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CHINA'S 1981-85 PLAN: IMPLICATIONS FOR TRADE

by

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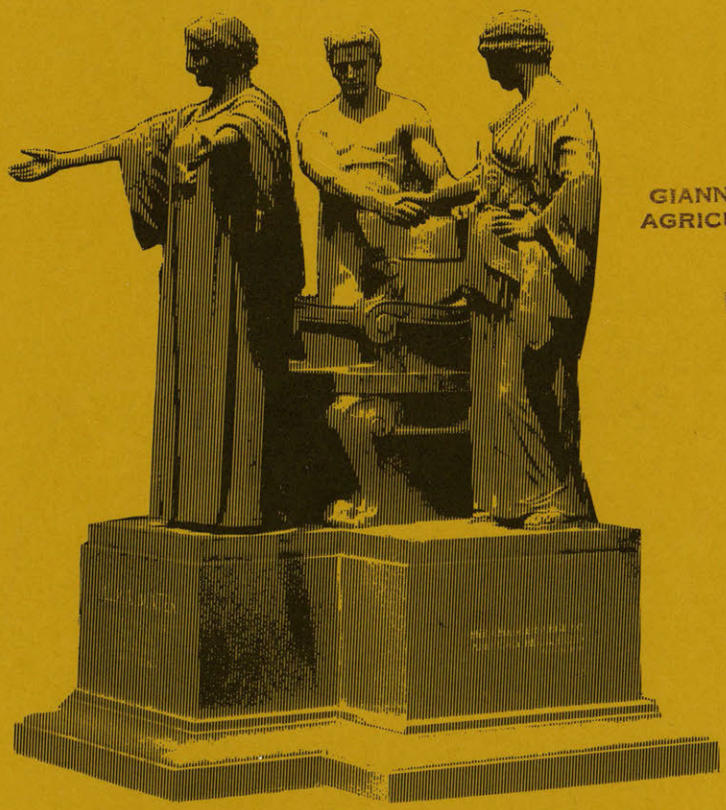

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CHINA'S 1981-85 PLAN: IMPLICATIONS FOR TRADE

S. C. Schmidt*

Introduction

China occupies an important position in world agriculture and has had a significant impact on world trade in wheat, rice and cotton. In 1982-83 China was the world's second largest coarse grain producer and third ranking producer of wheat accounting respectively for 10.6 percent and 14.2 percent of world outputs. During the 1960s China's wheat imports averaged nearly 10 percent of total world wheat imports and it was the world's largest or second largest importer in all but 2 years. China was the leading wheat importer during 1973-75 and 1977-79 and the second largest since then, purchasing 13.6 percent of total exports in 1981-82.

China is by far the world's largest rice producer accounting for 38.6 percent of total output in 1982-83. In export markets China has been the world's third largest supplier until 1980 but fell behind Pakistan since then. Chinese rice exports amounted to 5 percent of the world's total rice trade in 1981-82.

In addition to rice China is also the world's leading producer of tobacco, pulses and hogs. It is the third largest cotton producer and by the end of the 1970s had become the world's largest importer of raw cotton. In 1981-82 China purchased about 13 percent of world raw cotton imports and about 10 percent of world rubber imports. Cotton imports were supplemented by large imports of synthetic fibers.

In light of China's importance in world trade in above commodities, production and consumption targets set under the 1981-85 plan period will have important ramifications to both importing and exporting countries. Hence the primary focus of this paper is to consider the relevancy of plan targets and their likely trade implications.

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Economic problems led, after Mao Tse-tung's death, to a re-examination of existing policies and pressures for reforms. A Ten-Year Plan (1976-85) for the Development of the National Economy was adopted in 1978 with its central objectives of "four modernizations:" agriculture, industry, national defense, and science and technology. This ambitious plan called for extensive mechanization of agriculture, major new additions in virtually every sector of industry, and expanded communication and transport links. First priority was to be placed on agriculture where growth rates of 4 to 5 percent annually were targeted up to 1985. About 85 percent of all major processes of farm work were to be mechanized by 1985. Peking envisaged a growth in industrial output of more than 10 percent annually through 1985. Both these rates of growth were far greater than what China has been able to achieve in prior years.

Although few specific targets for industry were announced, the goal of 60 million tons of raw steel by 1985, an approximate doubling of then existing capacity, is indicative of the ambitiousness of the industrial development plan. The backbone of China's industrial development was in 120 key projects which Peking planned to bring on-stream expeditiously. The targets may well have been set to serve a national need for direction and political motivation for action rather than as a rational economic plan.

By December 1978, China's leaders realized that their original goals for modernization were unattainable and that certain sectors were of more critical short-term importance. The leadership felt that heavy industrial development goals in particular were too ambitious and unrealistic. Also, the leadership began to realize that the basic needs of the people had been given too little attention for too long. These considerations led to a major revision of the basic development strategy and the shifting of priorities. Central to the success of the new "readjustment" program was the correcting of low productivity, overcoming bottlenecks in the economy and spurring the expansion of export industries.

In pursuit of these goals, a series of policies and measures were instituted since 1979 including: granting of greater decision-making power to provinces and local units of production to stimulate local initiatives;

strengthening the role of market forces in the regulation of the economy; offering greater material incentives for securing increased production; and opening the nation's economy to the outside world and the broadening of its participation in the global economic system.

After lengthy deliberation and preparation the Sixth Five-Year Plan for Economic and Social Development, 1981-85, was drawn up and adopted by the National People's Congress, December 10, 1982. The Congress also adopted a new state constitution.

Targets for 1981-85

Objectives and General Targets. China has set itself a long-term objective of laying the foundations for the development in the follow-up Seventh Five-Year Plan (1986-90) and through this quadruple its gross annual value of industrial and agricultural production by the year 2000. To achieve this objective, an average annual increase of 7.2 percent is necessary.

For the current plan period the following ten objectives were enunciated: "1) an annual average increase of 4 percent in industrial and agricultural production; 2) increased output of processed agricultural products, light industrial goods and consumer goods; 3) readjustments of the direction for heavy industry and its product mix; 4) technological transformation aimed mainly at energy savings; 5) development of a national force of scientists and technicians and of educational, scientific and cultural undertakings; 6) intensified construction of national defense and the national defense industry; 7) bringing about a balance in revenues and expenditures; 8) energetic development of economic relations and trade with foreign countries; 9) rigid control over population growth; and 10) intensified environmental protection."[1]

General economic targets set for 1985:

A gross social product of 1,030 billion yuan, an increase of 180 billion yuan over the 850 billion yuan in 1980, representing an annual average increase of 4 percent (Table 1).

An agricultural output valued at 266 million yuan, against the 218.7 billion yuan in 1980, an annual average increase of 4 percent.

