Competing ideology and agricultural strategy: current agricultural development in India and China compared with Meiji strategy

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For over twenty years the two largest countries of the world have been engaged in a conscious effort at improving the material (and spiritual) conditions of life of the masses. What makes the experiences of these countries interesting, is that their attempts at economic development are being made under two distinct political and economic ideologies. While Chinese leaders believe in a continuing revolution and the ultimate establishment of a Communist society through the dictatorship of the proletariat, Indian leaders aim at evolving towards a 'Socialist' society through a parliamentary democracy which allows for the coexistence of political parties of differing ideologies, within the framework of the Indian Constitution. The successes and failures of these experiments, together with the Japanese experience (and in more recent years the Taiwanese), widely acclaimed as a 'model' for the developing countries, have influenced and certainly will influence academic thinking on problems of economic development and policy-making in other developing countries. Questions are already being asked as to whether these experiences can serve as 'models' for the so-called 'Third World'. This paper, in an attempt to provide a somewhat tentative answer to this question, underlines the basic similarities of approaches in these three countries, and at the same time stresses the inherent pitfalls in comparisons between countries with different natural endowments, social and cultural traditions, and current economic and political ideologies.

Since the future pattern and pace of development are largely dictated by the base from which a country starts, it is necessary to begin with a brief account of the levels of yield and agricultural technology already achieved in China and India by the middle of the present century and to compare them with the situation in Meiji Japan. We intend to show that in terms of pre-modern agricultural technology around the 1880s there was not much difference between the three countries. In fact there are insufficient grounds for suggesting that at the time of the Meiji Restoration in 1868 Japan was on a higher plane in terms of agricultural technology, or that the rate of growth of agricultural output in the Meiji era was appreciably greater than that of India or China either then or in the last twenty years, or that Meiji agricultural strategy, based on indigenous resources, was a more realistic one in view of Japan's factor endowments. In fact for most of the Meiji era there was a lack of strategy and a relative neglect of agriculture by the State, at least as compared with India during the same period. The major breakthrough in Japanese agriculture came after the 1920s and in particular after the Second World War as a result of the massive use of modern inputs, like chemical fertilizers, pesticides and hybrid seeds. As such there was nothing unique about Japanese strategy.

The next stage in our argument is to show that in both China and India there was a fairly clear understanding of the problems of agriculture, institutional or otherwise. In spite of ideological differences, the strategies were similar. It is ironic that even the mistakes committed were in similar directions and in correcting these the two countries moved towards a similar strategy. In our view there were two main reasons for the relatively 'slow' rate of growth of agriculture: (i) a lack of proper appreciation of the high

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level of pre-modern technology already reached in these two countries and a somewhat excessive adherence to pre modern techniques and inputs, and (ii) a relatively slow pace of industrialization directed towards the production of 'modern' inputs like chemical fertilizer and pesticides. It is still debatable whether a sweeping revolutionary institutional change in China or a somewhat complacent attitude to such changes in India had a more than marginal long-term effect on agricultural development. The difficulties they faced were largely the product of the political systems of the two countries. But in both cases there is clear evidence of a lack of dogmatism and of a willingness to be flexible if things went wrong.

With regard to the evaluation of the overall success or failure of the two strategies, not only is the time period involved too short for a proper appreciation, in particular because of the marked shift in strategy in the early sixties, but also we do not have enough reliable information to make valid judgements and meaningful comparisons. For quite some time the verdict has to remain inconclusive.

Methodological Issues in Inter-country Comparisons

In the search for a quantitative measure of the levels of agricultural technology, economists have often used the per acre yields of various crops somewhere indiscriminately. Ranking various countries according to per acre yields of crops, irrespective of differences in size, soils, topography, and climate is clearly indefensible. Even though natural conditions might be the same between two countries or two regions, economic opportunities may influence the per acre yield of a crop. For instance, in the absence of a market for agricultural products the best quality land may be devoted to grains (say rice), but with new market opportunities for cash crops such lands may be diverted to a cash crop (say jute), rice being pushed to inferior land, thereby showing a decline in per acre yield. Economists are not unaware of these limitations, but both in analysis and policy recommendations the implications of such limitations are often overlooked.

In terms of the per hectare yield of various crops, the Chinese figures are invariably higher than both the Indian and the Japanese in the last quarter of the nineteenth century (Appendix, Table 1). There is of course the question of the reliability as well as the representativeness of such data, but on the whole it seems that both in China and India the maximum per hectare yield of paddy was much higher than in Japan. Some of the Indian figures, in particular those for Madras and Hyderabad, are fairly reliable, for in some cases the estimates are based on crop-cutting experiments by the district officers. On the basis of the prefectural data (Appendix, Table 1) we estimate that in Japan in 1885–9 nearly 60 per cent of the total acreage under paddy (i.e., approximately 1.55 million hectares) produced over 2 metric tons. No comparable national data are available for either India or China but in Madras alone 1.11 million hectares produced more than 2 metric tons during this period.

1. The use of a more abstract measure, like rice units, wheat units or grain-equivalent, for purposes of international comparisons is far more open to question. This method has been used by Losing Buck, Colin Clark and Margaret Haswell and Shigeru Ishikawa. In such conversions the total output of various crops is converted into a common denominator of a particular crop (e.g., rice or wheat)—or a nutritional element, such as calories—such as can be obtained either by the same acreage under cultivation or in exchange for total crop output at prevailing prices. Sometimes a combination of both is used. Clearly this method assumes a high degree of monetization, the perfect working of the price mechanism in the allocation of resources, maximizing behaviour on the part of consumers, and perfect substitutability among crops irrespective of differences in soil, topography, climate and economic opportunities. These scholars readily admit that such assumptions are unrealistic; they also accept that the price ratio between two products does not reflect very often the productivity differential in terms of weights. For Ishikawa himself confesses that 'in the countries of Asia the per hectare yield of paddy is two to five times larger in weight than that of miscellaneous grain, but the differential in price is smaller.' (S. Ishikawa, Economic Development in Asian Perspective (Tokyo: Kinokuniya, 1967) p. 225.) The use of International Consumption Units may be a bit more defensible, because the grains can be converted into a common nutritional standard. But even here, if rice as food is preferred to milllets and sweet potatoes, what does an equivalence really mean?

2. For example, see the following extract from Gilbert Etienne's splendid book Studies in Indian Agriculture: the Art of the Possible (Berkeley: University of California, 1968):

'Here, the differences between the States are striking. In 1955/6 the average rice yields for the whole of India was 850 kg/ha, for Bihar it was 520; for U.P. 700. For wheat the average national yield was 725 kg/ha, in the Punjab the yield reached 900 kg/ha. One must note, however, that compared with other countries, notably China, these figures are low. An increase of 50 to 100 per cent is not, therefore, an ideal or vain hope, but a reasonable goal well within the scope of achievement...'

(p. 25.)


'Such differences are noticeable not merely as between different areas but between different groups of farmers. In the same area the best farmers are known to have produced yields per acre several times higher than those produced by average farmers... In fact, while the best in Indian agriculture does not compare unfavourably with the best elsewhere, the difference between the best and the average is much wider in India than in technically advanced countries. This is both an index of the backward character of agriculture and a measure of its potentiality for development.' (pp. 12–13.)

The implicit assumption behind these statements is that the differences result mainly from differences in practices or techniques, which may or may not be the case. Regional differences in practice may themselves result from geographical differences. In fact geographical factors are so crucial that topography or water-table, may lead to differences between two farms belonging to the same farmer located in the same village. A typical example of this would be upland and lowland rice; even the cultural practices on the two farms may be significantly different. In some cases wide divergences between the best and the average, arising from the large size of the country and consequent diversities in geographical factors, will not be a measure either of backwardness or of potentiality. Nor many technically advanced countries are confronted with the problem of size in the same way as are India and China.
Whenever possible sheep and cattle were herded at walls—impregnated with nitrous salts—and ashes. Marshes and ditches, sweepings of the roads and dung, oil cakes, mud from the bottom of tanks, any of these countries. Most of the information is available to any appreciable extent in India for the nineteenth century is more reliable and information is. Terms like 'acres under irrigation' do not give any clue as to whether they refer to assured irrigation all the year round, or irrigation available for one season. Even for more recent times statistics on irrigation do not clearly differentiate between potential and effective irrigation. The very nature of the problem may create further difficulties. For instance, the effectiveness of a considerable part of minor irrigation works like wells, small canals, rivers, ponds, ditches depends largely on weather conditions. In years of favourable rainfall and read availability of water the total effective area under irrigation would normally be larger than in those years when rainfall is deficient. Even within the same year in summer a larger proportion of minor irrigation works dries up, thereby reducing the effective area under irrigation. Similarly, a double cropping index would invariably be higher in years with favourable rainfall than in years with deficient rainfall. As the supply of animal manure depends largely on the availability of fodder and the availability of green manure on reasonable rainfall, the supply of organic manure itself becomes a function of the weather conditions. Under the circumstances a satisfactory comprehensive picture of agricultural practices can be built only if we had a fairly long time-series for acreage under irrigation, double cropping, green manures, supply of cow dung and other manures, and so on. So far no such information is available to any appreciable extent in any of these countries. Most of the information is highly impressionistic, though the information on India for the nineteenth century is more reliable and has a wider coverage than that on the other two countries.

