

## *High Tide Symposium\**

# **Mao and Agriculture in China's Industrialization: Three Antitheses in a 50-Year Perspective\*\***

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**ABSTRACT** Accelerated agricultural collectivization in China was an inescapable consequence of the broader economic goal of socialist industrialization. Rightly or wrongly, this wider vision of China's future was imposed by Mao, and to judge the High Tide of agricultural collectivization of 1955–56 without regard to these wider objectives is a mistake. The collectivization represented an extensive growth that relied on labour mobilization to expand factor supply and to extend the crop sown area in a manner rationalized by the theories of Ragnar Nurkse. This strategy inevitably required bureaucratic control and coercion, depressed peasant consumption and the forced siphoning off of the agricultural surplus. As such its outcome should not be evaluated in terms of the neoclassical economic norms of income maximization, peasant incentives or efficiency in cropping patterns based on market prices.

In this framework, the post-Mao decollectivization and the readjustment of the agriculture–industry balance can be seen as a transition to an intensive agricultural growth strategy that was built upon the precise material legacy (expanded irrigation and drainage capacity) left behind by Mao. This strategy has proved to be remarkably successful in further releasing industrial growth from the agricultural constraint.

Fifty years ago, in July 1955, Chairman Mao delivered his speech “On the question of agricultural co-operativization.”<sup>1</sup> The speech, which was addressed to Party secretaries from all the provinces, municipalities and autonomous regions, immediately triggered a “Socialist High Tide” that during 1955–56 engulfed the entire Chinese countryside in a radical upheaval and a shift of agricultural organization towards collectivization.<sup>2</sup> The High Tide did not

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1. See *Mao Zedong xuanji* (*Selected Works of Mao Zedong*), Vol. V (hereafter *Maoxuan V*) (Beijing: Renmin chubanshe, 1977), pp. 168–191, for the full text of the speech (hereafter “On co-operativization”).

2. The term “Socialist High Tide” was made known nationally through the book entitled *The Socialist High Tide in the Chinese Countryside* (three volumes) published by the General Office of the Central Committee of the Party in early 1956 with a preface and commentaries written by Mao himself on reports of individual cases of co-operativization collected from various provinces for promoting Mao's course of co-operativization. Cf. Kenneth R. Walker, “Collectivisation in retrospect: the Socialist

completely recede until the full cycle of Chinese agricultural collectivization was completed following Mao's death in 1976.

Within this larger cycle were smaller ones, familiar to us in terms of Mao's "wave-like" strategy. Thus the High Tide, after a temporary phase of moderation in 1957, culminated in the gigantic experiment of the People's Communes in 1958. Coupled with the wider Great Leap Forward (GLF) movement, this upheaval was in both scale and magnitude an unprecedented event in Chinese and possibly world history. Following the collapse of the Leap strategy in 1959–60, the emerging commune system was rapidly modified in a way that mitigated the disastrous excesses committed. However, this proved to be merely the prelude to Mao's Cultural Revolution (1966–76) – a movement that carried elements of the original commune system (notably absolute egalitarianism in distribution coupled with large-scale labour mobilization for rural construction), to their ultimate conclusion.

After Mao's death, the new Chinese leadership dismantled the People's Communes, starting the process even before it was officially sanctioned by the New Constitution of the PRC promulgated in December 1982. Collective farmlands were officially redistributed (or "reparcelled") to peasant families for individual farming in January 1984. The three-decade cycle of agricultural collectivization in China was then effectively completed.

From the vantage point of post-Mao reforms, the basic questions that arise are clearly, first, why the "Socialist High Tide" in the first place? And secondly, was the three-decade long collectivization really worthwhile? To many Western scholars and analysts, and indeed to many of their Chinese counterparts, the conclusions are as follows: collectivization impaired peasant incentives; rural bureaucratic control and non-market methods distorted the allocation of resources and inhibited productivity growth; the drive for grain self-sufficiency, especially during the Cultural Revolution, retarded rural specialization and intra-regional exchange; and, above all, agriculture was consistently undervalued in the national scale of investment priorities.

Taken together, agricultural collectivization/communization is thus seen to have been responsible for the slow growth or stagnation of Chinese agriculture, and hence of depressed peasant income, widespread poverty and even prolonged malnutrition for many. Above all, the Great Leap Forward phase was deemed to have cost China "almost a decade of economic growth," and to have made Mao and

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High Tide of Autumn 1955–Spring 1956," in Robert F. Ash (ed.), *Agricultural Development in China, 1949–1989: The Collected Papers of Kenneth R. Walker* (Oxford: Oxford University Press, 1998), pp. 11–49. The article was originally published in *The China Quarterly* in 1966. It gives a meticulous account of the circumstances surrounding Mao's decision to launch the co-operativization campaign and of its initial impact.

China objects of global ridicule. In short, Mao is seen more as a “revolutionary romanticist” than as an economic realist; a man who cared more for ideology, politics and class struggle than for practical economic issues.

Some scholars have, of course, noted the significance of advances in agricultural technology under Mao, notably in the forms of irrigation and drainage systems and the increased application of chemical fertilizer. But these advances are rarely emphasized in major Western studies. Rather, the potential productivity gains are seen as having been being offset by the waste and inefficiencies of rural bureaucratization. On this view, the only positive phases in the story of agricultural development are seen to be 1952–55 (prior to the High Tide), and the first half of the 1960s, both seen as periods when markets and prices still played a significant role in the rural economy.<sup>3</sup>

No wonder, therefore, that the post-Mao agricultural reforms that dismantled the People’s Communes and the compulsory farm delivery system, and replaced bureaucratic power with market mechanisms, are regarded as the negation of Mao’s approach to agriculture. But is this really the whole story of Chinese agricultural development in the modern period? I believe not. And the 50th anniversary of *On Co-operativization* seems an appropriate moment to review this topic of fundamental historical importance, because we have now reached the point where the Mao and post-Mao eras are of almost equal length.

In what follows I attempt to provide an alternative framework of interpretation for understanding the performance of agriculture under Mao and relate this to the course of development since his death. The three major propositions put forward may be regarded as the antitheses to widely held views on the economics of the Mao period. The discussion may raise more questions than are answered, but is offered mainly in qualitative form to develop longer-term debate. Further qualitative analysis can be left to students interested in the econometric analysis of Chinese affairs.

### *Collectivized Agriculture and the Industrialization Imperatives*

My first proposition examines the problem of how to evaluate the long-term performance of Chinese agriculture. I argue that one should not just look at the agricultural sector and evaluate performance in

3. For a post-Mao reassessment of China’s agricultural-policy and performance compare Nicholas R. Lardy, *Agriculture in China’s Modern Economic Development* (Cambridge: Cambridge University Press, 1983), and Y. Y. Kueh, *Agricultural Instability in China: Weather, Technology, and Institutions, 1931–1991* (Oxford: Oxford University Press, 1995). Other major works which fully or substantially deal with the subject matter include Alexander Eckstein, *Communist China’s Economic Growth and Foreign Trade* (New York: McGraw-Hill, 1966); Dwight H. Perkins, *Market Control and Planning in Communist China* (Cambridge, MA: Harvard University Press, 1966); Kang Chao, *Agricultural Production in Communist China* (Madison: University of Wisconsin Press, 1970); Kenneth R. Walker, *Food Grain Procurement and Consumption in China* (Cambridge: Cambridge University Press, 1984).

terms of comparative rates of output, productivity and income growth. Evaluation must take into account the wider context of industrialization performance, since this was the sector that agriculture was mainly to serve. For Mao (as for Stalin) steel was the “final good” and agricultural output the “intermediate input.”<sup>4</sup> Viewed this way, judgements about performance based on the impact on peasant incomes or poverty alleviation belong rather to the realm of ethics and welfare choices.

