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FOR FOOD WITH STRUCTURAL ADJUSTMENT
IN THE AGRICULTURAL SECTOR**

By

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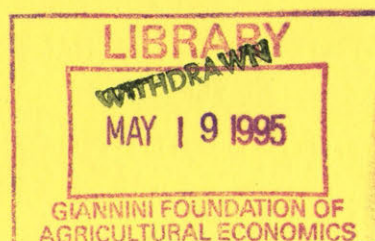


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**RESPONSES IN CHINA'S FREE MARKET FOR FOOD
WITH STRUCTURAL ADJUSTMENT IN THE AGRICULTURAL SECTOR**

Gulnaz Abdukadir and Max R. Langham¹

Abstract

Experiences since structural adjustment in China's agricultural sector suggest that the portion of the market which has been deregulated shows considerable economic rationality among the major actors in the market. Data used were generated during a period when China was following a gradual approach to the liberalization of markets, and the results suggest that the approach has merits for freeing agricultural markets. On the supply side, producers have been price responsive in supplying the free market, and a major institutional adjustment in the organization of farms indicates that fewer distortions have led to increased outputs for the market. On the demand side, home produced foods for rural consumer and rationed foods for urban consumer substitute for free-market goods. The income elasticity for food in the free market is more elastic in rural than in urban households as one would expect, since rural incomes are approximately one-half those of urban dwellers.

Key words: China, food marketing, gradual approach to deregulation, food supply, food demand.

¹ Gulnaz Abdukadir is an economic consultant with The World Bank and Max R. Langham is professor of Food and Resources Economics at the University of Florida. This paper is based in part on the major author's dissertation. Without implicating them in any errors, the authors wish to thank Uma Lele for her comments, support and assistance--especially to sources of data--and to Mark Brown for comments and technical assistance with the analysis.

The World Bank defines stabilization policies as those which achieve internal and external balance. The Bank refers to adjustment policies as those that lead to changes in the structure of incentives and institutions. If they do both, they are referred to as structural adjustment policies. In this study, we define structural adjustment in China as the degree of China's openness to the outside world and to its price and non-price reforms. The latter includes both macro- and micro-policies and institutional reforms. Structural adjustment in China includes many elements and we confine ourselves to how structural adjustment in agriculture affects China's food markets².

Before 1979, there were two kinds of rural enterprises in the Chinese planned economy--state farms implying that they were state-owned and collective-owned people's communes. Under the planned economy, producers did not have much choice in terms of what to produce, how much to produce and where to market. Almost all production activities were under a strict quota system. Production units acted to meet the planned targets and to fill fixed quotas.

Since 1979 reforms have been characterized by a much more open system and a gradual approach³ to the liberalization of food markets. The government used quotas and quota prices as policy

² The term agricultural products is perhaps more accurate, but we have chosen to use the term food since nearly all agricultural products supplied to China's free market are for food.

³ This approach contrasts with the Russian or "Big Bang" approach to market liberalization and is creating considerable interest and debate among development economist. Lele has stressed that developing countries should study and learn from China's experience in their agricultural sector. McKinnon (see International Monetary Fund) has also emphasized the valuable lessons in China's gradual approach for the Eastern European countries.

instruments to influence both state and free markets. By 1984, 98 percent of the production teams converted to the household responsibility system. Under this system individual families were responsible for production decisions and were permitted to base them on signals from a more open and market oriented system. As a consequence, gross value of agricultural output grew at an annual average rate exceeding 7 percent--more than twice the rate achieved over the previous two decades, and inflation remained low.

Quota prices were augmented with higher above-quota price bonuses. Quota levels were reduced, and encouragement sales were selectively used. Most importantly, the quota level for grains were lowered by 20 percent between 1978 and 1982 (Sicular). During this period the government still set minimum fixed quantity quotas and corresponding prices for first category products like grain. However, the number of farm products subject to planned procurement was reduced in both first and second category products⁴. And, the number of agricultural products not subject to mandatory procurement plans was expanded. In the mid 1980s, the government announced that, except for a few products, mandatory quotas were to be replaced by a program of contract and market purchases. In practice this contract system closely resembled the old procurement quotas.

The government increased its participation in market trade by reviving procurement at "negotiated prices" (Yijia Shougou). These

⁴ First category products are staple foods such as grains, edible vegetable oils and oil crops, and important cash crop such as cotton; while second category products include most of the cash crops, animal products, and side products.

prices were to follow trends in demand and supply, but in general were not to exceed local market prices (Wang). Free markets were encouraged for an increased number of products. However, farmers were allowed to sell their products on the market only after they had met their delivery quotas.

In the mixed economy, both price and quantity distortions were reduced, but the disequilibrium feature of the state market still existed. Prices of most agricultural goods were below their respective equilibrium prices. Hence, there were excess demands which were controlled by a rationing system in the state agricultural markets.