Pre-Modern Agriculture in China, India and Japan

From an examination of various sources we find that in all these countries manure consisted of animal dung, oil cakes, mud from the bottom of tanks, marshes and ditches, sweepings of the roads and walls—impregnated with nitrous salts—and ashes. Whenever possible sheep and cattle were herded at night on the fields. Branches and the leaves of all kinds of plants were trodden into the mud in rice fields. The use of green manure was quite common. Some ploughing in of leguminous and root crops was also being practised; probably wild grasses were more important as a source of manure in Japan than in India and China. Dried fish, bone meal and oil cakes.
were coming into wider use by the end of the nineteenth century. Early in the twentieth century oil cakes came to be widely used for direct fertilization; in India oil cake was primarily used as cattle feed, though some of it was applied directly to cash crops. The traditional sources of fertilizers were inadequate in all three countries, there was a considerable import of fish-meal and oil cakes into Japan. A significant export of oil cakes from China and India did not reflect a surplus of these. Chemical fertilizers remained almost negligible even in Japan until the end of the First World War. In 1917–21 the average per hectare use of chemical fertilizer in Japan did not exceed 0.15 kg. The one major difference between India on the one hand and China and Japan on the other was the use of night soil as manure. While in China and Japan night soil was a major source of manure, in India, because of religious prejudices, its use was limited. In some parts of the country night soil was being used in the 1870s. It is also probable that more cow dung was being burnt as fuel in India than in China or Japan, but this kind of loss may well be exaggerated. It is possible, however, although there is little relevant information available, that the Chinese farmers knew much more about the maturing of organic manure before use, or they knew more about the appropriate methods and appropriate timings for its application than their counterparts in India; but on the basis of evidence so far available to us, there does not seem to be any justification whatsoever for René Dumont’s assertion that ‘there is nothing in Indian agriculture that one may even describe as semi-intensive, for human manure is very little used and oil-cake is used almost as sparingly.’

If one goes by his own criteria of using in rotation ‘grasses, roots, kale and other fodder-crops’ which to him ‘represents a very real advance,’ pre-modern Indian agriculture was pretty well-advanced because, in many of their rotations, roots like sweet potatoes and above all leguminous crops were very well integrated. The rotation of crops was not being practised in Japan to the same extent, probably because of the predominance of wet rice.

Similarly, with regard to irrigation, the Indian or Chinese record in the nineteenth or early twentieth century is no less spectacular than that of Japan. It is estimated as a broad approximation that around 1904–9 China had almost 23.7 million hectares under irrigation, representing nearly a third of the crop area. There is no reliable information on irrigation for Japan for any period before the Second World War, this becomes available only after the Ad Hoc Basic Survey of Agriculture in 1955. Some information is however available with regard to irrigation and drainage projects benefiting more than 500 hectares. The total area irrigated by such projects completed by 1906 is estimated at only 89,000 hectares. According to the Indian Irrigation Commission (1901–03) the total area irrigated in India, excluding Burma and Baluchistan, at the end of the century was nearly 21.4 million hectares, covering roughly a fifth of the crop area. Even with regard to expansion, major irrigation works in Japan were undertaken mainly under the Arable Land Readjustment Law of 1899 and its subsequent revisions in 1903 and 1908. It is estimated that between 1900 and 1937 the total area benefiting under these schemes was only 1.8 million hectares. If we add to this 0.52 million hectares of additional irrigation provided by the efforts of the Prefectural Government, the total additional area brought under irrigation in Japan between 1900 and the Second World War comes to 1.70 million hectares. In China, between 1904 and 1930, the total irrigated area increased by 3.2 million hectares, presumably through private effort. As compared with this, in India in the last quarter of the nineteenth century alone, the area irrigated by government works increased by nearly 3.2 million hectares, and at least 1.2 million hectares by private effort. It seems, therefore, that in one way or another much of the nutritional element in night soil and urine in India goes to the farms. (See Indian Famine Commission, loc. cit., p. 165.)

7. Voelcker stresses that the burning of cow dung as fuel was ‘very far from being a universal practice among cultivators . . . The best cultivators do not burn dung except out of sheer necessity and because they have nothing else for fuel, and that among second-rate cultivators a great majority will not burn dung if they can help. Perhaps in all my enquiries there was none into which I looked more closely than this, as I had heard and read such diverse opinion about it; consequently, wherever I went, I did my best to inform myself upon it . . . I can instance place after place where I have visited and where no cultivator burns a scrap of manure for fuel.’ (pp. 100–17.)


9. ibid., p. 8.

10. See Voelcker (op. cit., p. 77) for India; and for China, see J. L. Buck, I and Utilisation in China: Statistics, op. cit., pp. 253–69.

11. Dwight H. Perkins, op. cit., p. 65. This is probably an overestimate. Perkins has adopted Buck’s figures of percentage irrigation for the 1930s and it is generally accepted that Buck’s agricultural statistics have some upward bias.


15. Perkins, op. cit., p. 65. As stated earlier this may be an overestimate. Not many large-scale irrigation projects were undertaken by the government in this period.
fore, that the British record in extending irrigation works in India was quite remarkable.

In terms of other agricultural practices like seed selection and the use of improved seeds, traditional Chinese and Japanese farmers seem to have had an edge over their Indian counterparts in the nineteenth century. On the other hand, intensive experimental work on seed improvement in Japan started only after the First World War; such experiments on modern lines started in China only in the 1930s. As against this, over 3 million hectares of land were under improved varieties of seed in India by 1925 because of the efforts of various agricultural departments. 10

With respect to agricultural implements no conclusive evidence is available. It seems nearly certain that irrigation equipment in China, and probably drainage equipment in Japan, were somewhat more advanced than in India, but the drill used in South India seems to have been more sophisticated than the Chinese version. The mechanical thrasher, like the Sembu-Koki, which has been in use in Japan since the Tokugawa period, was not available either in China or India. Animals played a much greater role in agricultural activities in China, and more so in India. Ploughs of different types and capacity were available in both India and China, while the light ploughs were used on wet paddy lands; some of the heavy ploughs in India worked with as many as 12 pairs of oxen. 17

Efforts at introducing Western implements did not show significant progress in the nineteenth century either in India or Japan. By the 1880s, however, improved implements manufactured by the Cawnpore Experimental Farm, including the 'Cawnpore "pump"', an adaptation of one of the Australian models, had considerable success in India. Improved iron Ploughs, winnowing machines, and iron sugar-mills were already being appreciated by the peasants and the success of the last implements was most marked. 18 Although farm machinery was imported from the West for the first time in 1870, they appear in Japan on a significant scale only after 1900. Comb-toothed threshers began to be replaced only after 1900, and inter-tillage weeders in 1905. Power machines in Japan became popular only after the First World War. In the adoption of new crops there is nothing much to choose between these countries. New World crops were introduced to China in the sixteenth century, but the pace of adoption accelerated only in the twentieth century. In Japan these crops were introduced only after the Meiji Restoration; in India experimentation and the introduction of new crops came in the last decade of the eighteenth century, with the pace accelerating in the nineteenth.

Nothing much is known about the mechanical and innovative activity of the Indian farmers or black smiths and carpenters; it is plausible that their Chinese and Japanese counterparts were superior in some respects, but there is no conclusive evidence to this effect.

So far as the institutional set up was concerned, both the Chinese and the Indian record is no worse than the Japanese in the nineteenth century; in fact, a conscious effort at ameliorating the conditions of the peasants started much earlier in India than in China and Japan. When the Permanent Settlement in Bengal, which had vested the permanent title to land in a new class of landlords in order to provide some kind of rural leadership (as in England) for agricultural improvement, failed in its purpose, the system was abandoned and a system of settlement with peasants (Ryotwari settlement) adopted. However, sub-tenanted could not be prevented because of the increasing pressure of population on the land, and measures were taken through tenancy legislation to provide occupancy rights to tenants. Although the situation varied between different provinces, by the 1880s a significant proportion of tenants had occupancy rights and paid cash rents. As against this, in Japan, even after the tax reforms of 1873—which was in no way a land reform aimed at protecting tenant interests—the greater proportion of peasants did not have security of tenure and quite a few tenants continued to pay their rent in kind. Tenancy in China in the nineteenth and the first half of the twentieth century was quite high (probably around 30–44 per cent), although there is some difference of opinion as to its exact magnitude. Little official effort was directed at improving the tenure-relationship in China until the 1930s, but efforts under the Nationalist Government were shortlived and not very successful. The indebtedness of the peasants was very high in all three countries, as was interest charged by the money-lenders—rates often exceeding 30–40 per cent per year. The unusually high rate of 100 per cent for 20 days or 1825 per cent a year is sometimes mentioned for China. 19 The situation was not very different in Meiji Japan. The ‘tenants had to borrow money at high interest from landlord or fertiliser merchant, and harvest when it came, left him little better off than before, by the time he had paid not only his rent but his fertiliser debt as well. 20 Indebtedness, the mortgaging of land and the eventual transfer of ownership was a recurrent pattern in the three countries. 21

16. Royal Commission on Agriculture in India, op. cit., p. 95.
17. Yosicker, op. cit., p. 221.
18. ibid., p. 228.
tional credit in the modern sense was completely absent in all three countries. The co-operative movement started in India in 1904, in Japan in 1900 and in China only in the 1930s. The provision of credit by co-operatives in Japan accounted for only 3 per cent of the total debt of members in 1914. In India until the middle of the twentieth century less than 6 per cent of the credit needs was supplied by the co-operative credit societies. In all the three countries, the co-operatives were controlled by the landlords and the rich peasants; poor peasants, who needed such facilities most, could only occasionally get any advantages from these institutions. Again the situation in India—though not radically different from the others—had a slight edge over them because the British rulers continued the age-old system of Takavi (loans for agricultural development), the rate of interest charged being between 5 and 6 per cent. The granting of financial assistance by the State on any significant scale for agricultural improvement in the Meiji era came only after the passing of the Arable Land Adjustment Law in 1899. Instances of parasitic, rank-renting, indifferent, conservative, or absentee landlords were not lacking even in Japan, though it is possible that the landlords in China and India exploited the tenants more than in Japan. On the other hand, apart from vague generalizations about the 'progressive' role of the landlords in Japan no conclusive evidence is available. Both in India and China it was customary for the landlords to finance and maintain major and medium irrigation works. Many landlords in Bengal and elsewhere are mentioned as co-operating in agricultural experiments by providing their own land. One particular landlord met all the expenses of a government experimental farm. Some of the feudal chiefs were very 'progressive'. The ruler of Baroda started an agricultural college. Some of the feudal chiefs themselves practised modern farming, advanced loans at low rates of interest for the construction of wells or for repayment to private money-lenders and made significant contributions to afforestation.