The major criterion has to be whether the agricultural sector did deliver sufficient agricultural surplus to promote industrialization. The “surplus” needed for this includes not only foodgrain consumed by industrial workers but also cash crops (such as cotton and tobacco), as well as the livestock, poultry and aquatic products used as inputs for textile/garment manufacturing and the tobacco and food processing industries. The final products among these goods may be consumed domestically, but by virtue of the strategy of maximizing industrial growth, they are bound to be primarily destined for the export markets where they are exchanged for advanced steel products, machinery, equipment and high technology goods required for the industrialization drive.

This seems to state the obvious. But if we think now in terms of Simon Kuznets' analysis of the tripartite contribution of agriculture (to product, market and factor supplies) the matter becomes quite complex.<sup>5</sup> Setting aside the “product contribution” illustrated above, the potential of agriculture as a market for China's own industrial goods (let alone imported ones) was obviously deliberately limited by Mao's strategy of forcing agriculture to rely on internal resources to build up the necessary production capability to raise agricultural surplus further and to meet its own consumption and producer goods demands.

In this respect, we must elaborate on Mao's thinking on the consequences of the High Tide. In *On Co-operativization*, Mao considered in some detail his “grand vision” of “socialist industrialization” for China and the role to be played by agricultural collectivization in achieving this. He made three major mutually reinforcing points.

The first was that co-operativization would facilitate agriculture's leap from small-scale management with farm implements powered by draught animals, to large-scale operation with machinery. Barring

4. I borrow an epigram by the Harvard Professor, Abraham Bergson that “steel was a final good to Stalin, and bread an intermediate one,” as quoted by Peter J. D. Wiles in 1962 in his *The Political Economy of Communism* (Cambridge, MA: Harvard University Press); see Anthony Tang, “Policy and performance in agriculture,” in Alexander Eckstein, Walter Galenson, and Ta-chung Liu (eds.), *Economic Trends in Communist China* (Chicago: Aldine Press, 1968), p. 460.

5. Simon Kuznets, “Economic growth and the contribution of agriculture: notes on measurements,” in Carl Eicher and Lawrence Witt (eds.), *Agriculture in Economic Development* (New York: McGraw-Hill, 1964), pp.109–119.

this, he argued, “it is not possible to resolve the contradiction between the ever increasing demand for commercial grains and industrial raw materials, and the presently very low output level common to major agricultural crops.”<sup>6</sup> Secondly, “only on the basis of co-operativized large-scale management will agriculture be able to make use of the supply from heavy industry (the single most important branch of socialist industrialization) of tractors and other farm machines, chemical fertilizers, modern transportation equipment, kerosene, electricity, etc. (in order to expand production).”<sup>7</sup> Thirdly, co-operativization, he argued, would help facilitate the overall process of accumulation since, in addition to the immediate contribution of direct agricultural taxes, “a substantial proportion of the large amount of capital needed for the completion of [socialist] industrialization and farm-technological renovation,” will in future come from a “large-scale agriculture.” “This [new sector] will greatly raise peasants’ purchasing power; thus facilitating “large-scale development of light industry” to supply peasants “with large amounts of living materials [consumer goods] [that they will] exchange for commercial grains and light-industrial raw materials.” It is through this exchange, Mao is arguing, that the rate of accumulation will be raised.<sup>8</sup> Hence while the pursuit of a modernized agriculture has merit for Mao in terms of peasant well being, the ultimate point of reference in the July 1955 speech is the maximization of capital accumulation as required by the Stalinist principle of preferential growth of heavy industry.

A few months after his *On Co-operativization* speech, Mao translated this grand vision into a more practical policy approach in his famous treatise *On the Ten Great Relations*,<sup>9</sup> which he himself regarded as the first ever blueprint for a uniquely Chinese route to national construction which “is similar in principle to that of the Soviet Union but has our own substance.”<sup>10</sup> Mao cautiously argued that “our problem at present is still how to appropriately readjust the investment [allocation] ratio between heavy industry and agriculture and light industry, in favour of a greater development of agriculture and light industry .... [Heavy industry] should still remain the main focal point, but investment proportions for agriculture and light industry should be raised a little bit .... This will help to better supply

6. “On co-operativization,” p. 181.

7. *Ibid.* p. 182. This suggests that by summer 1955 Mao was fully confident that agricultural co-operativization should precede mechanization, not vice versa. See Howe and Walker, “The economist,” in Dick Wilson (ed.), *Mao Tse-Tung in the Scales of History* (Cambridge: Cambridge University Press, 1977), p.181 about the significant controversy between Mao and Liu Shaoqi on the issue; and Perkins, *Market Control and Planning*, p. 60 for a brief discussion about the relevance of the Soviet experience of mechanization to China.

8. “On co-operativization,” pp. 182–83.

9. See *Maoxuan* V, pp. 267–288 for the full text.

10. *Mao Zedong sixiang wansui* (*Long Live Mao Zedong Thoughts*) (Chinese Red Guard publications, 1969; first reprinted in Japan, 15 November 1974) (hereafter *Wansui*), pp. 151 and 163.

living necessities to the people on the one hand, and increase capital accumulation on the other hand; and hence to develop [even] more and better heavy industry.”<sup>11</sup>

It is against this background that Mao has at times been regarded as being in favour of a “balanced development strategy” or a more “developmental” versus a purely “extractive” strategy.<sup>12</sup> The former type of strategy should perhaps be understood in the ethical sense of balancing peasants' welfare against excessive investment in heavy industry. The latter, however, is strictly a strategy in the literal sense that to “develop” and enhance agricultural productivity with appropriate doses of state investment may eventually help to extract an even greater amount of agricultural surplus in the relatively short term.

Whatever the case may have been with Mao, it is evidently very difficult, if not impossible, in practical policy deliberations to determine in either case what the “optimum trade-off” may be. What is clear, however, is that under the Stalinist pro-heavy-industry bias, both strategies imply “austerity” for the peasantry. Thus, the only yardstick available to gauge the performance is whether they effectively release industrialization from agricultural constraints.

In this respect, the most remarkable departure from the Stalinist model should really be seen in the rigorous attempt made during the Great Leap Forward to substitute the principle of rural “self-reliance” for supplies from the modern urban industries, in order to save even more resources for promoting the heavy industry. This strategy was indeed carried out with full force through the entire Cultural Revolution period.<sup>13</sup> The upshot was of course added hardship for the peasantry in terms both of consumption losses and of increased work loads.

In a way, the legacy of the agriculture–industry dichotomy remains relevant today, judging by the emergence in recent years of the so called *san nong* (三农) (three-agriculture) problem; that is, the general problems of agriculture (*nongye* 农业), of peasants (*nongmin* 农民), and of the rural areas (*nongcun* 农村).<sup>14</sup> In the eyes of the new Chinese leadership under President Hu Jintao (胡锦涛) and Premier Wen Jiabao (温家宝), it appears that only now is Chinese industry finally mature enough to “return-feed” (*fanbu* 反哺) agriculture or the rural

11. “On co-operativization,” p. 269.

12. Cf. e.g. Lardy, *Agriculture in China's Modern Economic Development*, p. 16.

13. Carl Riskin, *China's Political Economy: The Quest for Development since 1949* (New York: Oxford University Press, 1987), ch. 9; and Alexander Eckstein, *Communist China's Economic Growth*, pp. 31–36.

14. See Wu Wen and Liu Nianyan, “Tongchou chengxiang jingji shehui fazhande duice yu silu” (“Thoughts and policy for co-ordinating the overall development of the urban and rural economies”), *Zhongguo nongcun yanjiu* (*China Rural Studies*), published by the Rural Economy Research Centre of the Ministry of Agriculture, No. 13 (9 April 2004) for a comprehensive definition of the “sannong” problem; and Tang Minfang, “Jiejue ‘sannong’ wenti yingyi shenmo wei tupuokou” (“In solving the ‘sannong’ problem where should be the point for a breakthrough”), *Nongye jingji wenti* (*Agricultural Economic Problems*), No. 12 (2002) for the critical problems involved.

sector at large, and thus at last begin to achieve a more “harmonious” development sought in *On the Ten Great Relations*.<sup>15</sup>

Now to return to the question: should Mao’s agricultural policy really be considered as successful, bearing in mind the enormous burden placed on the Chinese peasantry? Obviously this must be assessed within Mao’s own frame of reference as outlined above.

