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**Price and Market Reforms
and
Agricultural Incentives in China***

Cristina C. David and Jikun Huang**

Introduction

Remarkable progress has been achieved in China's economy and its agricultural sector as institutional and economic reform measures adopted since the late 1970's gradually liberalized the institutional and market structure of production and consumption. Growth rates of gross domestic product, agricultural gross value added and food per capita increased dramatically, roughly doubling between the 1970's and 1980's (Table 1). Indeed, China's performance over the past decade was much more impressive than other countries in South and Southeast Asia. Although the growth rate of agricultural exports declined from 13.1% in the 1970's to 9.1% for 1980-1992, so did all other Asian countries because of depressed world commodity markets and general slowdown of the world economy. China, in fact, had the highest growth rate in agricultural exports during the 1980's, with Thailand's performance a far second at 5.2%.

Past studies have already demonstrated that the abolition of the collectives and the introduction of the household responsibility system of management decisions accounted for most of the agricultural productivity growth during the early phase of the reform period between 1978 and 1984. According to Lin (1989), over 90% of the productivity growth up to 1984 can be

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** Research Fellows, Philippine Institute for Development Studies, and China National Rice Research Institute, respectively.

explained by the introduction of the household responsibility system and less than 10% to the price reform. McMillan, Whalley, and Zhu (1989) found a slightly higher (20%) contribution of price and market reforms and noted that the changes in the system of making payments to producers rather than price increases per se were more important in raising productivity. In Fan's (1991) later study which separated the impact of technological change from institutional changes, one-third of the productivity growth was attributed to technological change and two-thirds to institutional change. Huang and Rozelle (forthcoming) showed an even greater contribution of technical change (nearly half) to productivity growth compared to the contribution of institutional change (22%) in the early reform period. Their study also found nearly all of the productivity growth by the late 1980's to be accounted for by technological change as the one-time effects of decollectivization have been exhausted. These two studies, however, have not considered the possibility that institutional and price reforms themselves may have directly and indirectly accelerated the generation and adoption of new technologies.

Because the shift to the household responsibility system was completed by 1984, while the process of price and market reforms is still evolving, what happens to price and market interventions, will increasingly be important in determining the growth of the agricultural sector. The scope for price and market reforms to further improve the country's efficiency in resource allocation remain large as the agricultural markets continue to be highly regulated particularly for major commodities such as grains, edible oil, cotton, and other industrial crops.

The purpose of this paper is to analyze the changes in price intervention policies and their impact on agricultural incentives. In the following section, we first describe the performance and changing structure of the agricultural sector. The second section analyzes how the

macroeconomic environment, specifically, exchange rate policy affected agricultural incentives over time. The third section describes the evolution of commodity-specific policies affecting agricultural prices to producers and consumers. The impacts of those policies, including exchange rate policies, on producers' and consumers' prices of selected agricultural products are examined in the fourth section. Finally, we conclude by explaining the factors affecting the changing patterns of agricultural protection.

Structure and Performance of the Agricultural Sector

Although China's economic growth has been reasonably rapid from the 1950s to the late 1970s, the process of institutional and economic reforms dramatically raised the pace of economic development after 1978 (Table 2). Annual growth rate of national income nearly doubled from 4.9% prior to reforms, to 9% between 1978 and 1992. As population growth rate declined from 1.9% to 1.4%, per capita national income grew at 7.5% over the past 15 years, one of the highest growth record in the world.

It should be emphasized that economic growth has been accelerating since 1978 as the full impact of current reforms is reaped throughout the economy and new reform measures are adopted. That acceleration, however, was limited to the industrial and service sectors where growth rates tripled from about 6% in the early period of the reform process to about 16% by the early 1990's. The fact that agriculture grew most rapidly in the early period of the reform process from 1978-1984 mainly reflects the sequencing of the reforms, i.e., first in agriculture and foreign trade, and then in industry by the mid-1980's (Perkins, 1994).

As the one-off efficiency gains from the shift to the household responsibility system were essentially reaped by the mid-1980's, growth rate of agriculture decelerated. This declining

trend was most pronounced among grains, oil crops, and cotton where price and marketing continued to be highly regulated. In contrast, for other crops, livestock and poultry, and fishery products, where price and market liberalization was more advanced, growth rates generally increased.

Rapid economic development has been accompanied by equally dramatic changes in the structure of the economy (Table 3). Because of trade liberalization, China has become a much more open economy with foreign trade growing at an even more impressive rate than national income. The value of exports relative to national income rose from 3% in 1970 7% in 1980, up to 20% by 1992, a three fold increase during the reform period.⁴

Consistent with the historical experience of developing nations, agriculture's share in the total economy has declined. The only exception was in the period 1978 to 1985, when agriculture's share in national income and total exports remained constant mainly because of the growth impact of institutional reforms in this sector. From 1970 to 1992, agriculture's contribution to national income fell from 41% to 29%, and in total employment from 81% to 59%. Within agriculture, the composition of gross domestic product also changed with the share of crops, specifically grains, oil crops, cotton, and other cash crops declining, in favor of livestock, fisheries, and other commodities.

The decline in agriculture's importance is even more marked in international trade. The share of agriculture to total exports was 37% in 1970 and as high as 75% when exports of

⁴ Judged in terms of the share of merchandise trade in GDP (more than 30% by early 1990's, China appears to be more than twice as open as India and Brazil, and significantly more open than the limited States and Japan (World Bank, 1994).

processed agricultural products are included. By 1992, that share was only 12%, and even including the share of processed agriculture which remained steady from 1980 to 1992, the share of raw and processed agricultural products was down to about 40%. It should be noted that agricultural import share also declined significantly. The agricultural sector in fact (including its value added contribution to processed agriculture) continue to be a net foreign exchange earner.

The declining importance of agriculture is a historical phenomenon common to all developing nations. China is a densely populated country with average farm size averaging less than 1 ha as early as the 1950's. With continued population growth on very limited land resources, the country's comparative advantage will rapidly shift away from land-using economic activities such as agriculture to more labor intensive manufacturing industries (Anderson, 1990). Moreover, growth in demand for agricultural products, despite rapid income growth, will be limited both in the domestic and international markets.

The issue is not so much the decline in agriculture's importance because that is an inevitable consequence of economic development. Rather, it is whether or not economic and institutional policies have accelerated this process by artificially reducing economic incentives, maintaining institutional arrangements that discourage private investments, and underinvesting in productivity-enhancing public goods such as irrigation and market infrastructure and agricultural research.

Most studies of the agricultural price and market policy reforms in China have focused on the changes in domestic procurement and distribution policies (Sicular 1989; Lardy 1987; Findlay et al., 1993). There has been much less attention on understanding the impact of other

commodity-specific policy instruments such as tariffs, export taxes, quantitative trade restrictions, and government trade monopoly on agricultural incentives. Even less is known about the impact of macroeconomic policies affecting the exchange rate. Yet, agriculture in China is, in general, tradeable and hence the social opportunity cost of agricultural production would depend on the world price at the border and the equilibrium or shadow exchange rate. Distortions in the exchange rate, specifically the overvaluation of the domestic currency, may be caused by the overall trade protection system, exchange controls, and a tendency to prolong disequilibrium in the balance of payments through unsustainable foreign borrowing and capital inflows. The overvaluation of the domestic currency have been found to lower agricultural prices by 20% to 30% in developing countries (Krueger, et al. 1991). And in many cases, the overvaluation of the domestic currency has been more important than commodity-specific policies in lowering agricultural incentives.

The Macroeconomic Environment

As in many other developing countries, China's domestic currency is widely believed to be overvalued. Under the socialist regime, China pursued an essentially autarkic development strategy, with self-sufficiency its central objective. Trade policy was highly restricted and carried out by only twelve state-run foreign trade corporations (FTCs). A rigid system of foreign exchange controls was in place whereby all export receipts were turned over to the Bank of China in exchange for domestic currency. Foreign exchange, in turn, was allocated to the state trading corporations according to the import plan. The nominal exchange rate was kept

virtually constant from 1950 to 1972 at about 2.25 yuan per dollar. And in the 1970's, the nominal exchange rate actually declined (or appreciated) to 1.68 yuan per dollar by 1978.

A new exchange rate policy was adopted together with the economic reforms instituted in the late 1970's. In 1981, the two-tier exchange rate system was introduced. The old rate of 1.5 yuan per dollar was applied to non-trade transactions (foreign remittances and tourism) while export earnings were allowed to be converted at a more favorable "rate of internal settlement" of 2.8 yuan per dollar, representing a 50% devaluation. In addition, a foreign exchange retention system was also adopted whereby a certain proportion of export earnings may be retained and freely used for imports, further raising the value of foreign exchange earned through exports. The rate of retained earnings was initially small (around 20%) and differed by categories of export products, central vs local level trade corporations, and even by regions. Retention quotas were allowed to be swapped among enterprises through the Bank of China.

In early 1985, the official exchange rate was unified at the internal settlement rate of 2.86, effecting another 24% devaluation. Moreover, the retention rate was raised to a minimum of 25% and as high as 100% in special export processing zones. The two-tier exchange rate system again reappeared with the establishment of foreign exchange adjustment or "swap" centers that allowed the exchange or "swapping" of retention quotas at a more depreciated secondary market rate. As the difference between secondary and official exchange rates widened in early 1986, the official exchange rate was again devalued to 3.72 yuan. A series of mini-devaluations resulted in a nominal exchange rate of 5.7 by late 1992 and 8.4 yuan by mid-1993.

Adjustments in the official exchange rates were accompanied by further liberalization of the retention quotas. Higher retention quotas permitted nearly 80% of total export earnings to

be retained. Foreign exchange adjustment centers (FEACs) were also allowed to convert foreign exchange directly to domestic currency at the secondary market rate, reducing the transactions costs of foreign currency exchange. And with greater competition among FEACs, a more favorable exchange rate prevailed.

To infer how exchange rate policy may have affected agricultural incentives over time, however, we examine the trends in the real exchange rate. A nominal exchange rate devaluation will only be effective in raising the price of tradeables, relative to non-tradeable goods if inflation does not erode the increase in the exchange rate. A real depreciation of the domestic currency will increase the local currency prices of tradeables relative to non-tradeables and contribute to the price competitiveness of domestic exports. Since agricultural products are generally tradeable, agricultural incentives may be expected to increase with real depreciations of the domestic currency and decrease with real appreciations.