The "Free" Market

With structural adjustment in 1978, the market opened to a degree and the government reduced various economic constraints on producers. In these "free" markets, we assume that producers maximize profits and consumers maximize utility. Therefore, our model is neoclassical in the sense that it is based on maximizing behavior in these markets. Before 1978, no official free market existed. Since these markets are more open and competitive, prices are largely determined by the forces of supply and demand.

In the model which follows, the focus is on the marketable surplus of food which enters the free market. Let:

$$Y_{ot} = [Y_{1t} \ Y_{2t} \ Y_{3t} \ Y_{4t}] * i, \text{ where,}$$

Y_{ot} = total quantity of agricultural output produced in year t ,

Y_{1t} = quota quantity,

Y_{2t} = above-quota quantity,
 Y_{3t} = total home consumption,
 Y_{4t} = free market quantity, and
 i = is the sum vector.

Omitting the time subscript for simplification and assuming that the quota, Y_1 , is fixed by the government and the quantity kept for home consumption, Y_3 , is predetermined when marketable surplus is offered to the market, the surplus offered to the market is: $Y = Y_0 - Y_1 - Y_3 = [Y_2, Y_4] * i$.

Letting P be the price with subscripts corresponding to the Y 's, then in a completely open and free system,

$Y_2 = 0$, and $Y_4 = Y - Y_1 - Y_3$, if $P_2 < P_4$; and

$Y_4 = 0$, and $Y_2 = Y - Y_1 - Y_3$, if $P_2 > P_4$.

During the period in which the data used in this study were generated by the system, P_2 was less than P_4 in each year. Even so, some sales under the above quota system were made. This fact suggests that farmers felt obligated, or perhaps intimidated, to offer some quantity to the above quota program. We believe these offerings were like an insurance payment to satisfy government. These non-obligatory and self-determined sales were treated as a constraint on the optimization process and subtracted off as were the fixed quotas.

Endogenous variables in the structural equations which follow are the quantity supplied, Y ; price, P ; quantity demanded in the

rural sector, Q_r ; and quantity demanded in the urban sector, Q_u ⁵. The market clearing identity is not presented.

The Supply Side

The supply function for food in the free market is specified in equation (1). Observations used to estimate this linear approximation were for the period after structural adjustment started in the rural area. Under the planned economy there were few changes in price and hence no concept of a supply function. The functional form of the supply function after adjusting for the required quotas was as follow:

$$\begin{aligned} Q(1) \ Y_t = & B + B_1 P_t + B_2 FER_t + B_3 LA_t + B_4 LD_t + B_5 HRS_t + B_6 NGCA_t + B_7 MCI_t \\ & (+) \quad (+) \quad (+) \quad (+) \quad (+) \quad (-) \quad (+) \\ & + u_t \end{aligned}$$

Where, Y_t = the marketable surplus supplied to the free market in year t (represented by Y_4 above),
 P_t = free-market price index,
 FER_t = application of manufactured fertilizer in nutrient weight in thousands of tons,
 LA_t = labor force in agricultural sector in thousands of people,

⁵ One might expect that the income variable in the rural demand equations is endogenous as income is determined with price and production in agricultural areas. Incomes may also be affected by other economic factors and policy variables (Lele and Mellor, 1981 and Mellor, 1978). To test whether there is an endogeneity problem (specification error) with treating incomes as exogenous, a Hausman (1978) specification test was conducted for each demand equation. This test for a particular equation is based on treating income first as exogenous and then as endogenous. If the coefficients of the two sets of estimates are sufficiently close, then the data suggest that there is not an endogeneity problem. The Hausman test results indicate that endogeneity was not a problem in either demand equations in this study.

LD_t = cultivated land in thousands of hectares,
 HRS_t = the proportion of the production teams that
had changed to the household responsibility
system,
 $NGCA_t$ = the percentage of total sown area in non-grain
crops,
 MCI_t = the multiple cropping index,
 B = the parameters to be estimated,
 u = the error term.
 t = observational index representing the t^{th} year,
and the signs below the parameters are those expected.

State procurement prices are announced prior to the beginning of the production season and therefore predetermined. The expected free-market price is assumed to be the current year's price since the crops supplied to the free-market are mostly vegetables grown in multiple crops in a season. Other assumptions about how farmers formed price expectations were tried including a naive expectation model, but none seemed to be as consistent with the data as the current price. Fertilizer, labor and land were treated as quasi-fixed inputs. At the national level the quantities of fertilizers available to agriculture are not determined in the market but

rather are based on other governmental decisions⁶. The HRS variable alters the compensation scheme and is expected to affect the level of effort supplied by each farmer. The percentage of cash crops increases as the production of grain crops decreases. Since most of the cash crops are under state control, an increase in NGCA will lead to a downward shift in the free-market supply of agricultural commodities. The MCI variable is included to capture the impacts of institutional adjustments, state price adjustments and market reforms, and B_7 is expected to be positive.