In a pioneering study completed in 1968, Anthony M. Tang conducted a standard correlation analysis between the growth rates of Chinese agriculture and industry in 1949–57.<sup>16</sup> His conclusion was quite straightforward: the agricultural policy of the Chinese government was correctly “development-oriented” (as a means to “extract” more agricultural surplus to support industrialization), but industrial development in the period was, nevertheless, still effectively constrained by the vagaries of agricultural production. Tang noted the sharp contrast on this point between China and the former Soviet Union. Per capita grain availability stood at 480 kilograms per year for the Soviet population in 1928 when Stalin started to collectivize Soviet agriculture. The comparable figure for China was only 220 kilograms in 1952 or 256 kilograms for the 1957 baseline. Thus while fluctuations in agricultural output had virtually no effect on Soviet industrial growth, in China the spillover effects of poor agricultural years affected both light and heavy industries. This is explained by the harsh reality that subsistence-level Chinese peasants had to be accorded a priority share of agricultural output, leaving industry as the “residual claimant” of output.

A similar analysis is needed for subsequent periods. But some basic aggregate indicators seem adequate to reflect the changing situation since the inception of the Chinese First Five-Year Plan in 1953. The figures in Table 1 show that the continuous industrialization drive based on highly collectivized agriculture had, by the time of Mao’s death, already brought the share of industry in the country’s GDP up from 21 per cent in 1952 to the startling high of 48 per cent in 1978. Since then the share seems to have basically stabilized between 49 per cent (1998) and 53 per cent (2003). Meanwhile, the corresponding GDP share of agriculture declined by 23 percentage points between 1952 and 1978, and since 1978 by 13 more percentage point to a mere 15 per cent in 2003.

15. Hu made the point at the Fourth Plenum of the 16th National Party Congress (NPC) held in September 2004, and again more specifically at the National Economic Work Conference in November 2004. In the words of Wen Jiabao, “the first phase of the (post-Mao) rural reform, i.e. the implementation of the basic economic system of household management is completed, and the country is now entering into the second phase of reform with industry ‘return-feeding’ agriculture and urban centres supporting the countryside” (press interview given in conjunction with the National People’s Congress held in March 2005; see *Xinbao caijing xinwen (Hong Kong Finance and Economic News)*, 15 April 2005. Wen also proclaimed that all agricultural taxes would be eliminated in 2005.

16. Tang, “Policy and performance in agriculture,” pp. 466–480.

**Table 1: China's Gross Domestic Product (GDP) and Total Employment (TEM) by Sectoral Origin in Benchmark Years (%)**

	1952		1978		2004	
	GDP	TEM	GDP	TEM	GDP	TEM
Agriculture	51	84	28	71	15	47
Industry	21	7	48	17	53	23
Services	29	9	24	12	32	31

*Sources:*

National Bureau of Statistics, *Zhongguo tongji zhaiyao 2005 (China's Statistical Abstracts)* (hereafter *TJZY 2005*), pp. 20 and 45 for 1978 and 2004; and *Zhongguo tongji nianjian (China's Statistical Yearbook)* (hereafter *TJNJ 2001*), pp. 50 and 108 for 1952.

Note also that agriculture's contribution to GDP growth in 2004 is estimated to be only 9 per cent of the total, in sharp contrast to shares of 62 per cent and 29 per cent respectively for industry and the services sector.<sup>17</sup> This suggests that industrial growth in China has now been basically released from agricultural constraints to become a self-augmenting sector. Three important points may be made, but only briefly, about the background to these impressive economic changes.

First, of course, is the role of the compulsory farm procurement scheme (in force during 1953–85). Mao himself made it very clear that the agricultural collectives were created to ease implementation of this device.<sup>18</sup> The forced siphoning was in practice “a progressive tax on current production with nearly confiscatory marginal rates.”<sup>19</sup> The “Kuznets” product contribution of agriculture was achieved both by direct tax and by manipulation of prices (the “scissors effect”). For Mao's reign taken as a whole there was, therefore, an enormous imbalance in investment allocation between agriculture and industry relative to the respective output generated.<sup>20</sup> This is precisely what is considered by many Western scholars to be the source of many of the economic ills in Chinese agriculture. I await to be convinced that a

17. *TJZY 2005*, p. 24. The rate of contribution of agriculture for 2003 is even lower, a mere 4%, as against 68% for industry and 28% for the services sector.

18. “Two talks on agricultural mutual-aid cooperation” (4 November 1953), *Maoxuan V*, p. 122. Mao made the point even more explicit in “Reading notes on the Soviet textbook of political economy” (1961/62), *Wansui*, p. 330. Notice that the scheme was adopted as soon as the First Five-Year-Plan (1953–57) was launched.

19. Tang, “Policy and performance in agriculture,” p. 495.

20. Nicholas Lardy conducted in his *Agriculture in China's Modern Economic Development*, pp. 126–28, a sophisticated estimate about the size of the “imbalance.” He shows that for 1950–77 light industry contributed (profits and taxes) 29% of state budget revenue which was equivalent to 70% of all state investment, of which only 8% was reinvested in light industry and the bulk used to finance investment in heavy industry. He also cited a respectful Chinese source to the effect that “as late as 1978 more than two-thirds of light industrial goods still were manufactured from inputs procured from agriculture.”



substantial reallocation of investment in favour of agriculture would have promoted the planned industrialization drive more effectively.

The second point involves the Kuznetsian “factor” contribution, which is obscured by the relative figures given in Table 1. Being a classical model of “unlimited labour supply,” Chinese agriculture can always release redundant labour to support industry. Much more important, however, is the factor of “land” as a contribution from agriculture. I refer to the continuous encroachment of farmlands during the process of urbanization and industrialization. The Chinese peasants were (and still are) constantly compelled to relinquish precious farmland at the discretion of the bureaucratic apparatus without due, if any, monetary compensation. Strangely enough, no effort has ever been made to compute the implicit price for such factor contribution. Of course, any computation would only help to aggravate further the estimated intersectoral imbalance between agriculture and industry. At any rate, the hard fact is that to meet production targets the agricultural sector had increasingly to resort to multiple-cropping practice to compensate for reductions in cultivated areas.

The third point relates to Mao’s strategy for regional autarky and national self-sufficiency. This involves international politics. It is clear that Mao was obsessed with fears of regional and international conflicts, conditioned as he was by the 1962 war with India, the 1969 Zhenbao Island clash with the former Soviet Union and, of course, the prolonged Dulles/Truman legacy of “containment.” Denied any direct support from outside, agriculture, as the foundation of the national economy, clearly bore the full brunt of the massive drive towards building an independent, comprehensive industrial system. Interestingly, Hong Kong was a key instrument for acquiring indirect assistance through the mechanism of multilateral trade. On the eve of the open-door strategy, net foreign exchange earnings from the former British colony alone were more than sufficient to balance the combined trade deficits incurred with Japan and Western Europe – deficits that reflected imports of the much needed advanced machine and equipment and steel products.<sup>21</sup> These were paid for by China’s exports to Hong Kong that were almost exclusively agricultural, subsidiary agricultural and processed agricultural products (including textiles), which made up the bulk of total Chinese export value.<sup>22</sup>

Viewed this way, Lardy’s “paradox” of “the persistence between the mid-1950s and mid to late 1970s of chronic malnutrition and low income in a significant share of the rural population, despite a doubling of per capita national income between these two periods”<sup>23</sup>

21. See Y. Y. Kueh and Christopher Howe, “China’s international trade: policy and organizational change and their Place in ‘economic readjustment,’” *The China Quarterly*, No. 100 (1984), p. 823.