In Fig. 1, the trends in the official exchange rate and the black market rate (corresponding to the secondary market rate) in nominal and real terms are depicted. The black market rate premium which was as high as 40% in some years, reflects the impact of foreign exchange controls and thus a partial measure of the degree of domestic currency overvaluation.

China's exchange rate policy during the reform period has clearly been successful in effecting substantial depreciations (increase) in real exchange rate. Whereas real exchange rates remained constant, and even appreciated over three decades prior to the reform period, the real exchange rates rapidly depreciated during the reform period except for a couple of years after 1985. Within less than 15 years, the real exchange rate depreciated by more than 400%. Evidently, nominal exchange rate depreciations were not eroded by inflation despite significant

expansion in the money supply. The success of the exchange rate adjustments stemmed mainly from the productivity effects of institutional and economic reforms in agriculture, foreign trade, and industry which contributed to the relatively low inflation (Intal, 1992). China was second only to Indonesia (and in the early 1990s, also India) in pursuing aggressive adjustments in the real exchange rate in the region over the past two decades (see Appendix Figure 1). The very favorable trends in the real exchange rate sharply increased export competitiveness and thus significantly contributed to the phenomenal export growth record and consequently the spectacular growth performance of the country in the 1980's.

Whether and to what extent the potentially favorable effects of the real exchange rate depreciation was reflected in agricultural incentives depends on what has happened to commodity-specific price and market interventions. With the opening up of agricultural trade and government's increasing unwillingness to cover deficits of agricultural trading operations, the trends in the real exchange rates will ultimately affect domestic pricing policy indirectly as well as market prices directly. In the following section, we first discuss the evolution of price and market reforms in the domestic procurement and distribution system and then the changes in foreign trade policies.

Evolution of Price and Market Reforms

Domestic price and marketing policies

Prior to the reform period, domestic and international marketing of agricultural products was handled mostly by a complex set of government institutions. The degree of government regulation and market competition allowed depended on the category of the product. Category

I products considered to be of strategic importance to the economy were subject to "unified" state procurement and distribution system (*tonggou*). It included grains (i.e., rice, wheat, corn, soybeans and other coarse grains), cotton, and edible oils which together accounted for about 80% of sown area. Marketing of these products was essentially a monopoly of the state which determined both producers' and consumers' prices. Moreover, production was carried out based on planned acreage, target volume, quality, and variety of production, ratio between home consumption and sales, and delivery date. Production and price policies were aimed at pursuing food self-sufficiency, price stability, and strong worker-peasant alliance.

Except for the amount used for the farm-households' home consumption for food, feed, and seeds, all production in Category I was procured only by the state at quota prices for a specified (compulsory) amount. Since the early 1960's, the state also procured any surplus production beyond the quota and home consumption at above quota prices to provide an incentive to increase production. A very limited amount was allowed to be bartered among farmers.

Category I products were sold by government agencies to urban consumers and rural households in grain deficit regions at ration prices upon presentation of coupons.²¹ Outside the ration quantities, category I products were also sold by the state at "resale" retail prices, mostly to rural households who were chronically short of grains because of low income or who have suffered from natural disasters.

²¹ These coupons were distributed on a per capita basis depending on age, type of employment, and other determinants of caloric requirements. For example, for grains, the monthly ration varied from 3.5-4.0 kg for children under 3 years to 25-28 kg for workers engaged in heavy labor.

Category 2 products were those subject to "designated or assigned procurement" (*paigou* or *tongi shougou*), i.e., a certain quantity or percentage of production must be sold to the state on a compulsory basis at quota prices but the surplus over the quota was allowed to be traded in the private markets. Over one hundred products fell under Category 2, including pork, eggs, tobacco, tea, silkworm, cocoons, sugarcane, sugar beet, raw lacquer, hemp and flax, animal hides, wool, major aquatic products, and fresh and dried fruit. These products were sold by government stores at administered fixed prices and by private traders at market prices. Although there was no widespread rationing of these products, some commodities such as pork, eggs, and others were occasionally rationed at the local level.

The third category included all other agricultural products outside Categories 1 and 2 that were mainly for local use and not for urban-rural exchange. Local government agencies procure these products based on negotiated contract sales according to mutually agreed prices. In general, these products were not subject to compulsory state procurement or price controls. And with few exceptions, these were sold freely in local rural markets.

The price and market reforms initiated in the late 1970's were aimed at raising farm level prices and gradually liberalizing the market, rather than making any fundamental change in the state pricing or procurement system. These reforms consisted of increases in quota and above quota prices; reductions in quota levels; and introduction of above quota bonuses for cotton, tobacco, and other cash crops, negotiated procurement of surplus production of grains, oils, and most other commodities, and flexibility in marketing of surplus production of all categories of agricultural products privately. Nonetheless, the limited and differential rates of liberalization of the different commodity markets have had substantial impact on productivity and commodity

composition at the farm and national levels. The shift from the collective and household responsibility system raised the price responsiveness of farm-households. As the right to private trading was extended to include surplus output of all categories of agricultural products after contractual obligations to the state were fulfilled, the foundations of the state marketing system began to be undermined.

The agricultural procurement prices directly under state control declined from 111 in the late 1970's to 81 in 1983 and that of agricultural sale price from 26 to 21. The free market at wholesale and retail levels expanded rapidly as the proportion of agricultural goods controlled by the state declined. The number of urban and rural markets grew from 33,000 to more than 60,000 in 1985 (Sicular, 1989). Moreover, difficulties were encountered in enforcing the multi-tiered procurement prices as farmers tried to shift their sales to high price categories. With higher levels of production, a greater proportion of government procurement at negotiated prices, and a constant ration sale price since the early 1960's, the budgetary cost of price subsidies rose dramatically. And procurement targets at quota prices could not be met.

After a record growth in agricultural production in 1984 and 1985, a second stage of price and market reforms was announced in 1985 aimed at radically limiting the scope of government price and market interventions and further enlarging the role of market allocation. The unified procurement system for grains and cash crops such as rapeseed, cotton, hogs, tobacco, and silk was to be replaced by a voluntary state contract procurement system and the number of commodities with listed sale price (i.e., under retail price control) was reduced further to 17. Farmers and state commercial departments were to negotiate purchase contracts before the planting season at the weighted average quota and above quota prices. Surplus

production may be freely retained for home consumption, sold to the market, or sold to the government at a low, guaranteed price equal to the old quota prices. There is no obligation for the government to purchase more than the contracted amount. On the other hand, the government may wish to purchase supplemented amounts at the market price. Other than for grains and cotton, however, the intention was to gradually eliminate planned procurement of agricultural products; and government commercial departments may only continue to buy and sell at the market.

Because of the sharp drop in agricultural production and severe food price inflation after 1985, however, implementation of the new policy was stalled. Mandatory procurement of grains, oil crops, cotton, and other cash crops continued at the "contract price" which basically was a weighted average of the former quota and above quota price. Inter-regional trade also continued to be restricted and price control of meat and key vegetables were imposed by local governments. To provide more incentive, for farmers to raise productivity and sell to the government, contract prices were raised over time. Also the procurement contracts were paid in advance and linked to low priced sale of fertilizers and diesel.

As agricultural production and prices stabilized in 1990-1992, another attempt was made to essentially abolish the compulsory quota system and the sale at ration prices to urban consumers in early 1993. The lifting of price subsidies to grains and other food commodities did not meet much political resistance from the urban consumers because government salaries were raised simultaneously and the proportion of income spent on grains has dropped from more than 20% of total household expenditure in the late 1950's to about 8% by the late 1980's (Lin, 1995). Indeed, at least 20% of households purchase better quality grains from the free market.

Because the procurement quota was prescribed in terms of quantity, farmers produce grains with high yields but low quality to meet the quota. Neither was there any resistance from the government agencies concerned because of the increasing difficulties in obtaining budget allocations for price subsidies.

While the distribution system has been successfully liberalized, at least for grains and other foods, the state compulsory quota system was again reimposed when production of grains, cotton, and oil seeds declined. Indeed, an incentive system was established to ensure that agriculture officials at both central and local levels to strictly enforce the quota system.

For grains and oil seeds, concern for self-sufficiency objectives mainly motivate the retention of the quota system. In contrast, the central and local government units which largely operate the agro-processing industry using cotton, silk, and tobacco as raw materials, resist the abolition of the quota system for these products to keep low prices of their raw materials.

Foreign trade policies

Although marketing of a substantial portion of the agricultural sector has been freed from direct government controls, these market prices nonetheless continue to be influenced by government trade interventions, in terms of tariffs, quantitative trade controls and licensing, and so forth. Indeed, these trade policy interventions also influence government procurement prices directly and indirectly to the extent that the government competes with private traders in purchasing farm products.

Significant changes in the nature and extent of government trade interventions have also occurred during the reform process. Prior to the reform period, the allocation of imports and

exports including foreign exchange were strictly based on administrative planning and undertaken by 12 foreign trade corporations. The process of trade policy reform has involved the introduction of greater competition in international trading and the gradual development of instruments for indirect controls. In 1984, the foreign trade system was decentralized considerably, with the provincial branches of national FTCs allowed to become independent and each province allowed to create its own FTCs. By 1986 there were 1200 FTCs, and by the early 1990's they number more than 3000. The foreign trade of what is considered strategic products such as food grains, textile fibers, chemical fertilizers, however, continue to be restricted to specialized national trading corporations to have stronger controls on levels of exports and imports of these products.

Table 4 shows the structure of the present tariff system affecting agricultural products and inputs, such as urea. While these tariffs are relatively high except for cereals, live animals, feed stuff, and fertilizers, there is a significant degree of redundancy in the tariff protection. Some are exportable, and many are non-traded. On the other hand, quantitative trade controls either through import/export controls and licensing are commonly applied to agricultural products, or in some cases tariff exemptions may be granted. Import controls/licensing may be aimed at protecting domestic producers, such as in fertilizers. On the other hand, export controls/licensing have even adopted either to capture some monopoly rents in the world market, specifically Hongkong, in the case of beef, pork, and vegetables. In the case of rice, maize, and textile fibers, export controls/licensing have been aimed mainly to keep domestic prices low to domestic consumers/agro-processing industries.

