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Relative Prices in the People's Republic of China: Rural Taxation through Public Monopsony

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A BRIEF CHRONOLOGY OF THE PRICE SETTING INSTITUTION

The government of the People's Republic of China has used agricultural price policies and other instruments which influence or determine relative prices in agriculture since the early 1950s. As the 1950s progressed, it became clear that price issues were sufficiently complex that a centralized independent organization was required expressly to supervise the establishment of appropriate prices and their periodic adjustment. Consequently, in July 1957, the National Price Commission was established. Although its operational development was arrested during the Great Leap Forward (1958–59) and the subsequent period of economic and administrational upheaval, the Commission was reestablished in 1963. With the advent of the Cultural Revolution era (1966–76), the Commission's relative autonomy was again impeached, to the extent that it ceased to exist as an independent organization, and a five-year program to correct the existing price structure was scrapped. It was not until the reform years following the period of economic chaos at the close of the Cultural Revolution that the current version of the National Price Commission, the State General Commodity Service Bureau, was reestablished. Of course, the Bureau cannot act without close consultation with the Ministry of Finance, the Ministry of Agriculture, and (until its abolition in 1982) the Ministry of Food. As in other socialist countries, pricing issues are so critical and political within government and throughout the nation at large that the Bureau's actions must normally be approved by the highest administrative organizations: in China, these are the State Council and the Central Committee of the Chinese Communist Party.

PRINCIPAL DIFFICULTIES IN APPLYING EFFECTIVE PRICE POLICY

It should be clear from the above brief discussion that the relationship of the price setting organization to other government bodies whose constituencies are affected by price changes has been anything but constant. In fact, although "unified" quantity planning has been practiced for China's major sectors throughout most of the People's Republic era, the periods 1958–60 and 1966–76 seem to reflect relatively little effort to use prices to affect incentives and allocation of land, labor, and current inputs among alternative crops, whereas the remaining years (1949–57, 1961–65, and 1977–86) were typified by some serious effort to do so.[1]

Consequently, the choice of price changes as policy instruments has been sporadic, and redundant mechanisms have necessarily been developed for accomplishing goals which price changes are sometimes aimed at addressing. In the current period, characterized by a greater role for prices, these parallel mechanisms are still intact to varying extents. When there is poor coordination between the price-setting organization and related government bodies, price policy has sometimes been rendered ineffective by the operation of other instruments (such as acreage controls, tied subsidies, market restrictions, and preferential allocations of scarce producer goods and credit), resulting in inefficient expenditure of government resources.

Conversely, when a particularly critical target variable has become the subject of great concern at the highest levels, the entire arsenal of instruments has sometimes been directed at the goal of influencing it. Without proper coordination of the application of these instruments and with weak quantitative understanding of their differential impacts and of the underlying economic and environmental mechanisms, price adjustments have been made when the operation of more powerful direct instruments would have sufficed. This procedure wastes government resources and engenders other unnecessary and unproductive side effects.

But there is also a self-perpetuating difficulty associated with this "shotgun" approach to intervention. When the target variable is influenced in the proper direction, it is more difficult to isolate and estimate the differential impacts of the policy instruments. This touches on the more general problem of the inadequate understanding of the impacts of various instruments in China and the lack of explicit and effective research in the area, a

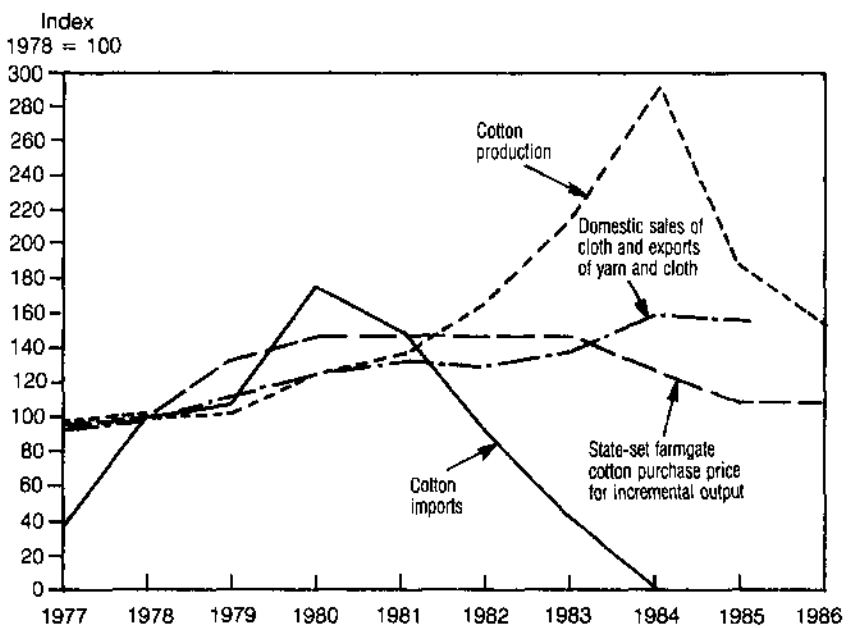
1. Even in periods characterized by relative attention to prices, the frequency of adjustment of prices has been generally inadequate. The history of price versus quantity control in Chinese planning and the theoretical superiority of relatively price-oriented rather than strictly quantity-oriented control in peasant agriculture has been developed in Lardy 1983a.

problem which is compounded by the blunting of standard warning signals such as spontaneous price movements owing to generalized price rigidity.

Figure 8.1 provides one example of these difficulties with respect to cotton purchases. Application of an impressive arsenal of instruments progressively accelerated cotton production in the late 1970s and early 1980s. Supply began to exceed demand by 1980, imports were cut, and stocks began to build. During the early 1980s, it was clear to decisionmakers that export potential was limited and domestic demand for low-grade cotton (comprising most of the output) was reaching plateaus, despite rising consumer income. Consequently, marginal prices for these low grades were gradually cut back toward the pre-acceleration level, since domestic industry not only was refusing to purchase larger quantities but also preferred to purchase higher-quality cotton to fill its existing requirements.

Government did not realize that it was not so much marginal prices that had been effective in accelerating cotton production but the availability in recent years of particularly high-yielding, low-grade cotton varieties, coupled with massive governmental fertilizer allocations in exchange for cotton sales and guarantees not only to purchase growers' output but to supply them with tradable goods, especially food, in return. Supply contin-

Figure 8.1 Index of shifting supply and demand constraints in the Chinese cotton sector



ued to accelerate despite falling prices, so that by the end of 1984 the government was storing more than 50 percent of the world's cotton stocks, which neither foreigners nor domestic industry wanted to purchase. The following year fertilizer allocations were cut back, and the government initiated a contract system for cotton procurement, arranging to purchase only 70 percent of the previous year's output. As government had been the near-monopoly purchaser of cotton for two decades, its refusal to guarantee purchase above contracted amounts had a major impact on output, which then fell even below the 70 percent mark. In addition, government purchasing organizations refused to buy two of the particularly popular high-yielding but low-grade cotton varieties (Zhongguo 1986; JPRS 1985a, 1985b, 1985c).

But the main problem of implementing effective price policy in China is that prices are expected to serve too many functions, allocative and distributional (Lardy 1983b). Specifically, procurement prices have been expected to serve in the difficult production planning effort. This by itself is a complex task. It involves reconciling the production goals with cost and incentive relationships among various interrelated activities and outputs within the agriculture and animal husbandry sector and affiliated sub-sectors, including industries using farm goods as inputs or supplying industrial inputs to agricultural production. In addition, however, procurement prices are expected to perform many of the functions of government tax and expenditure policy, that is, to effect broad allocation of resources among industry and agriculture, rural areas and urban areas, governments and individuals, and regions of the country.

Thus price rigidity in China arises not only out of a firm commitment to price stability arising from China's devasting experience with hyperinflation in the 1940s and rapid inflation in the early 1960s[2] but because price has been chosen as a means of controlling and simplifying allocation of resources among broad groups and sectors in China. The problems have been first, that the strategy of allocation has not been consistent with rapid balanced growth, and second, that the tendency toward price rigidity has played havoc with incentives and efficient allocation within sectors, a problem of growing severity with increased development and complexity of the economy.

Since 1979, China has been undertaking the tremendous task of price reform, attempting to realign prices throughout the economy for incentive purposes, as well as to reduce price rigidity *selectively* (substitute markets for dictated prices) so that prices can more efficiently perform their allocative function. Farmers are also allowed more decisionmaking power. The problem is that prices are now so far out of line with opportunity costs that

2. Xue Muqiao, Several questions on prices, *Renmin Ribao*, 28 January 1985, p. 5.

partial price reforms tend either to be ineffectual or to lead to unpredicted and unwanted consequences. But more comprehensive reforms also require major initiatives in tax and expenditure policy to avoid unwanted patterns of distribution. All of these shifts are taking place in an atmosphere of very imprecise knowledge.

In other words, Chinese policymakers have several tigers by the tail; as they reach to secure one that seems in danger of slipping away, they jeopardize their grip on the others. They can no longer hold all; letting one or two go seems even more dangerous; the only solution may lie in loosing them all at once, an unthinkable alternative. But to understand how China got to this point, it is necessary to review the broad history of prices over the past three decades, of course focusing on procurement prices and their role in serving broader short-term and long-term objectives.