22. Cf. Lardy, *Agriculture in China’s Modern Economic Development*, pp. 127 and 137.

23. *Ibid.* pp. ix and 159.

may not really appear to be that problematic, given that a very substantial proportion of per capita national income takes the form of output of machinery and equipment including weaponry. Even so it is a remarkable fact that Guizhou province, which had by far “the greatest concentration of chronic rural poverty in the late 1970s (and) the lowest reported life expectancy of any province – 59 years,”<sup>24</sup> still compared quite favourably with the national average life expectancy of 40 years in 1950 and only 47 years in 1960; although it was lower by six and nine years compared to the national averages of 65 and 68 years for 1975 and 1981 respectively.<sup>25</sup>

### *Collectivization as an Agricultural-Growth Strategy*

My second proposition examines the popular perception that agricultural collectivization in China was a major source of inefficiency and resource waste. I argue rather that, from the outset, collectivization was conceived by Mao as a resource mobilizing vehicle for expanding physical output as required by the industrialization imperative. Agricultural performance in China should therefore be assessed as such, rather than in terms of norms of static efficiency and income maximization. In the circumstance, any given agricultural output mix should clearly also be understood against the industrial planners' preferences rather than those of peasants or consumers in general.

I would therefore argue that from the planners' perspective, as long as the aggregate output growth brought about by the mobilization strategy outweighed the sum total of potential losses associated with peasant disincentives and inefficiency, the strategy is serving its purpose. For Mao, however, this was clearly a second best approach. He actually aspired to have “the best of both worlds” and, although he could always resort to “Politics in Command” as a substitute, the problems of peasant incentives and material well-being seem to have been constantly in the forefront of his mind.<sup>26</sup>

At any rate, the collectivization was clearly a case of an extensive growth strategy. Such a strategy initially involves movement from inside the full employment points on to the production possibility frontier. Achievement of this may be called growth efficiency and it should be distinguished from an intensive growth strategy that attempts rather to shift the production possibility frontier upwards by

24. *Ibid.* pp. 171 and 173.

25. Joseph C. H. Chai, “Consumption and living standards in China,” in Robert F. Ash and Y. Y. Kueh (eds.), *The Chinese Economy under Deng Xiaoping* (Oxford: Oxford University Press, 1996), p. 253.

26. See also Mao's “Summing up speech at the Sixth Expanded Plenum” (September 1955), *Wansui*, pp. 12–25, with which he campaigned for the official endorsement of his co-operativization drive.

more intensive use of given resources and technological innovation. This represents dynamic efficiency in the neoclassical sense.<sup>27</sup>

Whether or not prior to collectivization Chinese peasants actually operated at the transformation frontier (that is they achieved static efficiency by virtue of centuries of intensive cultivation under the private landholding regime) is a separate issue.<sup>28</sup> What seems clear is that under such a system, siphoning off the farm surplus would entail an enormous financial burden for the planners and thus seriously compromise the industrialization imperatives, even if we ignore the problem of the inability of planners to interfere with peasants' choices between work and leisure. (In the traditional system idleness was a common phenomenon during the slack season.)

In the eyes of the planners, therefore, there was a clear case for collectivization to enforce the extensive growth strategy. The entire mechanism required bureaucratic control and direct agricultural planning with targets for the physical sown area and individual crop outputs. The first experiments with these were in 1956 and 1958–59 and they were rigorously enforced during the Cultural Revolution, 1966–76.<sup>29</sup> This system rendered the neoclassical paradigm of economics inoperative, since under it it does not really matter whether the cotton/grain price relatives were correctly set or not, as these prices were simply an accounting device. As long as the officially fixed “scissors” differential allowed peasants a minimum net revenue (the rural counterpart of urban wage) to purchase such basic necessities as cloth and edible oil and vegetables, plus perhaps occasional meat products (if not self-supplied from the private plot), and some minimal consumer goods, the mechanism, draconian and robust as it might appear, was working. Note that the peasants were not only guaranteed the basic grain ration (*kouliang* 口粮) but cotton cloth was subject to prolonged rationing as well.

Viewed this way, it appears redundant to argue that rural cadres in charge of farm decisions were deprived of the price signals needed to guide intercrop sown area allocation; or that, worse still, they were constantly subject to political pressures to maximize key physical output targets in disregard of proven rational cropping patterns, as was widely believed to be the case under the “grain first” strategy

27. Abraham Bergson, *Planning and Productivity under Soviet Socialism* (New York: Columbia University Press, 1968), pp. 15–18. In his Harvard class, 1969–70, Professor Bergson made use of the transformation curve to illustrate the differences between growth efficiency and dynamic efficiency to be distinguished from static efficiency (producing on the frontier) (my lecture notes).

28. Cf. Mark Elvin, “The technology of farming in late-traditional China,” in Randolph Barker and Radha Sinha (eds.), *The Chinese Agricultural Economy* (Boulder: Westview Press, 1982), pp. 13–35, and of course the monumental contribution by John L. Buck, *Land Utilisation in China* (Nanking: Nanking University, 1937) about the situation in the 1930s.

29. Perkins, *Market Control and Planning*, pp. 65–68 and 83–86, and Nicholas Lardy, *Agriculture in China's Modern Economic Development*, pp. 19–21, 37–38, 41–43 and 46–48.

during the Cultural Revolution.<sup>30</sup> Nevertheless, two major points must be made to clarify such perceived “allocative biases” and their potential impact.

First, the issue here parallels the familiar argument that former Soviet bloc countries were all “trading in the dark,” because highly distorted domestic prices (as a result of years of government price-fixing), compounded by distorted official exchange rates, could not be compared with overseas prices to determine the optimum export mix. However, in practice central exports planners were basically aware, perhaps via trial and error, where comparative advantages lay, and the analogous problem faced by the agricultural planners and local rural bureaucrats was evidently much more manageable. The case was similar in industrial or enterprise planning although this was clearly much more complex in terms of product differentiations.<sup>31</sup>

A closely related argument is that unlike industry, agriculture is a “variable coefficient sector” (Richard Eckaus) and peasant behaviour is therefore less conducive to centralized management and control. Under the diktat or “extortion” by rural cadres, Chinese peasants could thus become resentful and act irrationally to result in gross inefficiency in farming. However, I would rather argue that once the farming routine was established, they would simply or subtly yield to the practice to earn, say, their own grain and cotton cloth rations. These considerations help us to understand why, under the prolonged period of Mao's hegemony, the rural fabric of production and exchange remained intact and worked reasonably well.

The second point relates to the apparently extreme “grain first” strategy of the Cultural Revolution. There are three aspects to a possible appraisal of the widespread charges about the excesses committed in terms of unbalanced cropping patterns. One is that how the perceived excesses can possibly square with the fact that the entire Chinese exports programme – which comprised overwhelmingly nongrain but essentially farm-related products and which was indeed so precious to the industrialization imperatives (as alluded to earlier) – managed to remain intact. It had in fact been consistently expanding.

The second aspect is slightly more technical. It is that the “grain first” strategy resembles the “output-maximizing model” of the former Soviet economy.<sup>32</sup> Unlike the perfectly competitive market

30. Cf. Lardy, *Agriculture in China's Modern Economic Development*, pp. 47–48 and 52–53 for the very explicit views made in this respect.

31. As a matter of fact, industrial planning in China was then already considered as much less difficult from in the Soviet Union. As Dwight Perkins put it, “[China] produces a far fewer number of commodities,” and “there are fewer interdependencies between industries and sector.” See his “Industrial planning and management,” in Eckstein, Galenson, and Liu, *Economic Trends in Communist China*, p. 601. Moreover, as Christopher Howe sees it, planning and decisions did not evolve from “scratch,” but normally involved “marginal adjustments and appropriate expansion” from existing plans; see his *China's Economy: A Basic Guide* (London: Paul Elek, 1978), p. 54.