Trends in nominal prices

The trends in the different producers' and consumers' prices in nominal terms are presented in Fig. 2 for rice, wheat, corn, soybeans, rapeseed, cotton, and pork and in Fig. 2a for urea. In the early years, the government has procured these products at quota prices and for later years at above quota and negotiated prices. For pork, where there are no compulsory quotas, the average procurement price is shown. The "mixed" price was derived from the reported index of unit value of procurement (i.e., value divided by amount procured). The government sells to consumers at state ration price for specified quantities and in unlimited amounts at retail prices. The reported free market price is basically at wholesale price level.

Although the procurement quota system has not been successfully dismantled after nearly 15 years of economic reforms, the trends in producer prices clearly indicate dramatic changes in price and markets policies (Fig. 2). With the exception of rapeseed, producer prices increased only by 50% to 100% over the three decades prior to economic reforms. In fact, for cotton and pork, there was hardly any change in procurement prices.

At the beginning of the reform period, quota prices were raised by 22% for grains, 26% for oils, 26% for hogs, 22% for sugar, and 28% for cotton (Sicular, 1989). Above quota prices for grains were also increased from 30% to 50% of quota prices and were introduced for cotton, tobacco and other industrial crops. Within only 15 years of the reform period, quota prices increased up to more than 200%. Increases in producers' prices were actually higher because the proportion of grains procured at the above quota and negotiated prices, and market prices also increased. Biggest price increases were experienced for rice, pork, and cotton, which are major agricultural exports. The degree of price changes varied widely among agricultural

commodities. Quota prices of rice, wheat, corn, and soybeans prior to the 1980's were about the same. But the differential rates of price increases during the reform period, brought the relative prices among grains closer to price relationships in the world market reflecting the impact of market liberalization policies.

Whereas producer prices appear to have been gradually liberalized since the beginning of the reform period, the low consumer price policy was, in fact, intensified up to 1990. In the 1950's, state ration prices were set at about 5% to 15% higher than procurement prices to cover a reasonable cost of marketing and rate of profit. As procurement prices increased more rapidly than state ration prices, the margins dwindled and quota and ration prices became equal for rice, corn, and soybeans by the mid-1960's and as early as the mid-1950's for rapeseed. As rationed prices for grains and oil seeds remained constant from the mid-1960's up to 1990, while procurement prices increased rapidly, the budgetary requirements to finance the deficits sharply increased. Price subsidies represented over 20% of total government expenditures by the early 1980's (Huang and David, 1995). This ratio has subsequently declined after 1985 to about 10% in the late 1980's, and down to about 7% by 1992. Another major problem was the accumulation of grain stocks that could not be easily sold in the domestic and export markets. Because of the low procurement prices, farmers focused on increasing yields rather than improving grain quality. Thus, the grains government procured generally had low quality. As incomes increase, urban consumers preferred higher quality grains that are often sold in the free market at higher negotiated prices. The price of low quality rice was also heavily discounted in the world market.

With the abolition of rationed price sales in the early 1990's, government sale prices quickly approached market prices. Although government salaries were raised to compensate for the removal of consumer price subsidies, the lack of any strong political resistance to sharp increases in food prices is quite remarkable.

Distribution of procurement and sales

In order to gain some understanding of the relative size of government procurement and distribution, the trends in the ratio of state procurement to total production of selected agricultural commodities are reported in Table 5. Table 6 presents the state procurement of grains at quota and above quota prices and at negotiated prices. Similarly, the distribution of state grain sales between planned (ration) and negotiated (retail) is reported in Table 7.

The procurement ratios are lowest for grains (about 20% in the 1970's) because of the high proportion of output used for home consumption as food, feed, and seed. The state also is the dominant buyer of pigs (about 60% to 70% of output) and edible oil (over 50%) for sale to the urban markets, meat processing industries, and foreign market. The remaining share is for home consumption as well as for rural-rural exchange.

The marketing of cotton, sugar, tobacco, and other cash crops such as silk continue to be largely a government monopoly under the reform period because the agro-processing industries are largely owned by local and central government enterprises. The proportion of pig output procured by the government has not significantly changed overtime, though a declining trend has been apparent since the late 1980's. A slow, declining trend can also be observed for sugarcane and tobacco, crops grown mostly in southern China where market and institutional

reforms have been more rapidly adopted. The increasing proportion of state procurement of grains and edible oil particularly in the 1980's, is somewhat unexpected. This may be explained, however, by the low income elasticity of the home consumption ratio to production that results in higher marketable surplus. But the main reason is the government's willingness to purchase more at the higher negotiated price. Table 6 shows that the proportion of state procurement at negotiated prices has grown to about 15% of total procurement for rice and wheat, and as high as 70% for corn, soybeans, and other coarse grains. For state grain sales, the proportion of grains sold at the higher negotiated price has also increased particularly for corn and soybeans because of increasing export ratios (Table 7).

Impact of Commodity-Specific Policies

To measure the impact of government policy on agricultural prices, domestic price is compared with the price in the absence of government intervention or under free trade. Since agricultural products and inputs are in general tradeables, the latter would usually correspond to the border price, i.e., CIF world price for importables and FOB world price for exportables. Prices must, of course, be compared at the same level of processing, quality of product, and point in the marketing chain.

The impact of commodity-specific price interventions such as the domestic procurement and distribution system, tariffs, exports taxes, quantitative trade restriction on domestic prices is estimated by the nominal protection rate (NPR), the percentage difference between domestic and border price converted at the official exchange rate. To measure the total effect of government interventions, including the effect of exchange rate distortions, the net nominal

protection rate (NNPR) may be estimated, i.e., the percentage difference between domestic and border price converted at the equilibrium exchange rate. Since China's pricing policy cause the producers' and consumers' prices to differ by more than the normal marketing cost, a separate NPR for producers and consumers need to be estimated.

Estimation of NPRs for China is complicated by several factors. First, producers as well as consumers face more than one price, but there is no available time-series data on the volume of government procurement or sales by specific price category, quantity of home consumption, and quantities sold by farmers and government at the free market price. The relevant price to use depends on how the NPR is to be interpreted. Based on the neo-classical theory Sicular (1988) argued that in the presence of markets, farmers will respond at the margin to the free market price and not to the quota price applied to a fixed quantity dictated by the state, which is like a lumpsum tax. Thus, to analyze how government policies affect resource allocation at the margin, the free market price is the relevant domestic price to use in estimating NPRs. In a recent paper, however, Lin (1992) counterargued that both the quota price and amounts are not exogenous, but affected by previous production levels. He then showed theoretically and empirically that procurement prices also affect farmers' decision making at the margin. Yang (1993) also disagreed with Sicular's analysis, based on the observation that a significant number of farmers do not produce a surplus to sell in the free market, or are able to evade fulfilling state quota requirement. His econometric analysis indicated that the state purchase price has a more significant effect than the free market price in farmers' grain production decisions. In any case from the point of view of analyzing the income distributional effects of pricing policy, all the different prices are relevant.

Second, determination of quota levels and the different procurement prices have been decentralized and regional barriers to trade were often imposed exacerbating regional differences in procurement and market prices. Because of lack of region-specific price data, however, regional difference in the policy impact, while reportedly significant for certain regions and years, could not be analyzed.

Third, the use of border price to represent the price that would have prevailed at the margin in the absence of government interventions may be subject to question for a number of commodities China exports and imports. Being a large country, China accounts for a substantial proportion of world production and trade of a number of its major agricultural products, such as rice, wheat, and in recent years, maize. Thus, the level of its exports or imports may affect world prices of these commodities. Even if China's rice exports constitute a very small amount of its total production, those changes can significantly affect the world rice price because the world rice market is quite thin, amounting to only 3% of global rice production. Since there are no available estimates of elasticity of world demand and supply for China's major agricultural exports and imports, it was not possible to estimate marginal export or import prices in this study. Caution must simply be taken in the interpretation of our estimates of NPRs which use border price.

Fourth, for the estimation the NPR, there is a question of what the relevant exchange rate to use, i.e., the official, secondary, or a weighted average of official and secondary exchange rate to use. As mentioned earlier, a certain proportion of imports or exports may be allowed to be transacted at the official low or secondary high exchange rates. But since data on these

proportions which may differ across commodities and type of corporation and change over time, are not available, a weighted nominal exchange rate was not possible to use.

Fifth, there has been no rigorous empirical estimation of the degree of yuan overvaluation and its changes over time. Such estimation is extremely difficult because of the preponderant use of non-tariff barriers and is also beyond the scope of this study. Yet, the degree of currency overvaluation is expected to be substantial because of the high degree of trade interventions that continue to prevail. Over 50% of the country's foreign exchange earnings are still subject to central government control. Weighted average nominal tariff is 32% and 50% of imports are subject to some form of non-tariff barriers. Supply of foreign exchange is also artificially reduced by a wide array of export controls and export taxes. In 1992, export licensing covered over 15% of China's exports and 54 product categories are subject to export taxes. International trade of certain agricultural outputs and inputs, such as grains, pork, fertilizer and so forth continue to be a monopoly of state-level trade corporations.

In Table 8, we show estimates of nominal protection rates based on various producers' and consumers' prices from 1970 to 1993 for selected agricultural commodities namely, rice, wheat, maize, soybeans, rapeseed, cotton, and pork. These NPR's were calculated using the official exchange rate to compare domestic and border prices. In Table 9, we show the estimated NPR's for the same commodities based on the black market rate, beginning in 1975 when the data on BM rate became available. As shown in Fig. 1, the ratio of the BM to the official exchange rate changed over time, reaching peaks just before the devaluation in 1981, 1984, 1990, and 1994 as of high as 75%.

It should be noted that the BM rate is about equal to the secondary or swap market exchange rate, and thus the NPR in Table 9 reflect the effect of the two-tier exchange rate system. The two different estimates of NPRs represent upper and lower bounds of the degree of protection or disprotection due to commodity-specific and exchange rate policies. The exact rate of nominal protection rate depends on the proportion of foreign exchange earnings from exports or foreign exchange requirements of imports that can be sold or purchased, respectively, at the official vs the blackmarket or secondary exchange rate which may differ across commodities and trading corporations and over time. It should be emphasized that the blackmarket rate does not correspond to the equilibrium exchange rate which would have prevailed under free trade situation.