Was the State in Meiji Japan more committed to agricultural development than in China and India in the nineteenth century? Probably yes, so far as China is concerned—this in spite of a long tradition of Chinese government assistance to agricultural development going as far back as Sung times (960–1279). In less advanced areas, during the Sung period, the 'officials had pictures painted on the government office walls showing the peasants how to farm. They also had books printed and proclamations put out.' The government also made efforts to popularize pumping equipment in areas still unfamiliar with it. Official manors are reported to have been supplied with free treadle pumps. Ch'ing rulers (1644–1912) allowed tax exemptions for resettlement or the construction of embankments. Regional governments participated in water control and management as well as in the construction of reservoirs. However, no systematic effort to modernize Chinese agriculture was made by the State until the 1930s and it remained rather 'piecemeal', 'superficial' and 'wholly ineffective'.

The situation was different in India. In the extension of irrigation, wasteland reclamation and the promotion of commercial crops the record of British rule in India in the nineteenth century is almost unparalleled. The contribution of the State towards agricultural experimentation, education and extension (in the limited sense in which the subject was known in those days) is not insignificant. The history of experimental work in India commences with the establishment of the Botanic Gardens at Calcutta in 1786. By the end of the eighteenth century the Botanic Gardens contained about 3,500 species. The garden imported new plants from abroad and distributed improved varieties of plants among the public. Roxburgh wrote in 1799 that the Chinese sugar-cane 'has been cultivated with the
utmost possible success. Many hundred thousands of cuttings of that article have been distributed over the country amongst the cultivators.\textsuperscript{37} This tradition of distributing plants and seeds to the cultivators was continued by other botanic gardens (e.g., Saharanpore established in 1817, and Daporee near Poona in 1826).\textsuperscript{38} The Saharanpore Gardens gave some attention to food-grains as well. Large numbers of fine varieties of rice cultivated in the Himalayas were introduced into the garden and 'some of the best sorts were... distributed to cultivators along the Doab Canal'\textsuperscript{39} in the 1830s. Wheat seeds and Otaheite or Mauritian sugar-cane were also being 'distributed in the Saharanpore and neighbouring districts'.\textsuperscript{40} Thus, until the emergence of experimental farms in the second half of the nineteenth century the botanic gardens performed the function of experimental and 'extension' work. The first experimental farm was started in Madras in 1865 and two in Bombay (in 1869 and 1878).\textsuperscript{41} Although in some cases these experimental farms had serious limitations, Voelcker, who was invited by the Government of India in 1882 to suggest ways of improving Indian agriculture, said: 'Generally let me say that after what I had heard before coming out to India, and what I had heard in India itself, I found experimental farms to be much superior to what I had been led to believe I should find them. It has been my lot to inspect experiments in England with which many of these in India would compare very favourably.'\textsuperscript{42}

Although embryonic experimental stations had existed earlier in Japan, a real beginning was made only in 1893,\textsuperscript{43} however, intensive experiments on seed improvement did not start until the Taisho era (1912–1926). Not until the 1870s did the Department of Agriculture in Japan concern itself with the promotion of foreign markets for silk and tea.\textsuperscript{44} New plants, seeds and farm tools began to be imported only after 1873. The Shinjuku Experimental Station started testing these only in 1872.

Agricultural exhibitions in Japan, only five of which were held between 1877 and 1903,\textsuperscript{45} were less numerous and less frequent than in India, where the government organized periodic agricultural exhibitions in Madras, Bombay, North-west Province and Bengal. Bombay held six different shows annually; North-west Province and Bengal held five, and Madras only two. Some of these shows had ploughing competitions, trials of water-lifts, demonstrations of the English system of butter-making, along with large displays of flowers, fruits and vegetables. In Voelcker's view these shows 'would by no means have compared unfavourably with the shows of some of the local agricultural societies in England.'\textsuperscript{46}

National prize shows for agricultural products were organized in Japan only after 1889.\textsuperscript{47} Already in 1871 the Agricultural and Horticultural Society of India was distributing medals for the best specimen of European vegetables cultivated by Indian growers. On receiving State aid in 1829 the Society started an experimental farm. Subsequently the Society established two local branches, in Bombay in 1830 and in Madras in 1836.

The Importation of foreign technical know how to improve certain crops started under the British in India as early as 1757 in Bengal when the Court of Directors sent an Englishman 'perfectly acquainted with the culture and preparation of silk'.\textsuperscript{48}

In 1769 several Englishmen and foreigners were sent to India as drawers, winders, reelers and mechanics with a view to introducing into Bengal the exact mode of winding practised in the filatures of Italy and other parts of the Continent.\textsuperscript{49} Various tools, implements and models manufactured in London and at Novi (Italy) were also sent.\textsuperscript{50} Chinese and Italian silk worms were successfully introduced into India.\textsuperscript{51} A committee was appointed by Lord Bentinck in 1834 to submit a plan for the cultivation of tea in India and the Secretary of the committee was sent to China in 1834 to study the Chinese methods of cultivation and to bring Chinese seeds. Subsequently tea was found growing in a wild state in Assam. Gardens were established at different elevations in the Himalayas. Some Chinese

\textsuperscript{37.} ibid., p. 90.

\textsuperscript{38.} ibid., pp. 223–4.

\textsuperscript{39.} ibid., p. 220.

\textsuperscript{40.} ibid., pp. 220–1.

\textsuperscript{41.} Other experimental farms were: Nagpore (1883), Cawnpore (1874), Dumraon (1885), Burdwan (1885), Seabpore (1887). There was an experimental farm in the Native State of Baroda in the 1880s. In addition to those experimental farms there were some 'demonstration farms' and some 'private farms'. In the Northwest Province there were no less than six private farms used as experimental or demonstration farms. One of the largest was Meerut, and another near Cawnpore consisted of 165 acres (see Voelcker, op. cit., pp. 358–9). There were some State-maintained gardens for the sale of improved plants and seeds and for the training of gardeners. One such garden in Bombay Presidency specialized in the propagation and sale of grafted mango trees (see Voelcker, p. 369).

\textsuperscript{42.} Voelcker, p. 337.

\textsuperscript{43.} Nakamura, op. cit., p. 85, note.


\textsuperscript{45.} ibid., p. 73.

\textsuperscript{46.} Voelcker, op. cit., pp. 463–4.

\textsuperscript{47.} Dore (1960/61) op. cit., p. 73.

\textsuperscript{48.} Royle, op. cit., p. 120.

\textsuperscript{49.} ibid., p. 121.

\textsuperscript{50.} ibid., p. 121, note.

\textsuperscript{51.} All these efforts led to a threefold increase in the quantity of silk imported from Bengal into England between 1792 and 1829; that is, from 0.40 million to 1.39 million lb. Some of the native princes, such as Tipoo in Mysore and the Court of Hyderabad in Berar, attempted sericulture (see Royle, p. 138).
were brought to India. The expenses in the earlier phases of experimentation was borne by the government, when the new industry had established its ability to stand on its own, the government tea plantations were sold to private enterprise.\(^{52}\) In 1839 twelve American planters were engaged to 'show the natives an improved way of growing and cleaning cotton'.\(^{53}\)

With regard to agricultural education, Japan probably had an edge over India, not in the actual date of establishment of institutions, which came earlier in India, but in the scale. By 1880 at least seven prefectures in Japan had independently established agricultural colleges. By 1886 the total number of schools had grown to sixteen. Ten years later the number was forty-six, the average size being at least forty pupils.\(^{54}\) By the time Voelcker visited India there was an agricultural college in Madras, the Poona College of Science had agriculture as one of the branches of science, and Bombay University had just started a Diploma in Agriculture. Punjab had a veterinary school. Baroda had an agricultural college affiliated to Bombay University. But there were no agricultural colleges in N.W. Province and Bengal. However, agricultural classes were attached to high schools, and in some of these the students had to work on farms attached to their classes. In some parts of the country itinerant lecturers were engaged to provide courses in agriculture. In some parts bursaries and scholarships were provided by the education departments or local authorities to students undergoing agricultural education. Textbooks and primers on agriculture both for students and practical farmers were translated into Indian languages and distributed. Many of these measures for the extension of agricultural education were certainly in the right direction, but the scale on which they were organized was probably inadequate.

On balance we are tempted to conclude that in terms of pre-modern agricultural technology there was not much difference between the three countries at the end of the nineteenth century. In terms of institutional change, the modernization of agriculture and the creation of infrastructure, the Indian record in the nineteenth century was much better than both that of China and Japan.\(^{55}\) Even a cursory review of the situation in Japan and India clearly suggests that the so-called Meiji strategy was in no sense more advanced than India's, nor was the rate of growth of agricultural output more impressive. The rate of growth of agricultural output of 2.4 per cent originally suggested by Ohkawa and Rosovsky has come to be questioned in recent years.\(^{56}\) and as a result they themselves have revised the estimate downwards to 2.0 per cent.\(^{57}\) Nakamura suggests a much lower rate of growth of 0.8 to 1.2 per cent. Perkins (1959) suggests a rate of growth of agricultural output for China of nearly 1 per cent.\(^{58}\) Blyn estimates that between 1891 and 1912 agricultural output in India grew by 1.4 per cent.\(^{59}\) The rate of growth in Japan slowed down to nearly 1 per cent in the period between 1913 and 1942.\(^{60}\) Even this rate is maintained because of an active participation by the government which started in right earnest only after the Sino-Japanese war (1895), and because of huge increases in domestic production as well as imports of fertilizers. A major breakthrough in the rate of growth of agricultural output in Japan came only in the wake of rapid modernization after the Second World War. The rate of growth of agricultural output in India slowed down drastically to about 0.35 per cent between 1911 and 1947.\(^{61}\) All through the

\(^{52}\) Indian Famine Commission, op. cit., p. 185.

\(^{53}\) Gazetteer of the Bombay Presidency (Surat and Broach), vol. ii (1877) p. 397.

\(^{54}\) Dore (1960/61), op. cit., pp. 75–6.

\(^{55}\) For example, there were already 30,983 miles of railway in India by 1909, as against only 4,700 miles in Japan in 1904. Because of Japan's small size, even this small total railway mileage probably provided more effective transport. Much of the transport of rice in Japan was by sea. On the other hand, water transport was quite well organized in both India and China. Traditional land transport was much better organized in India, and probably China, than in Japan.

\(^{56}\) Nakamura, op. cit. and Sinha, op. cit. See also K. I. Choi, 'Technological diffusion in agriculture under the Bakuhan system', *Journal of Asian Studies*, 30, No. 4 (1971).


\(^{58}\) Perkins, op. cit., p. 29.


