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JULY 9-12, 1989



THE ROLE OF CHINA IN INTERNATIONAL GRAIN MARKET

by Shwu-Eng H. Webb¹

I. Introduction

China is both the world's largest producer and consumer of grains. The share of China's production of world's grains have continued to increase from around 11 percent in 1960 to around 20 percent in recent years. With 22 percent of world's population, and maintaining self-sufficiency in grains has been one of China's top priorities. Any change in China's policy affects production, consumption, and trade will have significant impact on the world grain market.

The primary goal of the 1979 reforms was to raise living standards. The Government adopted many measures to increase peasants' efficiency. During the reforms, the State gradually decentralized agricultural production decisions, stressed economic efficiency, and encouraged regional specialization. As a result, trade restrictions have been loosened to some degree. Total grain trade as well as trade in other agricultural and industrial goods has increased substantially. With this kind of open-door policy, China will play an increasing role in international market.

Although the 1979 economic reforms have brought increasing liberalization to the agricultural sector, the Government still intervenes heavily under current domestic policy settings. How China's domestic policy affects international grain market in the future, depends on how the current policy intervention in China affects its grain production and trade. In this paper, producer subsidy equivalent (PSE), and consumer subsidy equivalent (CSE) measures are used to determine how current policy settings in China affect the grain economy.

These PSE/CSE measures are compared with an economic efficiency index across grain crops and other related crops to evaluate the possible effects of further reforms on grain production and trade. The continued reforms mean continued decentralization, and a more optimum economic structure in which different types and levels of economic activities will maximize the net economic returns to the society. However, the current austerity measures adopted by the State to deal with inflation and stagnation of grain production appeared to put economic reforms on the hold and certainly will have an adverse effects on international grain market.

II. Policy Framework Guiding China's Grain Economy

This section will briefly discuss policies that affected the grain economy before the 1979 economic reforms. Then, policies that affect grain

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production, consumption and trade since the reforms will be analyzed in more detail.

Grain Policies Prior to the 1979 Economic Reforms

Grains (mainly rice, wheat, corn, and soybeans) are the main food staple in China. Prior to the 1979 economic reforms, maintaining self-sufficiency was the top priority of the country's policy. Oilseed crops and cotton are also considered very important to the basic needs. Therefore, the production and marketing of grains, oilseed crops, and cotton were tightly controlled by the State. For cotton, virtually the entire crop was sold to the State.

The State's unified procurement system started in 1955. There were two types of procurements (quota and above quota) under two different sets of prices for grains and oilseed crops. For production teams that were defined as surplus units² under the commune system, there was a State compulsory procurement quota (usually 80-90 percent of the surplus after meeting the team members' food, feed, and seed demand) on these products. Peasants are required to let the State procure a certain percentage of the difference between actual production and the targeted output. The State had to purchase whatever the surplus that peasants wanted to sell. Before 1965, prices paid for the above quota procurement were the same as quota prices.³

Over the entire period of 1955-65, the procurement prices only increased by 35 percent. Within this period of time, prices of food grains sold by the State to urban residents remained stable and resulting in Government sale prices of grains less than the corresponding Government procurement prices.

In 1966, the State created an incentive system to encourage production teams to increase above quota procurement. The incentive for extra deliveries combined both the in-kind reward, 50 percent of food grains delivered above quota was paid in an equivalent value of sugar, vegetable oils, and industrial goods etc., and the other 50 percent of the above quota deliveries was paid at prices that were 30 to 50 percent higher than quota prices. The quota prices of food grains also increased by 17 percent. In the meantime, the Government raised urban sale prices of food grains to their procurement prices, with the exception of soybeans. However, after this increase in 1966, the procurement prices of food grains were kept the same over the entire period of 1966-78.⁴ The costs of producing food grains exceeded their procurement prices by more than 7 percent in 1978. (Z)

² A production team is defined as a surplus team if the team's grain output in 1955, was greater than its total utilization of grain for food, feed, and seed.

³ With the exception of 1960, when the State paid 10 percent premium for the above quota procurement.

⁴ The only exception was soybeans for which prices increased 9 percent in 1971 and 23.4 percent in 1978.

Before 1979, the economy was rigidly centrally planned. The production, marketing, and trade of almost all agricultural products as well as industrial goods were tightly controlled by the central government. What and how much to import and export were regulated by the Ministry of Foreign Trade of the State Council. Foreign exchange rates were set by the State.