The NPRs implied by the government procurement prices pertained to quota and above quota prices up to 1984 and to quota and negotiated prices afterwards. Data on negotiated prices were often not available. However, an index of the average procurement price is published and this was converted into an actual average procurement price using an estimated price when the distribution of procurement by type of price was available. The NPR faced by consumers is based on the government price to the consumer as indicated by

the ration sale price for grains and rapeseed and by the retail price for pork. For cotton, the NPR based on procurement price represent the rate of protection for both producers and consumers. Because there is often little difference between government and market prices for pork and cotton and relatively small proportion marketed privately, no data series on market prices were available. No attempt was made to adjust domestic or border price to account for domestic marketing cost because of lack of data. Appropriate adjustments were made to correct for differences in the level of processing.

Several observations may be made from Table 8 and 9. Except for rapeseed, the quota prices consistently represented a disprotection to farmers. The estimated rate of disprotection, as expected, is more severe when the blackmarket rate is used as the exchange rate. Even the quota price for rapeseed implied a negative protection at the blackmarket rate.

The introduction of above quota, and later negotiated sales, significantly reduced the disprotection from government procurement operations (see NPRs on average procurement prices). Note, however, that the NPRs based on the blackmarket rate remain negative. And only rapeseed received consistently positive NPRs at the official exchange rate.

Not surprisingly, the most heavily taxed commodities are the exportables -- rice, corn, soybeans, pork, and cotton. Importables are more favored, such as wheat, and particularly rapeseed. The most heavily taxed commodity is cotton mainly to reduce the cost of raw materials to the agro-processing industries. NPR for pork is the lowest among the commodities included in the table. When the implicit subsidy due to the artificially lower price of feed ingredients such as rice, corn, oil cake and meal are considered, however, the effective rate of protection is substantially raised. World Bank (1994) estimates EPR for animal husbandry to be about zero, despite a -30% estimate of NPR in 1991. Moreover, because the main destination of pork exports is Hongkong where it dominates the market,

an optimal rate of export taxation is called for.

Among grains, the most heavily taxed is rice which has the lowest NPR based on both the average procurement and market price. Aside from the lower quota price NPR for rice, the proportion of grain procurement at the higher negotiated price is typically higher for corn and soybeans (Table 6).

It is interesting to note that the proportional difference between market and average procurement price is much greater for corn and soybeans compared to rice. Evidently, export controls are more restrictive on rice, the main food staple. With more liberal policies on corn and soybeans, and possibly also a greater proportion of export revenues that can be converted at the secondary or blackmarket rate, the market price is relatively higher than average procurement price for corn compared to rice.

Except for pork, the rate of consumer subsidization implied by the ration price policy has been generally higher than implicit taxation of producers, based on the same exchange rate. This suggests that consumer price subsidies were supported not only by the low procurement price policy, but also by direct budgetary allocations.

The rates of consumer ration price subsidies increased in the reform period, as ration prices remained constant up to the late 1980's. The removal of the ration price sales in 1993 sharply increased consumer prices. But at the black market rate, consumers continue to receive significantly price subsidies for rice, wheat, and pork.

Despite substantial efforts to liberalize the price and market structure of the agricultural sector, most major agricultural commodities continue to be heavily penalized by commodity specific policies. When the impact of the overvaluation of the domestic currency due to the trade protection system is considered, the agricultural incentives would even be more undervalued. These distortions in price incentives depress agricultural production and

redistributes income from farmers to urban consumers and the agro-processing sector.

Examination of the trends in real price of major agricultural commodities shown in Fig. 3 suggests, however, that economic reforms did improve the relative price of agricultural commodities in the country. Whereas world prices in real terms have generally declined in the 1980's, domestic prices, including agricultural procurement prices have increased. Indeed the real prices to producers of the minor crops, such as fruits and vegetables, that are not subject to quota policies would have increased even sharper. It should be stressed, however, that the rapid real depreciation of the exchange rate has been a major factor raising agricultural incentives. In fact, farm producers did not seem to capture the full benefit of the currency depreciation as the NPR for the procurement price did not correspondingly decrease after the reform period, such as in cotton and pork.

Concluding Remarks

China's policy makers recognize the role of prices and market competition in determining production and efficient allocation of resources. Price and market reforms, therefore, has been a key component of the country's development thrust as it gradually shifts from a socialist to market oriented economy. While the institutional transformation from a collective to a household responsibility system of farm management was essentially completed by the early 1980's, the process of price and market reform has not been completed after one and a half decade. Although there has been definitely a decisive trend towards liberalization, the process has been characterized by cycles of deregulations and reinstatement of controls, as well as the balkanization of many agricultural markets (Findlay et al 1993). Moreover, our analysis of trends in nominal protection rates showed several cases where nominal protection rates have declined, rather than increased, with rapid economic development, as

predicted by the political economy theory of agricultural protection. China's case is unique because of its socialist history. The state not only balances the interests of producers and consumers, the state itself often considers its own interest as a bureaucracy, as a direct and indirect consumer of agricultural products in its own commercial enterprises, and prior to the reform period, also as a producer of agricultural products.

With greater decentralization in the state enterprise system, as well as of policy making, not only has there been clamor for protection against foreign competition, but also protection against regional competition. Internal barriers to trade has been erected for example, to protect the local government-owned processing industries. In order to reduce local government subsidies to urban consumers of grains and oilseeds, internal barriers to trade has been imposed to keep market prices and thus negotiated procurement prices low.

The decentralization of government on the other hand has increased pressure to further liberalize markets. For example, in the more progressive areas of China, such as Guangdong, Shanghai, Zhengjiang, and Beijing, the local governments themselves are pushing for market liberalization as the generally higher income of urban consumers, has shifted demand to higher quality grains and other agricultural products. The stocks of low-quality grains procured by the state accumulate, involving great cost to the local government. On the other hand, the high opportunity cost of labor makes agricultural products unprofitable. Yet, the farm household has to allocate a certain amount of labor to grow the quota production. The government realizes that the province is going to benefit more if farm households are completely free to choose the crops to grow, in this case, the high valued or less labor intensive crop or to participate in the non-farm employment. Indeed, the local government would profit by being able to import better quality grains at a low price than procure low quality grain that cannot be sold. Since the local government also owns much

of the rural industry, it will benefit from the lower wages caused by the greater labor supply.

It is ironic that in 1993, a greater degree of price liberalization has occurred on the retail prices of food commodities where the consumer is the general public. Since the state and local governments own a large proportion of agro-processing industries, there has been greater and more effective resistance to liberalize the trade on raw materials such as cotton, silk, tobacco, etc. than in the food crop sector. Thus, completion of price and market reforms in agriculture, hinges on the progress of enterprise, foreign exchange, and trade reforms.

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Table 1. Average growth rates of gross domestic product, agricultural value added, food production per capita, agricultural exports in selected South and Southeast Asian countries, 1970-1992 (%).

	1970-1980				1980-1992			
	Gross domestic product	Agriculture gross value added	Food per capita	Agriculture export	Gross domestic product	Agriculture gross value added	Food per capita	Agriculture export
China ^a	5.7	2.7	1.5	13.1	8.5	5.6	2.7	9.1
Indonesia	8.4	4.4	1.4	17.5	5.2 ^e	2.8 ^c	2.1	2.6
Malaysia	9.1	6.5	5.1	17.5	6.2	3.4	3.9	1.8
Thailand	6.7	4.2 ^b	2.1	20.7	7.5	3.6	0.5	5.2
Philippines	6.1	4.9	1.6	14.3	1.5	1.1	-1.4	-3.2
India	3.9	1.8	0.2	14.3	5.6 ^c	3.8 ^d	1.6	5.1
Pakistan	5.3	3.0	0.5	15.5	6.0 ^d	4.2 ^d	0.9	1.6
Nepal	2.0	0.8	-0.9	-1.8	4.5	4.6	1.1	-1.0
Bangladesh	4.7	1.4	-1.2	0.1	4.0	2.9	-0.3	-1.5
Sri Lanka	3.7	1.9	1.2	7.8	4.1	1.8	-1.6	-0.4

^a Refers to China and Taiwan.

^b Average of 1972-80.

^c Data up to 1990 only.

^d Data up to 1991 only.

^e Data from 1983.

^f Data from 1980.

Source: 1970-80 GDP and GVA growth rates data from FAO Production Yearbook.
1980-92 GDP and GVA growth rates data from ADB Key Indicators.

Table 2. Growth rates of national income by sector and selected agricultural commodities (%).^a

	<u>Pre-reform</u>	<u>Reform period</u>			
	1970-78	1978-84	1984-90	1990-92	1978-92
National income	4.9	7.9	8.6	11.0	9.0
Agriculture	2.7	11.5	6.0	1.7	7.6
Grains	2.8	4.7	1.8	-1.0	2.7
Rice	2.5	4.5	1.2	-0.8	2.3
Wheat	7.0	7.9	1.8	1.1	4.5
Corn	7.0	3.7	5.3	-1.8	4.1
Soybeans	-1.9	5.1	1.3	-3.7	2.6
Oil crops	2.1	14.9	1.5	0.9	7.2
Fruits	6.6	7.2	11.5	14.1	10.6
Cotton	-0.4	19.3	-3.5	0	5.1
Pork, beef & meat	4.4	9.1	8.0	8.2	8.5
Aquatic products	5.2	5.4	12.6	12.2	10.4
Industry	6.8	5.9	9.4	15.1	8.9
Others	4.6	5.8	11.8	16.9	12.3
Population	1.9	1.2	1.7	1.2	1.4
Per capita national income	3.0	6.7	6.8	9.7	7.5

^a Growth rates are computed using regression method. Growth rates of individual and groups of agricultural commodities are based on production data; sectoral growth rates refer to value added.

Source: SSB, Statistical Yearbook of China, 1993.

Table 3. Changes in the structure of China's economy (%).

	1970 ^a	1980	1985	1990	1992
Rural share in total population	83	81	76	74	72
Share in national income					
Agriculture	41	37	37	33	29
Crops		73	64	57	56
Livestock		18	21	27	27
Fishery		2	4	6	7
Forestry		4	5	4	5
Sideline		4	6	6	6
Industry	46	53	51	53	56
Services	13	10	14	15	15
Share in employment					
Agriculture	81	69	62	60	59
Industry	10	18	21	21	22
Services	9	13	17	19	20
Share in exports					
Agriculture	37	19	18	13	12
Processed agriculture	38	29	29	29	na
Industry and others	25	52	53	58	na
Share in imports					
Agriculture	na	34	14	16	11
Manufacture and others	na	66	86	84	89
Export ratio to national income	3	7	11	16	20

^a These are 3-year averages centered at year shown.