Table 1. PRC Selected Plan Goals for 1981-85

		Actual 1980	Actual 1982	Planned 1985	1980-85 Average Annual Growth --Percent--
Gross Social Product	billion yuan	850		1,030	4.0
Value of Agricultural Output	billion yuan	218.7	248.1	266	4.0
Value of Industrial Output	billion yuan	497.2	550.6	605	4.0
National Income	billion yuan	366.7		445	4.0
Foreign Trade Turnover	billion yuan	58.3		88.5	8.7
Exports	billion yuan	27.2		40.2	8.1
Imports	billion yuan	29.1		45.3	9.2
Grain Output[1]	million tons	320.6	353.4	360	2.3
of which					
Soybeans	million tons	7.94	9.0	11.5	7.7
Oilseeds[2]	million tons	7.69	11.8	10.5	6.4
Cotton	million tons	2.7	3.6	3.6	5.9
Sugar-Bearing Crops	million tons	29.1	43.6	46.7	9.9
of which					
Sugar Cane	million tons	22.8	36.9	35.9	9.5
Sugar Beet	million tons	6.3	6.7	10.8	11.4
Cured Tobacco	million tons	0.717	N.A.	1.3	12.6
Meat[3]	million tons	12.1	13.5	14.6	3.8
Fresh Water Aquatic Products	million tons	0.9	N.A.	1.6	12.1

[1]Includes soybeans, pulses, and other miscellaneous grains.

[2]Oilseed data reported by China excludes soybeans and cottonseed. They include peanuts, rapeseed, sunflowerseed, sesameseed, and other oilseeds, mainly linseed and castorbean.

[3]Pork, beef, and mutton. Source: Beijing Review, Vol. 26, No. 19 (May 9, 1983), pp. II-V; and Vol. 26, No. 21 (May 23, 1983), pp. V-VII.

An industrial output of 605 billion yuan, against the 497.2 billion yuan in 1980, an annual average increase of 4 percent.[2]

Foreign trade turnover of 88.5 billion yuan, an annual increase of 8.7 percent. Of which, exports accounting for 40.2 billion yuan, (8.1 percent annual increase) and imports for 45.2 billion yuan (9.2 percent annual growth).

Funds allocated for consumption for 1985 are to approximate 71 percent of the amount of disbursement in the national income. Per capita consumption of the population should grow at an average of 4.1 percent annually.

Industrial Targets. The general aims are 1) transition from an extensive growth strategy to an intensive growth strategy; 2) balanced growth; and 3) support of industries that promise increase in export capacity.[3] A two percent annual increase in the labor productivity of persons in state-owned industrial enterprises is counted on to facilitate the achievement of industrial goals. Emphasis is to be placed upon the development of energy, light industry, transportation, and service enterprises replacing the Stalinist-Maoist concept of rapid development through heavy industry. The outstanding feature of the industrial development plan is its emphasis on energy and transportation sectors. Approximately 40 percent of China's capital investment is targeted for these sectors. Concerning transportation the renovation of seaports are top priority. Because such a large proportion of China's international trade moves through its seven largest seaports, the modernization of these seaports is of great importance to later advances in other sectors.

Given its resource endowments China intends to develop labor-intensive light industries such as textiles, electronics, and consumer durables. It is felt that these industries will provide more employment and greater output per unit of capital than steel and other heavy industries. Within the light industry sector, priority will be given to those goods which are in greatest demand, such as sugar, beer, cigarettes, spirits, soft drinks, bicycles, sewing machines, watches, and electronic products.

In the heavy industry sector, the orientation was set toward producing goods needed by light industry, agriculture, housing construction and toward strengthening machine tool industries. The 1985 targets of major products are as follows:

Output of cotton yarn, 3.59 million tons, 22.8 percent more than that of 1980 and output of woolen fabrics 180 million meters, 78 percent more than in 1980. Chemical fibers, 780,000 tons (Table 2).

Chemical fertilizers 13.4 million tons, 8.8 percent more than in 1980. Of this, phosphate fertilizer should amount to 2.8 million tons, 21.2 percent over 1980; and nitrogen fertilizer, 10.55 million tons, up 5.6 percent.

Sugar output 4.3 million tons, 67.3 percent increase over 1980.

Beer 2 million tons, a nearly 3-fold increase over 1980.

Steel 39 million tons, 5 percent more than in 1980.

Pig iron 34.5 million tons, 9.3 to 7.7 percent less than in 1980.

Annual crude oil output maintained at 100 million tons.

Apart from employment considerations, a larger supply of consumer goods, the Chinese leadership believes, will stimulate the productive efforts of the population and absorb the increasing buying power of workers and peasants which currently fuels inflationary pressures. The threat of inflation is particularly potent in China.

Agricultural Targets. China's agricultural growth target of 4 percent per year is above the pace between 1953 and 1980 when the gross value of agricultural output grew only 3.4 percent.[4] The main objective is to promote a diversified agriculture and to obtain an all-round growth of agriculture. In furthering these goals China intends to 1) stabilize the various forms of the production responsibility system in the countryside; 2) make wider use of scientific and technological achievements; 3) improve the conditions of agricultural production; and 4) encourage greater specialization of production in "commodity bases."

The bases are selected regions that have favorable resource endowments for the support of high yields of certain crops. Since crops will be grown where soil and climate conditions are optimal, greater specialization should increase efficiency in resource use. Reportedly, these areas are receiving government assistance in the form of fertilizer, machinery, and other aid. There may also be important economies of scale associated with greater regional specialization. The new strategy of greater specialization was a break with the Maoist policies of producing a variety of crops to increase the degree of local and regional self-reliance and of limiting intra-provincial grain transfers.[5]

Table 2. PRC Light and Food Industry Goals for 1981-85

		1980	1982	1985	Average Annual Growth --Percent--
Light and Food Industry					
Cotton Yarn	million tons	2.92	3.35	3.59	4.2
Woolen Fabrics	million meters	101	127	180	12.2
Chemical Fibers	million tons	N.A.	0.517	0.780	N.A.
Sugar	million tons	2.57	3.38	4.3	10.8
Beer	million tons	0.67	1.17	2.0	24.4
Chemical Fertilizer	million tons	12.3	12.78	13.4	1.7
of which					
Phosphate	million tons	2.31	2.54	2.8	3.9
Nitroger	million tons	9.99	10.22	10.55	1.1

Source: Beijing Review, Vol. 26, No. 19 (May 9, 1983), pp. II-V; and Vol. 26, No. 21 (May 23, 1983), pp. V-VII.

Grain Production Goals. For grains the announced goal is to reach an annual output level of 360 million tons by 1985 equivalent with an annual increase of 2.3 percent over 1980. This stands in contrast with the 400 million tons target set in the ten year plan (1975-1985) which implied a growth in output of 4 percent per year. Aiding the achievement of the production goal is the shifting of some land currently under oilseed crops notably rapeseed and soybeans to grain. Future gains are also anticipated to come from improved yields. Twelve bases were designated for the specialization in grain production.

Rice is the dominant grain crop, accounting for 26.7 percent of the total grain acreage and for 44.1 percent of total grain production in 1981. Coarse grains constitute China's second ranking grain crop contributing about one-fourth to total grain production. Corn is the leading coarse grain and volumewise the second most important grain. Corn production grew rapidly in the 1970s at the expense of sorghum and millet.

Stimulated by more profitable prices the shift to agricultural specialization has resulted in a large expansion in the production of industrial crops notably cotton, sugar crops and oilseed at the expense of grain.[6] Most of the gain in oilseed crop area occurred in rapeseed, followed by sunflower, soybeans and cottonseed. To prevent the diversion of grain acreage to industrial crops, limits to specialization were reintroduced in 1981 and price incentives reduced in 1983. It is clear that China is going to strive towards a high degree of self-sufficiency in grain production in order to meet domestic needs and also reduce the risk of greater dependence on imports.