With controlled trade, political criteria instead of the principles of comparative advantage were used to guide the trade. For example, when the Government implemented the First Five-Year Plan (1953-57), industrialization was the top priority. The Government had to introduce a compulsory procurement system to increase grain supply at low prices to support industrial growth. Imports were limited to foreign capital goods and key industrial materials. Imports of consumption goods were limited to around 8 percent or less of total imports (5, p.277). The Government also regulated the kinds of goods exported to earn the foreign exchange to pay for imports. In the 1950s agricultural and processed agricultural products made up more than three quarters of the total value of exports.

In 1970s, the Government took advantage of higher world prices of rice and special beans. It used the procurement policy to increase the amount of rice and beans in stocks for exports. During the period of 1971-76, China imported 25.72 million metric tons of food grains, at the cost of \$3.22 billion and exported 16.36 million metric tons of rice and beans and earned exchange of \$3.95 billion.

Policies Affecting Grain Economy Since the 1979 Economic Reforms

Grain procurement policy With the reforms, the State gradually relaxed the restrictions on what and how much to procure and allowed peasants to sell their surpluses not only to local markets but also to other counties or provinces. To encourage farm production, especially grains, the State has lowered the quota procurement and raised procurement prices a number of times since the 1979 economic reform. In 1979, the price of 18 major farm products increased by 24.8 percent. (1, p.30) The above quota price in 1979 was set at 50 percent over the new quota price.

In 1985, the Government abolished compulsory purchasing quotas, and instead, negotiated contracts with farmers before they planted their crops. The contracted quantities were purchased at the weighted average of 30 percent of former quota prices and 70 percent of former above quota prices. The State could procure beyond the contracted amount only at the "negotiated" prices in the open market. Peasants are allowed to sell surpluses after meeting contracted quantities. The State is obligated to buy all the surplus offered by the peasants at the quota price. The average procurement prices for food grains, oilseed crops, and cotton increased by 139, 64, and 62 percent in 1987 from 1978. (2, p.91) The 1987 average procurement prices for all agricultural products was about double the average for 1978.

Subsidies for urban consumption of farm products Urban residents are powerful political constituents. The State is very sensitive to their demands and their resistance to paying higher food prices. As a result, the State continues to heavily subsidize urban consumption of farm products. The

Government has significantly increased procurement prices for farm products a number of times while prices charged to urban consumers remained fairly stable. The urban subsidies have become a larger and larger financial burdens to the government. In 1986, the State spent about 24.4 billion yuan (about 13 percent of government expenditures) just to make up for the price differences between the procurement prices and prices that the Government charged to urban residents. In addition, the Government spent at least an additional 200 yuan per ton in processing, storing, and transporting food from rural to urban areas.

Border measures Economic efficiency was stressed during the 1979 economic reforms. The State has relaxed its regional self-sufficiency policy to allow increasing number of farmers to specialize in crop growing and livestock raising activities. As a result, the Government also relaxed some of the restrictions on provincial governments for importing and exporting grain. In the 1980s, imports of food grains, especially wheat continued to increase to support households specialized in non-grain production such as cotton.

III. The Impact of the 1979 Economic Reforms on China's Grain Economy

Increase in grain production The 1979 economic reforms introduced the production responsibility system (PRS) which links peasant's remuneration directly with the value of output produced. The new system encourages farmers to take interest in all aspects of farming operations to raise output, yields, and returns.

Individual peasants were given the power to select product mix and to maximize their returns as long as they fulfill state contracts. Under the PRS, farmer's productivity increased significantly. Despite a 1.3 percent annual population growth rate and a decrease of grain area sown by 3.4 percent since 1978, per capita food grain production increased from 319 kilograms in 1978 to 377 kilograms in 1987. Total grain production increased