Source: Export data are from Almanac of China's Foreign Economic Relations and Trade, Various issues; the other are from A Statistical Survey of China, 1994 and SSB, Statistical Yearbook of China, 1993.

Table 4. Average tariff levels by groups of agricultural outputs and inputs, China 1992 (%).

	Weighted ^{a/}	Unweighted
Agricultural products		
Meat & edible meat	50.2	51.3
Fish and crustacean, mollusc & other invertebrate	30.9	33.6
Dairy products, eggs, honey	32.7	57.0
Products of animal origin	31.0	32.7
Live tree and other plant	58.1	52.4
Edible vegetables, roots & tubers	28.7	45.5
Edible fruits and nuts	44.4	56.3
Coffee, tea, mat	50.5	46.1
Cereals	3.0	3.0
Prod. mill indust.; malt; starches; insulin; wheat gluten	41.1	33.2
Oil seed, oleaginous fruits; miscell. grain, seed, etc.	33.9	33.6
Latex; gums, resins & other vegetable saps & extracts	30.1	41.2
Vegetable plaiting materials	25.2	38.2
Animal/veg. fats & oils & their cleavage products, etc.	27.8	35.7
Prep. of meat, fish or crustaceans, molluscs, etc.	70.0	70.0
Sugar and sugar confectionery	39.9	51.6
Cocoa and cocoa preparations	38.9	35.6
Prep. of cereal, flour, starch/milk products	60.0	60.0
Prep. of vegetables, fruits, nuts or other parts of plants	60.9	60.8
Miscellaneous edible preparations	77.9	72.1
Beverages, spirits and vinegar	88.2	118.0
Residues and waste from food industry	6.8	22.1
Tobacco and manufactured tobacco substitutes	143.4	116.7
Silk	59.0	61.4
Wool	24.2	57.0
Cotton	48.0	45.9
Agricultural Inputs		
Fertilizers	5.0	5.4
Inorganic chemicals, incl. agricultural chemicals	18.4	18.9
Plastic and articles thereof	32.8	37.7
Vehicles, including tractors	77.8	59.4

^{a/} Based on trade values

Source: China Foreign Trade Reform, A World Bank Country Study, February 1994.

Table 5. Ratio of state procurement to total production of selected agricultural commodities, China (%).

Year	Grains	Edible oil	Cotton	Sugar		Tobacco	Pig
				Cane	Beet		
1970-74	21 (99)	54	92	82	93	100	61
1975-79	21 (97)	55	94	77	91	98	66
1980-84	28 (86)	70	97	69	91	97	71
1985-89	34 (58)	73	94	72	90	87	65
1990-92	36	71	94	77	91	88	62

Note: Figures in parentheses are percent share of grains procured at quota and above quota price; the residual is the share procured at negotiated price.

Source: SSB, Statistical Yearbook of China, various issues; Chinese Commercial Statistical Yearbook, various issues.

Table 6. State procurement of grains by commodity and type of purchase, China (million tons),^a

Year	Rice			Wheat			Others		
	Total	Q & above quota	Negotiated	Total	Q & above quota	Negotiated	Total	Q & above quota	Negotiated
1977	20.0	18.9 (94) ^b	1.1	11.8	11.0 (93)	0.8	19.3	17.9 (93)	1.4
1979	22.0	19.9 (90)	2.1	15.6	14.9 (96)	0.7	21.6	19.2 (89)	2.4
1980	22.1	18.8 (85)	3.3	14.0	12.6 (91)	1.3	22.6	18.7 (82)	4.0
1981	24.2	20.5 (85)	3.7	14.2	12.2 (86)	2.0	24.2	19.3 (80)	4.9
1982	29.0	21.4 (74)	7.6	19.3	14.6 (76)	4.7	25.3	20.2 (80)	5.1
1983	33.1	31.0 (94)	2.1	27.6	26.2 (95)	1.4	38.0	34.0 (89)	4.1
1984	38.6	36.4 (94)	2.2	34.3	32.1 (94)	2.2	38.8	33.8 (87)	5.0
1985	30.1	24.0 (80)	6.2	26.7	23.1 (87)	3.5	22.5	12.5 (56)	10.0
1986	32.6	23.2 (71)	9.4	28.4	22.6 (79)	5.9	33.5	16.4 (49)	17.1
1987	31.4	19.8 (63)	11.7	28.2	17.7 (63)	10.5	39.6	19.4 (49)	20.2
1988	30.8	17.6 (57)	13.2	26.1	15.7 (60)	10.4	37.4	17.2 (46)	20.2
1989	36.3	19.6 (54)	16.7	28.6	16.9 (59)	11.7	35.6	12.4 (35)	23.2
1990	31.5	20.2 (64)	11.3	25.5	17.0 (67)	8.5	36.9	13.0 (35)	23.9
1991	31.2	18.8 (60)	12.5	30.0	17.4 (58)	13.2	37.0	11.4 (31)	25.6
1992	31.0	17.3 (56)	13.7	34.5	17.8 (51)	16.7	37.0	11.0 (30)	6.0

^a Figures in the table cover only the state procurement of grains by state commercial agencies, excluding those purchased by the other state agencies.

^b Figures in parentheses are percent share of procurement at quota and above quota price.

Source: SSB, China's Trade and Price Statistical Materials, 1952-1983, various issues; Statistical Yearbook of China, various issues; and Chinese Commercial Yearbook, various issues.

Table 7. State grain sales by commodity and type of price, China (million ton).^a

Year	Rice			Wheat			Others		
	Total	Planned	Negotiated	Total	Planned	Negotiated	Total	Planned	Negotiated
1979	18.3	17.6 (97) ^b	0.6	19.4	18.8 (97)	0.6	19.1	18.1 (94)	1.1
1980	20.1	18.4 (92)	1.7	22.6	21.3 (94)	1.3	21.5	19.6 (91)	1.9
1981	21.3	19.2 (90)	2.1	25.7	23.9 (93)	1.8	25.6	22.6 (88)	3.0
1982	22.9	20.0 (87)	2.9	28.6	26.5 (93)	2.1	25.6	22.6 (88)	3.0
1983	25.0	21.6 (86)	3.4	30.1	27.4 (91)	2.7	25.0	20.7 (83)	4.3
1984	34.4	25.0 (73)	9.4	37.0	30.6 (83)	6.4	32.8	21.9 (67)	10.9
1985	30.1	23.4 (78)	6.7	30.8	26.1 (85)	4.7	24.8	15.7 (63)	9.1
1986	32.4	25.5 (79)	6.9	36.2	30.7 (85)	5.5	27.9	15.4 (55)	12.5
1987	30.8	22.8 (74)	8.0	36.4	28.9 (79)	7.5	24.7	13.5 (55)	11.2
1988 ^c	28.2	22.0 (78)	6.2	35.8	28.8 (80)	7.0	36.9	17.0 (46)	19.9
1989	25.7	21.1 (82)	4.6	35.2	28.7 (82)	6.5	28.4	15.0 (53)	13.4
1990	27.7	22.4 (81)	5.3	35.8	28.7 (80)	7.0	29.5	15.0 (51)	14.5
1991 ^c	29.1	20.8 (71)	8.3	35.3	25.7 (73)	9.6	29.5	13.4 (45)	16.1
1992	30.5	19.1 (63)	11.4	34.8	22.7 (65)	12.1	29.6	11.9 (40)	17.7

^a Figures in the table cover only the state sales of grains by state commercial agencies, excluding those sales by the other state agencies.

^b Figures in parentheses are percent share of rice sold at planned price.

^c Data for 1988 and 1991 are estimated by authors.

Source: SSB, Chinese Commercial Yearbook, various issues.

Table 8. Trends in nominal protection rates of selected agricultural commodities estimated at official exchange rates, China (%).

	1970-74	1975-79	1980-84	1985-89	1990-92	1993
Rice						
Average procurement	...	-34	-30	-13	-24	-10
Quota	-18	-44	-44	-35	-44	-27
Above quota	1	-24	-16	na	na	na
Negotiated	na	na	-2 ^a	1	-7	...
Market	na	na	18	14	1	6
Ration sale	-16	-46	-53	-64	-54	6
Wheat						
Average procurement	...	...	12	9	-16	...
Quota	30	-11	-13	-5	-24	-3
Above quota	68	20	31	na	na	na
Negotiated	na	na	...	...	...	...
Market	na	na	43	30	20	22
Ration sale	71	12	-5	-26	-37	17
Corn						
Average procurement	...	...	5	-1	-24	19
Quota	-4	-22	-15	-14	-47	-15
Above quota	21	5	28	na	na	na
Negotiated	na	na	-	-	-12	...
Market	na	na	46	31	11	42
Ration sale	0	-23	-28	-50	-51	37
Soybeans						
Average procurement	...	...	...	-1	-10	...
Quota	-5	-12	13	-19	-28	-27
Above quota	...	...	...	na	na	na
Negotiated	na	na	...	...	...	...
Market	na	na	69	30	41	64
Ration sale	-9	-27	-45	-63	-48	34

^a 1981-84 only.

na - not applicable

... - not available

Table 8. Trends in nominal protection rates of selected agricultural commodities estimated at official exchange rates, China (%).

	1970-74	1975-79	1980-84	1985-89	1990-92	1993
Rapeseed						
Average procurement	...	...	34	18	24	...
Quota	22	5	14	9	16	...
Above quota	50	41	71	na	na	na
Average retail	na	na	na	-3	-3	...
Market	na	na	50	23	...	...
Ration sale	-29	-45	-50	-64	-73	na
Cotton						
Average procurement	3	-13	-8	-30	-30	...
Quota	3	-15	-17	-41	...	...
Above quota	na	na	-3	-31	...	...
Pork						
Procurement	5	-37	-4	-35	-46	-25
Retail	7	-36	-40	-28	-32	-2

na - not applicable

... - not available

Table 9. Trends in nominal protection rates of selected agricultural commodities estimated at black market exchange rates, China (%).