PROCUREMENT QUOTAS, FARMGATE PRICES, AND FOODGRAIN PROCUREMENT HISTORY, 1950 TO THE MID-1970S

In 1954, the year after a grain crisis that resulted in the establishment of the state purchasing monopoly, compulsory grain deliveries were introduced because state procurement organs had again been unable to secure enough grain for urban areas, grain-deficit areas, the army, and planned exports. Another crisis in 1955 led to the assignment of a planned production quota to each unit of land. Fixed portions of these production quotas constituted required sales to the state (compulsory procurement quotas) at given low prices. But sales obligations did not end there. After retaining a provincially determined per capita quantity to meet the immediate food, feed, and seed needs of rural farms and households, and even after tax and compulsory quota obligations were met, 80 to 90 percent of all "surplus" grain was also to be sold to the state. Production and fixed purchase quotas were to be set for the period 1955–57 in "normal" years to avoid the powerful disincentive effect of increased output immediately resulting in higher quotas. After a fall in state procurement, an "abnormal" year was invoked, allowing compulsory sales to be increased beyond a legal restriction of 40 percent of extra output (over and above compulsory deliveries, tax, and "planned surplus"). Subsequently, the 40 percent limit was eliminated. Pressure to produce more and to deliver more grain to the state led to the abandonment of fixed quotas, but the system returned, even before 1962, during the agricultural disasters. Quotas were fixed for five years and, in some areas, ten years, although there is evidence that the limitations on quota reassignment were sometimes transgressed.

But if virtually all "surplus" grain had to be sold to the state at the same

low price anyway, the disincentive effect on farmers was still powerful regardless of how infrequently the quotas were changed. This was not immediately appreciated by policymakers, but by 1960 a 10 percent price increment for "surplus" grain sales above a set amount of sales per team member was common practice in a number of Chinese procurement areas. Although ostensibly eliminated in 1962, the bonus for surplus deliveries was reintroduced in 1965 at a premium of 12 percent above quota prices. Between 1966 and 1970, quotas were increased but were fixed usually for three-year periods, and two kinds of incentives were instituted for surplus deliveries: half the surplus amounts earned 30 to 50 percent price premiums, while half received no price premiums but earned quantitatively specified rights to purchase certain industrial commodities. By 1970 several provinces had instituted across-the-board surplus price increments of 20 to 30 percent, and in 1971 they were established nationally at the 30 percent level (Tang and Stone 1980; Xiao 1983; Lardy 1983b; Zhongguo Shangyebu 1984).

The requirement of selling "surplus" grain to the state was institutionalized in the form of surplus quotas in the 1960s. Although basic compulsory quotas and the planned production quotas upon which they were based were set for a specific number of years, surplus quotas were subject to change annually and were fixed prior to planting in order to facilitate aggregate procurement planning and to ensure (to the extent possible) that additional fertilizers and other inputs would be delivered to those units trying for larger surpluses. Nevertheless, the delivery of surplus quotas, once set, became as obligatory as the basic compulsory quota. And the two-price system not only constituted regressive taxation but made farmers' tight financial planning even more subject to uncertainty, since it increased the financial impact of yield variations (Tang and Stone 1980; Lardy 1983b).

The land tax (normally payable in grain), the state grain monopoly, basic quotas, strict foodgrain acreage controls, surplus quotas, quota increases, and restrictions on nonagricultural activities were sequentially introduced by the state in order to ensure purchase of large quantities of staples at low prices for urban and army consumption, export and relief needs, and stockpiling plans. But these measures were not sufficient. Ill-conceived and badly-executed policy combined with disastrous weather in 1960 and 1961 to knock grain production back to the 1951 level. Thus China began importing between 3.7 and 8.1 million tons of grain annually, and continued to do so in almost every year through 1977. The age distribution of the rural population was changing in such a way that even though per capita grain consumption in 1977 was no lower than it was in 1956, the most basic rural needs were not satisfied at current production

levels. Thus, despite so many policies aimed at increasing state purchases, the marketed ratio for foodgrains fell from an average of 28.0 percent (1952–60) to 20.5 percent (1961–70) to 17.5 percent (1971–80).[3]

With the marketed ratio declining, it became very important to restrict the state's demand for grain. An urban rationing system was instituted as early as the 1950s. Migration to urban areas was severely restricted. Exports were not allowed to grow, and inter-rural trade was limited so that any local surplus could more easily be siphoned off to the cities. The rural grain relief program remained undeveloped. Despite this parsimony, state grain needs increased.

The only alternative to increasing the already onerous import burden was more rapid growth in grain production. The proportion of sown area planted with foodgrains was increased, to the detriment of cotton, oilseeds, and other economic crops. Irrigation construction and a seed-breeding emphasis on early-maturing varieties combined to push up the multiple cropping index. The state also engaged in major reclamation efforts to open new lands for growing foodgrains, even to the point of transforming aquaculture areas into rice paddies and semi-arid and poor-soil herding economies into grain cultivation zones. Production and basic quotas were raised periodically, and surplus quotas were increased whenever possible. For an added incentive, preferential fertilizer and credit allocations and other governmentally administered privileges were awarded to units pledging and delivering increased grain supplies to the state (Tang and Stone 1980).

Foodgrain production in the early 1950s was preindustrial. Plowing was the only farm task that was even partly mechanized, and the machine-plowed area represented only 0.1 percent of all farmlands. Annual chemical fertilizer application averaged less than a kilogram per hectare. By 1975, foodgrain production had increased 74 percent over that of 1952, but in order to reach this higher level of output, chemical fertilizer application exceeded 50 kilograms (nutrient weight) per hectare, tractors were reported to plow 35 percent of China's cultivated areas, 23 percent benefited from power-, diesel-, or gasoline-driven irrigation equipment, and mechanization on a variety of other farm tasks had begun. So that farmers could pay for increased production costs, state grain purchase prices by 1978 had been increased by 66 percent since the mid-1950s, while reported sales

3. Tang and Stone 1980, Zhongguo 1983, pp. 389–90, 437–38. Alternatively, based on production years (1 April–31 March) rather than calendar years and slightly different coverage, the shares are 28.9 percent for 1952–60, 24.2 percent for 1961–70, and 21.0 percent for 1971–80 (Zhongguo 1983, p. 393). If resales to peasants are deducted, the net procurement proportion still declines from 20.0 percent (1952–60) to 17.2 percent (1961–70) to 14.9 percent (1971–80).

prices of industrial inputs to agriculture had been cut in half (Stone 1983b).

The interesting point of the Chinese experience in this respect is that the considerable price adjustments made were insufficient. Most of the farmgate price increase through 1975 had occurred by 1963, and a considerable portion of the latter reflected market forces in the early 1950s, prior to the solidification of the state grain market monopoly. There was relatively little price increase during the period of greatest growth in production costs (1965–75). Purchase prices for wheat, rice, and corn remained virtually unchanged from 1966–77 on.

The results had serious implications for rural cooperation with the state and party administration and hence, ultimately, for the sustainability not only of low relative farmgate prices but of a host of policy activities which had become associated with rural oppression. By the mid-1970s the reports of production units that had increased output but had reaped little or no gain in per capita income were numerous. Among those particularly hard hit were units that had acceded to government pressure and concentrated all available resources on crop production, especially that of grain and cotton. The blame was placed on the large increase in input requirements (particularly fertilizers, water supply facilities, insecticides, and machinery) and on the quantity of labor applied per unit increase in output, as well as on insufficient cuts in prices of industrial inputs to agriculture and inadequate boosts in state procurement prices.

The results of an extensive 1978 survey in Hebei Province are particularly telling in this regard. Hebei is a major agricultural province in North China. It produced 5.4 percent of the nation's grain and 19.2 percent of its cotton in 1957 and had benefited considerably from tubewell construction since that date. But by 1979 its share of domestic grain production had not increased, and its proportion of cotton output had fallen to 5.2 percent of the national total. Among surveyed localities, gross agricultural revenues had risen 46 percent (1965–77), but nonlabor production expenses had risen 190 percent. The latter as a proportion of total product price rose from 26.5 percent (1965) to 40.2 percent (1977). Labor application per *mu* also rose (wheat, from 19.1 units in 1965 to 33 units in 1976; cotton, from 42.6 units in 1965 to 49.8 units in 1976). The situation was particularly severe in 1976–77, when the supply of industrial goods faltered and their prices rose. The average tax included in the price of purchased industrial inputs involved was, even then, conservatively estimated by the Chinese at around 20 percent (Tang and Stone 1980). Surveys showing similar results were conducted in Guangdong, China's most prosperous southern province, and in advanced areas of the lower Yangzi Valley. Sichuan, China's most populous province, was perhaps the hardest hit.

The most direct explanation for this surprising state of affairs is that most of the gains from China's cumulatively large investment in technical change in agriculture were not realized until recently, due to insufficient application of the relatively small quantities of additional capital expenditures required to complement efficiently even this labor-intensive strategy.