Industrial Crop Production Targets. Significant increases are also envisaged in the production of each industrial crop. The oilseed output goal for 1985 was set at 10.5 million tons compared with 7.69 million tons in 1980. This would amount to a 6.4 percent average annual rate of growth. Soybean output is slated to rise to 11.5 million tons, 7.7 percent annual increase over the 7.94 million tons in 1980. Cotton production is targeted at 3.6 million tons against the 2.7 million tons in 1980. This calls for a 5.9 percent average annual growth in production.

Output of sugar-bearing crops is planned to expand 9.9 percent a year to 46.7 million tons. Of this, sugar cane, 35.9 million tons; sugar beet, 10.8 million tons. Cured tobacco output should climb to 1.3 million tons from the 0.72 million ton level in 1980.

As in the case of grains, future gains in production of industrial crops will have to come from increases in yield. The acreage of cotton fields is to remain at about 5.7 million hectares and production increases are expected to come from wider use of higher yielding cotton varieties and the shifting of cotton to areas with favorable growing conditions. The area under rapeseed will be reduced below the 1983 level of 3.8 million hectares in the next few years. The acreage for cured tobacco will be kept at about 533,000 hectares. Basically, development of industrial crops is now being restricted on previously uncultivated land. To realize the anticipated crop yield increases the availability of better seeds, sufficient fertilizer, plant protection chemicals, more water and improved field management assumes considerable importance. China's fertilizer application rate needs to be raised in order to effect significant yield improvements.

Livestock Production Targets. China's 1985 output of pork, beef and mutton is to reach 14.6 million tons, an annual increase of 3.8 percent over the 1980 level of 12.1 million tons. Chinese statements indicate the intention to raise the output of poultry, eggs and milk. Livestock production is based mainly on traditional small-scale household operations and must be generally modernized if higher production is to be attained. Modernization of China's livestock industry will require investments in facilities for production, processing, storage and transport. It will also require breed improvement and the raising of feeding efficiency. Additionally, individual households are being encouraged to become specialized in livestock production.

To stimulate hog production and correct supply imbalances, Chinese authorities have introduced a number of incentive measures in 1981 including 1) providing feedgrains needed for breeding stock kept by commune members; 2) maintaining the system of purchase quotas; and 3) holding hog purchase prices stable.[7] Proposals were also put forward to set up a number of bases for producing hogs with leaner meat.

An important aspect of livestock production policy is a balanced expansion of hog and ruminants (cattle, sheep and rabbits) to restrain the rise in feed use of grains and oilmeal and to make more effective use of grassland resources and byproduct feeds. Plans are to expand grazing areas in 1985 to 6.7 million hectares as against 2.1 million hectares in 1980. Apparently large areas of marginal land that could not support field agriculture as well as that has been cultivated will be returned to grassland.[8] Efforts to promote ruminant-type animal production in areas with grassland resources have been underway since 1977. Between 1977 and 1981 there has been a gradual increase in large animal inventories mainly in cattle numbers.

An interesting feature of livestock production plans is the raising of milk cows and sheep on the outskirts of the big and medium-sized cities and in the vicinity of big enterprises and mines. The objective is to improve the supply of fresh milk in the cities.

By 1985 the output of aquatic products is envisaged to reach 5.1 million tons of which 1.6 million tons is to be fresh-water agricultural products.

Consumption Plans. Grain availability estimated at about 320 kilograms per capita per year in China (1977-79 average) has risen little in the past two decades.[9] Adult grain rations average 15-20 kilograms per month, but may go below this figure if the local harvest is poor. The availability of grain also depends on geographic location, those living in poor communes are allocated much lower rations that those living in richer communes, such as those in the North China Plain or in southern China.[10] The urban population is not as influenced by large changes in grain ration from year to year.[11]

Clearly, grains are very important to the Chinese diets. Grains constitute 90 percent of total caloric intake, and 80 percent of daily consumption of protein.[12] Rice is the staple food of a large proportion of the population. Chinese per capita consumption is the second largest in the world. Wheat is the second most important food grain in China.

Plans are to diversify the Chinese diet by moving towards greater consumption of livestock products. Meat consumption has not increased significantly since the mid-1960s. Annual per capita consumption is currently estimated at 11 kilograms. Main meat categories in descending order of importance are pork, beef and mutton.

China's vegetable oil consumption is also low in terms of world standards. Per capita consumption of edible oil is said to have averaged 3.6 kilograms in 1982.

Incentives and Constraints

Among the series of policies and measures, the decisive one was the relaxation in the system of rigid production planning and some dispersion of economic power to production units themselves. A measure of flexibility is to be applied in long term planning with national five-year plans playing more of a guiding role to be revised periodically to correct any imbalance in the economy. Agriculture was where the reform made most progress. In industry and commerce, at present, only minor reforms are being experimented and instituted step by step and tried out. Under these reforms employees' wages are more closely linked to their output than in the past and employees can even be dismissed.

Agriculture Related Issues. The main element of the agricultural reform strategy is the introduction of various forms of the "production responsibility system," consistent with the different levels of development in the countryside.[13] The system is based on three-party contracts signed by the state, the collective (or team) and the peasant household. First, the state sets a plan for production, designating certain crops and products for a particular area. Based on the state plan, the production team then contracts out the tracts of land to peasant households, who agree to grow given quantities of a stated crop. Draft animals and farm tools are distributed to the peasant households by the production team.[14] Under the contract peasants must sell the required amount of products to the state. The production team retains a share of the earnings from product sales for its own use. The remaining portion is owned by the peasant household. This system in effect ties the pay farmers receive with the actual work done. This stands in contrast with the previous arrangement in which the collective administration distributed an equal amount of the collective's earnings

to each member, regardless of contributions. Peasants in effect become sharecroppers or tenants. The success of this policy is attested by the fact that by the end of 1981 more than 90 percent of the production teams had established some kind of responsibility system.[15]

Encouragement of farmers to work private plots and engage in sideline production are other incentive measures applied. The upper limit of private plots agriculture was set at 15 percent of the production team's arable land. Private plots account for 8 percent of China's farm land now but 21 percent of its agricultural output.

Part of the production incentives was raising of national procurement prices of commodities sold to the state beginning in the summer of 1979 followed by increases in selected commodity prices in 1980 and 1981. These price increases varied from 10 to 50 percent depending on relative productivity and supply deficiency.

Extra production is particularly favored for those commodities with the greatest priority within the state's procurement program. Above quota sales to the state of grain and oils and fats attract a premium of 50 percent over base prices and 30 percent for cotton. Disposal of production above that agreed to in the delivery contract is limited for those commodities which are within the central supply system. Only those not needed and purchased by the procurement agencies can be sold on the rural markets.[16] Aside from these commodities some products will not be purchased by the state but put on the market by the peasants themselves.

In support of the achievement of plan targets, 6.3 percent of total national expenditures, approximately the same as during the previous five-year plan period were earmarked for agriculture. Much of the gains in production are envisaged to be realized through greater efficiency and productivity. This expectation is underscored by the limited possibility of bringing new lands under cultivation and high cost of reclamation and multiple cropping. A high proportion of the cultivated land suffers from recurrent droughts, floods, and cold. Also, reports indicate a steady loss of farm land to industrial development as well as new railllines, housing

construction, and military facilities. Cultivated areas declined by 12 million hectares between 1955-57 and 1977-79, much of which has been prime farmland.[17] A shortage of productive land will be a constraint to rapid growth in agriculture in the future.