32. Edward Ames, *Soviet Economic Processes* (Homewood, Illinois: Richard D. Irwin Inc., 1965), p. 54.

economy model, output in any state-owned enterprise was to be maximized subject to the constraint of “average-cost equal to (the given) price (average revenue)” (that is, the enterprise just breaks even). This principle replaces the familiar “marginal cost equal to the price” formula for profit maximization. Any output extension beyond the break-even point would clearly entail financial losses. Was the Chinese government really prepared to foot the bill (fiscal subsidies) for all costs that might arise under the “grain first” strategy? It seems doubtful, given that under the given scissors-differentials (highly depressed farm procurement prices versus expensive modern inputs) the peasants could easily incur financial losses which they could not be held responsible for.

The third aspect involves what may appear to be some exceptional cases. Sichuan was cited as one such case, where multiple (third) grain-cropping was rigorously expanded “at all costs,” in other words despite continuously increasing financial losses. Similarly, North China rigorously substituted grain for cotton, entirely ignoring presumably the law of comparative advantage in sown area allocation. The “grain first” practice was indeed said to have been carried to such an extent that cotton had to be imported on a large scale to feed the country’s textile industry, totally defying the simple arithmetic that the hard currency outlay on cotton imports could have otherwise been saved for importing a much higher quantity of grain than that produced domestically.<sup>33</sup> More research has to be done to unravel these puzzling “paradoxes.” Perhaps the principles of regional autarky and grain self-sufficiency were simply given as strategic imperatives.<sup>34</sup> We really do not know for sure.

The most conspicuous characteristic of Mao’s agricultural growth strategy is mass labour mobilization. This phenomenon is familiar but an important aspect of Mao’s approach to it has remained relatively unappreciated. This is that from the outset, Mao regarded agricultural collectivization as a good means for “fighting natural calamities.”<sup>35</sup> I refer to this elsewhere as the “institutional hedge.”<sup>36</sup> This is closely linked to restrictions on migration and occupational flexibility to prevent what was commonly referred to in pre-war China as *taohuang* (逃荒) – large-scale rural exodus to seek shelter and food in the wake of overwhelming floods and droughts. The new “institutional hedge” left peasants with no alternative but to stay on their farms and hence, in what I would term the “subsistence urge,” to redress the havoc

33. See Lardy, *Agriculture in China’s Modern Economic Development*, pp. 63–64, 82–86 and 201.

34. As was then epitomized by the Mao’s familiar call for “shen wa dong (digging deep – into the ground to build air-raid shelter), [and] guang ji liang (storing abundant grains)” to be “bei zhan (prepared for wars), [and] bei huang (against natural calamities).” See also Edward L. Wheelwright and Bruce MacFarlane, *The Chinese Road to Socialism: Economics of the Cultural Revolution* (New York: Monthly Review Press, 1970) for an interpretative study of Mao’s approach to “regional autarky.”

35. “On co-operativization,” p. 179.

36. Kueh, *Agricultural Instability in China*, pp. 18 and 48.

caused by floods by, for example, reclaiming the inundated farmland. In this way they can still help fulfil the compulsory sown area and output targets. As shown below, this indeed proved to be a most powerful incentive.

It seems that once this “institutional hedge” was established, Mao turned to the other equally important aspects of mass mobilization. That is, labour mobilization for water conservancy projects or expanding the irrigation and drainage capacity, and for rural support industry (iron bars and cement, such as for building water reservoirs), as well as farm-technological innovations in general. Such mobilization clearly converged in the 1958 policy slogan of “the Great Leap Forward” and forcefully triggered the amalgamation of the agricultural collectives into the people's communes.

What caused the GLF strategy to collapse and result in the food crisis of 1959–61 should perhaps not detain our discussion.<sup>37</sup> What seems clear, however, is that the Cultural Revolution strategy was in many ways built upon the Great Leap blueprint and experiments conducted during 1958. These included labour mobilization for large-scale irrigation and drainage projects that enabled China to build up and enhance what I would call the “technological hedge.”<sup>38</sup> Equally notable was of course the campaign for the “five small industries” (metal-making, machine-building, cement, chemical fertilizers and energy (coal mining or small hydropower plants)), all to be run by the communes and production brigades. Being rural-based and farm oriented, these were widely hailed by many Western observers as the “Chinese road to (rural) industrialization,” but they in fact all evolved from the experiences of the abortive “backyard furnaces” campaign

37. I delve into the origins of the disaster at great length in chapter 11 of *ibid.* The widespread views are familiar: extreme egalitarianism, peasants disincentives and labour exhaustion, coupled with failure in technically untenable large irrigation projects and the “deep ploughing and close planting” farming practice, plus the notorious “backyard iron and steel furnaces” campaign. I argue, however, that the upheavals were all phenomena of 1958 for which grain output actually hit the all-time high. Put simply, my view is that the culprit should be the central planning fiasco brought about by the grossly faulty information feedback from the provinces. This resulted in the disastrous delusion that only one-third of arable land would be needed for grain cultivation, and hence in the adoption of the “three-three system” (one-third for horticulture and the rest to lie fallow). Notice that total grain sown area was deliberately curtailed in 1959 by 9% from 1958 or 13% against the 1957 level. On top of this, state grain procurements based on highly exaggerated output claims were absolutely excessive. For self-survival peasants were forced to dip into seed and feed grains (for livestock and draught animals). The upshot was inadequate sowing in 1960, and coupled with the extraordinary droughts, a reduction in grain output by nearly 28 or 26% from the records of 1958 and 1957 respectively. The droughts prolonged into 1961 to prevent any quick recovery. Famine followed nationally. From the present-day mass media perspective, it still remains an intellectual myth how the catastrophic statistical fiasco took place.

38. For advances made in this respect see Bruce Stone, “Basic agricultural technology under reform,” in Y. Y. Kueh and Robert F. Ash, *Economic Trends in Chinese Agriculture: The Impact of Post-Mao Reforms* (Oxford: Oxford University Press, 1993), pp. 311–360, and Christopher Howe, *China's Economy: A Basic Guide* (London: Paul Elek, 1978), ch. 3.

of 1958.<sup>39</sup> Taken together these two campaigns were what produced the “high and stable yield fields” areas where harvests were substantially protected against floods and drought.<sup>40</sup>

The “institutional hedge” certainly worked. Chinese agriculture in the 1950s was basically in a similar technological environment to that of the 1930s, in that it lacked modernization and the “technological hedge.” However, while the weather in the 1950s remained as volatile as in the pre-war era – disastrous floods in the Chang [Yangtze] and Huai River basins in 1931 and 1954 and similar-scale droughts in 1934 and 1959 – for virtually all grain crops (rice, wheat, maize and others), the fluctuations in sown area, yield per hectare and hence total output were all consistently less in the 1950s than in the 1930s.<sup>41</sup>

Figures 1a and 1b show the sharp contrast between the two periods.<sup>42</sup> It may be noted further that the output stabilization trends were clearly in evidence across *all* major regions in the 1950s. The “institutional hedge” worked consistently across the nation. More important, output in the various regions all showed a rising trend in the 1950s, whereas in the 1930s the trends were at best stationary. Increases in output were in fact brought about by a combination of sown area stabilization/expansion and gains in yield per hectare sown. This clearly suggests that the “institutional hedge” was at work, given that, as Lardy has pointed out, “there were few industrial inputs used in farming and little evidence of technological change.”<sup>43</sup> Thus what made the 1950s different was that, apart from the collectivized effort to stabilize and expand sown area, the peasants were “coerced” to exhaust systematically all possible sources of organic fertilizers, both human and animal, for field application,<sup>44</sup> and to tend the fields with greater care, especially upon or in the immediate aftermath of serious floods and droughts, for subsistence and plan fulfilment.