Demand Side

It is widely agreed that there are differences between urban and rural demand in China for agricultural commodities. Urban demand is derived from behavior in urban households, and rural demand is mainly derived from behavior of production teams. Under the shortage economy, the state had a rationing system for most food groups such as grains, meats, edible oils, sugar and tea and other non-agricultural commodities consumed in the house. In the rural areas rationing for consumption was designed as follows: Firstly, grain producers were supposed to feed themselves with what was left after state procurement and requirements for seed and feed. Secondly, for those whose grain output was substantially lower than the state determined quota procurement level, and/or who

⁶ Fertilizer allocation problems abound in China, the principal problem with the allocation system is that it is too closely tied to procurement. Almost all nationally allocated fertilizers and most of the provincial production of fertilizers are typically provided in exchange for agricultural commodities. The allocation of some country fertilizer production is diverted by officials who use allocations to encourage compliance with various programs such as the birth control campaign (Stone 1986).

produce non-food crops, the state would supply a ration of food grains, and in some areas, edible oils. Since 1955, quantities of rationed items were determined according to one's age, occupation, and the local consumption level. Consumption in rural areas depended on incomes which in turn, depended on production. Under the People's commune system, 90 percent of rural incomes came from collectives. Therefore, the institutional structure had a large impact on rural consumption.

Coupons for such rationed items as grains, cooking oils, meats, sugar, tea and cotton were issued to each person classified as an urban resident. The quantity of coupons distributed to a consumer in an urban area depended on his or her personal income, ethnic group, and location. Personal incomes vary by occupation, skills, education, age, number of year working experience, and location. However, the greatest income gap among social groups existed between urban and rural residents. Under the rationed economy, there was not much choice and an urban dweller consumed according to his or her state issued coupons.

With structural adjustment, both urban and rural consumers have had to adjust to the new economy⁷. Consumption patterns in

⁷ China's statistical household survey data provide some evidence of the extent of income and consumption gains in rural China. In nominal terms, per capita incomes of farmers in 1991 were 5.3 times those of 1978 (A Statistical Survey of China). Incomes of urban dwellers rose about 63 percent during 1978 to 1991 and were 58.6 percent higher than rural income in 1991. In real terms, rural incomes may have increased by 70 percent while urban incomes were up by about 40 percent; however, the urban/rural income ratio in real terms is still well over 2. Consumption gains have been substantial. Between 1979 and 1991, annual per capita consumption of grain in rural China increased by only 3.2 percent, but per capita consumption of vegetable oils and red meats (excluding poultry) rose by more than 188 percent and 117 percent, respectively.

China's rural areas have continued to differ markedly from those in urban areas with rural residents consuming substantially more grain and less meat on a per capita basis, but the patterns have been converging.

In the rural area, the basic unit of rural consumption and production has become the individual household. There are more incentives for work to generate income and to improve living standards. Data in Table 1 show how structural adjustment has changed the sources of incomes.

Table 1. Sources of Farmer's Per Capita Income in Percentages by Years, 1978-1991

Year	From the collective	From the united organization	from the household management	Other non- borrowing income
1978	66.3	---	26.8	6.9
1980	56.6	---	32.7	10.7
1981	52.0	---	37.8	10.2
1982	21.5	---	69.4	9.1
1983	11.6	0.3	79.0	9.1
1984	10.0	0.8	80.3	8.9
1985	8.4	0.9	81.1	9.6
1986	8.5	0.7	81.5	9.3
1987	9.1	0.8	82.9	7.2
1988	9.1	0.7	83.2	7.0
1989	9.4	0.6	82.2	7.8
1990	8.8	0.3	84.0	6.9
1991	9.3	0.3	83.1	7.3

Sources: China Agricultural Yearbook (1985,1990).

The rationing system also gradually changed. Previously, some farmers were officially recognized as non-grain producers and were entitled to grain rationing. Such farmers paid the same price as urban residents--a price to cover the quota purchasing cost. More recently, they buy grain from the free market or in state stores. In this latter source, they now pay the above-quota price plus

marketing costs. In rural areas, only selected individuals such as fisherman, herdsman and government officials can buy grain at the ration price. Ration coupons other than for grains have disappeared, and consumers can freely purchase either in government stores or the free market.