\(^{61}\) Blyn, op. cit., p. 247. In our view this happened for two reasons: first, enough attention was not paid to imports or the domestic production of chemical fertilizer (in fact, as we have seen, exports of oilcakes and bonemeal continued throughout the period); and secondly, because of the slow rate of industrialization, there was no strong feedback. In per capita terms, India had developed agricultural exports of a similar magnitude as Japan, and she was exporting food while Japan became a net importer of food after 1895. According to our calculations, the agricultural export positions of India and Japan were as follows:

<table>
<thead>
<tr>
<th>Per capita agricultural exports (five-yearly averages in £ sterling at current rates of exchange*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
</tr>
<tr>
<td>1876-1880</td>
</tr>
<tr>
<td>1896-1900</td>
</tr>
<tr>
<td>1911–1915</td>
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</table>

*This, in fact, underestimates the increase in the volume of Indian exports. In 1871 the rate of exchange between pounds and rupees was 1 : 10, whereas in 1896 it was 1 : 15. Thus the decline registered in the period 1896–1900, if expressed in terms of rupees, denotes an increase of 19 per cent. Much of the export surplus, however, was not ploughed back into Indian economic development.
In the second half of the twentieth century it has been suggested that the per acre yield of food grains in India was declining. In our view this was largely caused by the transference of superior land to commercial crops and the consequent relegation of grains to somewhat inferior land. Bringing new marginal lands into cultivation would have similar effects.

Certain tentative inferences can be drawn from the above rather cursory view of agriculture in these three countries in the nineteenth and the early twentieth century:

1. It seems plausible to suggest that in these three countries agricultural technology had reached sufficient heights: it was by no means primitive, the term so often used by development economists. Much of what could be done, in terms of the extension of irrigation without using very sophisticated modern methods of engineering, was already done. Shortages of pre-modern inputs were being increasingly felt and this resource constraint put a limit on what could be attained with pre-modern technology.\(^6\) There was, however, a basic difference between India and Japan on the one hand and China on the other. In the last hundred years or so the basic infrastructure for agricultural development was far more developed in India and Japan than in China.

2. In view of this resource constraint the maximum attainable rate of growth of output, strictly under pre-modern technology, lies between 1 and 2 per cent only for a time, the precise definition of this time period is difficult. Subsequently there is a distinct possibility of a slowing down of the rate of growth or even stagnation; if population continues to grow, per capita productivity (and income) would be falling, in spite of a sufficiently high level of agricultural technology and practice.

3. An increase in labour supply or an intensification of effort cannot significantly counteract the resource constraint, because the supply of human and animal manure, green manure etc., is itself a function of total agricultural output and water supply. Sources of water supply are themselves largely dependent on rainfall and climatic fluctuations. This is where chemical fertilizer has an advantage, since its supply is independent of the agricultural sector—as is the case, though not entirely, with electrically operated tube-wells or major reservoirs.

4. If the first three inferences are correct, it follows that any measures of institutional change, in the absence of technological modernization, will make no appreciable difference in raising output. Such policy measures are intended to provide incentives to peasants to increase their efforts; but since such increases in effort make no substantial difference once technology and practice have reached sufficiently high levels, nothing much can be expected from institutional reforms alone. Price incentives will still be effective in changing resource allocation between crops, but not so much in increasing total agricultural output. In so far as the popularization of modern inputs is concerned, institutional reform would clearly play a significant part. Here one is trying to provide the peasants with incentives to move from the pre-modern production function to a modern one. In the following section, we shall analyse the Indian and Chinese agricultural strategies, keeping these inferences in mind. It is not much use bringing in Japan, since the Indian strategy is basically similar to the Japanese. In broad terms the comparison concerns the two ways to develop agriculture: in Chinese terminology the ‘capitalist road’ and the ‘socialist road’. In the former, private property in land is not interfered with to any appreciable extent, while in the latter private property is only marginal. Essentially, the comparison between India and China boils down to a comparison between peasant proprietorship and collectivization.

Agricultural Strategy in China and India

In view of the basic ideological differences, only very broad comparisons can in fact be attempted. Besides, one does not always know whether one should compare primarily the strategies as pronounced in policy documents or policies as implemented; very often there is a wide divergence between the two. Moreover, some policies get drastically modified in view of past experience; in other words, a process of ‘learning by doing’ is always going on in development planning and plan implementation. So in comparing strategies one is invariably comparing a hybrid between the original and subsequently modified specifications. Then is there the problem created by the lack of comparable statistics. And finally, in view of the lack of information on costs—both financial and social—how can one pronounce judgement on the appropriateness of a particular ‘model’ for the ‘Third World’?

For the sake of simplicity, we shall attempt to analyse the strategies under six broad headings:

\(^6\) Since in pre-modern agriculture the inputs are provided within the agricultural sector itself, there is always a limit to what can be attained. To underline this phenomenon the present author, in collaboration with Mark Elvin of Glasgow University, has developed the concept of the ‘pre-modern high-level equilibrium trap’ which is different from the ‘low-level equilibrium trap’ in one basic sense. The latter is based on the implicit assumption of primitive technology; therefore, significant increases in agricultural output can be obtained simply by applying more labour in the various agricultural activities. Once we accept that in some Asian countries (there may be other countries, one obvious one being Egypt) agricultural practices were very advanced in terms of pre-modern technology, there mere application of more labour will not bring about significant increases in output. For a further exposition, see M. Elvin, ‘The high-level equilibrium trap: the causes of the decline of inventions in the traditional Chinese textile industries’, in W. E. Wilmott (ed.), Economic Organization in Chinese Society (Stanford: Stanford University Press, 1972).
1. The place of agriculture in overall economic development;
2. The attitude to technological change;
3. The attitude to institutional reforms;
4. The attitude to overall rural development;
5. The problem of incentives;

These categories are not mutually exclusive. Very often some measures discussed under technological change may be greatly influenced by institutional reforms and the like. We do appreciate that this kind of broad categorization is a gross simplification.

1. The place of agriculture in overall economic development

In the past both countries have been taken to task for giving a high priority to heavy industry and for starving agriculture of investment funds. In the case of China this charge has been refuted by Hollister, who estimates that, in the 1950s, on average 22 per cent of gross fixed investment was devoted to agriculture. Much the same goes for India. Net investment in agriculture, including irrigation, during the First Five Year Plan in India was 25 per cent, although in subsequent plans the proportion fell to about 20 per cent. Such a scale of investment is by no means insignificant; on top of this, if one accepts the hypothesis that modernization, in particular the increasing use of modern inputs, is the key to agricultural breakthrough, the need for a strong industrial and transport base becomes the first prerequisite. It is also widely recognized that the sheer volume of modern inputs required, like chemical fertilizer or pesticides, in both countries is so large that they cannot depend to a large extent on foreign supply, even if there were sufficient foreign exchange to finance such imports. The case for a strong capital goods sector, given their size, can also be made on grounds of the comparative advantage in steel and related industries and their long-run development aims. What can, of course, still be argued is that the planners should have imported sufficient chemical fertilizers and attempted to increase agricultural output in the first instance, or should have created industrial capacity to produce chemical fertilizer first rather than, say, steel. The first option, i.e., of importing chemical fertilizer on a large scale, was not really open to China because of the US trade embargo, and the socialist countries did not have a significant surplus of fertilizer. In any case, both countries imported some fertilizer, though probably they should have imported more than they did, especially India. As to the second point relating to the building of plant for domestic production, it needs emphasizing that such an effort requires tremendous support from infrastructure, supply of raw materials and technical know-how. A modest beginning was made in both countries, but, as it turned out later, requirements were grossly underestimated. Efforts to correct this mistake came in the late 1950s and early 1960s in both countries; the expansion of fertilizer production has been much faster in China than in India. We tend to argue that part of this mistake was generated by an inadequate appreciation of the high levels that pre-modern agriculture had already reached in the two countries and that consequently there was an undue optimism as to the intensification of effort that could be achieved by mobilizing labour. This optimism was further strengthened by Western economists, with their grossly exaggerated view of Meiji agricultural strategy.

2. The attitude to technological change

In both countries the need for technical modernization in agriculture was clearly recognized. In China the National Agricultural Development Program

66. Dawson estimates that if the Chinese used chemical fertilizer at a rate equivalent to that currently used in Taiwan they would need anything between 50 to 60 million tons gross, or 10 to 12 million tons in nutrients (O. L. Dawson, 'Fertilizer supply and food requirement', in J. L. Buck et al. (eds.), Food and Agriculture in China (New York: Praeger Publishers, 1966) p. 114). Similar magnitudes are involved even for India. The two countries put together would require the total current production of nitrogenous fertilizer in North America and Europe, including the USSR.
68. Sinha (1964) op. cit., p. 282.
70. See, for instance, the following statement by Fei and Ranis: 'The lesson comes home most clearly from an examination of the historical records of nineteenth century Japan, which at the time of the Restoration in 1868 had a resource endowment comparable to that of many contemporary labour surplus underdeveloped economies and was able to increase its agricultural productivity remarkably without the heavy application of investment funds. The ability to take up the potential slack in the economy's agricultural sector via indigenous agricultural innovation led to a massive agricultural revolution.' (op. cit., p. 62; our italics.)
(1936–1967), which set the guideline for future agricultural development, suggested twelve 'chief steps' to increase the output of grain, this having priority, though the need to 'diversify' the agricultural economy was acknowledged. The twelve steps were: (a) the construction of water conservation projects (flood control and irrigation); (b) the expansion of fertilizer supply, both rural manure and chemical fertilizer; (c) the improvement of old-style farming tools and the popularization of modern farm tools; (d) the extension of the use of the best and most suitable seedling strains; (e) the expansion of multiple cropping areas; (f) the planting of more high-yielding crops; (g) the adoption of best farming methods (e.g., rotation of crops, intercropping, overlapping the cultivation time for two crops, close planting, etc.); (h) the improvement of the soil; (i) the preservation of soil and water; (j) the protection and breeding of draft livestock; (k) the extermination of insects, pests and plant diseases; and (l) the reclamation of wasteland and expansion of cultivated acreage. Broadly, these were the main methods for increasing output in India too, during the first decade of planning, although measures like intercropping, close planting, etc., were not given any significant attention; it is debatable whether in the Chinese case such measures made any appreciable difference. Recent Chinese experiments have shown that 'in the case of a high degree of close planting, although the number of seedlings is large, the number of ears is not necessarily large and, although the number of ears is large, the yield is not necessarily high', but increases between 12 to 150 per cent are reported to have resulted from changing the rotation.

