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AGRICULTURAL GROWTH IN CHINA AND INDIA:
SOME REFLECTIONS ON THE ROLE OF
PRICE AND NON-PRICE FACTORS

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The rate of growth of agricultural output in China over the last three decades seems to have been on the average about the same as in India, though over shorter periods it has appeared to be at times much higher (as between 1952 and 1957) and at times lower (as in the period 1958 to 1964)^[1,15,20]. In both countries there have been very sharp fluctuations in output due to natural factors (as in China between 1959 and 1961 and in India in 1966, 1967, and 1980). Superimposed on the above there have been however much longer downward swings and near-stagnation of output in China, particularly in the 1960's, attributed largely to major policy shifts in agriculture and related developments; there have been also similar upswings following reversal of some of these policies, as in the period from 1970 and in a more spectacular way after 1976. How precisely these swings are related to the policies followed is therefore very important for the interpretation of China's growth experience in agriculture during this period and the inferences one draws from it.

There were two clearly distinguishable dimensions in the policy shifts initiated in China from the end of 1958. One related primarily to agrarian organisation and institutions, in particular the formation of communes, brigades and work teams for operational purposes following collectivization, and absorption of private plots; the other was concerned with production policy, in particular the great stress that came to be placed on self-sufficiency in food and, more generally, on non-price factors in agricultural production. The latter was reflected at

the national level in the policy of "taking grain as the key link" and at the local level in the slogan of "grains first", as well as in the closure of rural collective markets (first in 1959 for a short period and then for a decade from 1966) and in the apparently widespread practice of fixing output targets for crops without taking into account their implications in terms of costs and incomes for the production teams concerned.

In regard to the first, the judgement of Joan Robinson early in the 1960's that the three-tier system associated with communes combined the advantages of small-scale and large-scale operation, and thereby answered the problems of scale of management, has had the support of other informed observers.^[3,17,18] In fact, as recently as 1981, in the most authoritative analysis of China's economy published within the country, the well-known Chinese economist, Xue Muqiao, has observed that "the system of a 'three-level ownership with the production team as the basic unit' in the people's communes is basically in harmony with the level of productive forces at the present stage".^[9] The only modification considered necessary in this system was the restoration of private plots, at any rate until 1979.^{1/}

Most of the criticism has been focussed on production and price policy, in particular that of "taking grain as the key link" (which is said to have hindered the development of other crops)^{2/} and at the same time keeping prices of all agricultural products too low. "Authoritarianism prevailed in agriculture", says Xue, "the areas to be sown with various crops were designated by arbitrary directives, cash crop growers were instructed to achieve self-sufficiency in foodgrain, and the collectives

were not allowed to diversify their economy. For years, therefore, the output of cash crops dwindled, the peasants earned less and less, and grain output showed little increase". Moreover, the price of foodgrains was kept unchanged for twelve years from 1966, with the result that in some of the low-yielding areas the collectives were earning "hardly enough to maintain even simple reproduction" and in even some of the high-yielding areas a higher output did not bring more income because of the rising costs of production. Consequently, "per capita grain output in 1977 was roughly the same as in 1957 and total cotton output remained at the 1965 level."^[9]

The view that the root cause of China's agricultural problems during the decade 1966-76 was not collectivization per se but the abandonment of prices as the regulatory mechanism and the closure of trading opportunities has received support from some independent analysts.^[7] It has been even suggested that many of the counties in China since then identified as "the poorest"^{3/} were once prosperous on account of the opportunities open for specialized non-grain crop production; that widespread poverty in at least some of them is apparently a phenomenon of recent origin traceable to the denial of the opportunities for specialization; and that therefore "a significant portion of poverty in rural China in the late 1970's was policy induced and not the consequence of resource endowments or other natural constraints".^[7]

It is difficult however to come to any firm conclusion, on the basis of available evidence, whether and how far grain prices could have been raised given the various constraints operative in China during this

period; what would have been the other implications of freely promoting specialized crop production at this stage; and how it would all have affected the scale and incidence of rural poverty in the country. Xue himself has referred at length to the serious problems involved in raising farm prices in the 1950's, indeed upto the middle of the 1960's, emphasizing in particular their far-reaching redistributive effects and the high subsidies and complex wage adjustments required to soften the impact of the higher prices on other vulnerable sections in both the rural and the urban sectors:

