes that the better performance of Pakistan since 1960 in promoting growth in the agricultural sector should be attributed to the reversal of the policies followed during the 1960's, the major departure from the earlier policy being the restoration of free market mechanism.

Production Performance

As the critique of India's agricultural policies has been based on the production performance of Indian agriculture, it would be but proper to put down a few facts regarding the same.

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* The total labour force of U.S.A. in 1960 was 71 million and of Japan 45 million.

† It is surprising that in these discussions no mention is made of international pricing of primary commodities of developing countries.

Prior to the disastrous failure of the monsoon in 1965-66, foodgrains production in India had increased to 89 million tonnes from 52 million tonnes in 1951. As a part of this increase is accounted by the enlarged statistical coverage and possibly by the change in the method of estimation, a better idea of the magnitude of the increase is provided by the Index Numbers of production from which the influence of these two factors has been eliminated. Table I gives the Index Numbers of agricultural production.

TABLE I—INDEX NUMBERS OF AGRICULTURAL PRODUCTION AND AREA IN INDIA

(Agricultural year 1949-50=100)

Period	Foodgrains		Non-foodgrains		All commodities	
	Production	Area	Production	Area	Production	Area
1950-51	90.5	97.9	105.9	110.8	95.6	99.9
1955-56	115.3	111.9	119.9	130.7	116.9	115.0
1960-61	137.1	116.9	152.6	141.2	142.2	120.8
1964-65	149.1	118.8	174.9	152.7	157.6	124.2

It is often suggested that much of this increase in production was due to the increase in acreage—(as distinct from the increase in statistical coverage)—, and since the scope for further expansion in acreage is limited, in future agricultural production may not increase at the same rate. The facts are that between 1955-56 and 1964-65, acreage under all commodities has increased by about 8 per cent and production by 34.8 per cent. (See Table I).

Table II gives the growth rates in agricultural area, production and productivity.

TABLE II—COMPOUND GROWTH RATES IN AGRICULTURAL AREA, PRODUCTION AND PRODUCTIVITY 1949-50 TO 1964-65

(1949-50 to 1951-52=100)

	Area under crops (Per cent)	Production (Per cent)	Productivity (Per cent)
Foodgrains	1.34	2.98	1.61
Non-foodgrains	2.52	3.61	1.06
All commodities	1.55	3.19	1.60

Source: Growth Rates in Agriculture 1949-50 to 1964-65, Ministry of Food and Agriculture, Government of India, 1966 (mimeo.)

The rates of growth in production though not adequate in the context of rapidly rising population and money incomes, do not compare unfavourably with world averages or the averages for the South-East Asia.

Price Trends

The major count on which the agricultural policy of the developing countries has been criticised is the alleged attempt on the part of the policy makers to keep farm product prices low. We may, therefore, examine this question in some detail. To begin with, we may acquaint ourselves with some of the basic facts about agricultural prices. Table A.1 in the Annexture gives the index numbers of wholesale prices of various commodities and commodity groups. While analysing these price data, it is necessary to note a few points. Firstly, the base year of the current price series is 1952-53, on the assumption that this was a normal year. It should, however, be noted that according to the earlier series with the base year 1939, the index number of cereal prices in 1952-53 was 444, with the general price index at 380.6. Thus, cereal prices were not only 4½ times higher than the pre-war prices, they were also relatively higher than the prices of manufactured articles, broadly indicating favourable terms of trade for agriculture. The shift in the base year of the new series, in a way, obliterated this phenomenon and also gave to the high prices an appearance of normalcy. This would, perhaps, explain why in January 1957, when the cereal price index stood at 95, the Government of India thought it fit to set up a high-powered committee "to examine the causes of the rise in prices and to suggest remedial measures, which would prevent speculative hoarding and arrest undue rise in prices."

Another fact which may also be noted is that for some commodities like cotton, there has been a statutory ceiling on prices, and though in reality the ceiling has never been operative, the Office of the Economic Adviser which prepares the index series records only the ceiling prices. Thus, for commodities like these, the index number under-estimates the rise in prices.

The price data for the past 15 years—or for that matter for the entire war and post-war period—do not indicate the situation of low farm prices. In fact, for the last 5 years, farm prices have been spiralling to an extent which has caused extreme consumer distress and were probably responsible for the severe reverses suffered by the ruling party in the recent general elections.

In terms of the new series, round about 1955-56, there was a severe fall in the prices of agricultural commodities, and foodgrains suffered most. The decline in prices was not however brought about by any deliberate policy of the Government to keep down the prices, but was a consequence of a general slack in the economy and a series of good harvests. The Government could, however, be legitimately criticised for not taking adequate steps to prevent such a drastic fall in prices. "A few half-hearted attempts were made to support prices through government purchases, but these had little impact on the price trend. The developmental expenditure under the plan was considerably stepped up from 1954-55. Deficit financing, bank credit and money supply started on the upgrade from about this time. Food imports and withdrawal from Government stocks were cut down to the barest minimum. The embargo on foodgrains was lifted for the first time after the decade."[4] However, as a result of these measures and the relatively poor crops in the subsequent seasons, prices started rising once again. By 1957, cereal prices were 54 per cent higher than those during the trough of 1955. Between 1961 and 1966, there was a further rise of about 50 per cent and in January

1967, they were 150 per cent higher than those in 1955-56. The rise in prices of agricultural commodities other than foodgrains has been steeper still.

Probably, what the critics have in view is not the absolute level of farm prices, but the relative prices and the farmers' terms of trade. Various methods have been used to determine the terms of trade : (*a*) of the agricultural sector vis-a-vis non-agricultural sector; and (*b*) of the farmers in terms of ratio of prices received to prices paid. The usual method used for the former is to study the relative movements in the prices of agricultural and non-agricultural commodities and the ratio between the two. This should not be strictly termed as terms of trade inasmuch as the weights used in the composition of the wholesale prices would be very different from the weights of the commodities entering into the trade between the two sectors. In any case, information regarding the movement in the prices of these two groups of commodities would be of some interest and is given in the Annexture Table A.2.

By and large, the movement in the prices of the agricultural and non-agricultural commodity groups have been on parallel lines. In the year 1955, however, the index for the agricultural commodities declined by as many as 12 points from the base year but that for the non-agricultural commodities fell by only 1 point. From this year onwards, the rise in the price index of the agricultural commodities has been somewhat steeper than the rise in the non-agricultural commodity price index. In the year 1961, the two indices stood almost at the same level. Since then prices of agricultural commodities have risen more rapidly than those of non-agricultural commodities.

Annexture Table A.3 giving the percentage change in price levels for all commodities, agricultural commodities and their sub-groups confirms the observations made above. Except for the quinquennium 1951-1956 when the decline in agricultural prices was somewhat larger than that in the prices of non-agricultural commodities, the subsequent rise in the prices of the former, especially commercial crops, has been consistently higher than that in the prices of non-agricultural commodities.