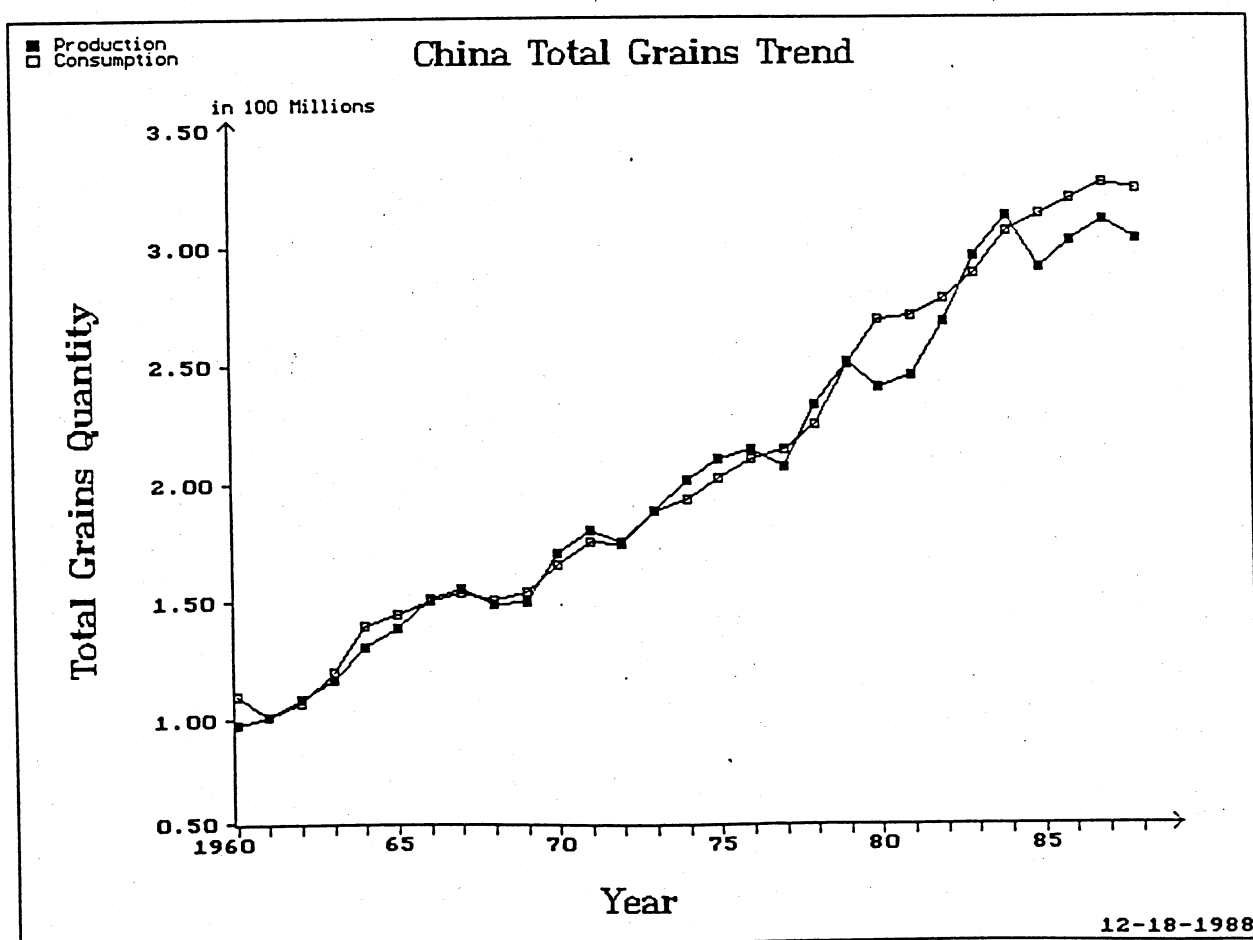
Increases in grain consumption Although grain production in China has increased substantially since the reform, the consumption increased even faster than the production as shown in Figure 1.

Many factors contributed to the rapid increase in grain consumption. Living standards have increased substantially, in all income classes. Per capita income increased from 316 yuan in 1978 to 916 yuan in 1987 in urban areas, and 134 yuan to 463 yuan in rural area. Per capita consumption of food grains increase from 219 in 1978 to 252 kilogram in 1987. Among food grains, the increase in wheat consumption is the most significant. It has nearly doubled over the period of 1978-87. Per capita wheat consumption increased from 48 in 1978 to 92 kilogram in 1987.

With increases in per capita income, people could afford to eat more meats and dairy products that used to be considered as luxury goods. Per capita consumption of meats and aquatic products increased substantially. To satisfy increased demand, the production of meat increased from 85.6 to 198.6 million metric tons and aquatic products increased from 46.6 to 95.5 million metric tons over this period of time. The increase in meat and aquatic

production has doubled feed demand for grain in China over the last 10 years. China consumed about 42.3 and 90 million metric tons of grains respectively in 1978 and 1987 to meet feeding requirement. Liquor consumption increased from 2.89 to 11.3 million metric tons during this period. Each kilogram of liquor production requires about 2.5 kilogram of food grain as input. The increase in liquor consumption would cause a substantial increase in demand for food grains.