"Rises in farm prices bring in their wake a rise in the prices of foodstuffs and possibly in those of light industrial products made from agricultural raw materials. This affects the livelihood of the workers, particularly those getting lower wages. In the first ten years and more after the founding of New China, we came across this problem several times when we raised grain prices. To solve the problem, the state raised only the purchasing power of grain but not its selling price. Thus the purchasing price exceeded the selling price and the state had to cover the difference by spending several thousand million yuan a year. The situation was similar with non-staple foods like meat and eggs. Food-grain was sold not only in the cities but also in the cash crop areas. After the purchasing prices for grain were raised, production teams in grain-producing areas charged more for the grain allocated to their members as a matter of course. Thus peasants who produced grain paid more for it while those in cash crop areas who did not produce it paid less for the commodity grain provided by the state. That was obviously unfair. To solve this contradiction, we raised the prices of foodgrain sold to rural inhabitants and placed them on a par with the purchasing prices in 1964. Peasants in cash crop areas didn't mind paying for their food grain at the same price as the grain producers on account of the higher purchasing prices for cash crops. But this created another problem, namely, the grain sold to peasants in cash crop areas, like the grain allocated to grain producers, now became more expensive than that sold to urban workers. In other words, grain was generally cheaper in the cities than in the countryside....To solve this contradiction, the state raised the prices of grain sold to urban residents in 1965, putting the selling prices in cities and towns on a par with those in rural areas. Raising the selling prices of grains affected the workers, especially those in the lower income brackets. It was suggested that the fiscal gains from

the price increases be added to the wage funds and used for wage increases. But the workers' families varied in size and, for a large family facing financial difficulties, a slight increase in wage could hardly cover the additional expenses on grain. In the absence of a definite plan for wage increases, the state added a provisional grain subsidy to wages. Today the same contradiction has appeared as a result of the recent state decision to raise the purchasing price of grain. It seems that an increase in the selling price of grain should be effected simultaneously with a universal rise in wages made possible by advances in production, so that the contradictions between workers and peasants may be solved step by step". [9]

There are also grounds to believe that, in the period to which Xue refers (i.e. from the early 1950s to the middle of the 1960's), retail prices probably rose very much faster (at over 8 per cent per annum) than indicated by the official retail prices (which recorded increases at the rate of only 0.3 per cent during 1954-58 and 1.9 per cent during 1958-64), even though the prices of food items were kept stable (presumably through subsidies); the rate of increase in the retail prices of non-food items (particularly of "subsidiary food, luxuries and clothing") was not unrelated to the policy followed in regard to food prices, in view of the practice of using prices "as a tool for collective revenue, in addition to considerations of level of living, and balancing supply and demand". [21]

Moreover, the empirical evidence that has been cited to show the rapid pace of substitution of cash crops such as sugarcane and cotton for grain in recent years, in areas where specialized production of these crops were possible, is only suggestive of the difference that might have been made by a more permissive price and production policy earlier. The approach of Chinese farmers to the so-called 'industrial' or 'technical' crops (which include not only fibers like cotton but

oil-bearing seeds, tobacco and sugarcane) was very cautious even traditionally, and it required various governmental guarantees to persuade them to grow those crops on an extended scale in the 1950's.

"In prewar times, very few farmers in China specialized in the production of technical crops. Their main aversion to these crops was a lack of security....After the Chinese Communists came to power, the government had tried to persuade some farmers to specialize in the production of important technical crops in the places most suited to them... For cotton, sugarcane and sugar beets, concentrated and specialized production gradually developed in many localities.... The government tried to guarantee stable supplies of grain and feed to these areas, regardless of the general situation of grain production in the country. However, the situation changed in the early 1960s. Because of severe crop failures in three consecutive years, the government could no longer maintain the guaranteed supply of food to the districts specializing in technical crops....It was only after 1963, when the food situation had considerably improved, that the government again shifted attention to the production of technical crops."^[3]

After 1976 this policy required large scale imports of grain from abroad (between 8 and 15 million tonnes per annum) as well as considerable supplies of chemical fertilizers to those areas, for bringing about further expansion of such specialized crop production; the larger scale of imports would not have been possible without the substantial increase in foreign exchange earning that began to accrue from oil exports from the middle of the 1970's. Even then the extension of area under these crops over the last decade has not been as significant in the country as a whole as may seem from the estimates for relatively small regions, covering a few counties in particular provinces, where there have been concentrations of some of them.^{4/}

In fact, the growing population and its subsistence requirements have pressed so heavily on the available land that even the area under

soybeans (which is to a large extent consumed as food but is also used for other purposes, and has been classified as a non-grain crop since 1956) has declined very sharply, from 12.7 million hectares in 1957 to 7.6 million hectares in 1981. Since soybeans are an important source of proteins for the bulk of the population this has obviously very serious nutritional implications but, as in the case of pulses in India, even the free play of market forces seems incapable of increasing either the area under this crop or its output to any significant extent in the absence of a major yield-raising technological breakthrough.