Information regarding the ratio of prices received to prices paid by the farmers is available only for a few regions. The Punjab Board of Economic Inquiry has been compiling this information for the last 25 years. Similar information is available for the last decade in some other States like Assam, Kerala, Orissa and West Bengal. Extreme caution has to be exercised in making use of this information without a detailed scrutiny of the methods and techniques used in the construction of the index. The differences in the crop patterns of these regions are significant. Orissa, Assam and West Bengal are predominantly rice-growing areas, while the major crops in the Punjab are wheat and gram. Kerala's agriculture is dominated by products like coconut, tapioca and pepper. Weights given to different commodities in the construction of the indices of prices received naturally vary, as they should. But the marked variations in the weights given to commodities entering into the indices of prices paid, particularly in regard to family consumption—*e.g.*, 48 per cent for clothing in the Punjab and 8 per cent in Bengal—are difficult to explain. Similarly, the basis for weights given to commodities purchased for farm production is quite arbitrary in some cases. Apart

from the technicalities of the construction of the index numbers, the method of collection of the data and their dependability leave much to be desired. However, for the sake of completing the record of available information, the parity indices for these States are given in Table A.4 in the Annexture.

Price Policy Statements

Thus, contrary to the general impression, the analysis of the relevant data on agricultural prices does not (with the exception of the quinquennium 1951-56) indicate either absolute or relative low levels and adverse terms of trade for agriculture during the last 15 years. We may now see whether the policies announced or implemented by the Government, indicate any bias towards deliberately keeping farm prices low. The various Plan documents are the best sources for acquainting ourselves with the thinking of the policy makers. The First Five-Year Plan document contains a very comprehensive statement on food price policy. It may be noted that when the First Five-Year Plan was formulated, prices of wheat and rice were 5 to 5½ times higher than the pre-war level. It is, therefore, not surprising that the Plan was concerned with ensuring that the prices of foodgrains are held stable at levels within the reach of the poorer sections of the community. But the Plan document hastens to emphasize that "This does not, of course, mean that the producer of the foodgrains should not get a reasonable return. On economic as well as social grounds it is vital that he does. But, the real return that he gets does not depend only upon the prices he obtains for his produce; it depends as much upon the prices he in turn has to pay for what he buys. If any increase in food prices raises these latter, he may be no better off in the end, and may even be worse off. In the last analysis, what limits the real income of the primary producer is low productivity. To increase this latter, what is needed is a programme of public investment, which will give him the water, the power, the seeds and the manures he needs A policy which might raise prices all round and jeopardise the investment programme is therefore of no ultimate benefit to the producer."[5] This was further elaborated in the following statement.

"A policy of price stabilisation must have in view certain maxima as well as certain minima. At a time when the economy is subject to inflationary pressures, the emphasis is inevitably on the maintenance of the maxima. But if the trend of prices is persistently downward, a system of controls with defined procurement prices can be used—and indeed should be used—to safeguard the interests of producers by preventing prices from falling unduly. Judicious purchases by Government at defined prices are thus an excellent device for stabilising prices and for evening out to some extent inter-State disparities."

"It is sometimes argued that controls act as a disincentive to production and that if free market conditions are restored, production will be stimulated, and even though prices rise in the process, the consumers will, in the long run, stand to benefit. To what extent controls are a disincentive depends on two factors, (*a*) prices paid to producers for controlled commodities, and (*b*) the efficiency and fairness with which the controls are administered. This latter aspect of the problem has, of course, to be constantly kept in view. As regards prices, the problem is to define a level which may be considered reasonable under given circumstances, and to ensure through direct controls or through fiscal and other

devices that the producer of foodgrains is not placed at an undue disadvantage. The difficulty about the incentive which might be given by the unregulated operation of the free market to production in a particular line is that expansion in this line takes place at the expense of output in some other line. A general increase in output cannot, obviously, be secured by merely increasing the money reward for each unit of work. The great advantage of a system of controls is that under it the measure of incentive to be given can be regulated."[6]

Subsequent Plan documents have reiterated this policy with only some minor changes in emphasis. The Third Five Year Plan states : "The producers of foodgrains must get reasonable return. The farmer, in other words, should be assured that the prices of foodgrains and other commodities that he produces will not be allowed to fall below a reasonable minimum. ....The farmer should have the necessary incentive to make these investments and to put in a larger effort. The policy designed to prevent sharp fluctuations in prices and to guarantee a certain minimum level is essential in the interest of foodgrains production..... . The other objective, no less essential, is to safeguard the interest of the consumer, and, as has been stated earlier, it is particularly necessary to ensure that the prices of essential commodities such as foodgrains do not rise excessively."[7]

In January 1965, the Government of India constituted an Agricultural Prices Commission. The Commission is to advise the Government on "the price policy of agricultural commodities with a view to evolving a balanced and integrated price structure in the perspective of the overall needs of the economy and with due regard to the interests of the producer and the consumer." While recommending the price policy and the relative price structure, the Commission was enjoined to keep in view amonst other things, "the need to provide incentive to the producer for adopting improved technology and for maximising production and the likely effect of the price policy on the rest of the economy, particularly on the cost of living, on wages, industrial cost structure, etc."

As will be evident, the various policy statements do not indicate any intention to deliberately keep farm prices low, though the need to protect the consumers from the consequences of an inordinate rise in prices has been necessarily kept in view. It has been amply made clear that the concern for consumer interests should not be allowed to take away the farmer's incentive to adopt improved technology and make the necessary investment for the purpose.

Operational Price Policy

It may be argued that as in other spheres, the policy statements of the Government have been invariably unexceptionable, but little of this wisdom is reflected in the actual implementation of the policies. We shall, therefore, now examine in some detail the operational aspects of the price policy. At the very outset, it may be admitted that as in other spheres, the Government has not been successful in realizing the objectives of its price policy, but as we shall presently see, the failure has been more in respect of curbing the inflationary rise in prices than in maintaining what may be termed as incentive levels of prices.

In reviewing the operative part of the price policy, it should be noted that except for sugarcane sales to the sugar factories—which amount to about 25 per cent of the sugarcane production—market prices are not fixed for any agricultural commodity. Floor and ceiling prices have been announced for raw cotton since 1943, but both the levels have been raised upwards several times. It is, however, common knowledge that the ceiling levels have never effectively checked the rise in prices. Some State Governments did, off and on, announce maximum prices for foodgrains, but they have never been able to enforce them effectively. On the other hand, the Government has supported prices of foodgrains as well as commercial crops, particularly jute at floor levels. The actual purchases, however, were limited because the prices soon rose beyond the support level. Thus occasionally even when the avowed intention of the Government was to check excessive rise in prices of agricultural commodities, it has not succeeded in restraining farm prices.