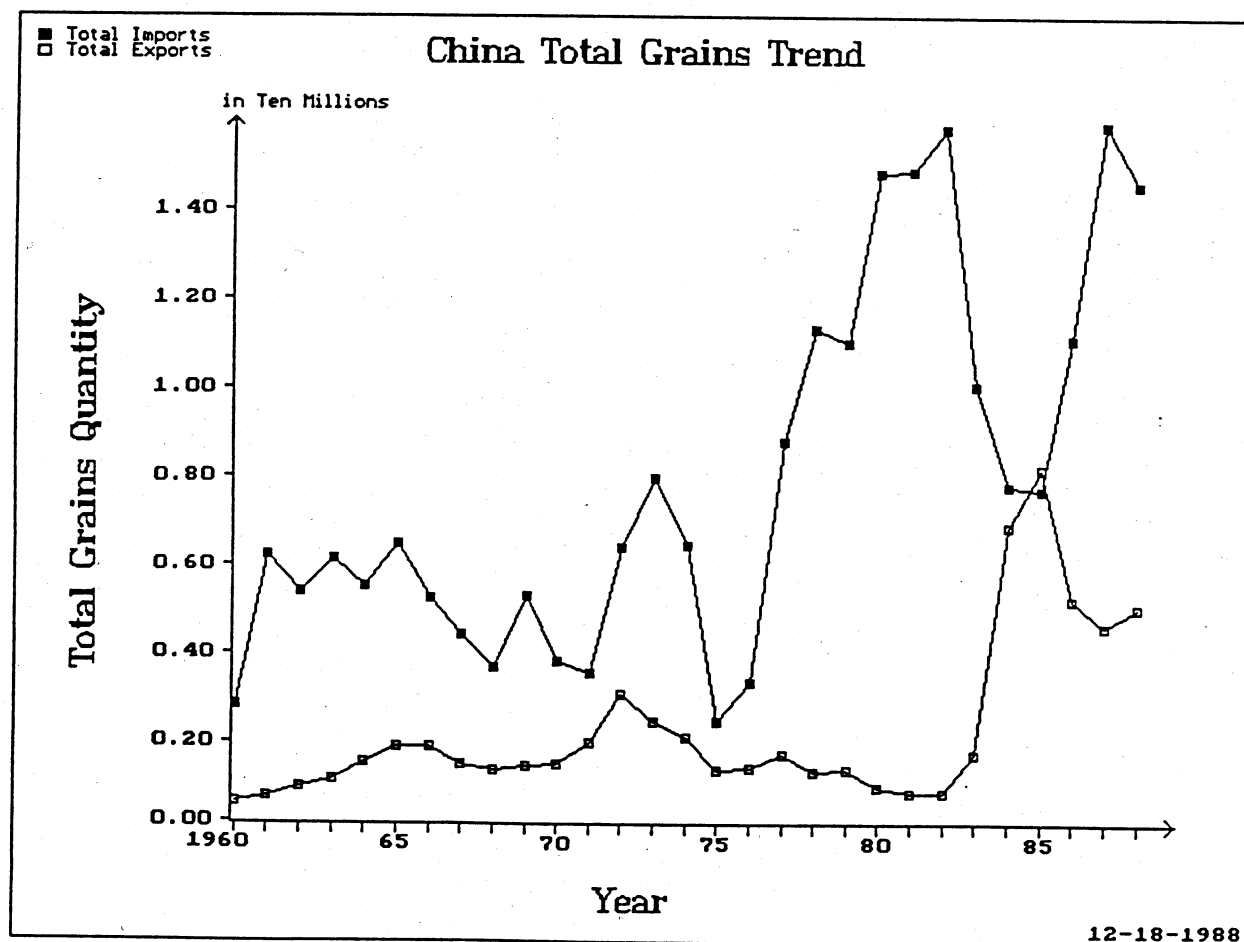
Figure 1. Production and consumption of grains in China



Urban subsidized prices remained stable despite the increases in incomes and procurement prices. With income increases the urban residents would diversify their diet and consume less staple goods. However, with subsidized prices and guaranteed quantity of food grains and other essential goods, urban residents do not conserve the consumption of these goods.

Economic efficiency was stressed during the 1979 economic reforms. Peasants have been given more freedom in selecting the types of production activities in which to engage. The State also permitted land use rights to be transferrable and extended land lease to 15 years. In some areas land lease contracts are granted to 50 years. As a result, more households are specialized on cash crops, livestock production, and increase their scale of operations to specialize single crop production instead of a mix of grains for self-sufficiency. With Government relaxed some of the restrictions on provincial governments for importing and exporting grain, grain trade increase substantially since the reforms as shown in Figure 2.

Figure 2. Grain trade in China



Decreasing role of grain production in rural economy With increasing autonomy under the PRS, economic returns become the guiding criteria for peasants to determine what and how much of a commodity to produce subject to meeting the State contracted requirement and other institutional constraints. As a result, the economic structure of rural economy changed significantly and became more diversified. First, the agricultural production became less important in the Nation's economy. Second, crop farming is becoming less and less important within the agricultural sector. Third, among crop farming activities, areas sown to grain crops have continued to decrease.