In India the pressure of population on land has been actually much less intense than in China (per capita availability of land being nearly twice as high), and such restrictions as have been operative at times on inter-crop shifts in the use of land have been relatively insignificant. Indeed, in the earlier period under British rule, there was an active policy of promoting the cultivation of 'commercial' (i.e. non-grain) crops. Yet, ever since the early 1920's, there has been no increase in the relative share of these crops in the country as a whole, and the share of foodgrains has remained remarkably steady over the last three decades at about 75 per cent of the gross sown area.^{5/} Apart from the importance attached by farmers to meeting their subsistence requirements there have been also other constraints, such as those imposed by climate and soil, on the scope for any major shifts in the cropping pattern in response to changes in relative price. It has therefore been found that, while the play of market forces could be an effective determinant of non-grain crops in total cropped area and even in bringing about locational shifts in area, there were severe limits to what could

be achieved through changes in relative prices alone.^[11]

The major source of productivity growth in Chinese agriculture in the 1950's is claimed to have been the increased specialization in cropping patterns during this period.^[7] In India, in the 1950's, a substantial part of the growth in agricultural output came from extension in the area of land under cultivation, but to the extent there was increase in productivity this was evidently the case in India also. Much the greater part of the increase in productivity realized in the 1950's has been found to have come from shifts in the cropping pattern within certain regions from foodgrains to non-foodgrain crops (which generally yielded higher value of output per hectare), and among foodgrains from the lower value crops (such as millets) to the higher value crops (such as wheat), as well as from locational shifts of some important crops (such as rice) from regions in which yields were lower to others in which they were higher. However, in the 1960's in contrast, as much as two-thirds of the overall productivity increase was from increase in "pure" yield.^[11] It is a matter for closer investigation how far the options available in regard to the cropping pattern and the constraints on it were similar in the two countries.

Still more pertinent perhaps to the interpretation (and rationale) of the policies followed in China during the 1960s in regard to cropping patterns, particularly the stress placed on self-sufficiency in foodgrain in each region, is the close conformity found in India between per capita output of foodgrain and per capita calorie intake among the rural population in the different States, and the consequent large variation in the latter. Even in a year such as 1961-62, when there were no administrative

restrictions on inter-State movement of foodgrain, not only was the total volume involved in such movement relatively small compared to total foodgrain output (well below 10 per cent of it) but the direction in which it moved was mainly towards urban areas. Evidently the incomes of rural buyers of foodgrains in the 'deficit' States (i.e. in those in which the supplies were not adequate to ensure higher levels of per capita calorie intake) were too low to attract supplies from the 'surplus' States through normal trading channels. Since the market mechanism has been inadequate to bring about greater evenness in the regional distribution of calorie intake, an obvious inference drawn has been that policy must be oriented towards greater growth of foodgrains output in areas where per capita calorie intake is low. [2,12,16]

Keeping this in mind, we may take a look at the province-wise and region-wise estimates of grain output in China in 1952 and 1957, as well as of average per capita grain output in the years 1955 to 1957 presented in Table 1.^{6/}

Table 1: Province-wise and Region-wise Grain Output in China, 1952-1957

<u>Province/Region</u>	<u>Net grain output</u> (in mn tonnes)		<u>% change,</u> <u>1952-57</u>	<u>Average output</u> <u>per capita,</u> <u>1955-57</u> (in kg)	
	<u>1952</u>	<u>1957</u>			
Heilungkiang	7.15	6.17	- 13.7	558	(188.5)
Kirin	4.92	4.28	- 13.0	433	(146.3)
Liaoning	4.89	5.94	+ 21.5	289	(97.6)
<u>North-East</u>	<u>16.96</u>	<u>16.39</u>	<u>- 3.4</u>		
Inner Mongolia	3.30	2.81	- 14.8	406	(137.2)
Sinkiang	1.61	2.03	+ 26.0	359	(121.3)
Kansu	2.84	4.57	+ 60.9	324	(109.5)
Tsinghai	0.37	0.64	+ 73.0	305	(103.0)
Shensi	3.76	4.28	+ 13.8	272	(91.9)
<u>North-West</u>	<u>11.88</u>	<u>14.33</u>	<u>+ 20.6</u>		
Hopsi	9.08	9.65	+ 6.3	197	(66.6)
Shansi	3.66	3.26	- 10.9	246	(83.1)
Shantung	10.96	12.08	+ 10.2	247	(83.4)
Honan	9.22	10.82	+ 17.4	258	(87.2)
<u>North</u>	<u>32.92</u>	<u>35.81</u>	<u>+ 8.8</u>		
Shanghai	0.04	0.03	- 25.0	110	(37.2)
Kiangsu	10.16	11.58	+ 14.0	268	(90.5)
Anhwei	8.24	11.53	+ 39.9	341	(115.2)
Chekiang	6.87	7.79	+ 13.4	307	(103.7)
<u>East</u>	<u>25.31</u>	<u>30.93</u>	<u>+ 22.2</u>		
Hupei	8.32	10.97	+ 31.9	347	(117.2)
Hunan	10.25	11.23	+ 9.6	305	(103.0)
Kiangsi	5.67	6.83	+ 20.5	362	(122.3)
<u>Central</u>	<u>24.24</u>	<u>29.03</u>	<u>+ 19.8</u>		
Fukien	3.67	4.38	+ 19.3	285	(96.3)
Kwangtung	9.39	12.21	+ 30.0	290	(98.0)
Kwangsi	4.93	5.32	+ 7.9	316	(106.8)
<u>South East</u>	<u>17.99</u>	<u>21.91</u>	<u>+ 21.8</u>		
Szechwan	16.70	22.98	+ 37.6	302	(102.0)
Kweichou	3.40	5.25	+ 54.4	289	(97.6)
Yunnan	4.43	6.25	+ 41.1	323	(109.1)
<u>South-West</u>	<u>24.53</u>	<u>34.48</u>	<u>+ 40.6</u>		
CHINA (Official)	<u>154.08</u> (154.39)	<u>183.33</u> (185.00)	<u>+ 18.9</u> (+19.8)	<u>296</u>	(100.0)