The extreme capital scarcity in the Chinese agricultural transformation strategy showed up in a number of ways. First, almost complete lack of mechanization and insufficiently anaerobic storage facilities for organic manures meant that nitrogen volatilization losses were greater and fermentation gains for other nutrients lower than could have been achieved in this extremely labor-intensive fertilization process. Because most nitrogen was lost in collecting, mixing, transporting, and spreading organic manures, nitrogen was a constraining element in yield growth despite massive application of manures. Until the late 1970s, it was inadequately supplied by manufactured fertilizers: in the 1950s this was due to modest growth from a very small base; in the 1960s and most of the 1970s, the problem was concentration on highly volatile ammonium bicarbonate production based on a simple process that could rely heavily on local capital generation and local feedstock resources. Resolution of the nitrogen constraint did not rapidly improve until the late 1970s, with major increases in urea application (Stone 1986a; Tang and Stone 1980).

Other examples of counterproductive capital conservation in agriculture's labor-intensive strategy include insufficient mechanization to increase labor productivity and rural incomes (and occasionally even aggregate production) in the transition to higher cropping intensity in many areas (Ishikawa 1978; Ishikawa, Yamada, and Hirashima 1982). Another example would be the overreliance on local, poorly capitalized and supplied cement and steel facilities, leading to collapse of dams and other water-retaining structures. Another example would be insufficient mechanization in earthworks and reclamation projects. In each of these areas, relatively small amounts of additional properly expended capital would seem to promise high productivity payoffs, even within highly labor-intensive techniques and strategies. Partial resolution of the more critical of these constraints (nitrogen application and requisite mechanization for raising the returns to multiple cropping) have been instrumental in the rapid acceleration of Chinese food production since the late 1970s.

Second, the local self-sufficiency movement and the increasing direct controls over farmland allocation among crops and input allocations among farms and crops (all products of the failure to accelerate grain production enough by other means to boost the share marketed) brought about serious deterioration in the productivity of resources both among and within collective units (Tang and Stone 1980; Lardy 1983a).

Third, the deleterious impact on farm labor incentives of the chronically

low prices and the arbitrary expansion of procurement quotas and of collective agriculture in general were criticized. The attempted solutions have been higher prices structured for growth incentives (1979–84); the substitution of a contract system for quotas (1985), and the replacement of collective farming by the production responsibility system (early 1980s), but the quantitative effects of each on grain production are difficult to estimate.

Another reason for poor profits for Chinese farmers was that relative prices for industrial goods were so high after World War II and the Chinese civil war and during the Korean War that even after a doubling in state grain prices and the claimed 50 percent decline in the price of industrial inputs to agriculture, mid-1970s relative prices for industrial goods were still generally higher in China than elsewhere (figs. 8.2 and 8.3). It turns out that the official price indices of industrial inputs to agriculture are flawed in several ways and considerably exaggerate the fall in prices for rural residents.[4] Furthermore, prices of industrial consumer goods had been increasing quite rapidly, deadening some incentive to sell additional quantities of grain.

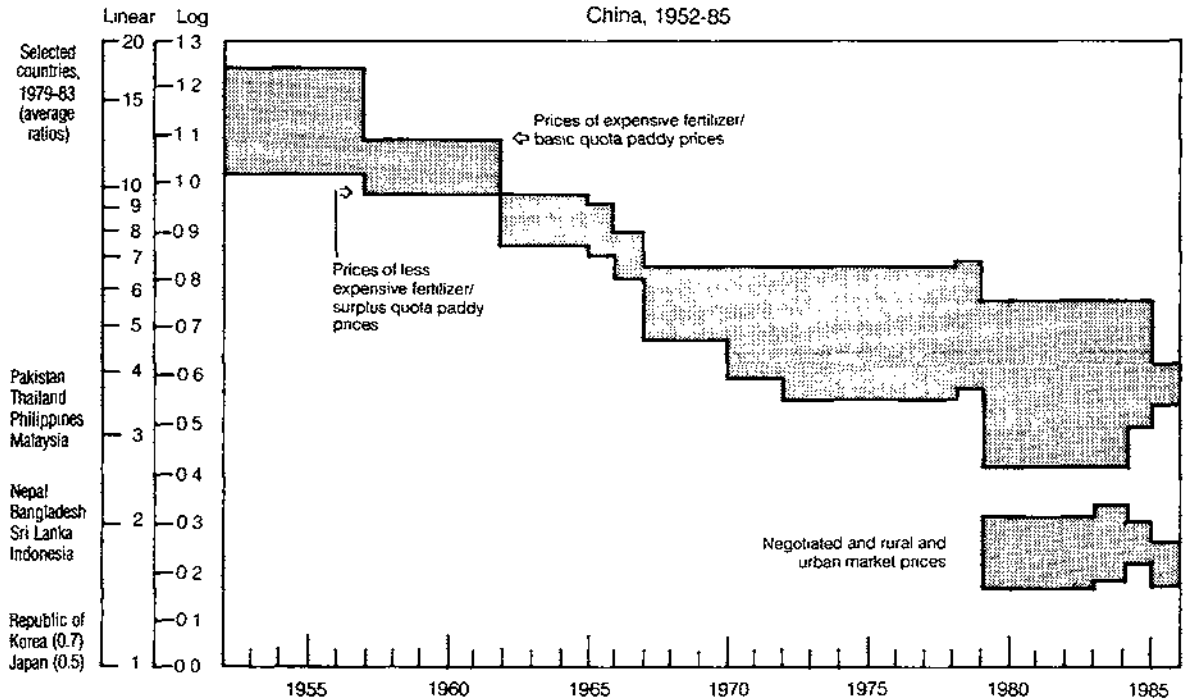
These low relative farmgate prices were no accident. If purchase prices

4. This price scissors disfavoring agriculture was most pronounced in the 1950s, when purchases of industrial products were very low. Although official price indices show a considerable movement in favor of agriculture, there appear to be some ambiguities or inconsistencies among them. It is clear, for example, that the farmgate sale price of ammonium sulfate, the principal chemical fertilizer used over much of the period, remained high and constant while the ratio of the price of urea to that of grain, though declining considerably, was still high relative to most countries and became important to farmers only in the late 1970s. The price of ammonium bicarbonate, the most important fertilizer during the 1960s and 1970s, ranked second after urea in the 1980s, was generally high per unit of nutrient, and varied considerably depending on location; furthermore, the product itself was volatile and of inconsistent quality. How could the price of industrial inputs to agriculture have fallen by 48 percent between 1950 and 1979 when the price of the principal purchased input (manufactured nitrogen) had changed little? The answer seems to be that current year weights were used to form this price index so that it is dominated to an inappropriate extent by urea. Since 1957, urea's ex-factory price has fallen by two-thirds, but until the mid-1970s production was very minor and allocated primarily to industry.

At the same time, the state maintained high prices for both consumer and producer durables and achieved a near-monopoly on the production of cotton goods and sugar, which are the major nongrain processed consumption goods in rural areas. The prices of diesel fuel (until 1983) and electricity have been subsidized, but the quantities allocated to agriculture are extremely limited and supply is unstable, while the price ratios of kerosene and gasoline to grain remain high by international standards. Equally important, inter-rural exchange of grain and other farm goods was limited and, unlike urban sales, was conducted at prices which moved upward with the procurement price (Stone 1984b, tables V-1, VI-1, and VIII-2).

The increase in grain purchase refers to within-quota sales and has been approximately confirmed in a recent source which lists the index numbers for each year from 1966 to 1977 as between 220 and 223 with 1950 = 100 and as between 182 and 185 with 1952 = 100 (Zhongguo Guojia Tongjiju 1984). The above-quota index would fall between 252 and 290 for the period (1950 = 100) or between 209 and 241 (1952 = 100).

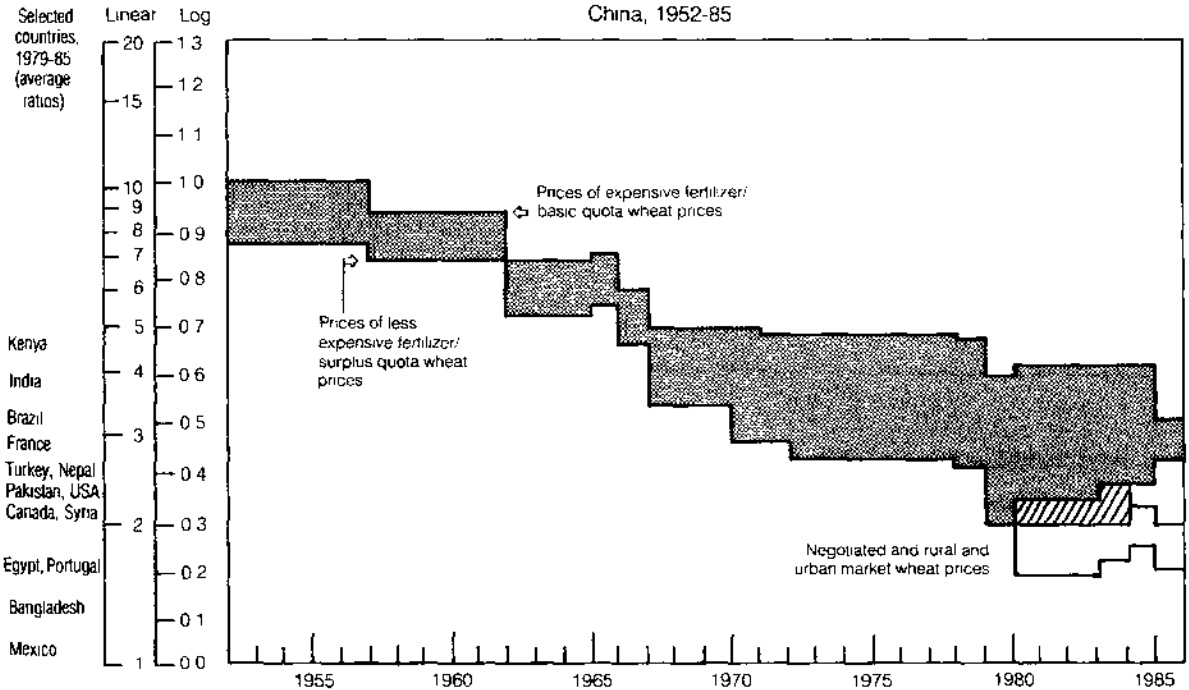
Figure 8.2 Nitrogen to paddy price ratios associated with preferred farm producers, 1952–85