With agricultural production becoming more efficient and with economic reforms encouraging the development of household and township enterprises, economic structures in the rural areas became more diversified as shown in Table 1. In 1978, 90 percent of rural labor were engaged in farming and mining and accounted for about 70 percent of value of products produced in rural society. In 1987, proportion of rural labors employed in non-primary industrial sector doubled from 1978 and accounted for 47 percent of gross value products in rural society.

Table 1. Structural changes in China's rural economy.

type	1978	1987	1978	1987
I. Labor:	-- mil. person --		---- percent ----	
Rural total	306.38	337.90	100.0	100.0
Primary industry	274.88	304.68	89.7	80.2
Secondary industry	19.64	44.48	6.4	11.7
Tertiary industry	11.86	30.74	3.9	8.1
II. Value of products:	-- billion yuan --		---- percent ----	
Rural total	203.75	755.42	100.0	100.0
Primary industry	139.70	401.30	68.6	53.1
Secondary industry	53.12	292.27	26.0	39.3
Tertiary industry	10.93	56.85	5.4	7.6

The agricultural sector itself has become more diversified, the proportion of production of traditional agricultural products such as grains, oilseeds, and other economic crops - although still the most important components of agricultural output value - has continued to decline as shown in Table 2.

Table 2. Composition of agricultural output value

Item	1978	1987	1978	1987
	---- mil. yuan ----		---- percent ----	
crop farming	107.16	283.78	76.7	60.7
forestry	4.81	22.2	3.4	4.8
animal husbandry	20.93	106.58	15.0	22.8
sidelines	4.60	32.51	3.3	6.9
fishery	2.21	22.49	1.6	4.8

Source: (8)

Although, grain procurement prices have increased substantially over the last ten years, the return on grain crops still fell far behind other cash crops. For example, using the domestic procurement prices to calculate the net returns, the profit per hectare on sugar cane was about three times of that for grain crops. As a result, sown areas to grain crops continued to decrease as shown in Table 3.

Table 3. Crop sown area in China: 1970-1987

Year	Total area sown	Grain crops	Cash Crops
	m. hectares	percent	
1970	143487	83.12	16.88
1971	145684	82.95	17.05
1972	147919	81.94	18.06
1973	148547	81.56	18.44
1974	148635	81.39	18.61
1975	149545	80.95	19.05
1976	149723	80.64	19.36
1977	149333	80.63	19.37
1978	150104	80.34	19.66
1979	148477	80.32	19.68
1980	146379	80.09	19.91
1981	145157	79.20	20.80
1982	144755	78.34	21.66
1983	143993	79.20	20.80
1984	144221	78.27	21.73
1985	143626	75.78	24.22
1986	144204	76.93	23.07
1987	144957	76.76	23.24

Source (4)

IV. Quantification of Current Intervention in Grain Economy

With the reforms, the Government gradually increased local autonomy, and allowed regional specialization. More and more of the State procured grains remained in rural areas to support the increasing number of specialized households. Rigid trade restrictions were relaxed to some degree. The Government has loosened rules to import grain, especially wheat, to support the urban residents. However, because of the existence of procurement policy and border measures, there is no doubt that the Government still intervenes heavily in China's grain sector.

In China, the Government intervenes in agricultural sector in a variety of ways: (1) procurement policies and marketing systems; (2) input use policies that are tied to procurement policies; (3) heavy subsidies on agricultural products to urban residents; and (4) border measures adopted by the State to restrain trade of agricultural commodities. This section will develop procedures to estimate the degree of government intervention in the

procedures to estimate the degree of government intervention in the production and consumption of major grain crops and other related crops.

The producer and consumer subsidy equivalent (referred to as PSE and CSE) measures are estimates of the amount of the cash subsidy or tax needed to compensate farmers/consumers for removing government intervention. Estimates of PSE/CSE's for 1986 presented here do not account for government investments in infrastructure such as irrigation, transportation or any services that contributed value-added to the commodities. However, in this report it is assumed that government services were proportionately applied to all agricultural commodities. Then, PSE/CSE when compared across agricultural commodities could show the degree of intervention in different agricultural commodities.

Two components of PSEs are estimated in this report: 1). the effects due to domestic procurement policy measures which are the sum of the input subsidies and the difference between the procurement and market prices. 2). effects due to the border measures that show the differences between the prices that domestic producers are getting and alternative prices that they could get if there were no government measures to restrain trade.

A negative (positive) PSE indicates a tax (support) on the producers of that commodity. Negative PSEs due to the procurement policy indicate that the procurement prices are less than market prices and the price difference more than offsets the input subsidies. In China, all major agricultural commodities due to procurement policy are negative. For grains, and oilseed crops, the taxes are about 10 and 19 percent respectively of market prices (Table 4). Almost all cotton is procured by the State. Therefore, there is no domestic market price to compare with its procurement price. This results in a zero procurement policy PSE for cotton.