Source of data: Kenneth R. Walker [23, 25]

It will be seen that the three regions in Northern China put together contributed less than 5 million tonnes to the increase of about 30 million tons achieved in the period 1952 to 1957; on the other hand they accounted for nearly 40 per cent of China's population. Moreover the average output of grain per capita in the four provinces of Hopei, Shansi, Shantung and Honan, which constituted North China, was considerably below the national average in 1957; and the same was the case, though to a lesser degree, in the Shensi Province of North-West China. About 30 per cent of China's population at that time lived in these provinces.

The observation made by Mao Tse-tung in the early 1960's that it was dangerous to rely on other provinces (and other countries) for food, and the goal of regional self-sufficiency he is reported to have himself set for the three provinces of Honan, Hopei and Shantung,^[24] assume therefore a much sharper focus in the light of these facts. It was perhaps not only the broader political and strategic factors he had in mind but also the more mundane considerations associated with food security.

One needs also to keep in mind the problems posed by the regional distribution of water resources and soils in China, and its implications for agricultural development strategy:

"The essence of China's water resource problem is an unhappy contradiction of climate and geography. Of the only 11 per cent of China's area that is cultivated, more than half, and by far the best half in terms of soil quality and terrain, is located in north China, whereas south China has largely mountainous terrain and leached, acid soils. But south China, with a warm climate and a long-growing season, also has the heaviest rainfall and about two-thirds of the total surface flow. Because more than half of the country's rainfall is concentrated in

2 or 3 summer months, spring droughts and summer floods are a perennial problem. Annual fluctuations in rainfall are quite severe, especially in the north: in the interior, the ratio of largest to smallest rainfall is 2 or 3 to 1, or more; in the northeast and northwest, it is as much as 10 to 1. Natural disasters tend, therefore, to be much more severe in the north — drought because of a lack of surface water sources and a fluctuating water table, which makes shallow wells an unreliable water source; flood because of a severe erosion problem in the denuded loess soils of the northwest, which has led to a buildup of the bed of the Yellow River to a level well above that of the north China plains and a lack of storage area for runoff during the flood season. As a result of the drought problem, irrigation requirements for secure yields in dry farming in the north are not substantially lower than they are for paddy in the south.

It is not surprising that the extension of water resources to non-irrigated or poorly irrigated areas should have been the linchpin of Peoples Republic of China agricultural development strategy. As the securely irrigated area grew, it was possible to substitute high-yielding crops and extend multiple cropping, employing improved seeds, more fertilizer, and intensive cultivation techniques to great effect". [29]

The policies followed in the period 1966-76, whatever their other consequences, had in fact the effect of increasing the area under irrigation very substantially. As can be seen from Table 2, it rose as a proportion of cultivated area from around 30 per cent in the early 1960's to about 38 per cent by 1970 and nearly 45 per cent by 1976. This also enabled multiple cropping to be extended on a much larger scale than before.