Operationally, the only prices fixed by the Government—and effectively implemented in recent years—are the minimum guaranteed support prices. It has been explained that these are floor prices, calculated to provide a sort of insurance against the contingency of a severe fall in price, as it occurred during 1955-56. Though no rigid formula has been accepted in determining the levels of floor prices, the criterion followed is that progressive farmers should find these levels adequate to merit enterprise and investment to augment production through the adoption of improved technology with all its risk and uncertainty. The actual market prices have been higher than the statutory floor levels, and it can be safely asserted that for the last several years no progressive farmer has been inhibited by the price factor in adopting improved technology.

Procurement

Besides the guaranteed minimum support prices, the Government fixes from time to time prices for procurement of foodgrains needed for its system of public distribution through fair price shops or rationing These prices are higher than the minimum support prices by a fair margin.* Only in 1963-64, the difference between the two was rather small. Procurement prices have been successively revised upwards in keeping with the market trends, but they are certainly lower than the prevailing open market prices. The fact that the Government procures foodgrains which has an element of compulsion and that the procurement is made at below market prices has been criticised as constituting a disincentive to production. As in respect of other policy matters, the facts of the situation are probably not fully known. The average annual foodgrains procurement over the decade ending 1961 comes to 1.16 million tonnes from the average production of 68.6 million tonnes—which would amount to less than 1.7 per cent of annual production.† If we exclude the procurement in the first two years (1951-52 and 1952-53) of the decade, it amounts to less than 1 per cent of domestic production. Incidentally, it may be noted that during these years not all procurement has been made at below the market rate. A part of it was in support of the floor prices.

* The Agricultural Prices Commission has recommended that for the 1967 *Rabi* season, procurement price of wheat should be Rs. 8 or about 16 per cent above the minimum prices fixed in the wheat producing areas.

† See Annexture Table A.5.

The step-up in procurement commenced from 1963-64 and was mostly confined to paddy and rice. Procurement of wheat has never exceeded half a million tonnes and most of it was procured in the Punjab in the open market—subject, however, to the ban on movement beyond the Punjab zone. In 1964-65, the procurement of 2.9 million tonnes of rice would amount to some 8 per cent of rice production or 25 per cent of the marketable surplus. This, no doubt, was a substantial proportion. But what exactly is the effect of this procurement on the average price received by the rice grower for his production or marketed surplus? It may be noted that with the exception of Maharashtra, which has introduced during the last two years, the so-called Government monopoly of rice and jowar purchase, the farmers are free to sell what is not procured by the Government—something like 75 per cent of the marketed surplus—in the open market. It is well known that whenever there is procurement by the Government, open market prices go up steeply and disproportionately to the quantum withdrawn by Government from the open market. As such, it would be reasonable to hold that the weighted average price received by the producer for the total sales (to the Government and in the open market) is no less than what he would have received in the absence of procurement. While this large-scale procurement was being undertaken, the index number of wholesale prices of cereals has gone up from 101 in March 1963 to 190 in March 1967. In the face of such spiralling prices, the Government could not adopt a *laissez faire* attitude; and the least it had to do was to maintain a system of public distribution of foodgrains at reasonable prices. For this purpose, wheat was available under the PL 480 programme, but rice had to be internally procured.

It is often suggested that the Government should purchase foodgrains, if it must, through the Food Corporation at competitive market prices. But to any one with a little acquaintance with market psychology it should be obvious that such action would instantaneously push up prices in the open market. It has been found that at the very appearance of the agents of the Food Corporation as buyers in the market, prices go up compelling the Corporation to bid at higher and higher prices or go without purchase. This happens because the market knows that the Government, unlike the ordinary trader, has definite commitments to supply foodgrains for its system of public distribution and comes to the market in the given period only to buy and not sell. Besides, a system under which Government purchases foodgrains at soaring market prices and distributes them at reasonable prices, would involve a heavy subsidy on consumer prices, at the cost of the State exchequer. We have not made any precise estimate of the financial cost to the Government of a scheme under which the Food Corporation would buy at the going rates and supply to the consumers at reasonable prices. But it is obvious that the scheme would impose an intolerable burden on the finances of the Government.

The Foodgrains Policy Committee (1966) examined the question of open market purchases by the Government and observed : "Such a system will, no doubt, involve very little disturbance to the working of the market economy. What is overlooked, however, is that prices will unduly rise. When Government enters the foodgrains market as a buyer in competition with private traders, the latter will push the prices up in order to command sufficient stocks so that they can continue to remain in business. Moreover, it has to be remembered that

purchase operations by a single large buyer tend to raise prices much more than by a large number of smaller buyers. Government's purchase prices are likely to turn out to be so high that neither the objective of holding the price line, nor that of equitable distribution to all, including the low income groups, can be expected to be achieved."[8] While this is generally admitted, Professor V.M. Dandekar suggests that "there exists a method of buying whereby the government may buy at the going market-price without itself entering competitive bidding. This is called purchase by pre-emption. It has been successfully practised in the Punjab. In this method, the government or the public marketing agency does not directly participate in the formation of price in the market. The market-price is allowed to form through the normal processes of competitive bidding and bargaining in the market. However, after the price is fixed and the deal is settled, the government reserves the pre-emptive right to step in and buy the given quantities at the price settled in the market. As the government does not enter the competition with other buyers in the market, it does not give a push to the price as it would otherwise. Nevertheless, it is able to offer the producer a price in accordance with the market situation."[9]

The system of purchase by pre-emption has much to commend itself. But such purchases can be made only in markets which are 'regulated' and have introduced a system of sale by auction. Very few up-country markets are so organized and regulated. Dandekar accepts this fact and suggests that "one of the first measures necessary is to organize and rationalize the marketing of foodgrains in the country so that a structure of market-prices would emerge, from day-to-day, by normal market processes which are competitive and public." In a truly professorial style, Dandekar has given a counsel of perfection. But it just amounts to begging the question. If we had such perfect markets in which from day-to-day prices would emerge through a process competitive and public, he would have had no occasion to write his brochure. The question is : till such organized markets emerge, what system of regulation should we adopt and operate? Dandekar has such a scheme. A full appraisal of his proposal will be beyond the scope of this Paper, but a mere outline should suffice to reveal its dreamland quality.

Dandekar suggests that within each District, a Foodgrains Marketing Board should be established endowed with a monopoly of inter-district trade. It should be a representative body of foodgrain producers, traders and the Panchayat-raj institutions, with a Government-nominated chief administrative officer and the accountant. The Marketing Board will purchase foodgrains in the open market in competition with other traders and marketing agencies. All inter-district purchases and sales will be restricted to the agency of District Marketing Boards. "Thus, the inter-district trade will be reduced to mutual trade between the 300 odd District Foodgrains Marketing Boards." "All deals settled between them will be promptly publicised giving particulars of quantities, quality and prices at selling points." (Large Districts could have more than one Board as "there is no harm even if the number of Boards is increased to a thousand or even two thousand.") Once the foodgrains market is thus 're-organized,' the government (State or Central?) would exercise its right of pre-emption. "All contracts for inter-district sale or purchase .... should be immediately notified to the respective state governments and permits for the necessary movement of the foodgrains

sought. If the government finds the price attractive, it would exercise "its pre-emptive right and ask the District to surrender not more than half the quantities contracted for, at the contract price." "In this manner the state governments will acquire stocks of foodgrains adequate to conduct their food policy." There will thus be 300 or 1000 food budgets, 300 to 1000 monopolies of inter-district trade and as many food zones; all in the interest of "free market" prices and incentives to production ! Food and Freedom is the title of Dandekar's brochure.