There is no doubt that during the Cultural Revolution the “institutional hedge” was greatly reinforced by the draconian collectivist approach of the time, coupled with the rapidly emerging “technological hedge” after the mid-1960s, to help further strengthen agricultural production. National grain output increased by an

39. Cf. Y. Y. Kueh, *Economic Planning and Local Mobilisation in Post-Mao China* (London: School of Oriental and African Studies, 1985). Many of these small plants are by their very *raison d'être* “inefficient” (lack of scale economies, excessive vertical integration etc.). But here again, the “costs” involved should not be considered as outweighing the “benefits” obtained from such a mobilization approach. Cf. Audrey Donnithorne, “China’s cellular economy: some economic trends since the Cultural Revolution,” *The China Quarterly*, No. 52 (1972),

40. Kueh, *Economic Planning and Local Mobilisation*, p.51.

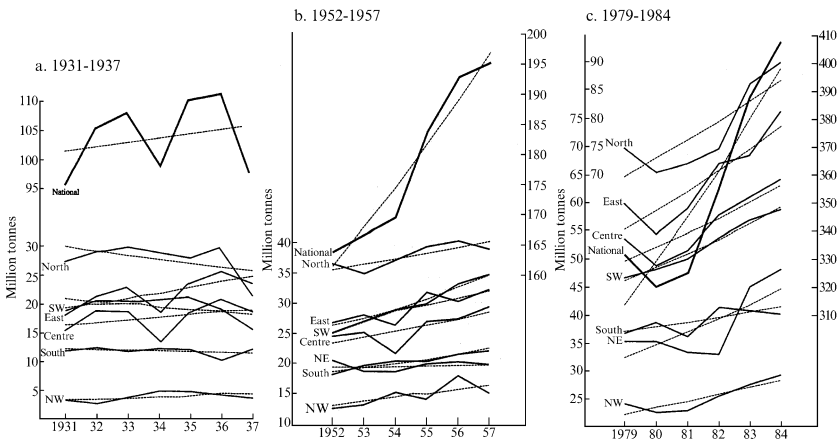
41. See discussion of my “stability index” in Kueh, *Agricultural Instability in China*, pp. 47–50.

42. The year 1959 is not included in Figure 1b, because the sharp output decline in that year was substantially caused by the deliberate sown area curtailment as alluded to. If 1958 is included, the picture will not change much.

43. Lardy, *Agriculture in China’s Modern Economic Development*, p. ix.

44. Cf. Y. Y. Kueh, “Fertiliser supplies and foodgrain production in China, 1952–1982,” *Food Policy*, Vol. 9, No. 3 (1984), pp. 219–231.

**Figure 1: Yearly Fluctuations in Regional and National Grain Output in China, 1931–1984, Subperiods**



Sources:

Y.Y. Kueh, *Agricultural Instability in China*, pp. 92–94.

average of 2.6 per cent per year in 1966–77 or 3.0 per cent if 1978 is included. These are quite impressive growth rates, particularly when viewed against the background of a highly pro-urban-industry policy bias, which left little state investment for agriculture, except perhaps that for harnessing the major untamed rivers.<sup>45</sup>

Lardy has argued that agricultural growth during the Cultural Revolution was “no more rapid than or even somewhat below the pace of development in 1953–57” (grain output increased indeed by an annual average of 3.5 per cent); he sees this as surprising given especially what he perceives as a great disparity in farm inputs between the two periods and the internationally significant breakthrough in the breeding and field dissemination of new rice hybrids in the 1970s.<sup>46</sup> Lardy explains the “paradox” by the two different Chinese approaches to managing agricultural development. That is, in the earlier period, despite collectivization, markets and prices still played a significant role. By contrast, in 1966–77, direct, quantitative planning and bureaucratic control impaired peasant incentives, distorted cropping patterns and hence depressed agricultural productivity.<sup>47</sup>

45. Cf. Leslie T. C. Kuo, *The Technical Transformation of Agriculture in Communist China* (New York: Praeger, 1972).

46. Lardy, *Agriculture in China's Modern Economic Development*, p. ix.

47. *Ibid.* pp. 40 and 47. For a similar neoclassical economic point of view see Gregory C. Chow, *The Chinese Economy* (New York: Harper and Row Publishers, 1985). Chow sees the Chinese farmer not being “paid according to the marginal product of his labour” (p. 47) as a core problem in Chinese agriculture. The other is “misuse [by the central planning authority and its staff] of farmland and [hence] low productivity” (p. 48). Such arguments are of course completely at odds with the very character of Mao's strategy of forced farm siphoning and double taxation via scissors-differentials, i.e. of forced savings to promote “growth efficiency.” See Bergson, *Planning and Productivity under Soviet Socialism*.



This argument is not supported by the data if we start with a comparison of 1952–57 with 1931–37 (see Figures 1a and 1b). In the 1930s the rural institutional framework was close to the market paradigm and I would argue that the superior performance in the 1950s was already a reflection of the initial impact of collective-mobilization economies, rather than to any lingering price and income incentives for the peasants. As for 1966–77, I would prefer to argue that the “less impressive” performance referred to by Lardy – especially as shown by “declining total factor productivity” – can, in the first place, be easily explained by the fact that the growth impact of the “institutional hedge” had, by the 1970s, become more or less saturated. We need also to bear in mind the widely known point that we still lack independent, reliable aggregate output and input indices for gauging the “total factor productivity” changes in Chinese agriculture. Depending on the data used and assumptions made (appropriate “weights” for land, labour and capital inputs) the estimated “total factor productivity” index can easily swing to the positive or negative side.<sup>48</sup> The Chinese data used by Lardy (farm survey or national data for production and labour costs and official aggregate agricultural output value in gross or net terms) are clearly not entirely satisfactory.<sup>49</sup>

Also, any serious estimation of changes in “total factor productivity” must take into account the accelerated expansion in capital stock that occurred during the Cultural Revolution when there were big investments in enhanced irrigation and drainage facilities.<sup>50</sup> Statistically, in the short term, this will tend to inflate “input costs” (no matter what procedure is used to account for the depreciation costs) and thus to depress “total factor productivity.” The output effects of big doses of investment take some time to come through as the “technological hedge” becomes fully effective. In this case, the effects were probably not fully noticeable until the 1980s.

A few words should be said about the weather which I have dealt with in detail elsewhere.<sup>51</sup> The “institutional hedge” profoundly helped dilute the weather impact in the 1950s (compared to the 1930s) and, coupled especially with the “technological hedge” built up in the 1970s, further minimized the weather disturbance in agricultural production. It is against this background that I believe that the post-Mao agricultural decollectivization needs to be understood.

48. See Kang Chao, *Agricultural Production in Communist China*, p 238; and Tang, “Policy and performance in agriculture,” p.482, and *An Analytical and Empirical Investigation of Agriculture in Mainland China, 1952–1980* (Taipei: Chung-Hua Institution for Economic Research, 1984), pp. 87–94 for attempts made; and Thomas B. Wiens, “Agricultural statistics in the People’s Republic of China,” in Alexander Eckstein (ed.), *Quantitative Measures of China’s Economic Output* (Ann Arbor: The University of Michigan Press, 1980), pp. 44–107, for possible sources of biases, reservation and disagreement between different estimates.

49. Lardy, *Agriculture in Modern China’s Economic Development*, pp. 86–87.

50. *Ibid.* p. 88.

51. Kueh, *Agricultural Instability in China*.

*Post-Mao Decollectivization as a Transition to Intensive Growth*

My final proposition examines the view that the decollectivization since 1978–79 represents a complete negation of Mao's approach to agricultural development in China. I would argue on the contrary that the new agricultural-policy programme was built upon Mao's legacy to reap the benefits made available by the material and technological foundation he had left behind.