Source: Stone 1986a; 1983–85 data have been added from official sources.

Notes: Nitrogen prices are for urea, ammonium sulfate, and ammonium nitrate. Ammonium bicarbonate, although very important in China, is not included since its price varies considerably among localities. Changes in the price ratios are due to changes in fertilizer or quota procurement prices or availability of surplus, negotiated, or market prices for paddy, or changes in the price increment for surplus quota delivery. This downward trend in the price ratio was curtailed in 1984 when urea prices were increased 13.3 percent and in 1985 with the establishment of a single price for all contractual purchases between basic and surplus quota purchase prices. Black market fertilizer prices (30–100 percent above preferred prices) and, since the mid-1980s, non-preferred market prices (up to 50 percent above preferred prices) are not represented here. Preferred farm-producer prices are generally those selling larger proportions of their output to the state.

Figure 8.3 Nitrogen to wheat price ratios associated with preferred farm producers, 1952–85



Source: Stone 1986a; 1983–85 data have been added from official sources.

Notes: Slashed area represents an overlap of ratios based on state sales and on rural and urban market prices; no market price averages are available for 1985. Nitrogen prices are for urea, ammonium sulfate, and ammonium nitrate. Ammonium bicarbonate, although very important in China, is not included since its price varies considerably among localities. Changes in the price ratios are due to changes in fertilizer or quota procurement prices or availability of surplus, negotiated, or market prices for wheat, or changes in the price increment for surplus quota delivery. This downward trend in the price ratio was curtailed in 1984 when urea prices were increased 13.3 percent and in 1985 with the establishment of a single price for all contractual purchases between basic and surplus quota purchase prices. Black market fertilizer prices (30–100 percent above preferred prices) and, since the mid-1980s, non-preferred market prices (up to 50 percent above preferred prices) are not represented here. Preferred farm-producer prices are generally those selling larger proportions of their output to the state.

could be kept low, then urban wages could also be kept low, facilitating high savings rates in industry and lower fiscal drag of the large and growing government service sector. Furthermore, cheap grain could be sold on a rationed basis to legal urban residents, increasing control over rural-urban migration. Yet planners were well aware that without acceleration in foodgrain production growth, marketed ratios would remain low. And without technical transformation of agriculture, there would be no prolonged acceleration in production. But, inevitably, technical transformation of agriculture would be expensive both for farmers and for the state. Was this transformation compatible with low relative foodgrain prices, given the state's complex of priorities? To answer this question, it is necessary to examine agriculture's expected contribution to Chinese economic development and the role of prices as a mechanism for realizing that contribution.

AGRICULTURE'S CONTRIBUTION TO ECONOMIC DEVELOPMENT: THE THEORETICAL CONTEXT

In the international literature on the development process, the agricultural sector is typically viewed as making four contributions to the process of economic development outside the sector: 1) furnishing food and labor to other developing sectors; 2) providing a domestic market for the goods and services of other sectors; 3) providing domestic savings for investment in other sectors; and 4) generating foreign exchange required for the development of the rest of the economy. The "other sectors" to be developed are usually abstracted as, or viewed literally to be, industry. Agriculture's own development, unlike that of industry, is rarely seen as an end in itself, but is valued principally for facilitating its contributions to the growth of other sectors.[5]

5. This view has been reflected in the postwar development strategies of many Third World countries, both in terms of government investment priorities and in pricing and other industrial protectionist policies that effectively bias the domestic terms of trade against agriculture in favor of industry and manufacturing. Consequences of those policies have often included a growing shortfall of domestic food production, increasing reliance on imports, and an increasing number of rural poor.

Hla Myint has made a useful distinction between agriculture's role seen in terms of its voluntary contributions, or spontaneous functions, reflecting its interrelationship with the rest of the economy during the long-term process of economic development, and agriculture's role seen in terms of the compulsory contributions that can be extracted from the agricultural sector, or the functions it can be made to perform by deliberate policy. While this dichotomy cannot be seen in its perfect form either in historical cases in this century or in any developing country today, much of the literature dealing empirically with agriculture's role leans toward experiences illustrating Myint's first interpretation, while development planners and their advisors naturally emphasize the second. Any inconsistencies among the components of agriculture's role are heightened, as the exigencies of immediate planning horizons cause planners to attempt to compress the stages of economic growth, and to accelerate the intricate long-term process of development, according to a simplified theoretical model which cuts corners (Stone 1984a, pp. 2-4; Myint 1975).

When conflicts develop among these expected roles for the sector, the generation and transfer of savings and provision of cheap urban food are usually seen as agriculture's indispensable contributions. But difficulties are generated when the country not only is relatively undeveloped in its nonagricultural sectors but is more or less stagnant in its agricultural sector as well. If savings are consistently invested in the nonagricultural sector, there will ultimately be an increase in the demand for agricultural products, especially food, which will not be cheaply satisfied without continuous technical change in agriculture. But bringing about rapid technological advance in agriculture, in many cases, requires considerable investment, and if the agricultural sector is indeed very poor and stagnant, its own surplus resources may be insufficient.

Here we come up against an inconsistency: agriculture's principal role is supposed to be to provide resource transfers out of the sector (to aid industrial development). Yet to do so, technical transformation is required which necessitates resource flows into the sector. Various tactics are recommended to manage this without doing violence to the original conceptualization. They amount to suggesting either that, with careful management, net transfers into agriculture can be kept low or negative, despite the investment requirements, through emphasis on demand linkages with other sectors tapping internal saving, and land tax applications or that, if the net flows are strong and positive, the situation is temporary and will be quickly followed by a subsequent stage in which they will turn negative (Stone 1984a). Let us review how the Chinese experience relates to this theoretical context.

AGRICULTURE'S CONTRIBUTION AND THE ROLE OF PRICES

It is clear that China, too, has tried to use agriculture as a source of investment funds and of cheap wage goods (food) for other sectors.[6] It is also inevitable that with the elimination of the private trading, banking, and landlord classes in China, government's role in providing mechanisms of transfer would be paramount. Any close examination of the economic history of the People's Republic reveals a scrupulous attempt to keep the flows of nonlabor resources into agriculture relatively low and the flows out

6. There are several factors which distinguish the Chinese case from the classic description of urban development bias (e.g., Lipton 1977). Several have been enumerated by Nolan and White (1984), who prefer the term "state bias" to describe the Chinese development disposition. There were, in fact, important substantive contributions in China in the areas of rural health and education, and pressure on incomes was not limited to the rural sector. Yet the balance of evidence suggests that the adopted development strategy, as executed in China, tended to disfavor rural labor and consumers to a greater extent than their suburban and urban counterparts during the first thirty years of the People's Republic and that the largest share of gross resource transfers into the rural sector was rather directly associated with agriculture's technical transformation, rather than more general rural welfare concerns.

of the sector relatively high. In fact, the flows almost ceased to have any spontaneous character at all and were increasingly controlled through central planning and administrative procedures. But this deliberate extraction of resources from the agricultural sector was not taken to the extent of completely ignoring the contradiction inherent in attempting to squeeze a stagnant agriculture. There was a clear sense that agricultural growth would require some investment geared toward technical change, and that an important portion of this investment would need to be mobilized on a governmental scale exceeding that of rural cooperative institutions. This effort at technical transformation of agriculture became quite significant in the later 1960s and 1970s, although it began in the 1950s (Tang and Stone 1980; Ishikawa 1983; Stone 1984a).

Substantial efforts at irrigation and other farmland capital construction were supplemented by accelerating and sequential adoption of domestically developed, higher-yielding seed varieties; considerable increases in the rural stock of farm machinery; and the most rapid growth rate of fertilizer application anywhere for a comparable historical period. On the other hand, clear efforts were made to keep to a minimum the flows of nonlabor resources into agriculture required for the transformation.