Apart from this, is it reasonable to suggest that anything less than the market price—whatever the state of scarcity, hoarding and speculative manipulations—necessarily constitutes a disincentive to the farmers? Is such absolute reliance on the 'reincarnated dogma of the market' necessary, or desirable ? What seems reasonable to posit is that as long as prices are well above the cost of production (inclusive of the risk margin), the farmer will spare no effort to increase his income through the largest possible production, within the constraint of his own and national resources.

PL 480 Imports : Impact on Prices and Production

We may now examine the repeated assertion that PL 480 imports have had the effect of depressing farm product prices within the receiving country and impairing the economic incentives to farmers to increase agricultural production. Let us first record a few facts. During the decade 1951-61, imports of cereals averaged 3 million tons per year. Annexture Table A.6 indicates that they varied from 1.3 to 11 per cent of domestic cereal* production, the variation being related to the domestic supply position. During the triennial 1954-55 to 1956-57, when the crops were moderately good, but the foodgrain prices declined sharply, imports were only marginal, being less than 2 per cent of the net domestic production.

It is obvious that in the absence of PL 480 imports foodgrain prices would have risen higher. We may take it that high prices are not considered as an end objective, but are crucial from the point of their impact on production and the farmers' incentives. For the discussion of this issue, it would be relevant to determine whether the foodgrain imports would affect the prices of foodgrains alone or those of all other crops as well. The major component of PL 480 imports was wheat and it is reasonable to assume that these imports affected the prices of wheat or at best also of other substitutable cereals from the consumer point of view, but could not have had much impact on the prices of commercial crops. The expected consequence of this relative shift in prices in favour of commercial crops would be a shift in agricultural inputs for their production. Assuming that this is exactly what happened, would such a development be necessarily injurious to Indian agriculture or the Indian economy as a whole ? It is, of course, true that higher foodgrains production is very vital to India's economy, but a stimulated growth of non-foodgrain crops is of no less importance for the overall national economy, particularly in regard to the international balance of payments.

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* Excludes pulses.

Reverting back to the price effect of PL 480 wheat imports, we do find that prices of wheat remained relatively lower than the prices of several other agricultural commodities. It may, however, be noted that in the years of very low cereal prices (1954-56), PL 480 imports were negligible and prices of all agricultural commodities had declined sharply. This would indicate that there were more potent economic factors than PL 480 wheat imports which determined the trend in agricultural prices. It is indeed difficult to discern a consistent correlation between prices of agricultural commodities and domestic production or the total availability (production + imports). The per capita availability of foodgrains in 1954-56 (15.7 ounces per day) when foodgrain prices crashed was in fact no larger than that in the years 1963-65 when prices were sky-rocketing, in spite of the enormous PL 480 imports. The price impact of PL 480, if any, was evidently drowned by more powerful monetary factors.

We may now assess the impact of PL 480 imports on the production and productivity of different crops. Wheat was the major component of these imports. As such if the assumption regarding the depressing effect of these imports on domestic production were valid, one would expect that the commodity whose production would suffer most would be wheat. As a matter of fact, this did not happen. The study of growth rates of different crops in India shows that wheat fared better both in area and production compared to all other foodgrains, and was at par with commercial crops like cotton—though not groundnut, jute and sugarcane. (Annexture Table A.7.)

In assessing the price effects of PL 480 or any other imports, it is necessary to ascertain critically, both theoretically and empirically the factors which influence farm prices. While it is clear that on the supply side the main factor is availability (domestic + imports), on the demand side the relative importance of population growth and increase in money incomes is inadequately taken into consideration. In fact, in the entire analysis of the problem by western critics, the price effect of the rise in money incomes has been completely ignored. By exclusively pinning attention to the *agricultural* policy of the developing countries, instead of viewing it as a part of the total economic policies, they have been led into a serious error of economic analysis.

In a recent study analysing inter-relationship between the change in price on the one hand and changes in Government spending and commodity output on the other, it was found that "a 10 per cent increase in plan outlay and non-plan expenditure will increase the price index by 2.6 per cent, and a 10 per cent increase in commodity output will result in a decrease in price of only 0.7 per cent."[10] Commenting on this inter-relationship, the authors observe : "The most striking fact is the very small effect commodity output has on price : commodity output has to increase nearly four times as fast as Government expenditure to offset the sharp increase in prices induced by the latter. If, for instance, total Government expenditure increases at a rate of about 15 per cent per year, the price index will be expected to rise by 3.9 per cent annually. If we wish to limit the net price increase to 3 per cent annually, the difference between 3.9 and 3 willhave to be offset through an increase in output amounting to a rate of 13 per cent annually." In another study, analysing factors affecting agricultural prices in India,

the conclusion was that "the national income/money supply played a much significant role in explaining the variance in foodgrains prices as compared to the per capita availability."[11]

The Indian planners have repeatedly emphasized that "a major constituent of price policy in this situation is fiscal and monetary discipline" : unfortunately this precept was observed only in its breach. The sins of the policy makers, if any, were in following a highly inflationary policy, which compelled the devaluation of the rupee in June 1966, and by no stretch of imagination those of keeping farm prices low. When the attention of western critics was drawn to the fact that "the PL 480 imports were meant as a countervailing force to the inflationary pressure in the economy generated by deficit financing and development expenditure,"[12] a typical reaction was that "This may indeed be so. However, while there may be no pronounced negative effect on domestic agriculture (because of the existing upward pressure on farm prices), if farmers are at all sensitive to prices, then agriculture will not expand to the extent that it would have done in the absence of the imported surplus,* The signal from the price mechanism that *more* resources are needed in domestic agriculture will not get through because of the effects of the surplus."[13] If this rejoinder is to be taken seriously, it would imply that (1) under no circumstances, however grave, should the domestic imbalance in production be corrected through imports, since they depress prices and destroy producers' incentives, (2) the process of higher prices-higher production could go on *ad infinitum*, notwithstanding the resource supply constraint and (3) the only valid guide for the allocation of resources is the price mechanism, whatever be its observed functional deficiency in a given situation. One would wish that the strategy of economic development was as simple as this, for under it all that the planners would have to do is to ensure an uninhibited price rise. Surely, more understanding is needed of the factors which inhibit agricultural growth in poor countries.