The process of decollectivization may be summarized as follows. At the famous Third Plenum of the Eleventh NPC of November 1978, the decision was made that farm procurement prices should be raised by an average of 25 per cent starting for the summer harvests of 1979. It is clear that without a decollectivization at the same time, the price increases would simply be a one-off income subvention to the peasants under the old egalitarian collective distributive framework. For the price incentive to help bring about the large response needed to increase output over and above increased peasant consumption *it had to be directly translated into income benefits for the individual peasant families*, and this could only be accomplished by decollectivization.<sup>52</sup>

The upshot was the redistribution of the collective farmland for private farming in 1984. This followed a short period of experimenting with contracting the farm tasks or output targets to peasant households. In light of the successive bumper harvests in 1982–84, which made it difficult to stockpile grains procured from the peasants, the state decided to dismantle the compulsory procurement scheme (in force since 1953) and to abolish the “reserve” or “support price” in 1985. Since then, procurements have been based on negotiated contracts and supply gluts have made redundant the urban grain-rationing system. As a result, agricultural production in China has been increasingly subject to a new breed of instability – the instability of the market.<sup>53</sup>

In short, the 1984 reform in effect brought Chinese rural institutions back to the situation of the 1949–52 “land reform.”<sup>54</sup> And the 1985 reform effectively returned the rural Chinese economy quite close to that of the pre-war era, save that there were no large-scale private land holdings.<sup>55</sup>

It can be argued that the new Chinese agricultural strategy is a version of the Chiang-Fei model of “maximum-speed development under austerity.”<sup>56</sup> This model postulates that an “optimum” rather

52. See Y. Y. Kueh, “China's new agricultural-policy programme: major economic consequences, 1979–1983,” *Journal of Comparative Economics*, Vol. 8, No. 4 (1984), pp. 353–375 for an initial interpretation and survey.

53. See Kueh, *Agricultural Instability in China*, ch. 12 for detail.

54. Y. Y. Kueh, “The economics of the ‘second land reform’ in China,” *The China Quarterly*, No. 101 (1985), pp. 122–131.

55. Kueh, *Agricultural Instability in China*, p. 236.

56. Alpha C. Chiang and John C. H. Fei, “Maximum-speed development through austerity,” in Irman Adelman and E. Thorbecke (eds.), *The Theory and Design of Economic Development* (Baltimore: Johns Hopkins University Press, 1966), pp. 67–92. This is a theoretical exposition but not an empirical study.

than a “minimum” consumption standard will maximize the rate of capital accumulation. This is because a crude, centrally imposed minimum subsistence level of consumption is likely to impair incentives, while an optimum income policy, with some degree of austerity, will induce greater labour effort so that overall output grows at a higher rate than the required increase in consumption expenditure. This will help raise the overall rates of capital accumulation and income growth.

Two aspects to this new strategy are interesting. First, Mao has actually survived the “purge” in the form of his industrialization imperatives. For, despite all the conspicuous changes, the policy focus of the new leadership seems to have basically remained on maximizing capital accumulation for industrial growth. And, indeed, this objective has been enhanced by now incorporating a big contribution from foreign capital and foreign exchange. Equally important is a second aspect of the new strategy: to promote agricultural production further by inducing greater peasants’ labour effort under the pressure of some “optimum austerity” regime that encourages intensive use of resources, especially of the highly improved technological capabilities inherited from the Maoist past.

Perhaps the “less-harsh” consumption policy adopted since 1979 represents a genuine value-reorientation towards the Chinese peasants. Perhaps, also, it fits in well with the first phase of the traditional dynastic cycle in which the founding emperor of a new dynasty would “take a rest and let peasants recuperate” before launching new, ambitious projects. However, it is only under the new Hu–Wen leadership that policy signals have begun to emerge that seem to mark a serious correction of the long-established agriculture–industry imbalance. This is perhaps the meaning of the current policy of “solving the three-agriculture problem.” We have yet to see whether this translates into a significant readjustment in national investment between agriculture and industry, and how the government will handle the problem of the scissors-differentials that has, since the 1985 reforms, erupted time and again.<sup>57</sup>

Now let us look at the initial performance of the new agricultural strategy. Figure 1c reveals that, as in the 1950s and 1970s, grain output trends in China continued to exhibit the pattern of a rising trend in 1979–84. This growth was associated with drastic increases in the application of chemical fertilizers, as peasants rushed to cash in on the new price benefits. However, this obscures the vital point that fertilizer and other modern current inputs can only be effectively used

57. A good case in point is the record high 1993–94 inflation. This was predominantly caused by massive rise in food prices, which was in turn associated with similar increases in government farm procurement prices made in an effort to compensate for increases in farm input prices. Cf. Y. Y. Kueh, “Prospects for a transition to a market economy without runaway inflation” in Y. Y. Kueh, Joseph C. H. Chai and Gang Fan, *Industrial Reform and Macroeconomic Instability in China* (Oxford: Oxford University Press, 1999), pp. 270–74.

if irrigation water is adequately available, and if, during the growing season, crops will not be seriously damaged or wiped out by floods or droughts. This is why the period 1979–84 is so profoundly different from the 1930s, although as discussed, rural institutions in the 1980s were rapidly converging on those of the 1930s.

In the 1980s the weather was as volatile as in earlier periods, as suggested by the fluctuations in grain output as it moves upwards in Figure 1c. Note especially the sharp downturns in total grain output in 1980 (down 3.6 per cent after the great Chang River floods) and in 1981 when there was a slight recovery of only 1.4 per cent. This reflected the equally serious but more confined floods in Sichuan province and offset the impact of the reform incentives. The equally powerful recoveries in 1982 (by 9.1 per cent), 1983 (9.3 per cent) and 1984 (5.2 per cent) were each prompted by exceptionally good weather in three good years, although accelerated decollectivization also helped to stimulate the Chinese peasants to cash in as fast as possible.

In order to measure weather impact under reform the effect of policy-induced sown area fluctuations on grain output have to be removed. I do this by making use of the yearly deviations in grain yield per sown hectare from the (log-linear) trend values to regress against the computed weather index. The results reveal that weather influence, while clearly discernible between the pre-war and post-war years, was consistently and indeed markedly reduced between the 1930s and the 1950s (the “institutional hedge” at work). Improvement continued in the 1970s (the “institutional” and “technological hedge”), and these gains have continued on into the 1980s (“technological hedge” firmly established to enable dismantling of the “institutional hedge”).<sup>58</sup> Interestingly, starting the 1980s, residual variations in grain yields *which cannot be explained by the weather variable*, have tended to increase. This is the new instability in Chinese agricultural production.

Twenty years ago, I rather feared that while the “less-harsh” consumption policy might help to bring about a sharp output increase, because of the high propensity of peasants to consume additional income this extra output could be easily lost in a decentralized agricultural regime. That is, it might be difficult for the state to capture a share of the expanded agricultural surplus to enhance capital accumulation further.<sup>59</sup>

It now seems that I may have been wrong. Agricultural capital stock in China has in fact continued to grow in recent decades. This must have allayed fears shared even by the Chinese leadership in the early 1980s, including the vice-minister for irrigation and power

58. See Kueh, *Agricultural Instability in China*, pp. 125 and 239 for details of the estimated regression equations.

59. Kueh, “China’s new agricultural-policy programme,” p. 373, and “The economics of the ‘second land reform’ in China,” pp. 130–31.

generation, who openly expressed doubts as to whether irrigation and water control facilities could survive a radical decollectivization drive (because of lack of collective maintenance).<sup>60</sup> However between 1978 and 2004 the “effectively irrigated area” increased by 0.7 per cent per year, from 44,965 thousand hectares to 54,478 thousand hectares, and diesel-driven agricultural drainage and irrigation machines by 3.2 per cent from 25,216 to 57,729 thousand kilowatts. In the same period farming machinery (comprising large, median and small-sized tractors and complementary farm implements) grew by 6.7 per cent from 117,499 to 637,560 thousand kilowatts; rural hydropower stations’ generating capacity by 5.8 per cent from 2,284 to 9,938 thousand kilowatts, and total electricity consumed in rural areas by 11.1 per cent per annum from 25,310 to 393,300 million kWh.<sup>61</sup> These impressive statistics suggest, ironically, that the Chinese peasants behave as if they are treating the Cultural Revolution as a “role model” to emulate. Notice also the enthusiasm with which Chinese peasants have continued to plough back farm earnings in expenditure on chemical fertilizers in order to take advantage of the improved infra-structural capital: consumption has risen from 8,840 to 46,370 thousand tonnes from 1978 to 2003, an annual growth rate of 6.6 per cent.<sup>62</sup>

Another important point is that the basic farm mechanization statistics as cited reflect not only improved agricultural-technology capacity. The implied pace of machine-for-labour substitution also helps point to the massive post-Mao rural economic diversification and industrialization drives.<sup>63</sup> This activity is indeed partly reflected in the new rural power generating capacity and total electricity consumed because these are by no means only directly related to farming operations.