The use of organic manures, already the most extensive in the world, was considerably intensified prior to rapid growth in chemical fertilizer application. Total growth in yield through increased cropping intensity was emphasized, greatly raising farm labor requirements relative to capital expenditures. The farmland construction efforts at irrigation, drainage, and field improvement heavily emphasized labor from within the sector and involved very modest commitment of state capital resources. From 1950 to 1979, agriculture claimed only 11.2 percent of state investment funds. Growing slowly from a modest base were total state aid to agriculture (used to promote mechanization among rich farm areas and to promote production in various ways among poor areas) and agricultural loans featuring high interest rates (about half of which originated within rural areas). Between 1953 and 1971, the total of state funds allocated to agriculture was only 23.4 percent more than the modest farmland tax. While this percentage increased in the 1970s, most of the increase was provided through taxation of rural enterprises (Stone 1984a).

Meanwhile, efforts were made to raise resource flows out of the sector. Although farmland taxes were a minor and decreasing mechanism of savings extraction required to finance these flows, the price system was a major and increasing one. Compulsory procurement of farm products at low, state-dictated prices contrasted with the high prices for industrial consumer and producer goods purchased by farmers. But the commodity terms of trade turned almost monotonically in favor of the agricultural sector during the period from the 1960s until the mid-1980s. The price system

became increasingly important as a transfer mechanism only because the absolute flows of real resources increased considerably while the land tax remained relatively constant.

What were the actual net flows of savings and real resources throughout the period? This calculation depends entirely upon the system of prices used. If one adopts the 1957 price structure, which heavily discriminated against farm goods, then net resource flows out of agriculture turned from decreasingly and slightly positive in the 1950s to (increasingly) negative during the 1960s and 1970s (Ishikawa 1967; Ishikawa 1987). If the price structure used is that of 1980 (disfavoring agriculture to a lesser extent), then the net resource flows out of agriculture did not turn negative until the 1970s. In either case, however, the long-term trend in the net flows is in the direction of imports into the sector. This contrasts with the hypothetical state in which technically transformed agriculture becomes an increasing source of net resources at a fairly early period. The actual result resembles the Ricardian growth trap, in which emerging dynamism in the industrialization process is constrained by slower progress in agriculture subject to diminishing returns in absence of sufficient technical change (Ishikawa 1987; Stone 1986c). The increasing flows *into* agriculture have been dominated by flows of agricultural producer goods from the industrial sector.

The behavioral model which emerges for the entire PRC period through the end of the 1970s is one in which every effort seems to have been made to maximize the savings at government's disposal. Investments, for this reason and a variety of others, were predominantly oriented toward heavy industry (Stone 1986c). Incomes in both agriculture and non-agriculture were kept at low levels, although increasing urban dominance and proximity to government over time allowed urban subsidies to increase much faster than those in the countryside (Lardy 1983b; Nolan and White 1984). When this pattern resulted in insufficient growth in food marketings or in generalized agricultural crises, investment was increased in agriculture, as well as in industrial subsectors which manufacture agricultural producer goods; and additional resources were directed to utilizing existing capacity more fully. This commitment simultaneously generates considerable pressure to sell available output.

When rural incomes are too low to accomplish such increased sales, despite political pressure exerted through collective institutions, a number of financing mechanisms are entertained, including: 1) twists in the terms of trade; 2) increases in loans and credit, particularly in association with input purchases and commitments to increased sales of farm products; 3) increased payment to collective institutions for rural labor in association with increased inventories of labor-intensive capital construction projects benefiting agriculture or with unskilled rural contract labor for industrial

capacity expansion; 4) other rural subsidies. While each of these financing mechanisms has been regularly used, the third emerged as quite important during the 1960s and 1970s. The first and second were more dominant during the 1950s and the late 1970s and were proportionally less important in the intervening period. Finally, when these financing methods put too great a strain on other budgetary categories, deficit financing has been undertaken (Ishikawa 1987), especially via increased note issue by the People's Bank or by de facto expansion of credit by the Bank when such note issue is resisted.

In general, agricultural production has responded at least in some measure to these periodic initiatives (Tang and Stone 1980). When some of the marketing pressure is relieved, the easiest negative adjustment appears to have been in the third category, especially in terms of fewer rural capital construction starts, and has often been accompanied by emphasis on completion of existing projects. Although instances of terms-of-trade movements against agriculture have occurred, they have not been numerous and have generally encountered considerable resistance, although the problem has been partially mitigated by introduction of improved producer goods at substantially higher prices or additional (relatively high-priced) consumer goods. However, the particularly poor state of financial development in China (Ishikawa 1987), coupled with some degree of rural distrust of existing financial institutions and, most recently, the dissolution of the communes, has left China with an increasing problem of governmental mobilization of rural savings except in some association with deficit financing.

One aspect of intersectoral resource flows, the quantification of which is least clear, involves agriculture's investment in rural nonagricultural enterprises. The collective has been a remarkable instrument for mobilizing farm savings and labor resources for moderate development projects, and it is unclear what proportion has been invested in rural industry. But it *is* clear 1) that state investment in rural industry has been minor; 2) that state taxation of commune and brigade enterprises in the late 1970s was roughly 22 to 25 percent of profits; 3) that fees to local authorities accounted for 2.5 to 3.5 percent of *sales* of such enterprises (perhaps 12.5 to 17.5 percent of profits); and 4) that 35 to 40 percent of after-tax profit had to be turned over to local authorities for general construction funds, a portion of which was reinvested in agriculture. These funds represented 60 percent of the state's basic agricultural construction investment in 1978 (Stone 1984a; Ishikawa 1967; Ishikawa 1983).

The production mix of permissible rural industries was, for some time, constrained in a highly capital-intensive direction. Although they were more labor-intensive than their nonrural counterparts, choice of technique could do little to compensate for capital intensity in the mix of production,

and the marginal product of labor in many rural enterprises was consequently close to zero. But since these enterprises were primarily owned by the county (or the commune or brigade), they provided, despite heavy taxation and restraints, an important savings and investment mechanism for local projects.

This all suggests not only low agricultural prices and strong financial discouragement of rural enterprises but low capital construction investment relative to the task of agricultural transformation, particularly in view of the implied constraints on the effectiveness of this investment. It may be illuminating to review the history of agriculture's share in state investment during technical transformation in the context of a low purchase price policy, and its relationship to output growth.

AGRICULTURE'S SHARE IN BASIC STATE INVESTMENT DURING TECHNICAL TRANSFORMATION

Despite scattered earlier efforts, China's comprehensive experiment with technical transformation of agriculture did not begin in earnest until September 1962. Through 1957, a development strategy emphasizing the concentration of resources on the expansion of industrial producer goods, a central focus of attention on national security, and preoccupation with organizational reform in both rural and urban sectors resulted in low priority for technical transformation. During this period real resources moved out of the agricultural sector. Industry absorbed the largest and an increasing share of the state's basic construction investment. Not only did agriculture's direct share of state investment decline from 5.0 to 2.9 percent, but its share of infrastructural investment in water control—the key to technical transformation—dropped from 8.9 to 5.0 percent of the total. These two components (plus investments for development of forestry and meteorology) averaged only 7.1 percent for the 1953–57 period. Despite the location of almost nine-tenths of the population in rural areas, agriculture's share of gross fixed investments (including modern and traditional farm implements, carts and livestock, land reclamation, peasant water control, and other imputed investments) declined rapidly from 31.8 to 23.5 percent, while industry's share rose from 22.0 to 36.5 percent (Tang and Stone 1980).

The unreliability of all of the statistics during and shortly after the Great Leap Forward (1958–59) makes estimation of agriculture's share unfruitful, but total fixed investments in all sectors over the 1960–62 period fell to around the 1953 level. And it should be noted that attempts to increase agricultural investment and production relied heavily on labor-intensive methods. Following the disastrous agricultural performance from 1959 to 1962, the 1963–65 period was marked by a particular concentra-

tion of scientific and technical efforts on the goal of agricultural transformation, as well as some increase in the sector's share in gross fixed investment (17.7 percent) and a twist in the terms of trade in agriculture's favor.

The first phase of the Cultural Revolution (1966–69) saw scattered industrial slowdowns, failures to deliver agricultural inputs, a drop in the farm-related state investment share (to 10.7 percent), an eclipse of scientific and technical manpower, and greater reliance on motivation through development of public-mindedness and patriotism as opposed to individual and small group self-interest, all leading to agricultural stagnation in 1968–69.