Input Prices and Policies

We have examined above the criticism that in India the policy has been to hold down product prices. We may now turn our attention to the criticism that input prices have been kept very high and this has thwarted the farmers in modernising their agriculture. Prof. Schultz observes : "it should be obvious that where the price of fertilizer is too high relative to the price of farm product, no extension programme can be devised that will induce farmers to use more fertilizer ..... In Japan where farmers are applying a hundred times as much fertilizer, it is vastly lower in relation to the price of farm product. It takes less than half as many pounds of wheat in Japan to buy a pound of nitrogenous fertilizer as it does in India. Rice farmers in India pay between three and four times as much for the fertilizer as do farmers in Japan in terms of the price that they receive for rice."[14] Mason endorses this view when he states, "if the potentialities of growth of Indian agriculture are to be realised, much greater attention than has been evident in the past will have to be paid to the relation between the prices of farm inputs and the prices of farm outputs."[15] Both Schultz and Mason quote the ratios of fertilizer-product prices to illustrate the point. There is no gain-

* It is not clear whether the objection is to concessional imports or any imports.

saying the fact that the price of fertilizer in India is very high, and to the extent the Fertilizer Pool operated by the Government sought to earn a profit from fertilizer distribution, it could be said that the policy contributed to a small extent to high prices. We can expect some reduction in the price when, as proposed, new large sized fertilizer factories based on modern technological processes are established leading to a substantial reduction in the cost of production. Pakistan, we know, has been heavily subsidizing fertilizer use, but this has been possible mainly because of, as Mason points out, the rapid growth in foreign assistance, "which in the last two years of her Second Plan amounted to 6 per cent of GDP and some 40 per cent of total development expenditure."

The real bottleneck in the further extension of fertilizer use in India is its availability, and till the introduction of the high-yielding varieties, a relatively low technical coefficient of output response at the higher levels of fertilizer application. The fertilizer production programme in India makes a poor showing and the government cannot be absolved from the blame for this poor performance. In this connection, it would be pertinent to note the recent liberalization of Government of India's policy on fertilizer. New units obtaining industrial licence before 31st December 1967 will not be subject to restrictions as to price or marketing for a period of seven years. As yet, the response of foreign collaborators to the new policy has not been very encouraging.

It should be readily agreed that factor prices must not be so high as would discourage its optimum use for augmenting production. This condition is satisfied as long as additional expenses (including the risk premium) involved in the use of any technical input are fully covered by the expected increase in receipts at current product price. Under these conditions there is no conceivable obstacle to the use of the input by progressive farmers. To the best of our knowledge, at no stage the farmer in India is known to have refrained from the use of the fertilizer because of its high price. The Committee on Fertilizers (1965) which looked into this problem has stated that : "Except in the rain-fed areas where certain risks related to the dependency on seasonal rainfall exist, the field results appear to indicate that at present levels of fertilizer application, the farmer in India finds adequate profitability in fertilizer use even at present prices."[16] The Committee cites the studies conducted by the Indian Institute of Agricultural Statistics and observes that "net return on fertilizer investment can go up to 400 per cent," and categorically states that "in the current context of short supply of fertilizers in relation to the demand, it cannot be said that fertilizer prices are inhibiting the growth of fertilizer use." In fact, there is an active black market in fertilizers and the problem is how to check the diversion of fertilizers from contemplated uses.

Data derived from a large number of fertilizer trials conducted on farmers' fields indicate that a 20 kg. application of nitrogen per hectare increases yield of rice by 259 kg. and that of wheat by 350 kg. With the price of N at Rs. 1.66 per kg. and of rice and wheat at Rs. 60 and Rs. 50 per quintal respectively, at the level of optimum doses, the profit per hectare would be Rs. 173.8 for rice and Rs. 221.3 for wheat. In other words, one rupee worth of nitrogen gives a profit

of Rs. 2.4 for rice and Rs. 2.6 for wheat.* The fertilizer response of the newly introduced high-yielding varieties is much larger, making higher doses of fertilizer application distinctly profitable. "It is over 18 months since the new high-yielding varieties of 'dwarf' Mexican wheat outgrew the experimental stage and were first distributed to a large number of cultivators in the major wheat-growing areas of Punjab, Haryana, Western Uttar Pradesh and Northern Rajasthan. Their results are now available. Their yields in 1965-66 have averaged 5,340 kilograms per hectare as against 3,330 kilograms of the best local varieties. The gross return per hectare is assessed respectively at Rs. 3,500 and Rs. 2,200. The cost of fertilizers has been assessed at Rs. 300 for the former and Rs. 130 for local varieties. This gives an increase of 54 per cent in net returns in favour of the 'dwarf' varieties with applications of fertilizer that are still below maximum yield levels."**

This is a sufficient condition for as extensive a use of fertilizer as may be desired—subject to availability. We should accept Prof. Schultz's proposition that the farmer's acceptance of the new input would depend upon the profitability of its use; but it is not logical to suggest that the acceptance is proportional to profitability. The incentive or disincentive for the use of fertilizers in India does not depend upon profitability of its use in Japan, Taiwan or Pakistan. The Indian farmer does not decide the quantum of fertilizer use on his farm in India by reference to the profitability of fertilizer use in Japan. It is therefore difficult to understand the relevance of the citation of fertilizer-rice or wheat price ratios in other countries to the economics of farming in India. Progressive farmers in India are satisfied that fertilizer use is currently profitable and would like to use as much of it as they can obtain. They and everyone else concerned would desire a reduction in fertilizer prices, but even today, farmers do not mind buying it in the black market. "There was a time when the extension agencies used to go with a message of greater use of chemical fertilizers and pumping sets. Today, the farmers go money in hand to purchase these commodities but they are not available to them."[17]

* Responses of rice and irrigated wheat to graded doses of N, under Indian farming conditions

	Doses of N. kg. per hectare				
	20	30	40	50	60
Increase in yield of rice : kg. per hectare	259	343	397	420	412
Increase in yield of wheat : kg. per hectare	350	472	559	611	628

Profitability of fertilizer use (N) at current prices†

	Optimum dose kg. per hectare	Cost of fertilizer Rs. per hectare	Value of additional yield Rs.	Profit Rs. per hectare
Rice	43.5	72.2	246	173.8
Wheat	50.4	83.7	305	221.3

Source : V. G. Panse, "Fertilizer Recommendations" in Proceedings of National Seminar on Fertilizers, Fertilizer Association of India, 1965.

† Prices assumed are Rs. 1.66 for 1 kg. of N, Rs. 60 and Rs. 50 per quintal of rice and wheat. Current prices for rice and wheat are substantially higher.

** *Times of India*, April 17, 1967.

Most of the improved varieties of seed developed earlier in India were designed for their drought resisting quality. This was perfectly natural under Indian conditions where the major risk in farming arose from the failure of the monsoon. But the response of these varieties to high fertilizer doses was somewhat meagre. This considerably reduced the profitability of intensive fertilizer use. A major breakthrough in Indian agriculture is now occurring as a result of the introduction of high-yielding varieties—hybrid and exotic—which have a very high fertilizer response. With this, fertilizer use which was already profitable will become much more so.