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Table 2: Cultivated, Irrigated and Gross Sown area in China,
1952-76

(in mn hectares)

<u>Year</u>	<u>Cultiva-</u> <u>ted area</u>	<u>Irrigated</u> <u>area</u>	<u>Sown area</u>	<u>Year</u>	<u>Cultiva-</u> <u>ted area</u>	<u>Irrigated</u> <u>area</u>	<u>Sown area</u>
1952	107.9	21.3(19.7)	141.3(130.9)	1965	107.0	34.7(32.4)	156.0(145.8)
1953	108.5	22.0(20.3)	144.0(132.7)	1966	107.0	37.3(34.9)	155.6(145.4)
1954	109.4	23.3(21.3)	147.9(135.3)	1967	107.0	38.0(35.5)	155.8(145.6)
1955	110.1	24.7(22.4)	151.1(137.2)	1968	107.0	38.7(36.2)	156.1(145.9)
1956	111.8	32.0(28.6)	159.2(142.3)	1969	107.0	39.4(36.8)	156.6(146.4)
1957	111.8	34.7(31.0)	157.2(140.6)				
1958	107.8	34.7(32.2)	156.3(145.0)	1970	107.0	40.3(37.7)	157.5(147.2)
1959	107.3	33.8(31.5)	151.6(141.2)	1971	107.0	41.5(38.8)	159.3(148.9)
1960	107.2	32.9(30.7)	146.9(137.0)	1972	107.0	42.5(39.7)	160.4(149.9)
1961	107.1	32.1(30.0)	142.2(132.8)	1973	107.0	44.0(41.1)	162.6(151.6)
1962	107.0	33.0(30.8)	145.7(136.1)	1974	107.0	45.3(42.3)	163.9(153.2)
1963	107.0	34.0(31.8)	149.3(139.4)	1975	107.0	48.0(44.9)	165.7(154.9)
1964	107.0	33.3(30.8)	152.0(142.6)	1976	107.0	48.0(44.9)	167.3(156.4)

[The figures in brackets relate to irrigated area as percentage of cultivated area and to cropping intensity respectively].

Source of data: Anthony M. Tang and Bruce Stone [22]

Though province-wise estimates of increase in irrigated area are not available for the period upto the late 1970's, it is clear from the available production estimates that 44 per cent of the total increase in grain output between 1955-57 and 1978-80 (which itself was about 140 million tonnes) took place in the three northern regions. The increase in output in the four Provinces of North China referred to earlier (Hopei, Shansi, Shantung and Honan) was 95 per cent during this period. [25]

It is therefore possible to argue that the increase in agricultural production achieved earlier in China in the 1950's was based largely on the restoration and fuller utilization of the traditional infrastructure of irrigation located largely in the south;^{7/} that with the relatively high yield levels already achieved during this period (particularly in the case of rice in which yield per hectare in China was more than twice as high as in India), and the very limited scope for extension of cultivated area, the only way of maintaining adequate rates of growth and correcting the regional imbalances was through large-scale investment for increasing further the area under irrigation (particularly in the north); and that therefore apart from the ideological considerations generally mentioned, a major reason for the far-reaching organizational changes introduced from the early 1960's through the commune system was essentially to mobilize rural labour on the necessary scale for undertaking such investment and for other related activities.

There is much evidence to support such an interpretation. The circumstances in which communes developed are for instance very pertinent to this interpretation.

"The emergence of communes in Communist China was rather accidental. The term commune, as a remote goal for agricultural transformation, had not appeared in any planning documents or Party resolutions before 1958. Before June 1958, the idea of forming such organisations in rural China had perhaps not even occurred to Mao Tse-tung himself. All the Party directives in May and June of that year concerning agriculture mentioned that the task for the Second Five Year Plan period was to consolidate collectives which by 1958 had engulfed almost 99 per cent of farm households. The early communes were formed purely by local cadres to solve labor shortages early in 1958.... Since these organizations appeared unexpectedly and there was little experience even in other Communist countries that could be borrowed, policy-makers in China, including Mao himself, were not sure what attitude the government should take toward them. Thus, Mao made a special trip to Hopei and Honan to investigate the newly founded communes. He was deeply impressed by them. Mao's favourable comments served as a signal to encourage the mushrooming of this institution". [3]

Unfortunately serious errors were made in the designing and execution of the projects conceived for the purpose and the results were initially so disastrous that a long period was required to recover from them.^{8/} However, there is no evidence to suggest that the underlying strategy was itself ill-conceived. The resumption of high rates of growth in agricultural production in China from 1970 onwards can in fact be attributed to no small extent to the substantial infrastructure that was built up in the course of the 1960's through investment in water and soil conservation (as well as in chemical fertilizers).