The border measure component of PSEs varies widely across commodities. Rice has the biggest difference between the domestic market price and world price among the major agricultural products. Domestic prices of wheat and soybeans are about the same as their respective world prices. Food security is still a very important priority. This is reflected in the price ratio of wheat and rice. The procurement price ratio of wheat and rice is just the reverse of the world price ratio. To encourage wheat production, Government set the price of wheat higher than the price of rice. In the world market, the price of wheat, in general, is lower than the price of rice. In China, rice farmers are taxed much more heavily than wheat producers.

If there were no border measures or procurement quota requirements, farmers could produce and export rice and corn, but more wheat and soybeans would be imported. Wheat is a more land intensive crop than rice. The labor requirement for rice is about 21.6 work days per mu (mu is a land unit in China, one mu equals to 0.165 acre) sown as compared to 13.7 work days for wheat in China. Because land is a relatively scarce resource and labor a relatively abundant resource, China should have comparative advantage in growing rice vis-a-vis wheat.

CSEs in general are roughly the same magnitude but opposite sign of the PSEs. The size of urban subsidy depends on type of commodity. Staples are subsidized more heavily than non-staple goods. In 1986, procurement prices

Table 4. PSEs/CSEs for selected agricultural commodities in China, 1986

Item	(1) Procured Price	(2) Market Price	(3) 1/ Average Price	(4) 2/ World Price	(5) 3/ Input Subsidy	(6) 4/ Urban Subsidy	(7) 5/ PSE Policy	(8) 6/ PSE Border Measures	(9) 7/ CSE Procurement Policy	(10) 8/ CSE Border Measures
Unit:			Yuan/Ton			Mil. Yuans		Percent		
Rice	371.66	415.35	400.33	730.86	2.56	3551.453	-9.90	-82.56	4.96	75.96
Wheat	462.72	517.11	498.41	542.46	3.87	2267.075	-9.77	-8.84	4.87	4.90
Corn	359.57	401.84	387.31	449.97	1.93	1296.395	-10.04	-16.18	4.55	11.98
Soybeans	841.87	940.84	906.81	895.35	15.07	489.242	-8.92	1.26	6.65	-4.83
Peanuts	1054.78	1231.76	1103.46	1663.49	15.91	745.849	-13.08	-50.75	10.29	35.05
Pork	3034.27	3052.00	3040.04	3118.74	5.90	2308.054	-0.39	-2.59	4.21	2.19
Eggs	2424.00	3000.00	2785.58	3114.10	2.60	481.419	-19.11	-11.79	2.89	3.80
Cotton	3281.60	3281.00	3281.64	3531.28	75.44	1362.367	2.32	-7.61	11.73	7.63

1/ Based on farm sales to nonfarm sales.

2/ The weighted average of procured price and market price.

3/ In general, Hong Kong imported prices in 1986 were used. If Hong Kong prices are not available, then, Asian prices are used.

4/ This only includes government spendings on making up the differences between prices that government paid and prices that government charged to farmers.

5/ The State publishes only total spending on the differences between government procurement prices and prices charged to urban residents. A weighting scheme based on index of procurement price to urban sale price and procurement quantity to allocate the total price subsidies to different commodities.

6/ Col.7 is calculated as ((col.1 - col.2 + col.6)/col.2)*100

7/ Col. 8 is calculated as ((col.3 - col.4)/col.3)*100

8/ Col. 9 is calculated as ((col.6 / total production)/col.2)*100

9/ Col. 10 is calculated as ((col.4 - col.2)/col.2)*100

percent higher than the corresponding urban subsidized prices.