### *Conclusion: A 50-Year Perspective*

Table 2 shows the basic statistics for grain production (China’s most important agricultural product) for the benchmark years 1952, 1978, 1998 and 2004. The year 1978, which marks the end of the Mao period, divides the past five decades into the two periods of equal (26-year) length: 1952–78 and 1978–2004. The year 1998 is used as a point of reference, as it marks the highest ever grain output in China in both total and per capita terms.

Several important points emerge from these data. First, total grain output increased at an annual average rate of 2.41 per cent in 1952–78, a rate remarkably close to the 2.63 per cent for 1978–98 and, in fact, that surpassed by a wide margin the 1.68 per cent achieved for

60. *Ibid.* p.131.

61. *TJZY 2005*, pp. 115–19, and *TJNJ 2004*, pp. 477–78.

62. *Ibid.*

63. See Kueh, *Economic Planning and Local Mobilisation in Post-Mao China* for an early study.

**Table 2: China's Population (P) in Millions, Grain Sown Area (SA) in Million Hectares, Grain Yield per Hectare (GY) in Kilograms, and Grain Output, Total (Q) in Million Tonnes and Per Capita (PQ) in Kilograms, 1952–2004; and Growth Rates in % Per Year for Sub-periods**

	1952	1978	1998	2004	1952–78	1978–98	1978–04
P	574.82	962.59	1,248.1	1,299.9	2.00	1.31	1.16
SA	123.99	120.59	113.79	101.61	-0.11	-0.29	-0.66
GY	1,322	2,527	4,502	4,620	2.52	2.92	2.35
Q	163.92	304.77	512.30	469.47	2.41	2.63	1.68
PQ	285	317	411	361	0.41	1.31	0.50

*Sources:*

*TJZY* 2005, pp. 39–40 and 119–20 for 1978, 1998 and 2004; *TJNJ* 1983, pp. 154 and 158; and *TJNJ* 1984, p. 81.

the more comparable period of 1978–2004. Secondly, in terms of per capita grain output (or “availability”), the 1952–78 performance would have been even more impressive, had it not been for the much higher population growth rate recorded for the period of 2 per cent per year, compared to 1.31 per cent for 1978–98 and 1.16 per cent for 1978–2004. Thirdly, the rate of increases in grain yield per hectare in 1952–78, by 2.52 per cent per year, was also comparable to that of the two later periods.

To assess the agricultural performance in 1952–78 further, we also have to bear in mind the interim Great Debacle of 1959–61. Grain output was in fact not restored to the 1958 peak until 1965–66, the advent of the Cultural Revolution. In other words, had it not been for the disastrous GLF experiments, Chinese agriculture would perhaps have been able to complete the transition to the intensive-growth strategy at an even earlier stage. Nevertheless, the relatively slow agricultural growth during the post-Mao era taken as a whole also clearly suggests that against the backdrop of the Maoist legacy, Chinese agricultural production was by the early or mid-1980s already entering into a phase of relative saturation, as alluded to earlier, in terms of enhanced grain-stockpiling, for example.

In other words, by the close of Mao's period China's historic food security problem was basically solved. Further, there was a continuous upgrading in the composition of grain consumption (Table 3). With fine grain consumption saturated, the share of maize has increased remarkably since 1978 (18 per cent of the total) or 1985 (17 per cent) to the peak of 2003 (27 per cent). This reflects grain now grown to feed livestock or used for edible oil or confectionery. This factor also explains the relative slowdown in per capita grain output in the past two decades, as can be seen in Table 2.

**Table 3: Trends in Grain Output and Output Composition in China, Selected Years, 1952–2004**

	Grain output (million tones)	Fine grains (%)			Coarse grains (%)		
		Rice	Wheat	Total	Maize	Others	Total
1952	163.92	41.8	11.1	52.9	10.3	36.9	47.2
1957	195.05	44.5	12.1	56.6	11.0	32.4	43.4
1970	239.96	45.8	12.2	58.0	13.8	28.2	42.0
1978	304.77	44.9	17.7	62.6	18.4	19.0	37.4
1985	379.11	44.5	22.6	67.1	16.8	16.1	32.9
1990	446.24	42.4	22.0	64.4	21.7	13.9	35.6
1995	466.62	39.7	21.9	61.6	24.0	14.4	38.4
1996	504.54	38.7	21.9	60.6	25.3	14.1	39.4
1997	494.17	40.6	25.0	65.6	21.1	13.3	34.4
1998	512.30	38.8	21.4	60.2	26.0	13.8	39.8
1999	508.39	39.0	22.4	61.4	25.2	13.8	38.6
2000	462.18	40.7	21.6	63.3	22.9	13.8	36.7
2001	452.64	39.2	20.7	59.9	25.2	14.9	40.1
2002	457.06	38.2	19.8	58.0	26.5	15.5	42.0
2003	430.70	37.3	20.1	57.4	26.9	15.7	42.6
2004	469.47						

Sources:

*TJZY* 2005, p. 120 for 2004; and *TJNJ*, various issues for earlier years.

The improved safety margin now available to the peasants is reflected in the chaotic aftermath of the abolition of “reserved” prices in the 1985 reform. In this episode grain prices fell and I estimate that probably three-quarters of the subsequent loss of output in 1985 (down by 7 per cent on 1984) was the result of deliberate limitations on the sown area and current inputs by disillusioned peasants.<sup>64</sup> Clearly, the peasants had by then sufficient income alternatives as a result of rural diversification. But these alternatives, available even in the early to mid-1980s did not emerge from a vacuum. Their origins lay in the “new five small industries” (cotton spinning, knitting, cigarette-making, wine-making and sugar refining) which themselves were often conversions from the five heavy small-scale rural industries of the Cultural Revolution.<sup>65</sup> During the 1980s, moreover, these industries were increasingly being consolidated into rural collectives that became the backbone of China’s export expansion.

64. Kueh, *Agricultural Instability in China*, pp. 249–251. Notice also that the sown area reduction in 1985 was the largest, in both absolute and relative terms, since the losses incurred in 1959 in conjunction with the “three-three system.” It also amounted to three-and-a-half times the absolute sown area loss of 1991 as a result of the “great deluge” in that year. In terms of grain output loss, 1985 (by 28.2 million tonnes) was very close to 1959 (loss of 30 million tonnes).

65. Kueh, *Economic Planning and Local Mobilisation in Post-Mao China*, pp. 6 and 34.

In conclusion, perhaps the most important point is that agriculture and rural development in the broader sense remain subject to a pro-urban and pro-industry strategic bias. It may be hoped that the new initiatives taken by the Hu–Wen leadership to address the *san nong* problem will finally begin to correct this imbalance. Already, however, the average peasant household has an Engel coefficient (outlay on food as a percentage of total consumption) that has declined from 67.7 in 1978 to a relatively comfortable 47 in 2004.<sup>66</sup> Fine grain as a proportion in total staple foods consumed has increased from 50 per cent in 1978 to 87 per cent in 2004. And beyond these food indicators, in 2004 three-quarters of all rural households possessed colour television sets (113 per cent of them if black-and-white sets are included), 37 per cent had washing machines, 55 per cent telephone lines, 142 per cent electrical fans and 36 per cent motorcycles. Clearly, the *san nong* problem today is very different from that facing China at the time of the 1955 High Tide. Even so, I remain unconvinced that had Mao failed 50 years ago, China today would have been better off in terms of industrial and agricultural progress.