	1976-79	1980-84	1985-89	1990-92	1993
Rice					
Average procurement	-48	-32	-33	-41	-38
Quota	-57	-54	-49	-57	-50
Above quota	-42	-31	na	na	na
Negotiated	na	-18 ^a	-24	-28	...
Market	-7	-3	-15	-22	-27
Ration sale	-58	-62	-71	-64	-27
Wheat					
Average procurement	-24	-8	-18	-35	...
Quota	-33	-28	-27	-41	-33
Above quota	-9	8	na	na	na
Negotiated	na	...	...	...	...
Market	25	17	-4	-6	-16
Ration sale	-16	-22	-43	-50	-20
Corn					
Average procurement	-34	-14	-25	-42	-18
Quota	-41	-30	-34	-59	-42
Above quota	-21	5	na	na	na
Negotiated	na	-	-25	-32	...
Market	16	20	-3	-14	-2
Ration sale	-42	-41	-62	-61	-6
Soybeans					
Average procurement	...	-17	-25	-30	...
Quota	-33	-6	-37	-44	-47
Above quota	...	...	na	na	na
Negotiated	na	...	...	...	...
Market	25	38	-2	10	17
Ration sale	-45	-55	-71	-59	-4

^a 1981-84 only.

na - not applicable

... - not available

Table 9. Trends in nominal protection rates of selected agricultural commodities estimated at black market exchange rates China (%).

	1976-79	1980-84	1985-89	1990-92	1993
Rapesced					
Average procurement	-19	10	-11	-5	...
Quota	-22	-6	-17	-10	...
Above quota	6	40	na	na	na
Average retail	na	-44	-37	-25	...
Market	34	23	-10	...	...
Ration sale	-59	-59	-73	-79	na
Cotton					
Average procurement	-39	-24	-47	-45	...
Quota	-41	-32	-54	-59	...
Above quota	-25	-20	-46	-52	...
Pork					
Procurement	-56	-54	-52	-58	-49
Retail	-55	-51	-48	-48	-33

na - not applicable

... - not available

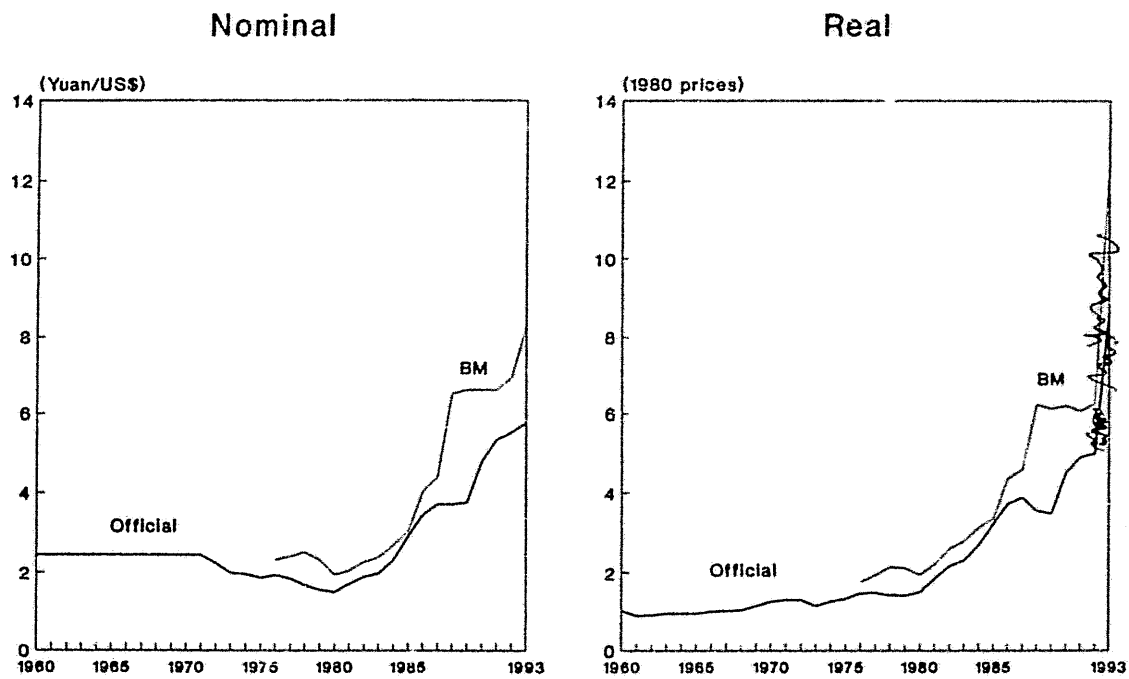
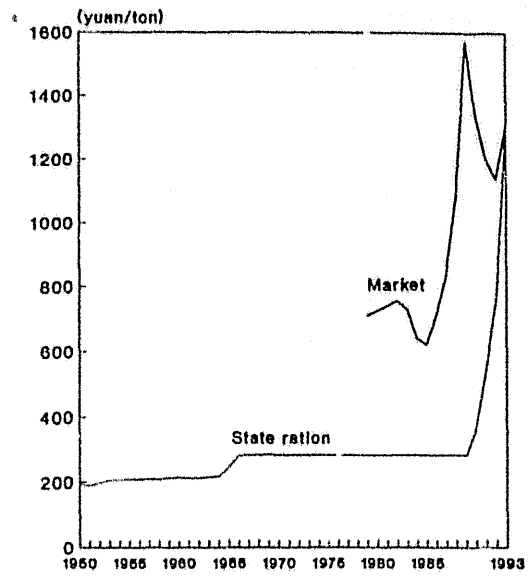
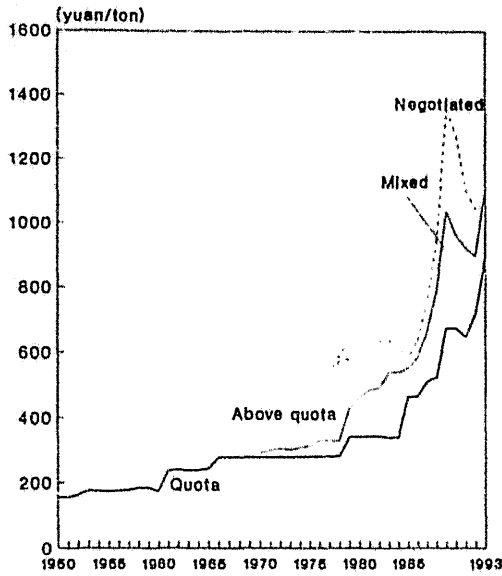


Fig. 1. Trends in nominal and real official and black market exchange rates, China, 1960-1993.

a) RICE



b) WHEAT

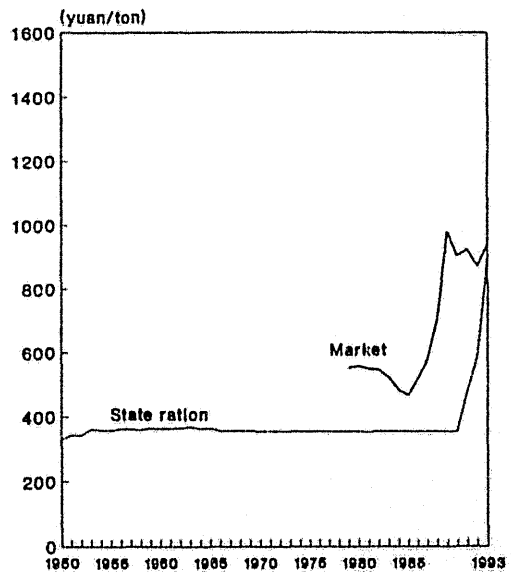
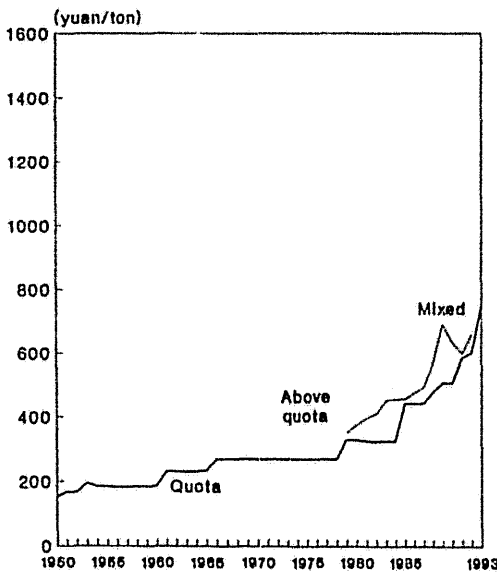
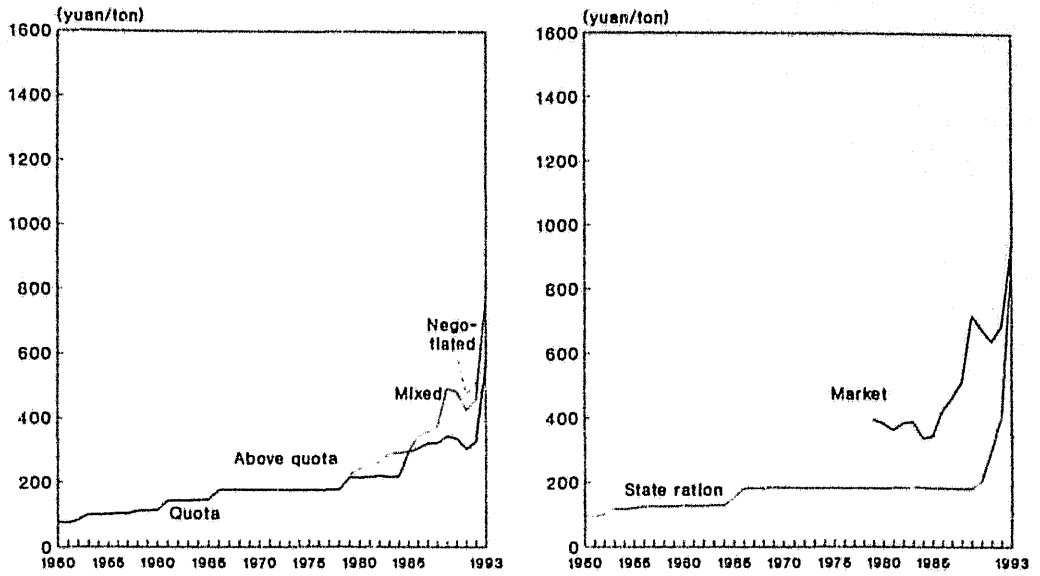


Fig. 2. Trends in the nominal prices of rice and wheat, China, 1950-1993.