Productivity improvement will depend greatly on the supply of required quantities of high quality inputs including water and continuation of material incentive policies.[18] There is reason to doubt the ability of the Chinese economy to supply modern inputs in quantities needed to realize the production potentials. Still a large potential for further farm output increases from additional fertilization exists. As of now, China's fertilizer production capacity is below needs and no significant increases in supply are in sight. China has rather meager indigenous resources for phosphate rocks and deposits of potash and even these are in remote areas. Thus the fertilizer application rate will also be affected by the volume of imports. China also needs to expand its production capacity of herbicides and pesticides as well as to raise production technology.

The mechanization of agriculture, highly praised just a few years ago, has been shelved in most areas of China. Large-scale mechanization in certain selected areas has not only proven to be expensive, but it also contributed to unemployment. At the present, full mechanization of crop production is restricted to certain parts of the Northeast where the short growing season puts high premium on timeliness and in selected underpopulated areas. Emphasis is on economical and practical small and medium-sized farm machines. China expects to turn out 60,000 tractors and 280,000 walking tractors in 1985. Also there is considerable scope for mechanization in animal production, which at present is characterized by the low level technology of household production.

The plan performance will also be affected by the level of managerial skills and technical expertise at the farm level and by improvements in the marketing and transportation systems. China's infrastructure is so underdeveloped that the cost of buying overseas grain is cheaper than transporting it from inland provinces. The transportation networks at present are barely sufficient to meet economic development needs.[19] And finally, achievement of China's current and distant production goals will be linked with the development and application of science and technology.

The allocations for education, science, culture, public health and physical culture account for 15.9 percent of total national expenditure in 1981-85. China intends to expand the scale and raise the academic standards in the education system in order to obtain competent people needed to manage its economic development. Currently the proportion of educated people is very low. Only 0.6 percent of the population has college education.[20] Full-time students in institutions of higher education will increase from 280,000 in 1980 to 400,000 in 1985, while total enrollment will reach 1.3 million, 13.6 percent more than in 1980.[21] Concurrently China will have to adjust the structure of education to accommodate the needs of economic and social development. In 1981 demand was greater than supply in a number of areas including economics, management, finance, law, English, geology, mining, general and mechanical engineering, light and textile industries. In a number of other areas supply was greater than demand.[22]

Plans call for the building of new research facilities, expansion of research, and increasing the number of professional research workers.[23] In agriculture, special prominence is to be accorded to institutional research leading to new varieties of grain with greater yield potential and resistance to insects and diseases and to the development of new cultural and management practices. Other stated priority fields are genetic engineering and the upgrading and care of animals and poultry. Complementing national scientific endeavors are the sending of Chinese students to overseas universities and promotion of contacts with scientific colleagues around the world. Between 1978-82, 12,000 Chinese have studied in 54 foreign countries at state expense.[24]

Industry Related Issues. There is great scope for improving the technical efficiency of China's industry. According to official admission, at present 30-35 percent of China's machinery and equipment is at the level of the 1960s and 1970s, with the remaining more than 60 percent at the level of the 1940s and 1950s.[25] Indicative of China's outdated production technology is that its energy utilization rate is approximately 40 percent lower than in developed countries.

Apart from productivity improvement China's industrialization pace will be critically affected by the availability of raw material inputs, notably agricultural raw materials. Nearly 70 percent of raw materials needed by light industry and 40 percent of material needs of all industry in recent years was supplied by agriculture.[26] Thus sustained growth of agricultural production will have an important bearing on the achievement of industrial goals.

Organizational Changes. Several organizational changes were made involving the elimination and merger of economic organizations. Thus the Ministry of Agriculture was expanded into a new Ministry of Agriculture, Animal Husbandry, and Fisheries while the Ministry of Cereals was merged with the All China Federation of Supply and Marketing Cooperatives into an expanded Ministry of Commerce.

China has also introduced some limited reforms in its foreign trade system and revised the incentive structure. Basically the reform gave more autonomous trading powers at the provincial level and to chosen enterprises, put them on a profit-loss basis and permitted retention part of foreign exchange earnings. Also material incentives such as tax advantages were authorized for firm manufacturing for export.

Plan Achievements 1981-82

The gross value of industrial and agricultural output in both 1981 and 1982 grew surprisingly well. The plan for 1982 called for a 4-5 percent increase in the gross value of industrial output, with heavy industry growing by only 1 percent and light industry by 8 percent. Actually, total industrial production grew by 7.7 percent to about 550.6 billion yuan, well above target, light industrial production rose by only 6.7 percent and thus fell short of target. By contrast, output value of the heavy industry rose by 9.9 percent significantly topping the 1 percent planned. The below target production of light industrial goods reflects a marked faltering of the leadership to impose

economic controls and enforce industrial priorities. There are concerns that heavy industry will again grow too rapidly at the expense of light industry resulting in a shortage of consumer goods.

In 1982 the value of light industrial production (276.6 billion yuan) represented 50.2 percent of total industrial output. Output value of the food processing industry increased 9.5 percent and textile industry 1.3 percent since the production of chemical fabrics was restricted. Among the major food industry products output of sugar and beer failed to meet planned quotas. Concerning farm inputs, output of tractors, chemical pesticides, and phosphate fell short of target levels, whereas output of nitrogen fertilizer and walking tractors exceeded planned quotas.

Total output value of agriculture was 248.1 billion yuan in 1982, 11.2 percent more than in 1981 compared with a planned increase of only 4 percent. The output of nearly all major farm products in 1982 hit all-time highs, reaching or surpassing planned figures. Total grain output, including soybeans and pulses, reached a record 353.4 million tons, exceeding the state plan by 6 percent. The output is 8.7 percent above 1981 and 6.4 percent over the previous peak figure of 332.1 million tons in 1979. Both rice and wheat production registered marked increases: despite smaller area, wheat output was 68.4 million tons or 14.7 percent more than in 1981 while the rice harvest was estimated at 161.2 million tons, 12 percent higher than in 1982.

The area sown to grain in China was increased by an estimated 1 million hectares to 114 million hectares in 1983 and total grain production is expected to approximate the 1982 record of 353 million tons. The 1983 wheat crop aided by larger area and favorable growing conditions is forecast at 75 million tons and coarse grain production at 85 million up 2.3 million tons on 1982. However, the rice crop is projected to be 5 to 10 million tons lower than in 1982. In view of current production performances, the 360 million ton goal for 1985 may not be too far out of reach.