A word may be said about Prof. Schultz's ideas about investment in irrigation. India, he observes, "already has three times as much land under irrigation as Japan—measured on a per capita basis. Yet India has invested large sums during recent years in still more irrigation."[18] It is absurd to measure irrigation requirement on a per capita basis. The only sensible basis of judging the requirement is the soil-climate complex. Fifty-five per cent of Japan's arable land was irrigated in 1962 as against only 15 per cent in India. In a country where the major threat to farming is drought, irrigation must have the highest priority. A few more tube-wells in Bihar would have avoided the major disaster it is facing today. But more importantly, the high pay-off of what Prof. Schultz calls modern inputs depends primarily on assured water supply. It is not just a whim of the policy makers in India that the new strategy of agricultural development—and India's only hope of a breakthrough in agricultural production—is sought to be concentrated on areas of assured rainfall or irrigation. Assured water supply is essential to the success of high-yielding varieties of seed. In a recent enquiry conducted by the Agricultural Economics Research Centre, University of Delhi in the IADP district of Aligarh (U.P.), 53 per cent of farmers gave "lack of timely and adequate irrigation" as the reason for not using chemical fertilizers, and another 10 per cent mentioned lack of financial resources. The main conclusion of the study was : "The most important pre-condition (for the breakthrough in agricultural production) is the creation of an assured and adequate irrigation, followed by improvement in farmers' knowledge about the technical and also economic aspects of the new inputs which they are expected to adopt."[19]

When we are thinking about agricultural production at the national level rather than at the level of an individual farmer, the overall availability of critical inputs, rather than an individual farmer's capacity (income) to offer higher prices, becomes a more crucial factor in augmenting production. It could, of course, be argued that availability is a function of price. But this is not invariably so in developing economies. Take the case of high-yielding varieties of seed. Their discovery and adaptation to local conditions, agronomic trials, preparation of nucleus and foundation seed, the first stage of seed multiplication and the extension work associated with their adoption by the farmers : all these activities depend to a very large extent on government initiative and sponsorship. The farmers' capacity to offer adequate price for the high-yielding varieties is largely irrelevant to the development of the activities listed above. In other words, one would not get the needed quantities of improved variety of seed merely through the functioning of the price mechanism.

The question is not whether India's agricultural economy should be run by the market or the planners. It is simply whether at this stage of India's agricultural development, public investment in socio-economic infra-structure—agronomic research, soil testing laboratories, fertilizer trials and demonstrations, seed farms, well trained extension personnel—would be more rewarding than high prices, which perchance may result in dispersed and rather uncertain investments by a large number of farmers. Neither is it a question of either-or—the market or the planner. A judicious balance has to be struck. The fact that more resources are needed for agriculture need not wait for the signal of inordinately high prices. In our context they are at best a danger signal. All that needs to be ensured is that the price does not act as an inhibitive factor to the flow of resources to agriculture.

Prices and Income

The persistent campaign for the recognition of price as the most crucial factor in production compels a close examination of the issue of the price effect on production. To clear the decks, it should be conceded straightaway that the farmers even in the subsistence economy do respond to prices in the sense that they adjust production to the most profitable cropping pattern. Nor need it be disputed that farm prices should be remunerative. But the view that 'the higher the prices offered to farmers, the more they will produce and bring to the market' needs a closer examination.

First and foremost, for a critical analysis of the price effect on production, it is important to distinguish between (*a*) shifts in land and other resources in response to changes in inter-crop price relationship and (*b*) an overall increase in agricultural production through the input of additional resources. The price factor is quite effective when a shift is desired in the relative production of two competing crops—say, between jute and rice. Its effectiveness is considerably reduced when a simultaneous increase in the production of almost all agricultural crops is desired—as is the case in India.†

Even in regard to shifts in resource use, particularly of land, there are severe agro-climatic constraints. In a recent study, an attempt was made to ascertain whether the changes in the cropping pattern were influenced by the relative price/returns of selected competing groups of crops. The results did not indicate any uniform pattern. In a number of cases, the relative area, price and returns are found to move in the same direction while in a number of other cases they moved in contrary directions. The final conclusion of the study is that "it is

† This is exemplified in a recent study in the Philippines.
"While prices of rice and corn in the Philippines have apparently been fairly efficient in their resource allocation functions, there is little evidence to indicate that price changes are an effective device for influencing aggregate agricultural output. In spite of the micro-economic evidence that prices are an important incentive for the purchase of yield-increasing technical inputs such as fertilizer, insecticides, and herbicides, no measurable yield response to price was obtained....most of the increase in the output is a result of shifting of land from other crops to rice or bringing new land into production. This implies that we should be less optimistic about the role of price as a development tool at least for the present, than would be the case if the price changes included yield responses in addition to area shifts." See Mahar Mangahas, Aida E. Recto and V. W. Ruttan, "Price and Market Relationships for Rice and Corn in the Philippines," *Journal of Farm Economics*, Vol. 48, No. 3, Part I, August, 1966.

not possible to choose a set of factors which have uniformly influenced changes in cropping patterns with regard to all the crops in the State as well as in the district."[20] Another study has shown that in the allocation of area between rival foodgrains, price was not a vital consideration. "In respect of foodgrains, price relative to weather becomes a feebler consideration, except and to the extent that foodgrains compete with crops other than rival foodgrains for area. Thus rainfall assumes that status which price does in the case of cash crops."[21]

The increase in rice production in Punjab is primarily due to the increase in the water-logged area where rice is the most appropriate crop to grow. In Gujarat, where groundnut-bajra price parity moved in favour of the former, groundnut production increased at a compound rate of 9 per cent per year through the increase in area at the rate of 10 per cent, productivity decreasing at the rate of 0.97 per cent. The area under bajra decreased at the compound rate of 5.14 per cent, but its productivity increased by 4.88 per cent.[22] A judgment on the economic gain from such a change in the cropping pattern is not easy to make. Thirdly, for some crops, the relative price change has to be quite substantial so as to reverse the relative profitability of the competing crops. In a recent study, it was found that there was not much meaningful association between the prices of rice and sugarcane on the one hand and the acreage of the two crops on the other. "The acreage of sugarcane as compared to paddy continuously increased during this period, but no such systematic trend was found in their relative prices. One important factor which determined the trends was that the net value of sugarcane output per acre was more than four times that of paddy."[23] Such profitability cannot be negatived by merely a shift in the price parity of the two commodities. Fourthly, for operational purposes, which economic devices would one use to deliberately alter the inter-crop price relationship ? Assuming we could deliberately push up foodgrains prices, would this necessarily alter the food-non-food price ratio in favour of the former ? For this to happen, it would be necessary to prevent a rise in the prices of non-food crops which is bound to take place as the consequence of the shift in resources in favour of the food crops, because the supply of commercial crops is already lagging severely behind demand. Assuming that it would be right to hold down the prices of non-food crops—but not of foodgrains—how does one do this ? The only known economic devices are buffer stocks and imports—PL 480 or others. Prospects for neither are bright, of buffer stocks in view of the continuing shortages and imports because of stringency in foreign exchange.