c) MAIZE



d) SOYBEAN

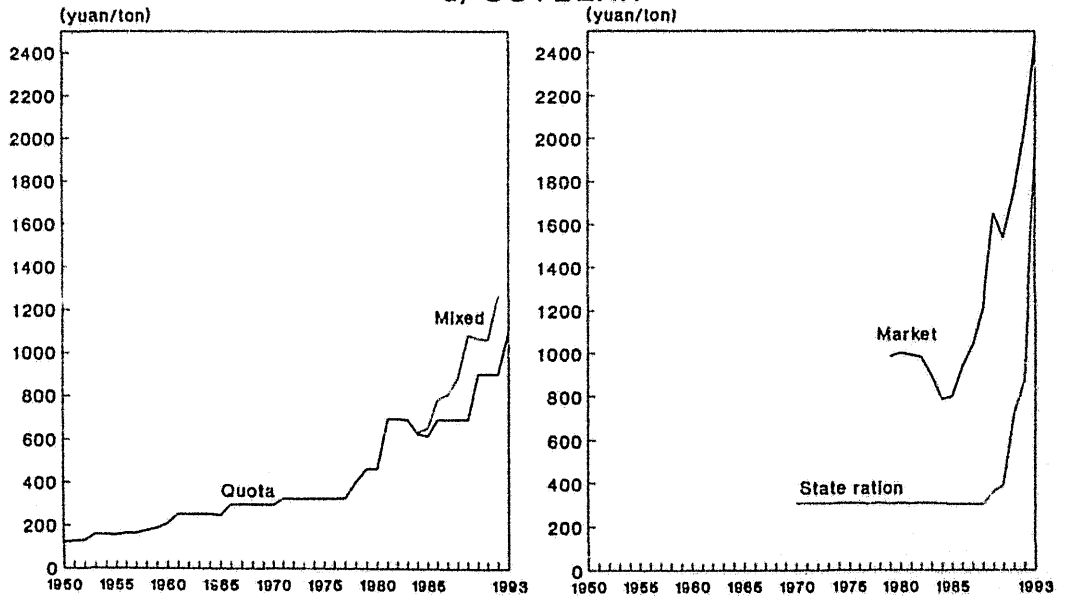
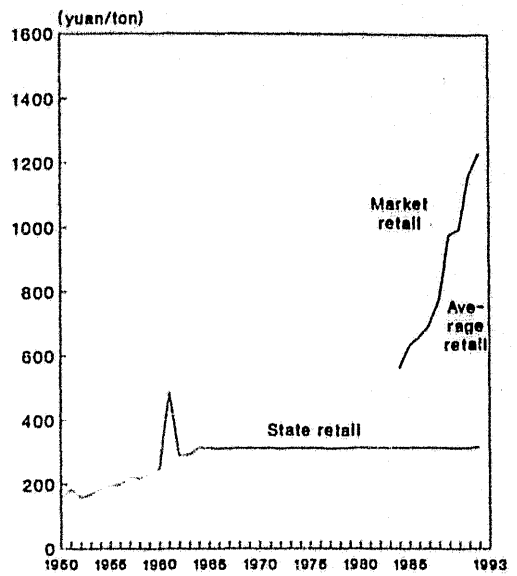
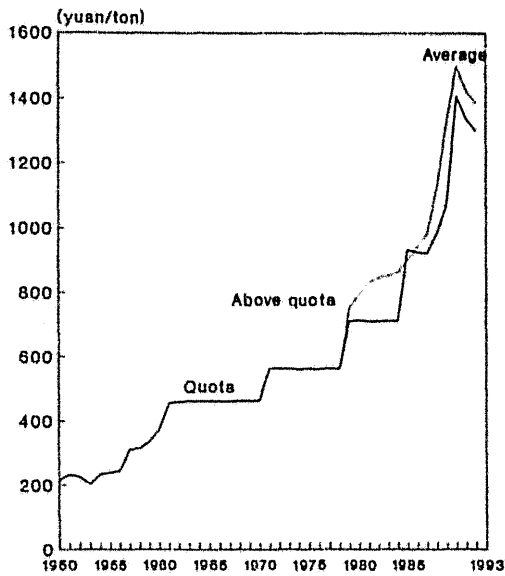
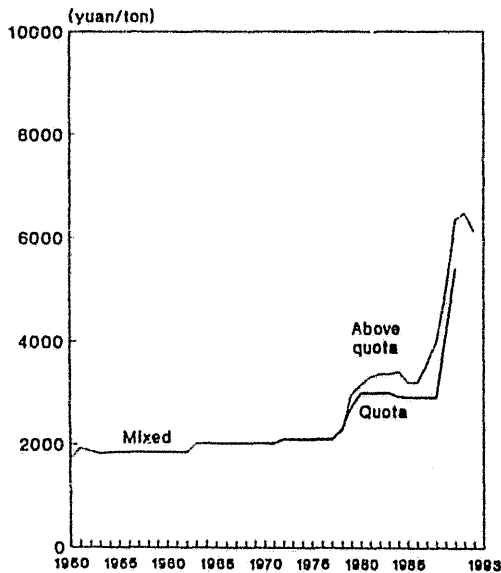


Fig. 2. Trends in the nominal prices of maize and soybean China, 1950-1993.

e) RAPESEED



f) COTTON



g) PORK

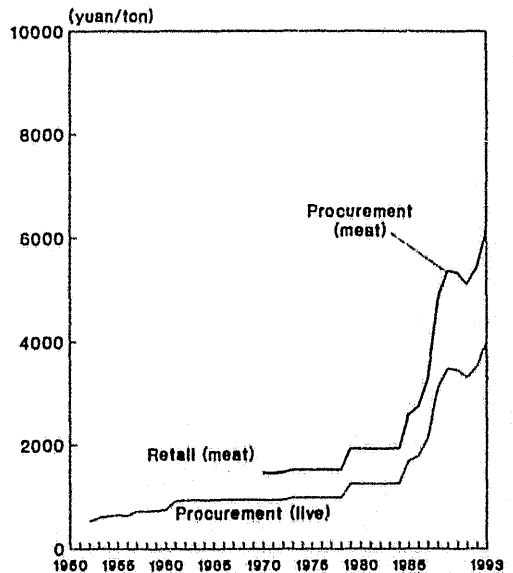
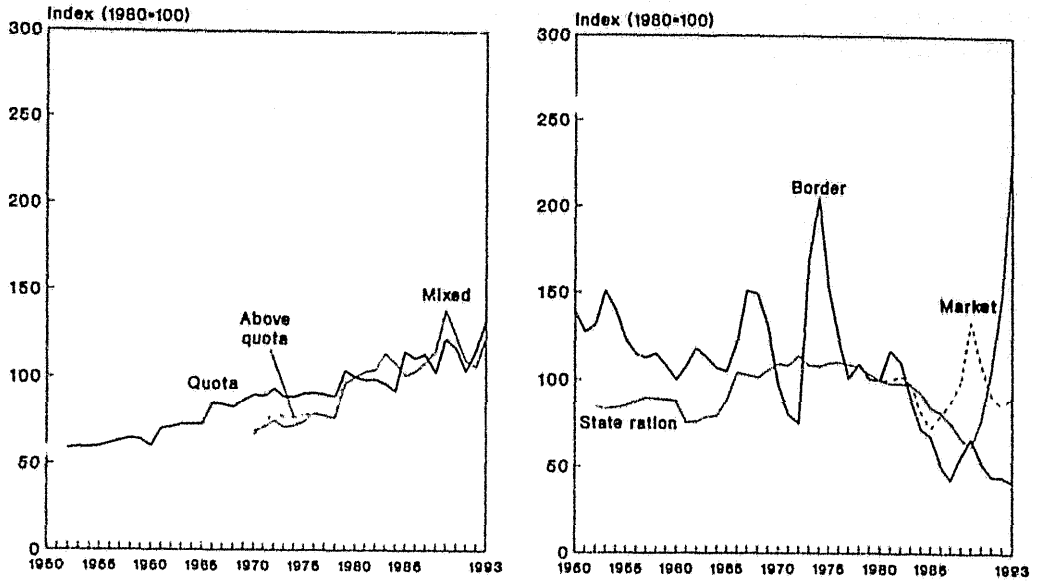


Fig. 2. Trends in the nominal prices of rapeseed, cotton, and pork, China, 1950-1993.

a) RICE



b) WHEAT

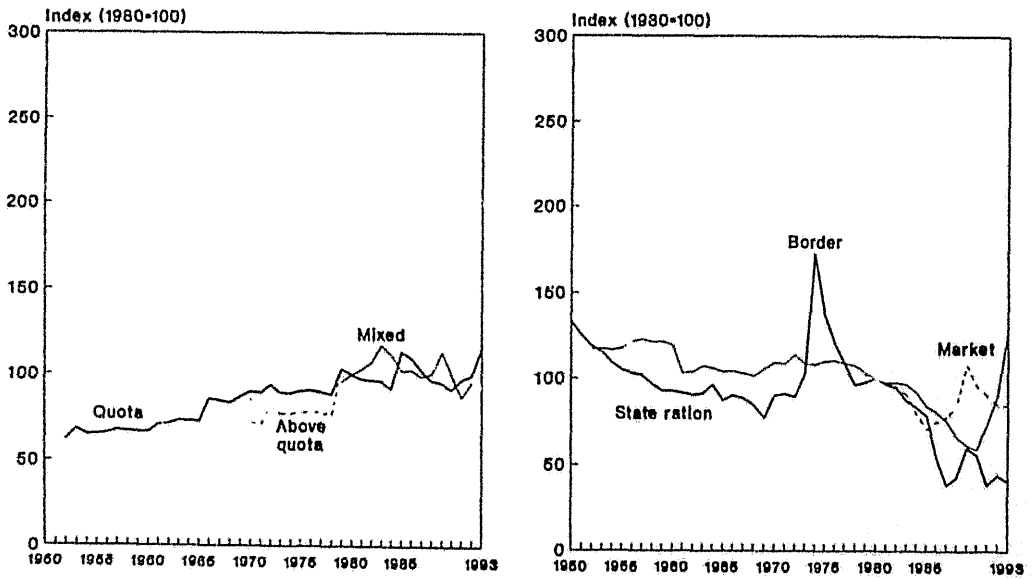
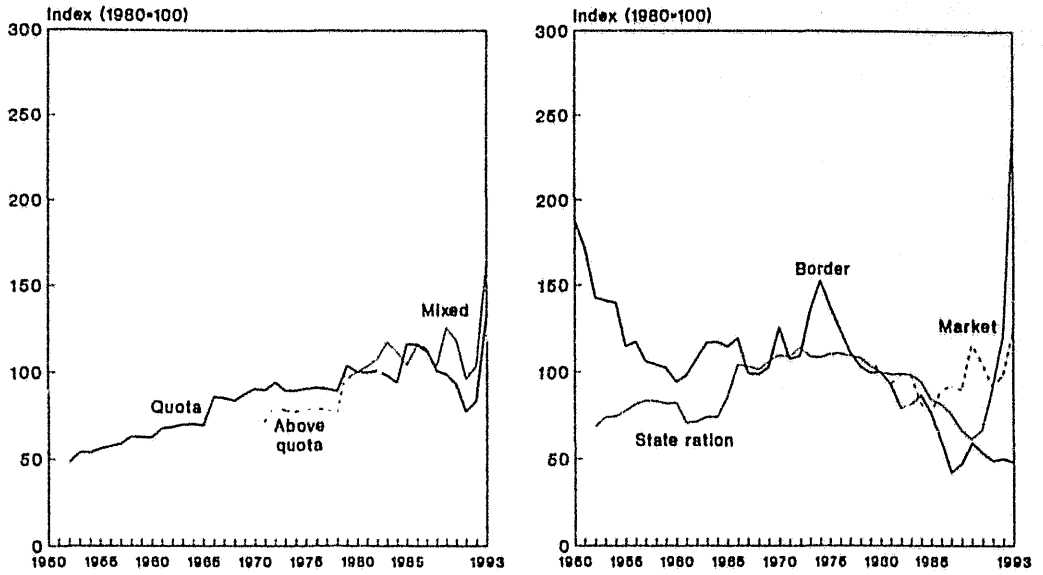