Judging from recent area trends (1980-82), the principal source of future growth in wheat production will have to come from higher yields. In view of the still low level of Chinese wheat yields, an average of 2.1 tons per hectare for 1980-82, there is substantial scope for yield growth (Table 3). With use of improved seed varieties, better cultivation practices

Table 3. Grains, Soybeans, Cotton Area, Yield and Production: World, U.S. and China

	Area			Yield			Production		
	1977-78	1980-81	1982-83	1977-78	1980-81	1982-83	1977-78	1980-81	1982-83
	----million hectares-----			-----tons per hectare----			------million tons-------		
Wheat									
China	28.07	29.20	27.70	1.46	1.89	2.47	41.08	55.20	68.40
U.S.	27.00	28.70	31.90	2.10	2.20	2.40	55.70	64.60	76.40
World	227.10	237.10	236.10	1.69	1.86	2.03	384.10	441.90	480.20
Rice									
China	35.53	33.40	33.10	3.61	4.17	4.87	128.57	139.26	161.20
U.S.	0.91	1.34	1.30	4.94	4.95	5.32	4.50	6.63	7.00
World	143.30	144.50	142.10	2.58	2.75	2.94	369.80	397.40	417.80
Coarse Grains									
China	33.90	32.30	31.00	2.09	2.63	2.68	70.70	84.80	83.00
U.S.	44.20	41.30	43.60	4.70	4.80	5.86	205.70	198.40	255.50
World	345.10	342.50	341.50	2.03	2.13	2.29	700.60	730.40	781.60
Corn									
China	19.60	19.30	20.53	2.53	3.05	2.98	49.50	61.10	61.10
U.S.	28.98	29.56	29.47	5.70	5.71	7.18	165.23	168.78	211.59
World	124.05	128.42	134.36	2.94	3.07	3.33	364.90	394.08	447.99
Soybeans									
China	6.85	7.32	8.30	1.06	1.08	1.09	7.25	7.88	9.03
U.S.	23.40	27.46	28.65	2.05	1.78	1.97	48.10	48.77	61.97
World	45.21	49.67	52.61	1.64	1.62	1.81	72.16	80.67	95.24
Cotton									
China	4.85	4.92	5.70	0.42	0.55	0.63	2.05	2.71	3.60
U.S.	5.37	5.30	3.90	0.58	0.45	0.66	3.14	2.43	2.62
World	32.77	32.40	32.30	0.43	0.44	0.46	13.99	14.31	14.73

Source: U.S. Department of Agriculture, FAS. Foreign Agriculture Circular on Grains, Oilseeds and Products and Cotton, various issues.

and greater use of fertilizer, a significant expansion in production can be expected, though below the 1970s growth rate. It should be mentioned that the spread of high yielding varieties of wheat and for that matter that of other cereals, will generally be limited by the rate of development of irrigation.

As in the case with wheat there is potential for a rapid increase in coarse grain production based on improved yields. Chinese corn yields at 3.1 tons per hectare in 1981 were below the world average of 3.4 tons per hectare and could be raised with increased usage of hybrid varieties, more inputs and better management.[27] The direction of production of other coarse grains, notably sorghum, millet and barley, is open to question. It seems reasonable to assume that there will be no further shifts in the acreage of these crops in favor of corn and further growth in production will have to come from higher yields.

China's rice production, at best, will continue to grow at a pace approximating its historical rate of 2.3 percent annually.[28] Constraining further rapid production increases are area limitations and comparatively high per hectare yields leaving little room for improvement.

Oilseed production reached a record 11.8 million tons in 1982, topping the 1985 target of 10.5 million tons. Rapeseed is credited for most of the gain with output placed at 5.66 million tons, up steeply from the 4.07 million ton level in 1981. Production of rapeseed more than doubled since 1980 due to changes in procurement price policy. Cottonseed and sunflowerseed also have had huge production increases. A bumper cottonseed crop of 6.66 million tons was harvested in 1982, 1.2 million tons above 1981. Only soybean output decreased from its 1981 level of 9.33 million tons to 9.03 million tons due to natural disasters in major producing areas. The largest crop had been harvested back in 1957 at 10.05 million tons.

The question now is whether China intends to encourage further expansion of oilseed production or will try to hold it to the original 1985 target of 10.5 million tons? The 1983 plan called for oilseed production to drop by 1.5 million tons suggesting that the government, at least in the short-term, does not want to produce more oilseed than planned for 1985.[29] This production adjustment is hoped to be accomplished through lower quotas and the elimination of the price bonus for rapeseed production. Thus most of the

production reduction will probably occur in rapeseed and to a lesser extent in soybean and peanuts acreage. Future oilseed production increases will have to be achieved by higher yields per hectare (Table 3).

Raw cotton production increased sharply since 1977 and by 1982 output was 3.6 million tons, 21 percent more than in 1981. This growth exceeded all expectations and approaches the target set for 1985.

Increases to varying degrees were registered in the number of hogs to 300.8 million heads, a 2.4 percent increase over 1981 and cattle to 76.1 million, an increase of 3.8 percent over 1981. Meat production totaled 13.5 million tons, 7.1 percent more than at the end of 1981. Pork accounted for most of the increase.

Trade Implications

Foreign Cooperation Arrangements. A pivotal feature of China's new policy orientation is the opening of the nation's economy to the outside world and the broadening of its participation in the global economic system by joining the World Bank and the International Monetary Fund. Foreign participation is especially encouraged in the form of joint ventures in export oriented industries. China is also encouraging co-production deals, compensation trade, export processing and assembling. Under the compensation trade plant and equipment is supplied by the foreign partner and payment is made over a period of time by exporting the manufactured products. There are other forms of compensation trade referred to as counter-purchase, barter, switch trading and product buyback, all of which require the seller of goods to China to accept payment in goods rather than cash. Another form of joint venture is the processing contract. In this arrangement the Chinese enterprise uses the resources supplied by the foreign firm for processing and/or assembling and turns over the finished goods to overseas companies and charges them processing fees. China has also shown preference for importing raw materials for processing (i.e., plywood and leather) and exporting the products (i.e., furniture, shoes).

The various forms of foreign cooperation arrangements to gain access to foreign markets is especially important for the Chinese for two reasons. First, Chinese knowledge of world market conditions has been scant and patchy and second, Chinese exports are especially vulnerable to protectionist measures. Channeling exports to foreign partners, especially those for their own use, mitigates the difficulty caused by protectionist sentiments in the importing country.

Joint ventures are not being viewed solely as a means for upgrading the technological mix of China's exports but also as a device to develop Chinese managerial skills and to secure needed technology and equipment for projects in areas of current high priority. This includes the development of the energy sector, improving the backward infrastructure, light industries, and development of the country's four special economic zones. The joint ventures may also facilitate a more flexible management style, particularly until the Chinese enterprise management system has been thoroughly reformed. The Chinese also hope that foreign investment will act as a spur to the efficiency of domestic producers.

In an effort to attract foreign investment, China has allowed various forms of arrangement to fit the particular purposes at hand and conditions, such as the type of product and technology involved and domestic capability. It has also introduced a series of foreign investment incentives, which include: 1) exemption from import duties and business taxes of machinery and equipment and other materials imported by foreign investors as part of their share capital and equipment and supplies which are not available in China; 2) extension of income tax holiday for joint ventures for its first two years and a 50 percent reduction in the third year; 3) greater opportunities to sell in China; and 4) lowering the tax rate on interest and royalties earned by foreign companies from 20 percent to 10 percent. Moreover, in special cases, foreign companies investing the Special Economic Zones in the coastal areas, even 100 percent foreign ownership is allowed. Additionally, not only foreign companies but individual foreigners were permitted to hold equity in China-based joint ventures.[30] Exactly how foreign firms are to be treated is still evolving. So far foreign response to joint-equity ventures has been limited because of lack of legal protection and the apprehension of the bureaucratic complexities of setting up a joint venture. Also shortage of trained people, especially management talent is a hindrance to rapid expansion of joint venture activities.