Chinese authorities became recommitted in the early 1970s to the goals of technical transformation and partially rectified the errors of the late 1960s, with resultant rapid agricultural recovery and growth through 1975. But improvement in the rural terms of trade evidently ground to a halt after 1972, far short of the degree of change necessary to ensure broad participation in technical transformation, and major infrastructural projects were increasingly financed through expropriation of rural savings and uncompensated manpower, as the farm-related share of state investment fell to 9.8 percent. At the very least there was no improvement in relative prices as a whole during the 1975–77 period, and according to some calculations the ratio dropped to the level of 1964–65.[7]

INCONSISTENCIES AMONG AGRICULTURE'S ECONOMIC DEVELOPMENT ROLES

While the method of extraction of agriculture's "surplus" was one which emphasized the short-term complementary role of furnishing cheap wage goods (food) and raw materials for the industrial and other sectors, short-term emphasis on the excessive fulfillment of these roles jeopardized their long-term fulfillment, as well as leading to the crippling of agriculture's performance of its other developmental functions. Mobilization of agriculture's savings and labor for its own technical transformation was certainly considerable for a land-poor traditional agriculture such as China's. But due to the inefficiency with which a large proportion of investments were inevitably undertaken, the amount of supplemental state investment, while sufficient to generate a reasonable growth rate in agricultural output, was not enough to bring about an increase in the marketed ratio of foodgrains, which formed the increasingly dominant complex of crops. Recognition of this failure by the early 1970s provided the impetus to pur-

7. Tang and Stone 1980, pp. 117–18. "Farm-related share" refers to state investment allocations to agriculture, forestry, water control, and meteorology, of which water control and agriculture represent the largest percentage. The statistics on farm-related share are from Zhongguo 1983, pp. 324, 325.

chase thirteen large-scale synthetic ammonia/urea complexes from abroad, a striking departure from Maoist foreign exchange parsimony, particularly vis-à-vis the agricultural and rural sectors. No single decision was more contributory to the startling agricultural productivity increases of the late 1970s and early 1980s (Stone 1985, 1986a).

In more market-oriented economies slow growth in food marketings might have led to a rise in the ratio of agricultural to industrial prices and to an eventual reversal of the net flow of resources out of agriculture. In China, this situation was prevented by state control of prices and rationing. But while the state-dictated ratio allowed some modest extraction of agricultural surplus without eliminating growth of the sector and its technical transformation, it did not permit a sufficient increase in rural per capita consumption. This led to decreasing rural cooperation and, coupled with bad weather and a failure in capital construction progress and the supply of industrial inputs, to farm output stagnation from 1975 to 1977.

What of agriculture's other roles? Capital-intensive emphasis in industry created a low demand for productive employment in the sector. Most of the remaining urban residents were absorbed in relatively low-productivity pursuits, generally organized by or within government, and the state retained the obligation to provide all legal urban residents with adequate foodgrain rations at low prices. Insufficient agricultural investment owing to excessive concentration on industry led to inadequate production and marketed ratios and to great difficulty in extracting sufficient food at low prices for the nonagricultural population.

Concern over this whole predicament caused the state to restrict migration out of agriculture and even to move urban residents back to the countryside. This isolation of the bulk of China's labor resources from the bulk of its capital investment virtually ensured low aggregate productivity of both capital and labor under the prevailing initial conditions of extreme capital scarcity. It also had serious equity implications, especially so because the methods of administrative control isolated rural areas not only from the cities but from each other as well. Thus agriculture fulfilled its role of supplying cheap labor for the development of the urban industrial sector to a lesser degree than it might otherwise have. Rural industrialization, China's well-publicized solution, was handicapped by the official and de facto financial policy of the central and local administrations (Stone 1984a).

Because of the excessively extractive price ratio, rural incomes were too low to provide much of a dynamic market for domestic industrial products, with the principal exception of chemical fertilizer sales. The concern over procurement of grains led the government not only to restrict inter-rural farmgoods trade and rural industrialization consistent with more rapid development of the agricultural sector but also to attempt to limit the alloca-

tion of farm labor for the production of handicrafts, farm subsidiary products, and even livestock goods which could have provided income to purchase industrial goods.

And finally, as is the case with many developing countries, agriculture's role in foreign exchange generation was primarily perceived in China in terms of import substitution of basic grains, that is, of being a source of cheap urban food rather than also becoming a dynamic or steady exporter of more highly valued farm products. With the extreme emphasis on grains, especially wheat, rice, and corn, China became a net importer of several traditional export farm commodities such as soybeans, oils, and sugar; exports of oilseeds decreased and those of tea, tobacco, and fruit stagnated at a low level until the recent policy changes. Inadequate investment, even for foodgrain and fiber development, ultimately resulted in massive foreign imports of grains, cotton, and, to a lesser extent, other fibers until the mid 1980s. Even within the context of a narrowly conceived emphasis on grain supplies, the degree of concentration on import substitution was undoubtedly misplaced. Although domestic wheat production provided the principal import substitute, greater emphasis on (more highly valued) rice and other exportables in the Yangzi Valley and the south, on cotton in North China, and on soybeans in the northeast, at the expense of wheat (and corn) which could be obtained cheaply on the international market, would have left China in a stronger position in terms of both grain supplies and foreign exchange.[8] Although such an internationally oriented strategy could not easily have been contemplated by the isolated China of the 1950s and 1960s, for which self-sufficiency was as much a strategy of national defense as of economic development, the failure to develop aggressively multiple trading relationships and a trading orientation ultimately left China in a more vulnerable position, since grain imports proved difficult to eliminate.

RURAL ORGANIZATION, PRICE, AND INVESTMENT REFORMS, 1979–84

The reforms required to alleviate this situation included a drastic shift in rural organization away from the cherished socialist goals for the sector and substantial rural price and investment increases. The rural incentive

8. Stone 1984a, p. 9. In 1982 total foodgrain and granulated sugar imports exceeded 16 million and 2 million tons, respectively. Cotton imports peaked at 897,600 tons in 1980 (Zhongguo 1983, pp. 437–38). It has been observed that China indeed engaged in a rice-wheat arbitrage, exporting rice to help finance larger wheat import volumes. Research at IFPRI has shown the international price of rice to be one of the important determinants of China's rice export volume. But rice exports did not increase commensurately with wheat imports, and pursuit of this activity was minor relative to what was potentially remunerative.

structure outlined by the Plenary Session in December 1978 and embodied in the 1979 National Economic Plan and Draft State Budget constituted the most extreme rural policy change since collectivization and was buttressed by long-term grain import agreements and a reform in the structure of state procurement of farm produce. Peasants were afforded considerably greater latitude in production decisions than in the previous two decades and received more pecuniary benefits from successful decisions than before.

Other changes were reflected in the government and party repudiation of "commandism"—a dictatorial tendency aimed at maintaining rural capital construction despite inadequate commitment of state resources. It often led to the application of production team labor and savings, without team approval, to projects that would benefit larger organizational units, had unacceptably long gestation periods, or were otherwise unpopular with the team. It also took the form of the frequent increase, contrary to national policy, in compulsory purchase quotas by ambitious local officials. Commandism, of course, not only alienated peasants from authorities but resulted in declines in labor productivity and in locally generated savings and investment.

The proportion of state-budgeted funds for capital construction to be devoted to agriculture was scheduled to increase from 10.7 percent in 1978 to 14 percent in 1979 to 18 percent in 1980–82. Operating expenses for agriculture and state outlay of aid to communes, brigades, and teams rose from 6.9 percent of the State's annual expenditures in 1978 and 6.3 percent in 1979 to 8 percent in 1980. Long-term, low-interest loans to rural people's communes from the Agricultural Bank of China and the rural credit cooperatives rose from 13 billion yuan in 1978 to 17 billion yuan in 1979. The total sum made available in 1980 was to be 20 billion yuan (35 billion yuan including exempted repayments), and the volume by 1985 was supposed to be "more than double" the 1978 level (Tang and Stone 1980).

Finally, in 1979 the terms of trade between agricultural and industrial products were made more favorable to agriculture and rural areas than in any previous year. They included a 20 percent increase in the government purchase price of within-quota grain; a 50 percent price premium for delivery of surplus grain; the decision not to raise the quotas of grain that must be delivered at the lower, within-quota price and the abolition of ceilings on collective grain distribution to commune members; a planned 10 to 15 percent decrease in the sales price of industrial inputs to agriculture; increased preferential input allocations to localities that increased output; and encouragement of rural fairs for inter-rural exchange and the sale of produce from private plots and sideline production and, now, from individually assigned collective plots (after tax, quota or contract, and collective cost obligations have been met). The rural fairs were ultimately al-

lowed to grow into rural and urban markets where even foodgrains could be exchanged once tax, quota, and surplus quota responsibilities to the state were fulfilled. Thus, along with the procurement price rise discussed in previous sections, substantially higher rural and urban *market prices* for foodgrains became legal alternatives. Finally, since quotas were frozen, if the state needed to purchase additional foodgrains it could do so at a *negotiated price*, which tended to be only slightly lower than the market price, although there is evidence that quotas for delivery of negotiated purchases were established in some areas (table 8.1).