Fig. 3. Trends in the prices of rice and wheat (in real terms deflated by implicit NI), China, 1950-1993.

c) MAIZE



d) SOYBEAN

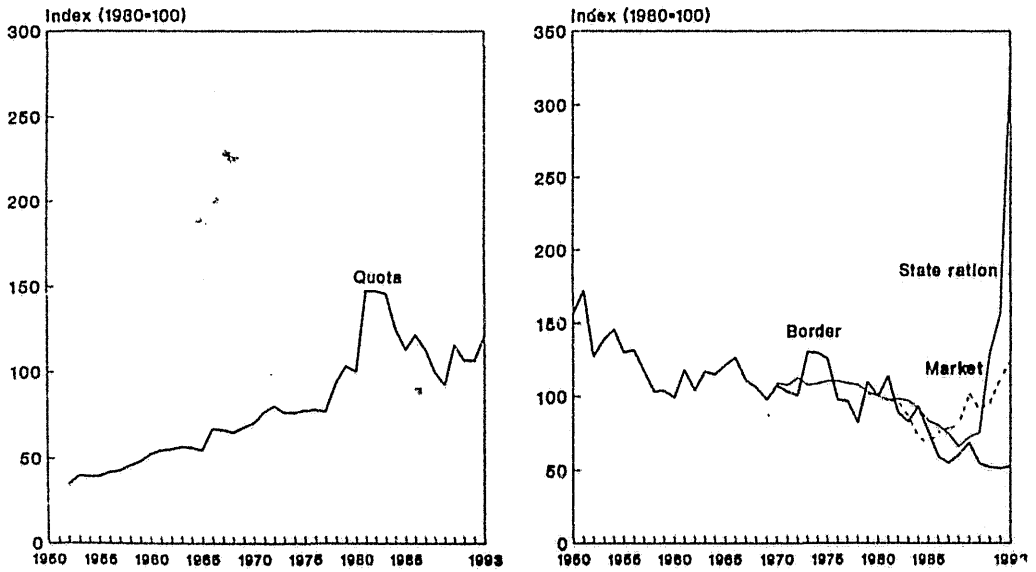
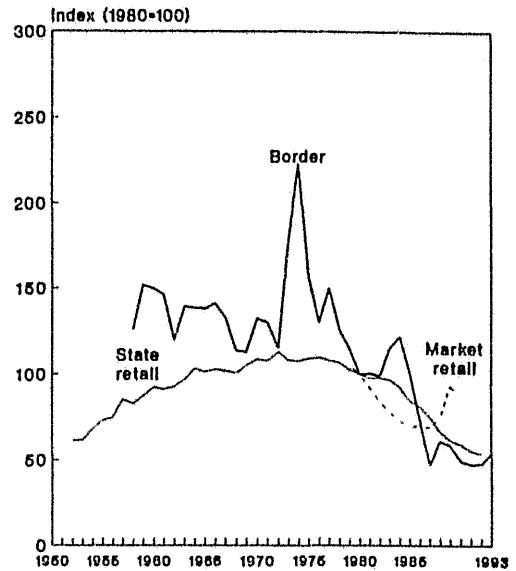
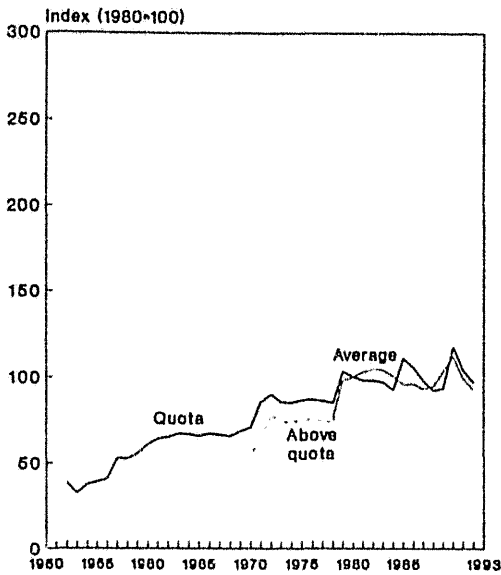
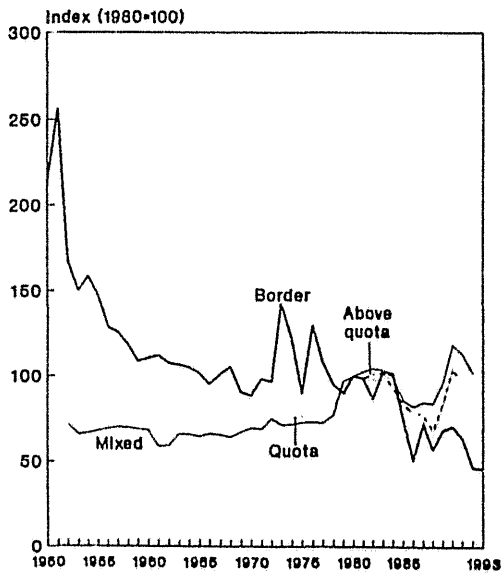


Fig. 3. Trends in the prices of maize and soybean (in real terms deflated by implicit NI), China, 1950-1993.

e) RAPESEED



f) COTTON



g) PORK

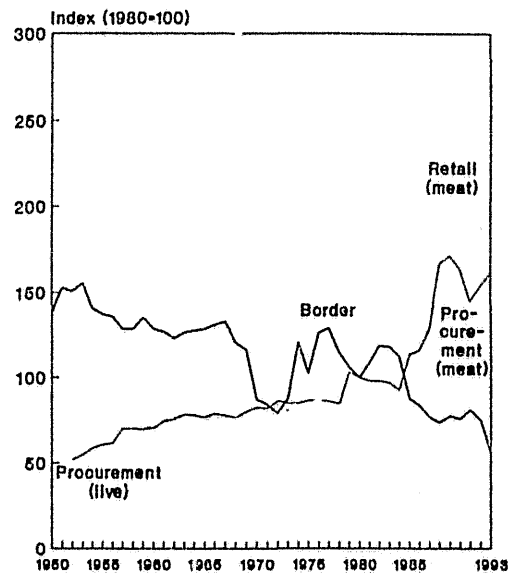
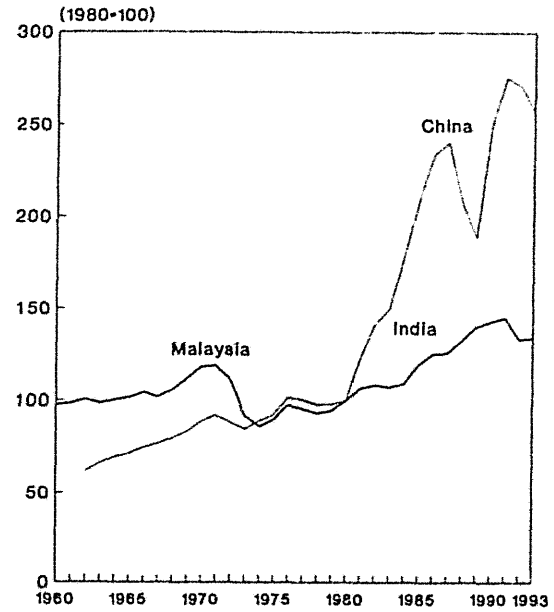
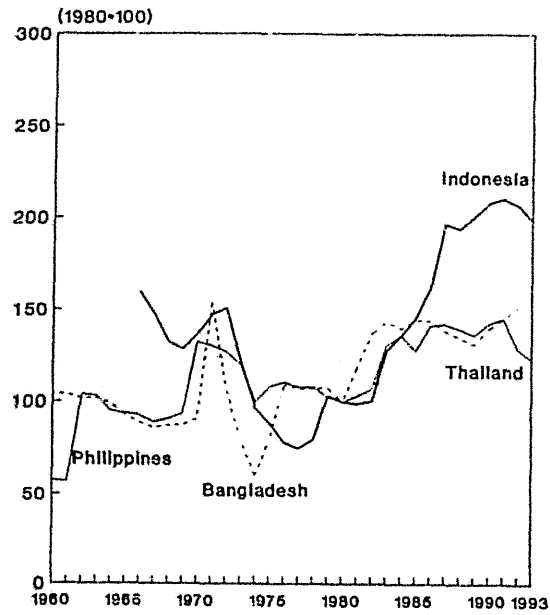


Fig. 3. Trends in the prices of rapeseed, cotton, and pork, (in real terms deflated by Implicit NI), China, 1950-1993.



Appendix Fig. 1. Trends in real exchange rate in selected Asian countries, 1960-1993.