Foreign trade plans for 1983 call for a substantial increase in imports in order to accelerate the modernization program. This expansionary import policy contrasts with the situation in 1981 and 1982 when China achieved trade surpluses of $3.6 billion and $3 billion respectively. The planned increase in imports is being especially facilitated by the foreign exchange surplus accumulated in previous years.[31]

Overall, the magnitude of China's trade in the 1980s will be tied in with the realization of agricultural and industrial production and consumption goals set in the 1981-85 plan period and direction of related government policies. It is often difficult, however, to coordinate the export plans with domestic demands. Conflict between export and domestic demand arises in cases where the goods are also in great demand at home. In this situation, the planning authorities must decide whether to make a downward revision in the export targets, curtail domestic consumption or adjust import requirements to export capacity. Because of the priority given to foreign exchange earnings, differences between export and domestic demand are generally resolved in favor of exports. Since foreign trade is a state monopoly, China is able to manipulate its export and import prices within a fairly wide range. China may sell substantially below world market prices or pay premium prices for imports depending on the economic or political goals it wishes to pursue.

Import Requirements. In 1982 China imported 15.6 million tons of grain made up of 13 million tons of wheat and 2.6 million tons of coarse grains. Purchases are forecast to fall only marginally in 1983 to around 15 million tons. Based on China's long-term purchase agreements with major suppliers, grain imports in 1984 may be in the range of 13 to 18 million tons (Appendix Table 1). China's grain imports during the next few years are likely to be maintained at around current levels.[32] As in the past the bulk of grain imports will be wheat.

The magnitude of wheat imports may change from year to year in response to 1) increase in population, 2) the size of wheat harvest, 3) the level of state procurement, and 4) stockpiling policies. Permission of higher reten-

tions of wheat and thus higher rural consumption would, other things being equal, lead to greater imports. Because China's stockpiling capacity is unknown, no inference can be drawn regarding its impact on the year to year variations in wheat imports. Nonetheless, it may be assumed that at times of favorable world market prices, China may import wheat in excess of normal requirements for stockpiling purposes.

Over the longer term China's wheat imports will also be affected by the growth of incomes and pace of industrialization. Industrialization and concurrent migration from countryside to the towns will undoubtedly increase demand for wheat based foods.

The magnitude of coarse grain and oilseed imports will reflect trends in 1) the growth of domestic production, 2) direction and pace of livestock production, 3) feeding efficiency, 4) permitted growth in domestic consumption of livestock products, and 5) level of livestock product exports. The actual rate of expansion of livestock branches is unclear. Expansion of hog and poultry operations could greatly boost demand for both feedgrains and oilseeds. For 1983-84 China's coarse grain imports are expected to be around 3 million tons.

In view of the excellent 1982-83 oilseed crop outturn, China is expected to become a net exporter of oilseeds of an estimated 0.61 million tons.[33] Of this soybeans are seen to contribute around 400,000 tons and shelled peanuts 150,000 tons compared with 260,000 tons and 111,000 tons in the preceding year (Appendix Table 2). It is reported that the still too high erucic acid content of the Chinese rapeseed limits its export potential to the Japanese market.

With a planned cutback in oilseed production through 1985 and continued increases in vegetable oil consumption, China is not likely to be able to remain a net oilseed exporter. China is thus seen to become a net importer of oilseeds by 1985, though it will continue to export as well as import soybeans and export peanuts in substantial volumes.

China's future raw cotton imports will be influenced by a combination of factors such as the level of domestic cotton and synthetic fiber production, growth in domestic spending on clothing and foreign demand for China's textile products. Chances for expanding textile exports to developed countries are, due to rising protectionism, slender and this together with

expanding domestic consumption will tend to have a depressing effect on the level of exports. By the same token, China's raw cotton imports will likely be reduced from the 500,000 bales imported in 1982-83.

Export Availabilities. Official announcements suggest that China intends to maintain its position as a net agricultural exporter. Nonetheless export capacity will be constrained by expanding domestic consumption and the pace of exports will likely decelerate below the rate recorded in the second half of the 1970s.[34]

Given a still significant income elasticity of demand for basic food items, and the low per capita meat and dairy product consumption levels, the demand for these products will expand considerably by 1985. Even a modest growth in per capita consumption levels by China's 1,031,880,511 inhabitants (July 1, 1982) will strain domestic supplies of both feeds and livestock products.

The scope of improvement in per capita consumption levels, however, may be held down either by tighter rationing or price increases. The current growth of the Chinese population at 1.5 percent in 1982 is still too large and is among the biggest concerns of economic planners. This translates into 15 million people that had to be additionally fed in 1982.

Exports will continue to include such traditional agricultural raw materials as hides and skins, feather, bristles, live hogs, tung oil, raw silk, wool and tea. Food products exports are likely to be concentrated on rice, pork and hog products, fruits and vegetables, frozen fish and shrimp. China's rice export supplies are not likely to substantially exceed current levels. Also world market conditions are likely to militate against export growth. Specific joint-venture projects now underway for poultry and dairy production in southern China and for grain and soybean production in the northeast are expected to enhance China's export capabilities for these products.[35]

U.S. Agricultural Exports to China

The growth in U.S.-China trade has been spurred by the implementation of a U.S.-China Trade Agreement effective February 1980. This agreement provided for mutual extension of most-favored-nation treatment, extension of U.S. export credits and stepped-up U.S. market development programs. Government export credits were made available under a loan agreement and a memorandum of understanding on financing procedures signed by the Export-Import Bank of the United States (Exim Bank) and the Bank of China in May 1981. The Agreement on Commercial Exhibitions opened the way to the launching of trade promotional efforts by both countries.

In line with the normalization of U.S.-Chinese relations, the trade between the two nations has increased rapidly totaling $5.6 billion in 1981 compared with $1.8 billion in 1978. In 1978 China sold only 3.2 percent of her total exports to the U.S. The share rose to 8.2 percent by 1981. During the same period, the U.S. share in China's imports rose from 8.3 percent to 20.3 percent. The increase in the U.S. share was achieved partly at the expense of Japan.

U.S. agricultural exports received a boost through the signing of the U.S.-China Grain Agreement in October 1980. This agreement provides for annual exports of 6-8 million tons of U.S. wheat and corn to China during 1981-84. An additional 1 million tons may be purchased without prior notice, making the effective range 6-9 million tons. If China's imports fall below the minimum 6 million tons, it must reduce purchases from other sources proportionally.

The value of U.S. agricultural exports to China rose from a low of $64 million in 1977 to a record $2.2 billion in fiscal 1981. Since then the value of U.S. shipments declined to $1.9 billion in 1982 and then dropped to an estimated $800 million in fiscal 1983. Wheat is the leading U.S. agricultural export accounting for over three-fourths of the total in 1982. Cotton is the second ranking export item followed by soybeans and corn.

The decline in U.S. agricultural exports is due mainly to a sharp drop in wheat and cotton sales. The only bright spot has been corn. U.S. corn exports more than doubled in 1982-83 reaching an estimated 2.3 million tons

out of total imports of 2.5 million tons. Nonetheless U.S. grain sales to China for 1982-83 totaled 6.4 million tons and thus are above the minimum as agreed under the bilateral pact.

Purchases for 1983-84 have not been as heavy as anticipated. Total Chinese wheat and corn commitments to the U.S. at the end of June were only 2.6 million tons, of which wheat commitments were 1.2 million tons and corn 1.4 million tons. A serious threat to the grain supply agreement with the U.S. could arise should total imports for 1983-84 be lower than in recent years or if more tonnage is contracted from alternative sources.