Apart from this, it is income rather than price which is more relevant to the issue of the incentive. In many developing economies, agricultural productivity is very low. The greatest disincentive in farming is low income. And at the root of low income are the scanty resource base of the cultivator and its low productivity. Increase in productivity will therefore be more rewarding than the increase in price in augmenting farmers' income. To stress the price factor beyond a point is to seek an easy way out, and side-track the main issue.* An excessive

* No wonder, the politician finds the price incentive advocacy most palatable. According to the press reports, the Food Ministers Conference recently held in Delhi voted for 20 to 25 per cent higher price for wheat procurement than was recommended by the Agricultural Prices Commission, which by its terms of reference is enjoined to consider the effects of its recommendation on the entire economy.

emphasis on the price factor by making existing practices more profitable may even weaken the incentive for the adoption of improved production practices. It is indeed surprising that the crusaders for incentive prices do not simultaneously mention the contribution which higher productivity can make to higher incomes—without an increase in product prices. The high-yielding varieties of seeds recently introduced in India have a much greater potential for augmenting farm incomes than mere higher product prices. The relationship between prices of farm products and prices of purchasable inputs is, no doubt, important. But *more important* is the output response to the inputs, which can be greatly increased by technical research and better farm management.

Non-Price Incentive

It is somewhat surprising that the discussion on production incentives is restricted to prices and the prevalence of a free market mechanism. Time was when the developing countries were told that defects of the agrarian structure—absentee landlordism, exploitative tenancy, usurious credit and inefficient marketing—were a major obstacle to agricultural development. India has carried out a fairly radical programme of land reforms. In spite of the many admitted imperfections in the implementation of the programme, the agrarian structure is today more rational and equitable. Zamindari and other intermediary tenures have been abolished from 170 million acres, or about 45 per cent of the total land under cultivation. As a result of this, 20 million tenants have acquired occupancy rights. According to the 1961 Population Census, the percentage of land under pure tenancy (of the landless) was 4.2 and that under mixed tenancy (owner-cum-tenant) 18.2 per cent of the cultivated land. Though there is a good deal of concealed tenancy, the area under recorded tenancy is less than 12 per cent. If land to the tiller is a production incentive, Indian policy in this direction, at least, deserved a mention. Perhaps the critics have some second thoughts on the relevance of the agrarian structure to agricultural production, because many of the countries which have earned praise for their production performance and restoration of the free market mechanism have shown no conspicuous achievement in the sphere of the reform of the agrarian structure.

The total public sector outlay on agriculture, community development, major and medium irrigation projects during the three Five-Year Plans comes to Rs. 3,530 crores. It has been suggested that this was not enough and much of the investment has not yielded expected returns. Yet, the point is that this effort is in great contrast to what was being done for Indian agriculture under colonial rule.

But the one aspect of incentives to which we wish to draw special attention is agricultural taxation. Indian agriculture has received exceptionally favourable treatment in this regard. It is estimated that direct agricultural taxes amount to no more than 2 per cent of the value of agricultural production. And even so, one state government after another is announcing a partial or complete withdrawal of the land (revenue) tax. It should suffice to quote a few notable findings on the subject from a recent study on tax burden on Indian agriculture.[24] The overall conclusion of the study is that "the agricultural sector of the Indian economy is being favoured over the non-agricultural sector as far as the fiscal operations

of the government are concerned." It also notes that "there was—and has been since 1950-51—a net outflow of funds from the non-agricultural to the agricultural sector via the capital budget of the government. In 1962, for example, the agricultural sector received about Rs. 250 crores of capital expenditures by the government, whereas it contributed only Rs. 75 crores to the capital budget." Surely, any one concerned with the problem of incentives in Indian farming should note some of these features of the Indian economy, and not just keep hammering on product prices.

Summary

Our review of the agricultural price policies—announced and implemented—does not reveal a deliberate attempt to keep farm product prices low. On the contrary, farm prices have been continually rising from 1956 onwards and are at present 100 per cent higher than in 1952-53 (the base year of the Wholesale Price Index Series), when they were 4.5 times higher than those before the war. In fact, the most serious problem of the national economy today is the steep rise in prices of food and agricultural raw materials.[1] There was a brief period around 1955 when there was a sharp drop in prices of agricultural commodities. The policy maker can be blamed for not following a more imaginative price policy during this period. Since then the failure is in restraining the rise in the prices of food and raw materials. There is also no evidence of consistent adverse terms of trade for agriculture.

For the bulk of the agricultural produce there is—and has been—an effective free market. Procurement below the market rates has been insignificant, except in recent years when for rice in 1964 and 1965, it reached 25 per cent of marketable surplus. Nor does the review show that input prices have been kept high as a policy measure. Compared to world prices, prices of fertilizers in India are no doubt high, but there is no evidence to suggest that this factor has inhibited the use of fertilizers by the farmers. But the policy maker must bear the blame for the tardy development of an efficient fertilizer industry.

We have shown that neither the production nor the productivity of wheat—which was the main PL 480 commodity to be imported on a large-scale—suffered because of the relatively lower prices. Growth rates of other agricultural commodities not affected by PL 480 imports —rice for example—are not better than those of wheat.

Lastly, the review shows that the analysis of the price effect on production needs more sophistication. A distinction needs to be made between what may be called a "shift" effect of prices—shift of acreage and other resources from one crop to another—and the "overall" effect on the aggregate agricultural production. Regarding the input-product price relationship, it is axiomatic that this should be demonstrably favourable to the expanding use of modern technical inputs, but a more rewarding approach to the problem is by way of cost reduction, through improved technology and productivity-raising research and management. The supply inelasticities in the factor market must also be borne in view, because in such situations, the immediate effect of the increase in product price would be

an increase in input prices. Loosening of inelasticities require action on a wider front than that of price mechanism.

Finally, in the discussion on incentives it is but proper to consider the totality of economic policy. Each specific policy can be meaningfully interpreted only in the context of other ancillary policies and the developing economic situation. When the price policy—if such there was—or the actual price situation for agriculture in India is examined within a comprehensive focus, the impression that product prices were deliberately kept low or that the high input prices inhibited adoption of modern technology appears to be based on a partial and selective evidence. In any case, low agricultural prices have never been a constituent of economic policy. It is, however, possible that restraints on exorbitant prices have been misunderstood as preference for low prices.

India's agricultural growth undoubtedly has been disappointing. This is perhaps at the root of her many economic troubles today. It, however, does not follow that the 'failure' of Indian agriculture was *mainly* a consequence of wrong policies in the field of agriculture. As a hind sight, many errors of judgment can be discovered. More often, even the right policies were not effectively implemented. This does not, however, justify the verdict that agricultural development was neglected or that there was a policy preference which implied "a low regard for agriculture as source of economic growth." True, agriculture has responded poorly to the developmental effort of policy makers. In retrospect, it appears that the problem of agricultural development is more complex than what either the economists or the policy makers believed it to be.