This is not to deny that the role of prices was under-rated and even neglected during this period. Apart from the possible failure to raise foodgrain and other prices selectively and by slow stages (as indicated in Xue Muqiao's analysis referred to earlier) there was clearly a strong tendency to assume that the opportunity cost of peasant labour was equal to or very close to zero. This was often disguised,

and thus encouraged, by the system of payment of remuneration with reference to work points; for, while the number of work points earned by the members of a team could increase as a result of additional work done by them, such as on capital construction, the value of each work point depended essentially on the consumption fund available for distribution. When the work put in on capital construction, or in activities such as preparation and collection of organic manure, led to significant increases in grain output the value of the work point would rise; but when output ceased to increase, or its maintenance at high levels required large quantities of inputs that had to be purchased from outside (such as for tractors for deep ploughing or chemical fertilizers, weedicides, etc), the value of a work point could fall. One would then expect the additional income realizable from private plots to hold much greater appeal for the peasant, and resistance to develop to multiple-cropping and other such practices beyond the point where they do not help to increase peasant incomes perceptibly. By the early 1970's the lack of material incentives on this account was evidently becoming a serious problem in mobilizing labour in collective activity.

Among the first to point this out was Shigeru Ishikawa:

"This tendency has come to the fore in the new phase of agricultural development and seems to be associated with the attempt of government to introduce new varieties of crops or new cropping systems for increasing land productivity in the area where the project for flood control, irrigation or land improvement has been completed. The introduction of new varieties with new land infrastructure brings about an upward shift in the marginal productivity of labour schedule. However, it often results in a crossing of old and new isoquants (or of old and new total yield curves) and requires a change in the previous input combination, i.e. towards a deeper ploughing and a greater application of farm yard manures. Therefore, realisation of increase yield potential of new varieties tends to require increased

labour inputs. However, there exists an upper limit for increased labour inputs to have a higher marginal product than previously. The problem is that the government operating on the total yield criterion, tries to increase the employment of labour beyond this limit, which may not be welcomed by farm-level decision units for whom the marginal yield criterion is usually more relevant..... The (government's) expectation appears to be that mechanisation, at least in the present phase, will substantially raise the marginal productivity of labour applied to particular farming operations....Here, it is suggestive to examine the recent frequent reports about the emergence of a number of brigades whose production has increased but whose income has decreased, in the areas where intensive mechanisation is introduced. The main reason cited for this is the large increase in the cash cost of chemical fertilizer, agricultural chemicals, repairing of farm machinery and electricity".^[5]

The subsequent discussions within China on the mistakes made in attempting to increase grain production through maximized multiple cropping bear out this analysis.^[27]

This is in all probability the main explanation for the changes in agrarian policy, in regard to both organisation and prices, that have been taking place in recent years in China. But it has to be then also recognised that the large-scale investment activity in agriculture which the organisational innovations made possible was an important and even indispensable phase in its development. Prices and other material incentives can evoke substantial increases in output only after the other constraints have been effectively relaxed.^{9/}

The gravity of those other constraints on agricultural growth has been recognised in India for a long time. Under the existing system of private ownership of land, not only are there large inequalities in the size of operational holdings but each holding is often fragmented in too many parcels. These parcels "are so haphazardly laid out that

where irrigation is available, it is not capable of being used to the best advantage; and where cultivation depends on rainfall, the conditions for proper soil and moisture conservation are vitiated". It has therefore been proposed that consolidation of holdings must be made compulsory under law; that "prior to consolidation, (a) the entire land in each village should be topographically surveyed and levelled to receive water wherever water is already available, (b) the irrigation channels and drains should be constructed for the entire village, (c) if there exists a potential for additional minor irrigation (underground or surface) works, these works should be constructed and rationally located from the point of distribution of water, (d) in dry villages, without any potential for underground water resources, land levelling and contour bunding for soil and moisture conservation (and construction of storage tanks for collection of rain water) should be effected for the entire village or a group of villages at a time and (e) village and feeder roads should be properly aligned". The land so developed was to be then distributed back among the owners, such that "each one of them has his holding in one, or at most two, compact pieces", through "an equitable and democratic procedure".^[10] It has not however proved to be politically feasible in India so far, and these problems therefore continue to be the most serious constraints on balanced agricultural growth.

Though the rate of growth of agricultural output in India compares favourably with that recorded in China over the last three decades, not only are yield levels much lower (except in the case of wheat) but cropping intensity remains very low^[12] and the regional

disparities in agricultural growth have been considerable.^[29] Nor has it been possible in India to shift the terms of trade consistently in favour of agriculture, as has evidently been done in China. It is of course important to note here that prices of agricultural commodities in the 1950's were much higher in India relatively to prices of industrial goods than in the pre-War period, while the opposite was the case in China;^[8] this has to be allowed for in comparing the changes in relative prices made since then in the two countries. Nevertheless, the fact remains that the income distribution effects of such shifts are much more serious and difficult to cope with within the institutional framework of the Indian economy. In the absence also of a radical redistribution of land, as in China, the impact made on rural poverty through the growth process in agriculture has been naturally much less perceptible.