Chinese imports of U.S. soybeans and cotton too are also likely to decline from previous years' levels. As Chinese imports from the U.S. have been declining, purchases from Argentina, Canada, and the European Community have risen. Increased purchases from Argentina and the European Community are attributed to lower prices demanded and the French freight subsidies which are higher than normal grain subsidies. But political retaliation is also an important factor in the declining Chinese purchases of U.S. farm products. The U.S. arms sales to Taiwan and the according of independent status to Taiwan are the major issues which mar U.S.-China relations.

Another difficult issue between the two governments is U.S. control over the sale of high technology equipment which China needs for the country's modernization. The main reason for the U.S. ban is that China has not signed the nuclear non-proliferation treaty. Further straining the relations between the two countries was the U.S. decision in April 1983 to grant political asylum to a Chinese tennis star.

The conclusion of a new bilateral agreement on U.S. imports of Chinese textile and apparel products is expected to ease the economic strains between the two countries and lead to renewed purchases of some American farm products. The accord, which is retroactive to January 1, 1983 runs through 1987, limits annual shipment growth to the U.S. to between 2 percent and 3 percent.

China is the fourth largest supplier of textile products to the U.S. In 1982 textile exports from China to the United States amounted to about $800 million supplying about 11 percent of all such imports.

Resolution of other outstanding issues could give a further boost to the revival of U.S.-China trade.

Long-Term Implications. China's food supply and trade position over the long term will be determined by the 1) rate of increase of population, 2) maintenance of incentive system that spurs productivity, and 3) ability to improve the country's domestic transport and distribution network. If China succeeds to keep its population at 1.2 billion by the end of the century, there will be 880 pounds of food per capita in a year, according to official sources. In a "worst case scenario" with the population growing to 1.48 billion, per capita food supply would drop to only 660 pounds.[36] Then the question is to what extent the pace of birth rate can be kept in check. New laws in effect authorize penalties for families who raise more children than allowed by the government.[37]

Further progress in productivity will, to an important extent, be determined by the continuation of consistent incentive programs in agriculture and industry and the overhaul of the state pricing mechanism. As of now, progress toward economic reforms is slow and halting reflecting an obvious lack of unity and decisiveness of the current leadership over the best way to confront emerging economic problems. The obstacles to reform are technical, bureaucratic, and ideological in nature. The imperatives of reform may conflict with regional and local economic priorities and thus their implementation is being resisted. Bureaucratic infighting among various ministries can also prevent central directives from being fully implemented. Changing foreign trade structure so far has created a great deal of confusion as different departments make conflicting claims of authority.

The biggest poser for central authorities is how far they dare go in granting enterprise autonomy in the area of production planning and control over investment funds, and toward private activities in particular.[38] The role of prices in resource allocation is another unresolved issue. Administratively set prices prevent the price mechanism to regulate consumption or production and thus remain a serious source of inefficiency. Presently prices of raw materials and other essential commodities are heavily subsidized which now account for around 30 percent of annual state spending. This has raised the issue in party circles whether China can achieve modernization without converting its socialist system to capitalism. A segment of Communist Party functionaries prize ideology over pragmatism.

An adequate transport and distribution network would not only facilitate the process of production but also allow greater interregional movements of grain and hence reduce the advantage of imports.

Appendix Table 1. People's Republic of China: Major Grain Contracts

Exporter	Date Announced	Quantity Per Year Million Tons	Type	Period
Argentina	Nov. 1973	0.7-1.0	wheat and corn	1974-76
	May 1978	1.0	wheat and corn	1979-81
	Sept. 1980	1.0-1.5	0.7-0.9 wheat 0.3-0.6 corn and soybeans	1981-84[1]
Australia	Oct. 1973	up to 4.7 in total	wheat	1974-76
	Jan. 1979	2.5	wheat	1979-81
	Nov. 1981	1.5-2.5	wheat	1982-84
Canada	Oct. 1973	1.6-2.0	wheat	1974-76
	Feb. 1979	2.8-3.5	wheat	1979-82
	May 1982	3.5-4.2	wheat	1982-85
United States	Oct. 1980	6.0-8.0	wheat and corn	1981-84[2]
EC (France)	Sept. 1980	0.5-0.7	wheat	1980-83

[1]Replaces final year (1981) of May 1978 agreement; includes soybeans.

[2]All wheat, except 15-20 percent of corn. China can buy up to 9.0 million tons without prior notification.

Source: Alan J. Webb and Edward C. Wilson, An Overview of Bilateral Trade Agreements for Agricultural Commodities in International Markets. IED. Staff Report No. AGESS81-616, USDA, Washington, D.C., June 1981. Appendix pp. 1-8;

U.S. Department of Agriculture, ERS, China Review of Agriculture in 1981 and Outlook for 1982. Supplement 6 to WAS-27, Washington, D.C., August 1982, p. 32.

International Wheat Council, Market Report, PMR 119, London, England, June 28, 1983, Appendix Table 1.

Appendix Table 2. China's Oilseed Trade, 1976-77 - 1982-83

	(October/September)						
	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
	thousand tons						
Imports							
Soybeans[a]	233*	188*	261*	810*	545*	509*	36*
Sesameseed	8*	3*	1*	1*	-*	5*	4*
Total	241*	191*	262*	811*	545*	514*	40*
Exports							
Soybeans	97*	79*	339*	243*	340*	260*	400*
Groundnuts[b]	18*	21*	31*	52*	229*	111*	150*
Sunflowerseed[b]	4*	5*	6*	6*	10*	14*	15*
Rapeseed[b]	-*	-*	-*	-*	-*	5*	20*
Sesameseed[b]	1*	2*	2*	17*	21*	34*	31*
Palmkernels	-*	-*	-*	-*	-*	-*	2*
Castorseed[b]	1*	-*	10*	18*	7*	26*	28*
Total	121*	107*	387*	336*	608*	450*	646*
Net Exports	-120*	-84*	125*	-474*	63*	-64*	606*

[a]Figures with asterisk: estimated on the basis of the exports of known supplying countries.

[b]Imports into known importing countries, considering one month shipping time.

Source: Oil World, No. 20/XXVI, May 1983, p. 148.

FOOTNOTES

[1] Beijing Review, Vol. 26, No. 21 (May 23, 1983), p. V.

[2] Some analysts believe that energy constraints alone will slow the industrial growth rate to between 3 and 5 percent annually through 1985, compared with 9.6 percent in 1975-80. See Robert M. Field and Judith A. Flynn, "China: An Energy-Constrained Model of Industrial Performance Through 1985," in Congress of the United States, Joint Economic Committee, China Under the Four Modernizations Part 1, Washington, D.C., August 13, 1982, p. 357.

[3] For a full discussion of industrial reform see Bruce L. Reynolds, "Reform in Chinese Industrial Management: An Empirical Report," in Congress of the United States, Joint Economic Committee, China Under the Four Modernizations Part 1, op. cit., pp. 119-137.

[4] But even this growth rate in agricultural production is tempered by the fact that it has been realized at high resource cost and declining factor productivity. According to Tang's estimates, total factor productivity in China's agricultural sector in 1977 was 21 percent below the level of 1957. See Anthony M. Tang, "Food and Agriculture in China: Trends and Projections, 1952-77 and 2000," in Anthony M. Tang and Bruce Stone, eds., Food Production in the People's Republic of China, International Food Policy Research Institute, Research Report 15, Washington, D.C., May 1980, pp. 27-28.