The estimated gross financial transfer to the countryside in 1979 brought about by the changes in state purchase prices of farm goods and sales prices of industrial goods, together with reduction and remission of rural taxes, was estimated at 9 billion yuan. For comparison, state aid to rural units was 2.06 billion yuan and for administrative expenses related to agriculture, water control, and forestry, 7.91 billion yuan, whereas state capital construction for the sector was 6.24 billion yuan in 1979. The gross

Table 8.1 PRC wheat and rice prices, 1980

	Wheat	Paddy
	(yuan per kilogram)	
Basic quota state purchase price	.3144	.2312
"Surplus" quota state purchase price	.4716	.3468
State negotiated purchase price	~.5940[a]	~.6200[a]
Rural market price	.5940	[b]
Urban market price		.6200
State retail price for rationed sales to "nonagricultural" population	[c]	[d]
State resale price to "agricultural" population	.3395	.2497
State resale price to low-income peasants and those suffering from natural disasters	.1997	.1469
Internal accounting price for in-kind distribution within production units	.2722	.1904

Sources: The 1980 basic quota prices and the surplus resale prices based on them are from China, People's Republic of, Nongye Jishu Jingji Shouce Bienweihui 1983, p. 742. The same table with somewhat different prices and interpretations appears in Lardy 1983b, p. 7. The milling rate data are from rural processing facilities cited in FAO 1979, pp. 17-28.

[a] Approximated at the market price.

[b] .780 yuan for milled rice. Milling rates in China run 68-78 percent. On the basis of weight equivalence, this would suggest a comparable paddy price of .5304-6084. But in most developing countries paddy rice prices are around half those of milled rice owing to processing costs.

[c] .370 yuan for rationed flour.

[d] .303 yuan for rationed milled rice. See n. *b* above. Comparable paddy prices would be in the range of .152 to .237 yuan.

financial transfer through the price mechanism for 1980–82 relative to 1979 would be substantially higher.[9]

The output response to these shifts was dramatic. From stagnation at 285 million tons during 1975–1977, foodgrain production vaulted to more than 407 million tons by 1984 (table 8.2). Available evidence suggests that this unprecedented growth was mostly real and not the product of statistical distortion. If the excellent weather year 1979 is compared with 1984, the implied growth is still very impressive. The impact on other agricultural production categories was generally even greater.

Of course it is virtually impossible to sort out the effect of the price changes *alone* in the presence of such sweeping reforms. It is quite possible

9. Tang and Stone 1980, pp. 118, 147; Zhongguo 1983, pp. 452–53. Whether there is any *net* transfer of resources depends upon the system of prices selected as "normal." If 1978 prices are used, there was a net transfer of resources into agriculture. Yet 1978 Chinese prices still discriminated against agriculture relative to the international price structure and from the point of view of average profit margins over production costs.

Table 8.2 Growth in foodgrain yields and chemical fertilizer application surrounding the 1979–85 policy reforms, 1975–86

Year	Foodgrain sown area	Foodgrain output	Average yields	Chemical fertilizer application
	(million hectares)	(million metric tons)	(metric tons per hectare of sown area)	(million tons of nutrients)
1975	121.062	284.515	2.35	5.369
1976	120.743	286.305	2.37	5.828
1977	120.400	282.725	2.35	6.480
1978	120.587	304.765	2.53	8.840
1979	119.263	332.115	2.78	10.863
1980	117.234	320.555	2.73	12.649
1981	114.958	325.020	2.83	13.349
1982	113.463	354.500	3.12	15.134
1983	114.047	387.275	3.40	16.598
1984	112.884	407.305	3.61	17.398
1985	108.845	379.108	3.48	17.758
1986	109.733	391.090	3.56	19.520

Sources: Zhongguo 1983; Zhongguo 1984, pp. 137, 141, 145, 175; Zhongguo 1986, pp. 149, 156, 174–80; Xinhua [New China News Agency] news bulletin, 8 February 1987; Zhao 1987, p. III; *Renmin Ribao*, 14 March 1987, p. 1; Zhongguo 1987, p. 3.

Note: Foodgrains include paddy rice, wheat, coarse grains, soybeans, pulses, and, valued at one-fifth natural weight, sweet potatoes and white potatoes. The chemical fertilizer figures include application to all crops, not just foodgrains. But foodgrain sown area was around 80 percent of total sown area throughout the period, and fertilizer application to foodgrains comprised a roughly equivalent proportion of chemical fertilizers used.

that they would not have been so effective without the other important changes in rural incentive structure allowing farmers to keep most of their increased output or to sell it profitably in the free markets. But it is also clear that without the price changes, the additional application of fertilizers indispensable to such a massive increase in yields might not have been possible. Without the price changes, the allocational distortion of inputs and labor away from unremunerative foodgrain fields (which, through administrative control, could not easily be reduced) would have been even more severe in the grain surplus areas. In such a case, the realized increase in foodgrain yields would not have been possible.

CONSEQUENCES OF THE REFORMS FOR AGRICULTURE'S ROLE

As should be obvious, there have been major consequences associated with the substantial shift in financial flows brought on by the reforms. In order to satisfy urban consumption while allowing farmers to keep most of the increased output, Chinese grain imports accelerated from 2 percent of the international grain market in 1976 to roughly 7–10 percent of a 40 percent larger international market in 1981–82 (Zhongguo 1983; FAO 1983b), so that the proportion of urban food supply furnished domestically became the smallest in PRC history (table 8.3). The government was ultimately able to reverse this increase in food imports as the reforms, as well as investment and price increases, took effect. But with a politically powerful urban population long dependent on cheap food, the price increases could not be passed on to citydwellers. This brought about an increase in the food subsidy cost to the government to more than one-quarter of the state budgetary expenditures at all levels, an immense drain on state resources. The subsidies benefited an already relatively well-off rural government and urban minority, with the exception of about 10 percent of the total, which went to disaster-stricken rural areas (table 8.4). Thus agriculture's contribution to investment in other sectors, never a very large proportion, became substantially smaller, or negative, depending upon the system of prices used.[10]

On the other hand, the markets for industrial consumer goods, as well as industrial inputs to agriculture, have blossomed, and, with more liber-

10. Stone 1984a, pp. 10–11. The subsidies represent 6.2–6.5 percent of Chinese national income (according to the Chinese method of calculation) or around 33 percent of the wage bill of state workers and employees (*Renmin Ribao*, 27 June 1983). By contrast, the Indian subsidies of rationed cereals were less than 2 percent of central and state government expenditures and were considerably less than 1 percent of net national product. Polish food subsidies rose to 17.6 percent of the wage fund in 1980, but they are distributed to well over half the nation's citizens, whereas Chinese subsidies are concentrated on around 16 percent of the total population, primarily in urban areas (Lardy 1983b, pp. 38–40).

Table 8.3 International trade in foodgrains, sugar, cotton, and chemical fertilizers, 1950–85

Years	Avg. annual total foodgrain exports	Avg. annual foodgrain imports		Avg. annual net imports	Ratio of net imports to domestic foodgrain production	Avg. annual fertilizer imports	Share of domestic application	Avg. annual granulated sugar imports	Ratio of sugar imports to domestic production	Avg. annual raw cotton imports	Ratio of cotton imports to domestic production
		Total	*Wheat only*								
		(million metric tons)			(percent)	(thousand metric tons of standard weight)	(percent)	(thousand metric tons)	(percent)	(thousand metric tons)	(percent)
1950–54	1.65	0.03	0.02	−1.63	−1.23	306.4	—	73.9	17.9	65.1	7.6
1955–60	2.79	0.13	0.06	−2.66	−1.76	1,350.7	60.0	144.9	21.5	67.6	4.6
1961–65	1.62	5.93	4.89	4.31	2.96	1,889.8	42.3	797.2	162.9	113.6	8.1
1966–70	2.57	4.98	4.42	2.41	1.30	5,041.3	39.0	475.0	33.2	93.0	4.1
1971–76	2.94	5.05	4.09	2.10	0.94	5,679.1	24.7	535.8	32.1	255.3	11.0
1977–83	1.61	12.33	10.26	10.72	3.81	9,678.3	16.5	1,430.1	53.1	514.3	19.1
1984	3.57	10.45	10.00	6.88	1.69	18,356.2	21.1	1,228.7	32.3	39.8	0.6
1985	9.33	5.97	5.38	−3.36	−0.89	7,609.4	8.6	1,908.7	42.9	0.2	—

Sources: These figures appear in or were calculated from data appearing in Zhongguo 1984, pp. 141, 142, 145, 397, 410–12; China, People's Republic of, State Statistical Bureau 1985, pp. 255, 281, 336, 339, 510, 516, 517; China, People's Republic of, General Administration of Customs 1986, pp. 20–30; China, People's Republic of, State Statistical Bureau 1986.

Notes: Trade and domestic production of foodgrains includes milled rice, wheat, coarse grains, soybeans, and potatoes valued at one-fifth natural weight. "Standard weight" denotes 21 percent N in the case of nitrogen fertilizers, 18 percent P_2O_5 for phosphate fertilizers, and 25 percent K_2O for potash fertilizers.