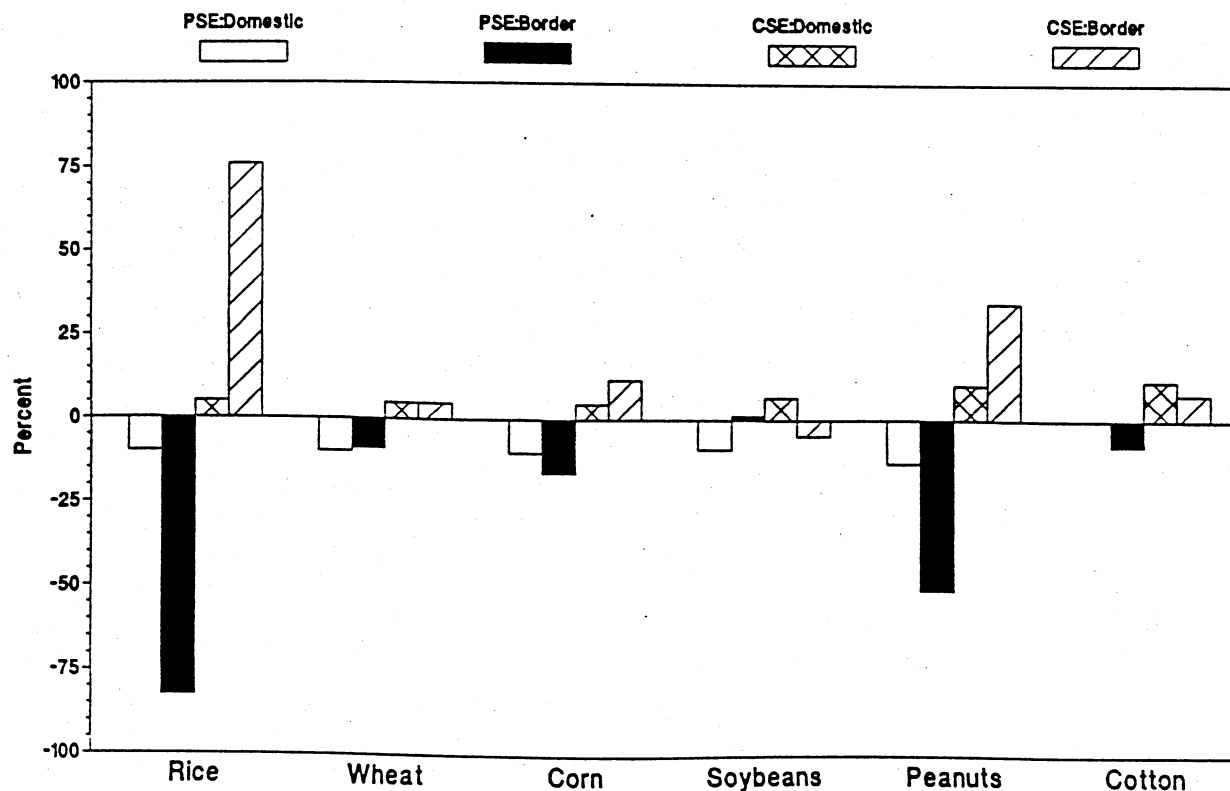
V. Economic Efficiency vs. Government Intervention

To project how China's domestic policy will affect the international grain trade, we have to link the various degrees of intervention among major crops to their returns in China. With this linkage, it is possible to discuss how various policy scenarios would affect China's grain production, consumption, and trade.

In this section, economic efficiency indices which show net returns to total variable inputs and land of various major crops are developed. The economic efficiency measures are linked with PSE/CSE estimates to derive the implications of government intervention for economic efficiency in the grain sector.

In China, Government intervenes quite heavily in grain production. The intervention also varies substantially from one commodity to another as indicated by the PSE/CSE estimates shown in Figure 3. Hence, domestic production and prices of these commodities are distorted. The calculated returns on these commodities will be greatly distorted, if the domestic producer prices are used. Since all of the major agricultural commodities are tradable internationally, the appropriate "objective" prices to calculate the relative returns across various agricultural commodities are world prices. The quality and the intervention in the input markets of fertilizer, labor, and other variable inputs do not vary much from producing one crop to another. Hence, the domestically priced of these inputs are used to calculate variable costs of production.

Figure 3. PSE/CSE's of selected crops in China, 1986



The net returns to variable inputs per ton of output produced are calculated as the ratio of value of per ton of output produced which is priced in its corresponding world price⁵ to total variable costs of material and labor (valued on domestic prices) in producing a ton of output. This ratio shows the rate of returns per yuan spent on variable inputs to produce this unit of output. Among the major crops produced in China, rice has the highest efficiency ratio of 3.55 (each yuan spent on variable inputs yields an output value of 3.55 yuan), as compared to 1.83 for wheat. When this set of economic efficiency index is compared with PSE measures of these commodities, it clearly demonstrates that in China, the Government taxes more heavily on these crops that they have greater efficiencies in producing. Returns to fixed inputs per mu as shown in Table 5 are again in the same order of government taxes on those crops.