A further elaboration of China's low agricultural productivity problems is given by Robert F. Dernberger, "The Chinese Search for the Path of Selfsustained Growth in the 1980's: An Assessment," in Congress of the United States, Joint Economic Committee, China Under the Four Modernizations Part 1, op. cit., pp. 22-23.

[5] The priority given grain production over the previous two decades has forced the diversion of a portion of land into grain growing irrespective of profitability considerations. Such a policy has often resulted in inefficient resource allocation. See Robert F. Dernberger, "The Chinese Search for the Path of Selfsustained Growth in the 1980's: An Assessment," op. cit., pp. 37-39.

[6] Between 1977 and 1981 the area under grains and tubers dropped by 6.5 million hectares, an area corresponding with 6.5 percent of the 1977 area.

[7] U.S. Department of Agriculture, ERS, China Review of Agriculture in 1981 and Outlook for 1982. Supplement 6 to WAS-27, Washington, D.C., August 1982, p. 7.

[8]There are vast areas of submarginal land along the northern and western borders of the country for which productive use could be found. For more details, see Rhoads Murphy, "Natural Resources and Factor Endowments" in The Chinese Agricultural Economy, ed. Randolph Barker and Radha Sinha with Beth Rose. Boulder, Colorado: Westview Press, 1982, pp. 49-54.

[9]Frederic M. Surls and Francis C. Tuan, "China's Agriculture in the Eighties," in China Under the Four Modernizations Part 1, op. cit., p. 422.

[10]On regional differences in grain distribution, see Bruce Stone, "China's 1985 Foodgrain Production Target: Issues and Prospects," in Food Production in the People's Republic of China, ed. by M. Tang and Bruce Stone, op. cit., p. 95; and Francis Tuan, PRC Provincial Total Grain Production, 1969-79, Staff Report, Economics and Statistics Service, U.S. Department of Agriculture, January 1981.

[11]Estimates suggest that average per capita grain consumption in urban areas may be 25 to 35 percent higher than in rural areas. See Nicholas R. Lardy, "Food Consumption in the People's Republic of China," in The Chinese Agricultural Economy, ed. by Randolph Barker and Radha Sinha with Beth Rose, op. cit., p. 158.

[12]Central Intelligence Agency, National Foreign Assessment Center. China: Demand for Foreign Grain, ER-79-10073, January 1979, p. 2; and Vaclav Smil, "China's Food: Availability, Requirements, Composition, Prospects," Food Policy 6, 2:69-72, 1981.

[13]The system seems to operate in three forms: 1) individuals, households, or work groups within the team in high income collectives contract with the collective for specific work within the collective economy; 2) small plots of land are farmed by individuals or households on a piece work basis but the distribution of income is collectivised; and 3) in remote less productive areas households obtain land on a contractual basis and guarantee to meet state quotas and any collective levy. For a description of the evolution and operation of the responsibility system see Jurgen Domes, "New Policies in the Communes: Notes on Rural Societal Structures in China," Journal of Asian Studies, Vol. XLI, No. 2, February 1982, pp. 253-267.

[14]Beijing Review, Vol. 26, January 24, 1983, p. 15.

[15]U.S. Department of Agriculture, ERS, China Review of Agriculture in 1981 and Outlook for 1982. Supplement 6 to WAS-27, Washington, D.C., August 1982, p. 2.

[16]By 1981 nearly 38,000 rural markets have been reopened, 2,000 of them in urban areas.

[17]Frederic M. Surls and Francis C. Tuan. "China's Agriculture in the Eighties" in Congress of the United States, Joint Economic Committee, China Under the Four Modernizations Part 1, op. cit., pp. 431-432.

[18]The close coincidence between agricultural cycles and policy cycles in the 1952-1978 period is well documented by Anthony M. Tang, "Trend, Policy Cycle, and Weather Disturbance in Chinese Agriculture," American Journal of Agricultural Economics, Vol. 62(1980):339-347.

[19]For a discussion of the state of China's transportation networks, see Albert S. Peterson, "China: Transportation Developments, 1971-80," in Congress of the United States, Joint Economic Committee, China Under the Four Modernizations Part 1, op. cit., pp. 138-170.

[20]"China has a population of 1,031,882,551," People's Daily (October 28, 1982), p. 4.

[21]Zhao Ziyang, "Report on the Sixth Five-Year Plan," Beijing Review, Vol. 25, No. 51, December 20, 1982, pp. 10-25.

[22]Nan Zhou and Ronald D. Balsley, "The Role of Intellectuals in the Economic Development of China: Problems for Joint Venture Partners and Current Solutions." Paper prepared for Conference on China's Trade and Foreign Policy with the Industrialized Countries. University of Illinois at Urbana-Champaign, Illinois, 1983, p. 10.

[23]As part of the strengthening of the scientific establishment the State Scientific and Technological Commission was reestablished under the State Council, to coordinate China's national scientific activities. Concurrently, the responsibility of the Chinese Academy of Sciences for planning, directing, and supporting research was gradually restored. Currently the Academy is composed of 113 research institutes, covering most fields of natural and engineering sciences.

[24]"About Intellectuals," Beijing Review, Vol. 25, No. 49, December 6, 1982, pp. 3-4.

[25]Beijing Review, Vol. 26, No. 9, February 28, 1983, p. 15.

[26]For example, food processing, paper and textiles which together contributed 57 percent of the output value of light industry in 1979 are based almost exclusively on agricultural raw materials.

[27]In the last few years the Chinese have developed and released high yielding strains of wheat and corn, incorporating the best foreign germ plasm. An excellent discussion of Chinese crop research efforts, failures and achievements is provided by Thomas B. Wiens, "Technological Change," in The Chinese Agricultural Economy, op. cit., pp. 106-117.

[28]For a description of the factors affecting the prospective growth of China's rice production, see Frederic M. Surls and Francis C. Tuan, "China's Agriculture in the Eighties," in China Under the Four Modernizations Part 1, op. cit., pp. 438-442.

[29]FAS Report, Weekly Roundup of World Production and Trade, WR 28-83, Washington, D.C., July 13, 1983, p. 1.

[30]For more information, see "Recent Development in Tax and Investment Policies of PRC" by Margaret Jack, China Economic News, April 16, 1983.

[31]It is of interest to note China's impressive foreign exchange reserves and SDR's which rose from $5.05 billion to $11.34 billion during 1982. Chinese foreign debt to be set against this is probably less than $4 billion.

[32]The absolute volume of imports may be limited by China's port capacity which, at the present, is believed to be 17 million tons a year.

[33]Oil World, No. 20/XXVI, May 20, 1983, p. 148.

[34]Frederic M. Surls, "Foreign Trade and China's Agriculture," in The Chinese Agricultural Economy, op. cit., p. 190.

[35]Ibid.

[36]Oil World, No. 20/XXVI, May 20, 1983, p. 148.

[37]Farm families, for example, will not receive the usual addition of land for private use when an unauthorized child is born. They will also have to deliver an extra quota of food to the state.

[38]Apart from private rural activities, China's private enterprise sector in cities and towns is growing. There are now 2.6 million households licensed to operate their own shops, restaurants and services. The Economist Intelligence Unit, Quarterly Economic Review of China, North Korea, No. 2, 1983, p. 9.