Table 8.4 State budgetary revenues and expenditures and state food consumption subsidies and their recipients, 1974–81 (billion nominal yuan)

	1974–78 avg.	1979	1980	1981	1979–81 average
State food consumption subsidies					
Indirect subsidy of domestic grains and oils	*~4.1*	*>7.8*	*10.3*	*>12.8*	*10.2*
Indirect nonstaple food subsidy		>0*	>3	*2.8*	(~2)
Direct nonstaple food subsidy	0	<1.0*	~1.6*	(13.4)	*>5.33*
Indirect subsidy on imported grain		*0–0.8*	*0–2.1*	*0.6–2.4*	*0.2–1.8*
Total		(9.0–10.5)	14.9–17.5	(29.7–31.5)	(17.7–19.5)
Total state budgetary revenues		*110.33*	*108.52*	*108.95*	*109.27*
Total state budgetary expenditures		*127.39*	*121.27*	*111.50*	*120.05*
Recipients of state food consumption subsidies					
"Non-agriculture" average population (millions)	(~143)	(~156)			
Urban		*124.28*	*131.375*	*136.415*	*130.69*
Suburban & rural nonagricultural		*~19*	*25*		
Amount received (billion yuan)		(8.1–8.9)	(17.5–19.6)	(20.8–22.6)	(15.5–17.1)
"Agricultural" average population (millions)	(~821)	*820.36*			
Rural and suburban			~(811.1)		
Urban contract labor			*9.3*		
Amount received (billion yuan)		<3*	*3.0*	~3*	(~3)

Sources: ***Renmin Ribao***, 16 April 1982, 27 June 1983; ***Hongqi*** (Red Flag), no. 1, 1982; Lardy 1983b; China, People's Republic of, State Statistical Bureau 1984.

Note: Figures in italics are quoted from a Chinese source or are calculated directly from official figures. Figures in parentheses are derived. Asterisks indicate rough estimates.

alization, an active rural nonagricultural sector which supplies simple manufactured consumer goods and services and provides simple components to industry is becoming economically important. Agriculture, in fact, has been so successful and the budgetary drain of the food subsidy program has increased so significantly that the government reversed the rapid growth in net agricultural imports, and the full planned reduction in prices of industrial inputs to agriculture was never authorized.[11] Instead, the farmgate price of urea was raised 13 percent in 1984, and a market for fertilizers partially replaced the direct allocation system, although government restrictions of supplies in 1985 kept fertilizer market prices even higher. The bumper crops of the early 1980s hastened an overhaul of the procurement system, which had been totally unsuited to surplus conditions: government reversed its long-standing pledge to purchase all grain and cotton offered for sale. In 1985 a contract system was established combining the old quotas and "surplus" quotas and featuring a single price between the two. Above-contract deliveries, if purchased, would be subject to flexible prices reflecting supply and demand conditions but generally not above the fledgling market prices.

More ominously, the percentage of the state's capital construction budget allocated to agriculture never reached 18 percent. The total state construction budget declined by 21 percent in 1981, and the proportion allocated to agriculture, forestry, water control, and meteorology fell to 6.6 percent, then to 6.1 percent of a recovered budget in 1982, 6.0 percent in 1983, and 5.0 percent in 1984. Additions to fertilizer production capacity in 1983 and 1984 were at the lowest absolute levels since the 1950s, and future plans call for only partial aggregate recovery, though they purport to address nutrient imbalance.[12]

11. Actually, urban foodgrain consumption was already subsidized in the early 1960s (probably with the 1963 procurement price increase), but the subsidy was reduced in 1965. It is not clear whether the 1966 procurement price increases were reflected in retail prices, but by 1970 the domestic grain subsidy alone was almost 2.5 billion yuan, increasing to 4.3–5.2 billion yuan during 1975–77. The greatest increase in these subsidies occurred after 1978, however, and was financed partly through inflation and partly by reducing the total capital construction budget, national defense expenditures, bank loans to rural areas, expenditures on technical innovation and trial production in enterprises, and additions to circulating funds for enterprises (Zhongguo 1983, pp. 325, 448–49; *Beijing Review*, no. 48, 1982; Zhongguo Guojia Tongjiju 1984, p. 314; Zhongguo Shangyebu 1984, p. 521; China, People's Republic of, State Statistical Bureau 1985).

To make matters worse, commune dissolution, increased decisionmaking power of farmers, selectively reduced quotas, and higher surplus prices were creating a situation in which farmers were increasingly able to manipulate the system to raise average prices even above planned levels, a problem exacerbated by the unfamiliar bumper crop situation of the 1980s, to which the system was ill-suited. The accentuated incentive pricing has ultimately had excessive intersectoral and interregional distribution consequences, as well as having rewarded system manipulation and guideline evasion to a considerable extent.

12. Loans to rural communes and production brigades fell more than 4 billion yuan short of the 1984 plan of 20 billion yuan but continued to grow to 19.9 billion by 1983, then vaulted to 31 billion in 1984 and 35.25 billion in 1985, surpassing the plan to double the 1978 level,

All of this does not indicate a saturated demand for grains but is evidence of an administrative response to the short-range problems of budgetary crisis and suddenly unmanageable stocks in a system ill-suited to continued rapid growth in supply of agricultural goods, and within a context whose essential orientation toward urban and capital-intensive industrial development is still incompatible with sustained balanced growth. Although short-term incentives for several crops can indeed be rolled back to more maintainable levels, deterioration in long-term investment in agriculture's technical transformation may cause difficulties in future. A steady long-term program to underwrite the future basis for supply growth should involve considerably increased emphasis on labor-intensive nonagricultural development to boost effective farm product demand, along with heavy investment in infrastructure to facilitate rural growth in both farm and nonfarm sectors and in market development to link them (Stone 1985, 1986a, 1986b).

CONCLUSIONS

Unlike the countries depicted as successful models of economic development, which are reputed to have financed industrialization by squeezing agriculture, the People's Republic of China was unable to extract resources from the agricultural sector through deliberate policy without serious consequences for the rate of overall economic growth and the destruction of agriculture's other developmental functions.[13] This was the case despite very effective rural institutions for mobilizing savings, a substantial increase in labor application per hectare, and an active rural response to rural industrialization and technical transformation of agriculture.

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though the real values are lower due to generalized price inflation. China is clearly relying on local investment in agriculture to make up for the drift in central expenditures. One of its primary mechanisms is a rebate to counties and townships for taxation of their industries, one-quarter of which is supposed to be spent in support of agricultural production. This could be an important source of agricultural development financing, but, like the loans to communes and brigades, it is not clear what proportion of these funds are actually spent to support growth in crop productivity. With the exception of a few large projects, state expenditures on water control have dropped substantially. Again, local efforts are supposed to take up the slack, financed by water fees imposed on farmers. This transition, however, is not likely to be easy (Zhongguo 1985, p. 526; Zhongguo 1986, p. 616; Stone 1986a; discussion with members of the Rural Development Research Center, Jiangsu, Shandong, and Beijing, April 1986; Ren 1987).

13. This conclusion is reminiscent of Ellman's (1975) findings for the Soviet Union in the 1930s and is of some relevance to a large number of developing countries whose attempts to squeeze agriculture have failed to extract a surplus of much quantitative importance to national capital formation in the short run while leading to disastrous implications for the longer run.

As in many other developing countries, an immediate policy emphasis on cheap urban food in the PRC, without sufficient state investment in *all* requisite aspects of agriculture's technical transformation, set up a contradiction between the short-term and long-term fulfillment of the sector's role as a source of savings and food for the development of other sectors. Increasing market control for various farm inputs and outputs and rural organizational efforts to resolve the contradiction also focused on short-term gains at the expense of long-term deterioration in resource allocative efficiency and perhaps in the quality and intensity of applied agricultural labor.

These are the elements that combined to depress the returns to Chinese agriculture's incomplete technical transformation. And thus relative prices, no longer far out of line internationally, still proved a critical limitation. But it is important to note that it was not price increases alone that resolved the problem. What did prove effective was the combination of massive provision of nitrogen, revival of gains from regional and occupational specialization, resolution of imbalanced allocational patterns limiting resource productivity within farming areas, and reestablishment of the link between effort and reward underwritten by the positive shock of price increases—all these added to a firm base, developed over decades, of improved seed technology, relative agronomic sophistication, and water control.

Finally, during the three decades in which an urban, capital-intensive strategy increasingly constrained agriculture's ability to provide food and savings for the dynamic development of other sectors, agriculture's other developmental functions—as a source of labor and foreign exchange and as a domestic market for goods and services of other sectors—were seriously curtailed. All in all, it is not yet evident how, in China's case, a sufficient state investment in agriculture to allow balanced growth would have been consistent with a sizable net outflow of resources from the sector for a large part of the People's Republic period.

Yet China is now at a crossroads. Substantial resolution of the constraints which have inhibited the acceleration of farm production of a considerably transformed agricultural sector now provides an unprecedented opportunity for agriculture to fulfill several of its theoretical functions as a pivotal sector in the rapid development of the entire economy. What remains to be determined is whether the struggle to deal with the short-term difficulties associated with the unfamiliar chaos of China's current economic revolution will lead the country to return to more familiar inertial states of urban and industrial orientation and restriction of growth in order to achieve a measure of control, or whether China will succeed in forging ahead with the second half of the program aimed at rebalancing the econ-

omy. This would call for an employment-intensive development of the rural nonagricultural sector, bolstered by infrastructural investment as a counterpart to sustained commitment to agricultural expansion and a link to the capital-intensive urban sector. In all of this, the role of price, as China's markets for food, inputs, and consumer goods are decreasingly controlled by government, may be neither the most critical instrument for achieving this development nor even an appropriate one, but rather an indicator of sectoral performance.