Table 5. Returns to variable inputs and land of various crops in China, 1986

Crop	(1) Yield 1/ kg/mu	(2) Material cost 1/ yuan/mu	(3) Labor cost 1/ yuan/mu	(4) Total variable cost 2/ yuan/ton	(5) World price 3/ yuan/ton	(6) Returns to fixed inputs 4/ yuan/mu	(7) Returns to variable inputs 5/ ratio
Unit:	kg/mu	yuan/mu	yuan/mu	yuan/ton	yuan/ton	yuan/mu	ratio
Rice	386.24	47.13	32.40	205.91	730.86	202.76	3.55
Wheat	207.77	41.02	20.58	296.48	542.46	51.11	1.83
Corn	310.98	34.80	24.42	190.43	449.47	80.56	2.36
Soybeans	99.73	21.66	17.24	390.05	895.35	50.39	2.30
Peanuts	140.56	48.72	35.20	597.04	1663.49	149.90	2.79
Cotton	62.75	58.43	60.93	1902.15	3531.28	102.23	1.86

1/ Source:(4)

2/ (Col.(2) + Col.(3))/(1000kg./Col.(1))

3/ In general, Hong Kong prices in 1986 were used. If Hong Kong prices are not available, then, Asian prices are used. Source (8)

4/ Col.(5)/1000 kg. * Col.(1) - Col.(4)

5/ Col.(5)/Col.(4)

⁵ Imported prices in Hong Kong were used as reference world prices. The world prices were expressed in US\$ terms, they were converted to local currency of yuan by multiplying official exchange rate of 3.72 yuan to 1 US\$.

VI. Prospects of Grain Trade

In China, the returns to producing light industrial goods such as textile products are much higher than agricultural commodities. Among the agricultural commodities, the returns on meats, aquatic products and other cash crops (e.g. fruits and vegetables) are higher than grain crops and cotton. Hence, if economic reforms are to be continued and the agricultural sector continues to decentralize, we can expect grain production will decline in importance in China.

Two of the most efficient crops of rice and peanuts are also the two most heavily taxed crops in China. Their domestic producer prices are about 83 and 51 percent below world market prices. Increasing liberalization in agricultural sector through reforms will encourage farmers to increase the production of these two crops and other cash crops which yield much higher profit margins. If economic reforms are continued, rice probably will be the only grain crop that China might increase its supply to the world market.

If the economic reforms continue to increase decentralization and to be successful, China would be a very promising market for major grain exporters. The returns on producing grain crops (with the possible exception of rice), are relatively lower than other crops and economic activities. The production of these crops remain relatively high with Government's intervention. With increasing liberalization, the intervention will be gradually eliminated. Since the peasants' objective is to maximize their net returns, the production of these crops would likely to decrease. Per capita income would increase with successful economic reforms. China currently is a low income country, and an increase in household income would likely increase consumption of wheat, meats, dairy products etc. as consumers improve their diets. The demand for wheat for food consumption, and corn and soybeans for feed and industrial demand will increase with the increase in income. As a result, China would likely increase its imports of these grains.

VI. Outlook of Current Austerity Measures

China's enthusiasm for economic reforms in the past ten years has been dampened by the an increase in the rate of inflation (18.5 percent in 1988). During the first quarter of 1989, price increases were even worse than last year. The price index increased by more than 25 percent in the first quarter of 1989 as compared with the same period last year. As a result, the Central Committee in late March decided to increase central control and adopted austerity measures to slow down social spending.

Grain production has fallen short of targeted production for four years in a row since 1985. Consequently, in early 1989, the Government decided to make grain production a top priority. Several measures were taken to reach the targeted production this year. 1). The Government raised procurement prices of food grains, and cotton by 18 and 10 percent respectively. However, this measure is not likely to stimulate peasants to increase grain production, because the increase in grain procurement prices was even less

than the inflation rate. 2). China increased taxes on peasants who produce crops other than grains and cotton. 3) Tighter controls were placed on the outflow of rural laborers to urban area. 4). The Government forced peasants to reserve better land for grain production. Fruits and other cash crops can only be produced on less productive land. 5). More controls were placed on exports of grain. For example, provinces with surplus corn in the Northeast were forced to ship product to the south instead of exporting to gain foreign exchange.

Increasing central control and emphasis on grain production might have adverse effects on economic efficiency. Abruptly dropped construction projects will cause adjustment problems such as relocating unemployed workers and probably can only conceal inflation problem temporarily. The key to fighting inflation would be to tighten the money supply and create incentives to increase the supplies of raw materials, and energy resources and expand transportation capacity to keep up with the increasing social demand for goods and services.

Current measures adopted by the China's Government to increase grain production will be at the expense of other economic activities which could bring higher income to China with the same amount of resources. Given the same amount of resources, the economic crops (eg. oilseeds) and cash crops (eg. fruits) yield output values that are 60 to more than 100 percent higher than cereal grains. The returns on livestock products and light industrial goods for exports are even higher. Using forceful measures to switch the production from other economic activities to grain crops would result in losses in the foreign exchange earnings greater than the increase in the value from grain production.

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