ANNEXTURE

TABLE A.1—INDEX NUMBERS OF WHOLESALE PRICES

Year	General Index	Food Articles	Cereals	Industrial Raw Materials*	Manufactures
	(*Base :* Year ended August 1939 = 100)				
1952-53			444.5		371.3
	(*Base : 1952-53 = 100*)				
1951-52	111.8	112.5	94.7	130.9	103.3
1955-56	92.5	86.6	75.5	99.0	99.7
1960-61	124.9	120.0	104.4	145.4	123.9
1965-66	165.1	168.8	148.1	189.1	149.1
Jan. 1967	198.3	209.7	190.0†	237.1	167.2

Source : Report on Currency and Finance, 1965-66, Reserve Bank of India, Bombay, 1966.

* In the total weight of 155 for this group, fibres and oilseeds account for 121 ; other agricultural commodities included are lac, rubber, etc.

† Last week/week ended Saturday.

TABLE A.2—INDEX NUMBERS OF WHOLESALE PRICES OF AGRICULTURAL AND NON-AGRICULTURAL COMMODITIES

(Base : 1952-53 = 100)

Year	Agricultural Commodities			Non-agricultural Commodities	All Commodities
	Weights	(680)	(461)	(320)	(1000)
1950		113		99	109
1951		122		117	120
1952		102		104	102
1953		107		99	104
1954		99		100	100
1955		88		99	92
1956		102		105	103
1957		109		108	109
1958		112		109	111
1959		118		111	116
1960		124		121	123
1961		126		127	126
1961-62			122.9	—	125·1
1962-63			123.3	—	127.9
1963-64			131.5	—	135.3
1964-65			155.8	—	152.7
1965-66			169.3	—	165.1
1966-67			199.0	—	191.0

Sources : Economic Survey of Indian Agriculture 1960-61, Directorate of Economics & Statistics, Ministry of Food & Agriculture, Government of India, New Delhi, 1961, p. 56 ; and *Reserve Bank of India Bulletin*, Vol. XXI, No. 4, April, 1967.

TABLE A.3—PRICE TRENDS : 1950-1966

(Index Numbers : Base 1952-53 = 100)

Commodity	Percentage Change in 1956 over 1951*	Percentage Change in 1961 over 1956	Percentage Change in 1966 over 1961	Percentage Change in 1966 over 1951
All Commodities	− 18.4	+ 30.0	+ 35.2	+ 43.4
Agricultural Commodities	− 20.6	+ 31.9	+ 41.0	+ 47.6
Food Articles	− 17.4	+ 26.6	+ 47.4	+ 54.1
Cereals	− 14.0	+ 16.3	+ 56.0	+ 56.0
Raw Cotton	− 25.7	+ 3.7	+ 15.3	− 11.0
Oilseeds	− 28.9	+ 50.9	+ 61.2	+ 73.1
Manufactures	− 13.3	+ 26.0	+ 21.3	+ 32.5

Source: Report on Currency and Finance, 1965-66, Reserve Bank of India, 1966.

* 1951 was a year of rather high prices. The change is with reference to average prices in March of the given years.

TABLE A.4—INDEX NUMBERS OF PARITY BETWEEN PRICES RECEIVED AND PRICES PAID

Year	Assam (1944=100)	Kerala (1952-53=100)	Punjab (1938-39=100)	Orissa (1939=100)	West Bengal (Previous year=100)
(1)	(2)	(3)	(4)	(5)	(6)
1951-52	131.6*	—	91.7	—	—
1952-53	103.9	—	98.5	110.02*	—
1953-54	102.1	95.2	101.2	103.02	—
1954-55	99.6	85.2	89.9	113.81	101.1*
1955-56	96.4	82.4	99.1	126.24	98.9
1956-57	106.7	83.4	103.7	135.54	—
1957-58	118.6	81.9	96.9	123.92	—
1958-59	109.3	83.0	103.2	121.84	107.3
1959-60	99.1	92.8	94.8	—	98.2
1960-61	107.3	92.1	95.3	—	102.6
1961-62	115.5	88.8	87.8	—	98.7
1962-63	105.6	84.1	84.9	—	97.9

*Calendar years, *e.g.*, 1951 is identified as 1951-52 and so on, in column one.

Source: Courtesy : Directorate of Economics & Statistics, Ministry of Food & Agriculture, Government of India.

TABLE A.5—FOODGRAINS PRODUCTION AND PROCUREMENT

(in million tonnes)

Year	Production	Procurement	Per cent of (3) to (2)
(1)	(2)	(3)	(4)
1951-52	52.02	3.48	6.68
1952-53	59.24	2.09	3.52
1953-54	69.82	1.43	2.04
1954-55	68.07	0.13	0.19
1955-56	66.85	0.04	0.06
1956-57	69.85	0.29	0.41
1957-58	64.31	0.53	0.82
1958-59	77.14	1.80	2.33
1959-60	76.67	1.27	1.65
1960-61	82.04	0.54	0.66
Total (Years 1951-52 to 1960-61)	686.01	11.60	1.69
1961-62	82.71	0.48	0.58
1962-63	78.45	0.75	0.95
1963-64	79.43	1.41	1.77
1964-65	89.00	3.23	3.62
1965-66	72.30	3.72	5.14

Source : Bulletins on Food Statistics, Ministry of Food & Agriculture, Government of India.

TABLE A.6—GROSS IMPORTS OF CEREALS ON GOVERNMENT ACCOUNT

(in thousand tonnes)

Year	Imports of Wheat	Total Cereal Imports	Total Cereal Production	Col. (3) as per cent of Col. (4)
(1)	(2)	(3)	(4)	(5)
1951	2970	4800	45740	10.50
1952	2459	3930	46400	8.46
1953	1612	2040	51350	3.97
1954	197	830	61080	1.35
1955	435	600	58970	1.01
1956	1095	1400	57530	2.43
1957	2898	3630	60200	6.03
1958	2716	3224	56410	5.71
1959	3553	3868	65490	5.90
1960	4386	5137	64873	7.91
1961	3092	3495	69310	5.04
1962	3250	3640	70951	5.13
1963	4073	4556	67008	6.80
1964	5621	6266	70188	8.92
1965	6583	7450	76560	9.73
1966	—	10340	62250	16.61

N. B. : Year 1951 refers to agricultural year 1950-51 and so on.
Source : Economic Survey, 1966-67, Ministry of Finance, Government of India, New Delhi, 1967.

TABLE A.7—GROWTH RATES (COMPOUND) OF DIFFERENT CROPS : 1949-50 TO 1964-65

Crops	Production per cent	Area per cent
Rice	3.37	1.26
Wheat	3.97	2.70
Jowar	2.50	0.91
Cotton	4.44	2.42
Groundnut	4.18	3.81
Sugarcane	4.59	3.26

Source : Growth Rates in Agriculture 1949-50 to 1964-65, *op. cit.* Table 3.3.

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