Both in India and China irrigation has been considered vital for agricultural development, and flood control and irrigation have been viewed as complementary. In both countries the State aimed at the harnessing of large rivers and the construction of large projects, while the minor irrigation schemes were to be constructed by the peasants and masses with some State aid. During the First Five Year Plan period, massive funds were allocated for many multipurpose river projects with their series of dams, reservoirs, and canals as well as for electricity generation. But subsequently the construction of major projects had to be slowed down for lack of funds and materials. There were sufficient lags in the availability of water and its utilization, the main reason being a lack of synchronization in the programmes for the construction of headworks, canals, distributaries, water-courses and field channels. In China in the mid-fifties, particularly during the 'Great Leap' period, the small projects came to be stressed. A much greater emphasis was placed on labour mobilization and self-reliance. For a time during the 'Great Leap' there was almost a 'reckless pace' of construction when it was claimed that nearly 100 million people were engaged in conservancy projects. After this period of feverish activity the emphasis shifted to consolidation and increasing the efficiency of already completed irrigation projects. Something similar happened in India after the Second Five Year Plan. During the Third Plan, a much greater importance was given to minor irrigation to which further considerable emphasis was promised during the Fourth Plan period. Also stressed was the need for 'better maintenance, adoption of appropriate crop patterns, better utilization and water management, and efficiency in execution'. The Plan document further suggested the need for placing 'by law' certain obligations on local communities and beneficiaries with respect to the construction and maintenance of field channels and tanks, and the desilting of the beds of tanks. It recommended that statutory powers should be conferred on village Panchayats for enforcing these obligations on beneficiaries. Some States had already enacted such legislation, but to what extent such legislation was effective is not known.

Although the need to increase the use of chemical fertilizers was felt in both countries throughout the 1950s, there was a much greater reliance on the collection and preservation of organic manures. As late as 1960 the National Agricultural Development Program stressed hog raising. It was 'demanded that each household in the countryside raise an average of 1.5 to 2 heads of hog by 1962 and 2.5 to 3 heads of hogs by 1967'. It also suggested the development of green manure and the utilization of manure and garbage suitable for making fertilizer. Policy towards chemical fertilizers changed during 1956–7. In fact the original target under the First Five Year Plan for 1957 was only 0.55 million tons. In September 1956 the target for 1962 was raised to 3.0 million tons and by a further revision in November 1957 was raised to 15.0 million tons for 1967. But for 1959 the target

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71. Selection from China Mainland Magazines (SCMM) American Consulate-General, Hong Kong, No. 375 (29 July 1963) p. 36.
72. SCMM, No. 424 (6 July 1964) p. 3.
75. whereas the target for minor irrigation projects was 9 million acres, as against 12 million acres for major projects, in the Third Five Year Plan the target was 12.8 million acres for each (Third Five Year Plan (India) p. 306; Fourth Five Year Plan (India) p. 136).
76. Third Five Year Plan (India) p. 308.
78. K. R. Walker, Planning in Chinese Agriculture (London: Frank Cass, 1995) p. 44. Dr. L. Site suggested to me that a similar shift was taking place in Russia at this time. It is not known whether this had anything to do with the shifts in policy in China.
79. ibid., p. 44.
still remained as low as 1.3 to 1.5 million tons.80 The situation was far worse in India; the Second Five Year Plan had set a target of 1.8 million tons for total consumption of nitrogenous fertilizer for 1961. Domestic production capacity rose to only 0.35 million tons of chemical fertilizer.81 The complacent attitude arose from a widespread feeling among economists in India that food self-sufficiency could be attained on the basis of organic fertilizers.82 Two major differences between the attitudes of planners in the two countries related to the size of operational units and agricultural mechanization. In India, 'although consolidation of holdings has been regarded as an integral part of the agricultural production programme, in practice the two programmes are not always co-ordinated.83 In many States 'there has been comparatively little advance.84 In spite of the promise of a more 'vigorous' programme, the Fourth Five Year Plan ends up on a feeble note.85 If private property is sanctified how does one enforce mutual exchanges of land, even if these were to enhance aggregate welfare? This question still remains unanswered in India. Though economies of large-scale farming are still open to question, particularly in rice, largely for ideological reasons the consolidation of fragmented holdings in China was virtually complete during the collectivization movement. Of course, allowance had to be made for terraced farms.

In India, agricultural mechanization was not given the same emphasis as in China. The slowness of the pace of consolidation of fragmented holdings as well as higher cattle–land ratio must have been the primary reasons for this. The use of heavy equipment like tractors in India was largely for land reclamation. In China, agricultural mechanization has been more of an ideological than an economic or technological issue. It was very much a focal point of controversy between Chairman Mao's 'revolutionary' line and Liu Shao-Chi's 'capitalist' road to agricultural transformation. Mao felt that 'in the field of agriculture . . . it is necessary first to have co-operativization before it is possible to make massive use of machines',86 while Liu felt that 'without industrial development and industrialization, agricultural collectivization basically can not be realised'.87 A third voice, dissenting from both Mao and Liu was Po-l-Po who put forward labour-surplus and factor-proportion arguments. In a party document he showed that mechanizing agriculture in a labour-surplus country was completely useless.88 In 1956 several surveys were ordered to examine the contribution mechanization is likely to make towards increased output. The conclusions drawn from the surveys were somewhat conciliatory, but the victory of the Mao line was almost complete, since the National Program for Agricultural Development (1956–67) formulated in 1956, but approved in 1960, assigned only a secondary role to mechanization. In practice, throughout the First Five Year Plan tractorization remained largely confined to reclamation work and to State farms.89 Not all the State farms, however, were mechanized. At the time, when the Indian delegation visited China, only 140 out of 3,000 State farms were mechanized.90 Mechanization became a 'serious program' only in the beginning of the Second Five Year Plan and, according to the claims of the newly-established Ministry of Agricultural Machine Building, in 1959 there were 59,000 tractors, 4,900 combine harvesters and 7,500 motor-threshers in operation.91 Subsequently, the number of tractors increased rapidly to 135,000 by 1965,92 as against this in 1967–8 India had only 80,000 tractors.93 In recent years there has been an increasing demand for tractors from the private sector in India.94 The demand for electrically operated tube-wells has been growing very rapidly in both countries in recent years. The actual number in use in China is not known, but it has been suggested that nearly 6.6 million hectares of farm land was being irrigated by mechanized pumps in 1965. In 1961 it was only half of this area.95 In India there were only 31,000 pumps in 1961 and by 1968–9 the number had risen to 1.08 million.96

From the above description it is clear that during the 1950s both countries paid much less attention to modern agricultural inputs. The major shift in Chinese policy came after the dislocations created by the excesses committed during the 'Great Leap'...
which was obviously one of the most ambitious
exercises in surplus labour utilization with traditional
techniques. In India the change in policy starts after
the disillusionments of the Second Five Year Plan
period, but real change came only after the shock of
the Bihar famine 1965–6. It needs stressing that agri-
culture was never really neglected in either of
the countries; what in fact changed in the 1960s was the
shift in emphasis from indigenous to modern inputs.
This shift in attitude in both countries gave birth to a
new concept of selective development. After all,
modern inputs, for geographical reasons and/or lack
of complementarity, could not be used indiscrimin-
ately in all parts of the country, or on all the farms of
a particular region; besides, there were obvious
shortages of such inputs. Attempts had to be made,
therefore, ‘to concentrate on the areas where factor
complementarity to application of chemical fertilizers
are present and this yield responses are relatively
high’.

In the early sixties, under the inspiration of
the Ford Foundation, India launched the IADP
(Intensive Agricultural Development Programme)
which later came to be known as ‘The Package Plan’. It
was nearly at this time that the idea of ‘Guaranteed
High Yield’ areas emerged in China. In both countries
such selected areas represent a very small proportion,
around 10 per cent, of the total cultivated area, and
receive the lion’s share of modern inputs, thereby
further aggravating the problem of inequality
between persons and regions in India and production
teams, brigades, communes or regions in China.

3. The attitude to institutional change

This section is, by any count, not only the most
emotive and controversial, but also the most
confusing, at least for two reasons. In both countries,
opinions on what ought to be done were sharply
divided and the decisions, when taken, were often
compromises; and, in view of experience and contin-
gencies, policies were frequently revised. Further-
more, the divergence between theory and practice has
been more marked in this area than in any other.
Both political parties, the Communist Party of China
and the Indian National Congress were committed to
a major land-reform programme long before they
came to power. Naturally, in both the cases, with the
inception of economic planning, institutional reforms
were assigned a major role in attaining higher agri-
cultural output. The Indian First Five Year Plan
document stressed that the ‘future of land ownership
and cultivation constitute perhaps the most funda-
mental issue in national development. To a large
extent the pattern of economic and social organisa-
tion will depend upon the manner in which the land
problem is resolved’.

A land policy could not be
considered adequate unless ‘it reduces disparities in
wealth and income, eliminates exploitation, provides
security of tenant and worker, and, finally promises
equality of status and opportunity to different
sections of rural population’. In China, agrarian
reform was considered to be a ‘pre-requisite of the
development of the productive power and the
industrialisation of the countryside’. Of course,
there were two basic differences in approach: first the
Communist Party in China was ideologically
committed to abolishing private property in land,
although a promise was given that ‘the right of owner-
ship over the land obtained by the peasants (during
the land reform) shall be protected’. In India
under the Constitution private property could be
taken over by the State only by providing due
compensation; and second, while the Chinese leader-
ship believed in class-conflict, and relied on ‘the poor
peasants (including the newly-elevated middle
peasants), solidly to unite with the middle peasants,
and gradually to proceed from restricting to finally
wiping out exploitation activities of the rich
peasants’, the Indian leadership was committed
to a parliamentary democracy and consensus
politics.