November 30, 1982

Footnotes

- 1/ In December 1978, at the Third Plenary Session of the 11th CPC Central Committee, there was a consensus of opinion among the new leadership that even though the principle of payment according to work done was accepted as the basis for the distribution of collective income, the basic accounting unit, namely the production team consisting of 30 to 40 households, was too unwieldy for the purpose; and that it was therefore necessary, for promoting productive efficiency, to develop a system of delegating responsibility to lower levels i.e. to households, individuals, and tiny groups of a few households or individuals. By the end of 1981, more than 90 per cent of the production teams in the country are reported to have adopted this 'responsibility system' in one form or another. Though it represents an innovation of potentially great significance, marking the acceptance of a proposal originally made in 1961 by Liu Shao-chi (and severely criticized then by Mao Tse-tung), it is too early yet to attempt an evaluation. Some important questions have been raised however by A.R.Khan. [6]
- 2/ "The policy of 'taking grain as the key link' hindered the development of cash crops as well as forestry, animal husbandry and fishery. To increase grain output, woods were destroyed in hilly areas to expand farmland and forage grass was removed in pastoral areas to grow grain crops. Not only was this disastrous to forestry and stockbreeding, but soil erosion grew serious and droughts and waterlogging became frequent. Consequently, grain production was slowed down as well". [9]
- 3/ The poor counties in China have been identified as all those with an average per capita collective distributed income of less than fifty yuan annually in the three successive years 1977-1979. [14]
- 4/ According to estimates presented by Lardy [7] the area sown under sugarcane in Fukien Province increased by over 75 per cent between 1975 and 1980 (raising sugarcane output to three times the level touched in 1957); and similarly, the area under cotton in four prefectures of Shantung Province increased by more than 50 per cent in 1980 following guaranteed supplies of cereals and increased supplies of chemical fertilizers. However, as will be evident from the estimates for the country as a whole, the increase in area under these crops has been very modest over the decades.

(in mn hectares)

	<u>1952</u>	<u>1957</u>	<u>1970</u>	<u>1976</u>	<u>1981</u>
Cotton	5.6	7.2	5.0	4.9	5.3
Sugarcane	0.2	0.3	0.5	0.7	0.7

The data for 1952 and 1957 are from the official statistics published by the government; for 1970, 1976 and 1981 the source is the FAO.

- 5/ In China the share of non-food grain crops (counting in soybeans among them) has apparently fallen somewhat below 20 per cent of gross sown area, after rising to about 23 per cent between 1952 and 1957. According to targets set since 1976, planted grain acreage will be only 80 per cent of the country's cultivated land at the end of the period of "readjustment". [4]
- 6/ 'Net' grain output excludes soybeans which were classified under grain till 1956. All estimates relate to unhusked grain.
- 7/ "...altogether only 8.3 per cent of the total increase in irrigated area in 1949-56 was attributable to large irrigation works. About 90 per cent of the irrigated area added in 1949-56 was served by small-scale irrigation systems. One official source has admitted that the bulk of this increment actually resulted from repairing and restoring old irrigation systems which were unused during wartime because of a lack of maintenance and the displacement of farmers". [5], pp. 123-124
- 8/ One of the best accounts of this period, with a clear analysis of the precise reasons for the failure, is to be found in Kang Chao's study. [3], pp. 124-138.
- 9/ One has to be perhaps also cautious in accepting the estimates of reported increases in agricultural output in China during the period in view of some important unresolved questions concerning Chinese agricultural statistics. According to the official estimates, the total area under cultivation in 1979 was slightly less than 100 million hectares, 13 mn hectares lower than in 1957. Evidently, photographic analysis of China by foreign satellites has indicated the area under cultivation to be nearly 150 million hectares; and subsequent aerial analysis of several regions by Chinese authorities is reported to have revealed considerable difference (ranging from 8 to 50 per cent) between the cultivated area as reported from those regions and the actual area. It would appear that ever since the policy of emphasizing increased per-acre yield of grain was implemented, there has been under-reporting of the cultivated area. According to Sun Yefang, an adviser to the Chinese Academy of Social Sciences, such under-reporting has not been corrected so far. (Cf. Economic Management, No. 2, 1981). [28] It is therefore also possible that some of the increases in output now being reported are increases realized earlier that were not reported then.