The Indian First Five Year Plan recommended the
following measures:

(i) the abolition of intermediaries;
(ii) tenancy reforms, e.g., security of tenure to
the tenants, provision of fair rents and a
right of purchase for the tenants;
(iii) the fixation of a ceiling on land-holdings and
the distribution of the surplus land;
(iv) the improvement of the conditions of agri-
cultural workers;
(v) the co-operative organization of agriculture
with the ultimate objective of co-operative
village management.

The Chinese land reform under the Agrarian
Reform Law of 1950 was only marginally more
comprehensive in conception. It abolished ownership
by landlords and confiscated their draught animals,
farm implements, surplus grains and surplus houses in

98. Government of India, First Five Year Plan 1951–56
99. ibid., p. 184.
100. Kuo-chun Chao, Agrarian Policy of the Chinese
p. 95.
101. ibid., p. 95.
102. Tsu-hui Teng, Director of the Rural Work Department,
Central Committee of the Chinese Communist Party, quoted
in Chao (1960) op. cit., p. 95.
103. It is by no means implied that one form is more
democratic than another. Perhaps people’s participation in
China was stronger than in a Western-style democracy such as
India, with an extremely powerful party without any strong
countervailing political force. But on the other hand it may
not be too much to claim that in India the role of
compulsion is far smaller and that of individual freedom of
action far greater. It is debatable whether this freedom really
means very much on an empty belly, but it does mean that
the options for radical reform are far fewer.
104. Government of India, Reports of the Committees of
the Panel on Land Reforms (New Delhi, 1950) p. 6.
the countryside. But investment in other properties of landlords and rich peasants in connection with industry and commerce were protected by law. A rich peasant was allowed to retain land for self-cultivation either by himself or by hired hands. He was also allowed to retain his other properties and even rented land, so long as it did not exceed the amount tilted by his own household. Harsh punishments were given to those who were guilty of sabotage activities like dispersing their land and property, killing cattle, and destroying farm implements, houses, arable land and trees. But at the same time there was a clear recognition of the fact that the retention of the rich peasants was necessary for the recovery of agricultural production. Chairman Mao himself reported to the Central Committee of the Communist Party on 6 June 1950 that 'there should be a change in our policy towards the rich peasants, a change from the policy of requisitioning the surplus land and property of the rich peasants to one of preserving a rich peasant economy in order to further the early restoration of production in rural areas. This change of policy will also serve to isolate the landlords while protecting the middle peasants and those who rent out small plots of land.'

It seems that, except for the scale on which the land reform was implemented, up to this point it was not very revolutionary as compared to the Indian land reforms. Use of force and severe punishments considerably reduced the resistance to its implementation. As against this, in India, the landlords challenged the validity of the laws enacted in various provinces on the grounds (i) that the law did not strictly fulfil a public purpose, (ii) that the legislatures were not competent to enact this legislation, (iii) that the compensation provided was inadequate and (iv) that it violated the Fundamental Rights in regard to the enjoyment of private property. Some acts were, in fact, declared ultra vires of Article 31 of the Constitution. Land reform could be implemented only after the Constitution was amended. As it is widely recognized progress has been slow, but on the other hand the 'elimination of big feudal landlords by parliamentary means is no small achievement in the first decade of independence.' By now, zamindaries, jagirs, inams 'have been practically abolished', 'bringing 20 million tenants into direct relationship with the State and making available to the State Government several million acres of cultivable land, which have been distributed to landless agriculturists.' In some States, where intermediary tenures were not prevalent, 3 million tenants and share-croppers have been given ownership rights of more than 7 million acres. The enforcement of a ceiling on land holdings has enabled the government to take possession of over 2.3 million acres of surplus land on which tenants and landless labourers are being settled. However, landlords, through the political and administrative machinery of the State, have often succeeded in watering down the provisions of legislation or in slowing down their implementation. It has been difficult to enforce tenancy legislation because of the social and political influence of the large and medium landowners (in Myrdal's terminology, the Peasant Landlords). For similar reasons, the benefits of co-operative institutions and developmental programmes have accrued mainly to the rich and medium farmers at the cost of small peasants, sharecroppers and tenants. But on the other hand, the social and political power of the rich and medium farmers can easily be exaggerated. True, so-called backward classes and the untouchables have not yet obtained their fair share in the political or administrative system but they have undoubtedly emerged as political pressure groups, more so in State politics, and politicians from so-called high castes can neglect such pressure groups only at their own peril.

Similar tendencies appeared in China after the initial land reforms. Poor peasants who lacked capital and other resources fell into debt and sold their land to rich peasants. Until 1954, for all practical purposes 'agriculture was managed on an individual, private basis, each household controlling the disposal of its own produce.' Initially co-operativization was scheduled for the Second Five Year Plan period (1958–62). Starting with a modest aim of bringing only 33 per cent of peasant households under semi-socialist co-operatives, the transition to socialism was to be completed over 15 years. Even after the organization of the Primary Stage Agricultural Producers' Co-operative, private property in land, draft animals and implements was left unaffected. The co-operative, which was now an instrument of unified management, was required to pay rent to the owner for the use of land and implements. In

106. ibid., p. 100.
109. ibid., p. 1311.
110. Fourth Five Year Plan (India) p. 174.
111. ibid., p. 174.
112. Walker, op. cit., p. 7. See also David and Inahed Crook, The First Years of Yangi Commune (London: Routledge and Kegan Paul, 1966) p. 6. In the area of the present Yangi Commune as many as 200 peasant families sold their land and 100 families had to sell their houses in 1951.
114. ibid., p. 9.
addition, the peasants were left with a small private plot for their own use and the products could be sold on the market. The amount of such land allocated to each household depended on the size of the household and the quantity of land. Initially the maximum allowed was 5 per cent of the average amount of cultivated land in the locality, in 1957 this was raised to 10 per cent.\textsuperscript{115} It was only with the emergence of Advanced Agricultural Co-operatives between 1956 and 1958 that land was collectivized without compensation, and henceforth no rent was paid for the use of land or other resources. However, other resources were taken over by the collective by paying agreed prices.\textsuperscript{116} The private plots were allowed to remain with the peasant household. During the communization movement in 1958 the reforms became more radical; private plots and private markets were abolished; sidelines were suppressed; common mess halls were established; and part of the food was distributed free irrespective of work done. In a three-tier system the commune became the planning unit.\textsuperscript{117} Because of the difficulties encountered in the course of communization, the government had to moderate its views in almost all respects. Private plots and private livestock rearing, domestic handicrafts, as well as rural markets, were revived during 1960–1.\textsuperscript{118} These came to be 'an essential and supplementary part of the Socialist agriculture'.\textsuperscript{119} By 1961 'free supply' came to an end and mess halls were closed down. Piece-rate was once again restored to a favoured position \textit{vis-à-vis} time-rate. Production teams were made the accounting unit. More recent attempts, in 1969 and 1970, to merge production teams to form fewer and larger units, to abolish private plots, or to reintroduce mess halls, have been resented by the peasants, and the news coming out of the provinces in 1971 and early 1972 indicates that the authorities have been critical of 'leftish mistakes committed in the course of implementation of economic policies in agricultural area' and the peasants are being assured that any drastic change in the current \textit{status quo} is not being contemplated. Some other criticisms with regard to rural institutions, with which we are so familiar in the Indian context, have been levelled against similar Chinese institutions, even by official sources. For example, during 1969 the credit co-operatives were criticized for being 'too business-minded' or for being 'divorced from the poor and middle peasants'. It was suggested that they gave too much consideration to the financial background of commune members asking for loans. They were blamed for being concerned with the ability of production teams seeking loans to repay, and for granting loans to profiteers and speculators. The credit personnel had little contact with the condition of the poor and lower-middle peasants; they had to walk long distances to make deposits, draw money and seek loans, sometimes they found it difficult to get the services of the credit personnel. Subsequently on the basis of Chairman Mao's directives credit stations were set up in the production brigades and poor and lower middle peasants' management committees (and teams) were set up to cater to the need of such peasants. For similar reasons India's Fourth Five Year Plan has promised to 'orient the policies and procedures of credit co-operatives and land development banks in favour of small cultivators'.\textsuperscript{120}

4. The attitude to overall rural development

Planners in both countries seem to have believed that agricultural policy must aim at improving all aspects of rural life, and as far as possible on the basis of self-reliance. In their idealized conception, Community Development in India and the communes in China come very close, the latter being more pervasive; the differences in approach arise mainly from the two basic philosophies with regard to private property and 'democracy'. The Second Indian Five Year Plan suggested that 'the essence of the approach is that villagers come together for bringing about social change and are assisted in building up a new life for themselves and participate with increasing awareness and responsibility in the planning and implementation of projects which are material to their well-being'.\textsuperscript{121} The Resolution on some questions concerning the People's Commune, adopted by the Eighth Central Committee of the Chinese Communist Party at its Sixth Plenary Session in December 1958, stressed that the 'people's commune is the organizer of the production and life of the people and the fundamental purpose of the development of production is to satisfy to the maximum extent the constantly growing material and cultural needs of all members of the society. In leading the work of the commune, the Party must give all-round attention to the ideological development, production and livelihood of commune members... in order to do their work well, the communes must practise a high level of democracy, consult the masses on all matters, faithfully represent their interest and reflect their will... only by ensuring democracy in the commune will it be possible to create throughout the country a vigorous and lively political situation in which there are both centralism and democracy, both

\textsuperscript{115} Chao (1960) op. cit., p. 154.

\textsuperscript{116} Walker, op. cit., p. 16.

\textsuperscript{117} The three-tier system consisted of the People's Commune at the apex, with 2,000 to 8,000 households; the Production Brigade, with up to 250 households (although the average size was 30 to 40 households); and the Production Teams, with 6 to 20 households (see Walker, op. cit., pp. 16–17, Table II).


\textsuperscript{119} ibid., p. 86.

\textsuperscript{120} Fourth Five Year Plan (India) p. 221.

discipline and freedom, both unity of will and personal ease of mind.' In India Community Development, which covers the whole of the country, encompasses agriculture, irrigation, communications, education, health, supplementary employment, housing, training and social work. The scope of the commune was wider. It combined industry, agriculture, trade, education and military affairs. At the same time it was conceived as the basic unit of organization of Socialist State power. In recent years, with the attempts to weld together the Panchayat Raj and Community Development, India seems to be moving in a somewhat similar direction. The merger between the two has introduced 'fundamental and far-reaching changes in the structure of district administration and in the pattern of rural development. Their significance lies in the fact that, subject to guidance and supervision by the State Government, the responsibility for the implementation of rural development programmes will now belong to the Block Panchayat Samiti working with Panchayats in the village and Zila Parishads at the district level.\(^{122}\) Panchayat Raj and Community Development have played an increasing role in recent years in the formulation and implementation of local plans.

In practice both approaches have limitations and have not so far made any appreciable progress towards their professed aim of ultimate 'transition from Socialist to Communist society' in China, and of enabling the underprivileged 'to take their place in the cooperative movement and other spheres in their own right' in India. The Government of India confesses that 'By and large the programme continues to be dependent on Government initiative and even more so on Government funds.\(^{123}\) In China, in spite of vigorous campaigning and propaganda, the authorities have found that organizing peasants' efforts along the official line is not always easy. For example, the People's Daily reported in August 1969 that some peasants in one commune had given up collective production to engage in private side-lines and profiteering. Even the cadres were blamed for being involved, or at least for conniving, in embezzlement and speculation. Sometimes members of the People's Liberation Army (PLA) had to be deployed in the communes, or demobilized soldiers of the PLA placed in key positions in rural basic-level units, to ensure implementation and to keep control over the peasants. Even the youths, who are the product of the new ideology, did not necessarily conform to the government's wishes. Large numbers of youths, sent to the rural areas under 'Down to the Countryside', returned illegally to the cities. Sometimes the army and the Public Security Bureau had to be involved to send them back. Because of such resistance and difficulties, the programmes, as initially comprehended, had to be moderated or modified.\(^{124}\) As seen earlier, not only has commune power been devolved downwards, but also other basic elements like mess halls and egalitarian distribution have been given up, at least for a time. The structure and the philosophy remain, however, and can be reinforced in future, perhaps in more moderate steps. This is true also of Community Development and Panchayat Raj. To what extent the masses in the rural areas are really involved in the actual preparation of plans is difficult to say, though it is plausible that they are more involved in China than in India, where the approach to planning is basically technocratic and 'elitist'.

5. The problem of incentives

Because of the fundamental difference in attitudes between the two ideologies to private property in land, the role of the market- and price-mechanism and the role assigned to incentives must be different. In actual practice, the Chinese have allowed some (though minimal) private ownership of land, also of livestock and handicrafts; and the fact that they have tolerated private markets and the payment of distributive shares on the basis of work points itself suggests that they have not ignored financial incentives, though non-material incentives have been emphasized quite considerably. On the other hand the Government of India has made wide use of controls on the prices and movement of agricultural products as well as of agricultural inputs. It has organized the distribution of food-grains through co-operatives and fair-price shops.

The regulation and control of prices in the view of Indian planners is 'an aspect of the problem of institutional changes — that is, a strengthening of public and co-operative as against private agencies — that must necessarily accompany developmental planning'.\(^{125}\) A system of compulsory levies on farmers was introduced in 1964. The methods of procurement have varied between States. For example, in Maharashtra, the system is one of monopoly procurement with a graduated levy on producers; in Punjab purchases are coupled with an efficient system of regulated markets. There have also been restrictions on interstate movement of food-grains by private traders. A Food Production Corporation in the public sector has been established since 1965 for procuring, moving, storing and holding food-grains at the ports and in the interior of the country. Its aim is to 'attain a commanding position in the distribution of food-grains and stabilization of prices'.\(^{125}\)

One should not stretch the similarity too far; in spite of the relaxation of control on private marketing activities in the sixties\(^{126}\) the scope of

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122. Third Five Year Plan (India) pp. 337–8.
123. Fourth Five Year Plan (India) p. 228.
124. Third Five Year Plan (India) p. 131.
125. Fourth Five Year Plan (India) p. 236.
126. In 1964 grain was reported to be sold on the free market, apparently with official connivance. With respect to second category commodities, once the markets were revived it soon became accepted that they might be sold at above official prices (see Donnithorne, op. cit., p. 298).
rural markets in China is limited. In September 1961, it was estimated that only about 25 per cent of rural commodity circulation was transacted in 40,000 rural markets in China.127

The Chinese Government has controlled the prices of agricultural inputs like fertilizers; such prices are 'basically uniform' for the whole country, which in itself involves an element of subsidy for the remote areas.128 Government purchase prices have been widely used to stimulate or control the production of a particular crop.

Some material incentives have been provided by lowering taxes in, or exempting from taxation, those agricultural areas which have been badly hit by natural calamities. Taxes are not usually raised with every increase in output, thereby allowing the communes and brigades to keep a part of the increase in agricultural output. This aspect of not requisitioning too much grain and money and of giving sufficient consideration to the peasants' need for an increase in their food ration and income has come to be emphasized more and more in recent months. Occasionally peasants have been permitted to retain newly reclaimed land from the hills as private plots. Peasants who make inventions or innovations are given extra work points.

The task of economic incentives in India is fundamentally of a different order. Because of the guarantees to private property in land, those who have land and other means of production do not require many direct government incentives, though there is, of course, the need for incentives to improve techniques and practices; a much greater need for such incentives is to redirect resources to commodities which have priority in the plans. In so far as the popularization of agricultural inputs is concerned, the recent policy of the Government of India is to facilitate distribution by providing channels of distribution and supplying guaranteed credit. No subsidy is available for chemical fertilizers, seeds and plant protection material, except for backward and inaccessible areas, and to a limited extent for certain export crops.129 With a view to facilitating increased production, minimum support prices are guaranteed by the government for foodgrains, sugar-cane, jute and cotton.

6. Social justice

There is a common belief in both countries that social inequalities are the outcome of economic inequalities, of both wealth and opportunities. In India the problem of inequality is further aggravated by the existence and the rigidity of the caste structure.130 Because of the dominant ideologies in the two countries, attempts at eliminating economic inequalities have differed fundamentally. The Chinese revolutionary solution abolished private property in land, as well as the privileges of the rich; but, on the other hand, cadres have, in practice at least, emerged as a privileged élite, more so before the cultural revolution.131

In India, as seen already, some institutional reforms have been directed towards eliminating economic inequality, such as the fixing of ceilings on land-holdings and the redistribution of land. Other measures include 'positive discrimination' in favour of the 'underprivileged' through the reservation of seats in educational institutions and government jobs. Political equality has been provided by the reservation of seats in the central and provincial legislatures. A modest beginning—but an essential precondition for further developments—towards social equality has been made by declaring untouchability and discrimination on the basis of caste, religion, sex, etc. illegal under the Constitution. Some more positive steps for ameliorating the condition of the small farmer have been taken under the Fourth Five Year Plan. In the initial stage a small Farmers' Development Agency is being set up in 45 selected districts to 'identify the problems of the small farmers' and assist them either directly or through the existing institutions. The Agency will be empowered to provide resources to credit institutions for existing small operators.

A Brief Appraisal

So far, there does not seem to be any conclusive evidence that one strategy has appreciably excelled the other. A recent study by Bardhan,132 based on data for 16 years (1952–3 to 1967–8 for India and 1952 to 1967 for China), shows that the rate of growth of food-grain output was 1.9 per cent per annum in China, as against 1.7 per cent in India. This period included the unusually disastrous years of 1965–6 and 1966–7 in India and 1960 and 1961 in China. Bardhan's estimated rates of growth, after leaving out these years, come to 2.5 per cent for both countries. Total agricultural output in India probably

127. ibid., p. 299.
128. ibid., p. 755.
129. Fourth Five Year Plan (India) p. 128.
130. The role of caste as an inhibiting factor is somewhat exaggerated in the West. It is sometimes surprising to find that caste itself becomes a vehicle for democracy. Admittedly this is not an ideal situation; but the political supremacy of a caste and its nepotism is challenged far more quickly today than was ever possible before, and other castes combine readily in overthrowing the predominant caste. In some States in South India the appointment of high caste Hindus has been suspended until such time as other castes have gained a fair share in the administration, based on their proportion in the population.
131. A. Watson, 'A revolution to touch men's souls: the family, interpersonal relations and daily life', a paper presented at the Study Group in Leiden, 1–3 June 1972, mimeographed. The cadres have received special housing, better clothing and food, and better education for their children (p. 14).
grew slightly faster than in China; the overall growth rate in India was 3.01 per cent between 1952–3 and 1964–5 because of a much faster rate of growth of non-food crops in India. It is likely that the output of commercial crops did not grow as fast in China as in India. To keep the perspective right, we must remember two things: first, the quality of agricultural statistics is not strictly comparable in the two countries, Indian data being more reliable than the Chinese; secondly, there was a much greater element of recovery, as well as catching up, in China than in India, where a more stable political administration had added a great deal to agricultural infrastructure before 1950.

With regard to food consumption the picture in the two countries is broadly similar. The Chinese level of calorie consumption is estimated by various sources at around 2,010 calories.133 Protein consumption is estimated at 57 grammes per day. These intakes are slightly higher than the Indian intake of 2,000 calories and 50 grammes of protein (Appendix, Table IIIa); probably for climatic reasons, as well as higher activity rates in recent years, the Chinese need more on average than the Indians. The higher calorie intake in China is largely the consequence of a high consumption of root crops, the difference in grains being less than half an ounce per day; whereas the Indians consume much more sugar and sweets, pulses and nuts, fruits, milk and fats. Animal products provide a much larger amount of calories and a little more protein in China than in India. On balance, the average diet is marginally more diversified in India than in China where the quality of the food in terms of animal food is marginally better. With respect to the poorer sections of the community, however, China has certainly scored over India by guaranteeing the basic minimum food.134 In a recent study Peter Schran has shown that the institutional changes in China eliminated many of the traditional forms of economic inequality.135 As the land reforms had redistributed most of the land of the rich peasants, the income of poor peasants increased while the income of the former landlords was reduced to the level of the poor peasants. It also reduced the number of rich peasants but their relative earnings remained largely unaffected. During the collectivization movement, the ‘distribution according to labour’ reduced the rich peasants to the level of poor peasants, since the rich peasant households had a lower labour–population ratio. But as Schran suggests, collectivization created new income differentials, e.g., that between primary cadres and ordinary peasants, which was very similar in magnitude to the former differentiation between rich peasants and the average income of all peasants. Further attempts at a more egalitarian distribution under the communitization movement had to be given up. Inequalities between the incomes of peasants and rural craftsmen and other non-agricultural employees still continue, as do income disparities between regions. Rural incomes still continue to be considerably lower than urban.