References

- [1] Pranab K. Bardhan, "Chinese and Indian Agriculture: A Broad Comparison of Recent Policy and Performance", The Journal of Asian Studies, Vol. XXIX, No. 3, May 1970.
- [2] Centre for Development Studies, Poverty, Unemployment and Development Policy: A Case Study of Selected Issues with reference to Kerala (United Nations, 1975, ET/ESA/29).
- [3] Kang Chao, Agricultural Production in Communist China, 1949-1965 (Madison, Milwaukee, and London, 1970)
- [4] Xu Dixin, "Prospects for China's Economy in the 1980's", Chinese Economic Studies, Fall 1980, Vol. XIV, No. 1.
- [5] Shigeru Ishikawa, "China's Food and Agriculture: A Turning Point", Food Policy, May 1977.
- [6] A.R. Khan, "Institutional Changes in Rural China in Recent Years", ILO Asian Regional Team for Employment Promotion, Bangkok, July 1982.
- [7] Nicholas Lardy, "Comparative Advantage, Internal Trade and the Distribution of Income in Chinese Agriculture" (paper prepared for the Trade and Development Workshop, Yale University, January 25, 1982).
- [8] Ta-Chung Liu and Kung-Chia Yeh, The Economic of the Chinese Mainland: National Income and Economic Development, 1933-1959.
- [9] Xuo Muqiao, China's Socialist Economy (Foreign Language Press, Beijing, 1981).
- [10] B.S. Minhas, "Rural Poverty, Land Redistribution and Development Strategy: Policy", Sankhya: The Indian Journal of Statistics, 1974, Volume 36, Series C, Parts 2 and 4.
- [11] Dharm Narain, "Growth of Productivity in Indian Agriculture", Occasional Paper No. 93, Department of Agricultural Economics, Cornell University, June 1976, published in Indian Journal of Agricultural Economics, Vol. XXXII, No. 1, January-March 1977.
- [12] Dharm Narain and Shyamal Roy, Impact of Irrigation and Labor Availability on Multiple Cropping: A Case Study of India (International Food Policy Research Institute, Research Paper 20, November 1980).
- [13] P.G.K. Panikar, "Inter-Regional Variations in Calorie Intake", Economic and Political Weekly, Special Number, Vol. XV, Nos. 41 to 43, October 1980.

- [14] Peoples Republic of China, Ministry of Agriculture, Communs Management Bureau, "Poor Countries in China, 1977-79", Hsein-hua yueh-pao (Now China Monthly), 1981, No.2.
- [15] K.N.Raj, India, Pakistan and China: Economic Growth and Outlook (Allied Publishers, 1967).
- [16] K.N.Raj, "Integration of Population with Development in Asia" (paper prepared for the Asian Conforonco of Parliamentarians on Population and Development held in Boijing in October 1981, published in Popoli, Vol.8, No.3, 1981.)
- [17] Joan Robinson, "The Organisation of Agriculture", Bulletin of the Atomic Scientists, June 1960.
- [18] Joan Robinson, "China Today: Economic Organization", The Journal of the Royal Society of Arts, No.5144, Vol.CXVI, July 1968.
- [19] Joan Robinson, "The Philosophy of Prices", in Contributions to Modern Economics (Basil Blackwell, Oxford, 1978).
- [20] Subramanian Swamy, "Economic Growth in China and India, 1952-1970: A Comparative Analysis", Economic Development and Cultural Change, Vol.21, No.4, Part 2, July 1973.
- [21] Subramanian Swamy, "Retail Price Index in the Peoplo's Republic of China", Review of Economics and Statistics.
- [22] Anthony M.Tang and Bruce Strong, Food Production in the People's Republic of China (International Food Policy Research Institute, May 1980).
- [23] Konneth R.Walker, Provincial Grain Output in China, 1952-57: A Statistical Compilation (Contemporary China Institute, 1977).
- [24] Kenneth R.Walker, "Grain Self-sufficiency in North China, 1953-75", The China Quarterly, September 1977.
- [25] Kenneth R.Walker, "China's Grain Production, 1975-80 and 1952-57: Some Basic Statistics", China Quarterly, June 1981
- [26] Thomas B.Weins, "The Evolution of Policy and Capabilities in China's Agricultural Technology", in Chinose Economy Post-Mao (Joint Economic Committee of U.S. Congress, November 1978).
- [27] "China's Cropping System Debate", Chinose Economic Studies, Winter 1981-82/Vol.XV, No.2.
- [28] Hiyoshi Egawa, "Chinose Statistics: How Reliable?", China Newsletter, No.33, July-August 1981 (publications Department, Japan External Trade Organisation, Tokyo).
- [29] G.S.Bhalla and Y.K.Alagh, Performance of Indian Agriculture: A District-wise Study (Sterling, Now Delhi 1979).

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