Nothing as radical has happened in India. A recent study by Mukerjee suggests that ‘there has been a small reduction in overall disparity’ within rural sectors.136 There exist significant differences in incomes between various States as well as between rural and urban areas; rural incomes are significantly lower than urban. Nevertheless, the problem of the inequality of income is not as acute in rural areas as in urban.137

To what extent has agriculture provided resources for economic development? Comparable detailed intersectoral transfers of resources are lacking for both countries. Some tentative estimates are available of two major components (foreign exchange earnings and the marketed surplus of grain) of the contribution of agriculture to economic development. China exported $1.7 worth of agricultural commodities per head of agricultural population; as against this India exported only $1.63. In China agricultural exports met the total import requirement of the agricultural sector, whereas in India agricultural imports averaged $2.71 per head of the agricultural population. The share of the marketed surplus of food-grain (including the amount paid in agricultural taxes) in China averaged around 34 per cent in 1953–7, declined drastically to 27 per cent in 1958, and rose slightly to 30 per cent in 1959.138 No direct national estimates of the marketed surplus are possible the largest. The most recent estimate by Klatt places it at around 2,050 calories: see W. Klatt, ‘A Review of China’s economy in 1970’, The China Quarterly, No. 43 (July September 1970) p. 118.

134. It must be noted that this basic minimum differs widely between areas. Rationing is still on the work-point basis, and rice rations range between 30 to 74 catties as between prosperous and less prosperous areas.


138. These tentative estimates are based on the figures for Chinese foreign trade given in Donnithorne, op. cit., p. 319, and on Indian trade statistics from Information Service of India, India 1968: Annual Review, pp. 180–2. Figures of agricultural population are from FAO, Production Yearbook 1970, Table 5. In the export totals, manufactures based on agricultural raw materials like textiles are not included, whereas in imports, agricultural inputs like fertilizers are included. Imports include food-grains which are largely for urban consumption, so it should not be included in assessing the net contribution of agriculture to earning foreign exchange. If one leaves out food imports, the Chinese record in terms of import: export ratio looks a bit more impressive; it works out at 1 : 2.8 against 1 : 2.1 in India. These figures relate to 1969 for both countries.
available for India, but according to Bardhan's indirect estimates nearly 27 per cent of the grain output was marketed in 1953–4, which was significantly lower than in China. This proportion had declined to 26 per cent by 1961–2, although this decline was much smaller than in China. It seems, therefore, that in extracting resources from the rural sector, the Chinese record has been slightly better than the Indian, the reason for which may be in the greater degree of direct control on individual consumption levels that can be exerted in the Chinese system.

In mobilizing human resources and in the intensive use of labour, the Chinese achievement in terms of working longer hours or more man-days per year must exceed that of India. It has been suggested by specialists on China that although such mobilization of labour permitted the Chinese authorities to make a major contribution towards creating agricultural infrastructure, such as irrigation dams, etc., a considerable part of such labour was in fact wasted. The magnitude of such waste is difficult to assess. In India a significant amount of manpower is being wasted annually in the form of unemployment. Apart from the economic cost involved in such a situation, there is an inbuilt element of frustration, demoralization and loss of human dignity. From the point of view of labour utilization, therefore, the Chinese system has a definite advantage over the Indian, but one has to make some allowances for the unpleasantness and demoralization involved in regimentation of the Chinese type. The Chinese authorities themselves are aware of this and there are continued attempts to reduce the element of compulsion through propaganda and 'emulation' campaigns.

To sum up, it seems that in terms of the rate of growth of agricultural output or of the levels of food consumption the Chinese system has not so far shown a distinct advantage over its Indian counterpart, but in terms of egalitarianism and the mobilization of resources it has a definite edge over the Indian experiment. It is plausible to argue that through the better mobilization of resources, a more radical reform of institutions, the consolidation of holdings and the enlargement of the scale of operations and with its stronger industrial base, China is now in a better position than India to accelerate the rate of growth of the agricultural sector. But on the other hand, if differences of opinion continue within the party hierarchy in China, as has happened in the past, and if this leads to repeated 'purges' and 'vilification' campaigns, the chances are that the cadres will feel less secure in taking the initiative and a spirit of cynicism may develop among the masses. As in the past, frequent changes in the institutional set-up on ideological grounds may create further instability and uncertainty, thereby proving to be a disincentive to cadres and the masses.

On the other hand, the results of the development efforts in India up to now have been by no means so disappointing as to reject its own ideology. With all the problems of the unification of native States, of partition just after independence, and the perennial problems created by differences of religion, race and language, the overall record of India's achievement within a framework of 'parliamentary democracy' is not insignificant. Both countries ought to be given some more time before their relative progress can be more fully evaluated.

140. Schran, op. cit., p. 78; also Chao (1970) op. cit., p. 62.
141. Similar views are expressed by Bardhan in his papers already quoted.
STATISTICAL APPENDIX

Table 1. Average yield of paddy in China, India and Japan in the nineteenth century

(a) China: 1800–99

<table>
<thead>
<tr>
<th>Province</th>
<th>Metric tons per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiangsu</td>
<td>3.75 (8)</td>
</tr>
<tr>
<td>Kiangsu (north)</td>
<td>3.17 (6)</td>
</tr>
<tr>
<td>Hunan</td>
<td>3.5 (50)</td>
</tr>
<tr>
<td>Hupeh</td>
<td>2.17 (2)</td>
</tr>
<tr>
<td>Swatow</td>
<td>9.7 (6)</td>
</tr>
<tr>
<td>Kwantuung (entire)</td>
<td>7.75 (19)</td>
</tr>
<tr>
<td>Szechwan</td>
<td>1.9 (15)</td>
</tr>
</tbody>
</table>

*Figures in parentheses denote the number of observations used in arriving at the average figures in the table.

Provinces and Divisions

(c) India: 1870–80

<table>
<thead>
<tr>
<th>Province/Division</th>
<th>Metric tons per hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUNJAB (1872–77)</td>
<td>1.39</td>
</tr>
<tr>
<td>NORTH-WEST PROVINCE</td>
<td>1.39</td>
</tr>
<tr>
<td>AND OUDH (1877–78)</td>
<td>1.32</td>
</tr>
<tr>
<td>Meerut Division</td>
<td>1.32</td>
</tr>
<tr>
<td>Allahabad division</td>
<td>1.54</td>
</tr>
<tr>
<td>Jhansi division</td>
<td>1.47</td>
</tr>
<tr>
<td>BANGAL (mid-1870s)</td>
<td>1.71</td>
</tr>
<tr>
<td>Burdwan division</td>
<td>2.59</td>
</tr>
<tr>
<td>Meerut (north)</td>
<td>2.99</td>
</tr>
<tr>
<td>Dinajpur</td>
<td>1.38</td>
</tr>
<tr>
<td>Hangur</td>
<td>1.98</td>
</tr>
<tr>
<td>Orissa</td>
<td>1.98</td>
</tr>
<tr>
<td>Most Bihar districts</td>
<td>1.58</td>
</tr>
<tr>
<td>MADRAS (1875–76)*</td>
<td>2.69</td>
</tr>
<tr>
<td>Vizag Patram</td>
<td>2.69</td>
</tr>
<tr>
<td>North Arcot</td>
<td>2.80</td>
</tr>
<tr>
<td>Madura</td>
<td>3.04</td>
</tr>
</tbody>
</table>

(b) Japan: 1885–89

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Number of prefectures</th>
<th>Metric tons per hectare*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>0–1.67</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1.68–2.09</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>2.10–2.64</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2.51–2.64</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.65–3.35</td>
<td></td>
</tr>
</tbody>
</table>

*The minimum yield is estimated at 1.33 metric tons and the highest at 2.83 metric tons.

Regions

HYDERABAD

Quantity of land

Survey by District Officers: in eight Districts 4.29

*Some of these areas had a second crop, the yield of which is not included in these estimates.

Table 2. Total area in India under rice producing more than 2 metric tons of paddy, 1953–54

<table>
<thead>
<tr>
<th>States</th>
<th>Total acreage in millions of acres</th>
<th>Percentage of total acreage under rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra</td>
<td>2.55</td>
<td>6%</td>
</tr>
<tr>
<td>Bombay</td>
<td>0.86</td>
<td>25</td>
</tr>
<tr>
<td>Madras</td>
<td>2.95</td>
<td>46</td>
</tr>
<tr>
<td>Bengal</td>
<td>6.96</td>
<td>70</td>
</tr>
<tr>
<td>Mysore</td>
<td>0.23</td>
<td>25</td>
</tr>
<tr>
<td>Punjab</td>
<td>0.35</td>
<td>neg</td>
</tr>
<tr>
<td></td>
<td>13.03</td>
<td>17</td>
</tr>
</tbody>
</table>


Table 3(a). Average availability of food in India and China, per capita per day

<table>
<thead>
<tr>
<th>States</th>
<th>Calories</th>
<th>Protein</th>
<th>Fat</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>2000</td>
<td>50</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>2050</td>
<td>57</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>


Table 3(b). Supplies of calories and proteins in the Indian and Chinese diets, per capita per day

<table>
<thead>
<tr>
<th>Cereals</th>
<th>Potatoes &amp; roots</th>
<th>Sugar &amp; sweets</th>
<th>Pulses &amp; peas</th>
<th>Vegetables</th>
<th>Fruits</th>
<th>Meat</th>
<th>Eggs</th>
<th>Fish</th>
<th>Milk</th>
<th>Fats &amp; oils</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDIA</td>
<td>33</td>
<td>32</td>
<td>56</td>
<td>33</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>2000</td>
</tr>
<tr>
<td>CHINA</td>
<td>28</td>
<td>12</td>
<td>31</td>
<td>31</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>2050</td>
</tr>
</tbody>
</table>

Source. As for Table 3(a).