According to the consumer expenditures survey, per capita expenditures in current prices increased from 116 yuan in 1978 to 619 yuan in 1991 (A Statistical Survey of China). A large component of these expenditures was for products that were produced and consumed by the farm household and valued at current market prices. After deflating for price increases, real consumption has doubled. Following two decades of no increase in per capita private consumption, this has been a remarkable outcome. Another indicator of an increase of real incomes of rural farmers has been the decline in the percentage of their food that was self-produced (Table 2). The index of per capita consumption for nonagricultural residents (not shown in Table 2) increased 102 percent over the period 1978-91, an annual growth rate of 7.9 percent compared with the growth rate of 9.5 percent for farmers (A Statistical Survey of China).

In the urban areas, with institutional and price adjustments and the opening up of a free market, the consumption pattern changed. These changes were primarily due to increased incomes associated with the removal of market distortions. Entrepreneurs became responsible for their own profit and losses and wage rates of farmers were based on performance on the job. So, there were

Table 2. Percentages of Living Expenditure in Farm Households Purchased and Home Produced by Years, 1978-1990

Year	Purchased articles	Home-produced articles
1978	39.7	60.3
1980	50.4	49.6
1981	56.1	43.9
1983	58.8	41.4
1984	58.6	41.4
1985	60.2	39.8
1986	62.8	37.2
1987	64.5	35.5
1988	67.6	32.3
1989	68.6	31.4
1990	67.2	32.8

Sources: China Rural 40 Year (1989). A Statistical Survey of China 1992.

incentives to work and greater access to opportunities to improve living standards. Consumption patterns also changed because of the availability in the market of a greater variety of goods which were not rationed. By the early 1980s, it was no longer necessary to present grain coupons when eating in restaurants or when buying manufactured food stuffs such as cakes and cookies. As a consequence, a majority of urban residents accumulated unused grain coupons.

The government used the ration coupon in the state market to restrict excess demand for cheap food to urban dwellers. So, the basic food coupons still existed even though with reform most of the rationing coupons disappeared for agricultural goods.

With the shift from a planned economy to a mixed economy, there were changes in the structure of consumer demand for both urban and rural consumers. Incomes were different and the state and the free markets played different roles. Also, there were a

greater variety of agricultural commodities that consumer could choose among without rationing.

In specifying the model on the demand side, we assumed that the objective of the consumer was to maximize his or her utility subject to an income constraint. For rural consumers the income constraint consisted of three components--income from collective business, income from cooperative business, and income from household production. For the urban consumer the income constraint consisted of two components--basic wages of workers and bonuses. The specification also included home consumption and HRS for rural consumers and rationed goods for urban consumers. Our estimators were based on a simple linear approximation to the demand functions.

Rural consumers--The function estimated was as follows:

$$(2) \quad Q_{rt} = b_{0t} + b_{1t}P_t + b_{2t}I_{rt} + b_{3t}Y_{3t} + b_{4t}HRS_{rt} + u_{rt},$$

$$(-) \quad (+) \quad (-) \quad (-)$$

where, Q_{rt} = per capita demand of rural consumers of the agricultural products measured in yuan in the t^{th} year;

P_t = free market price index of agricultural products;

I_{rt} = per capita income of rural residents measured in yuan;

Y_{3t} = rural per capita consumption of home goods measured in yuan;

HRS_{rt} = the proportion of production teams that have

changed to the household responsibility system;

u_{rt} = an error term; and

expected signs are again given in parentheses below the respective coefficients.

Rural home consumption was expected to be a substitute for the free-market supply, i.e., b_3 was expected to be negative. The HRS variable was included as an indication of farmers greater freedom to grow what they desire to consume and of the access to basic inputs to exercise this freedom. Chinese farmers tend to produce more goods for home consumption and to buy less when the opportunity exists, so b_4 was expected to be negative and to explain how institutional adjustment impacts on the behavior of rural consumers in the free market.

Urban Consumer.--The function estimated was:

$$(3) \quad Q_{ut} = a_{0t} + a_1 P_t + a_2 I_{ut} + a_3 B_{ut} + u_{ut},$$

(-) (+) (-)

where, Q_{ut} = per capita quantity demanded of the agricultural products by urban consumer measured in yuan in the t^{th} year;

P_t = free market price index of the agricultural products;

I_{ut} = per capita income of urban resident measured in yuan;

B_{ut} = urban per capita consumption of rationed goods measured in yuan; and

u_{ut} = an error term.

Rationed goods were expected to substitute for agricultural products purchased in the free market, i.e., a_3 was expected to be negative.

The Data Sources and Model Estimates

The data used in this study were from official Chinese sources for the 14 years 1978-91. This subset of data covers the period when there was a free market for agricultural goods not under quota. Data were not available to specify a food demand system with more narrowly defined categories of foods consumed. A number of adjustments were made with the data. Detailed information on data sources and adjustments are available from the authors⁸.

All data in yuan were deflated by the grain market price index. The data set was used for an analysis of the impact of price and institutional adjustments on agricultural supply and demand for agricultural goods in the Chinese free-market economy.

The three equations were estimated with 3SLS and 2SLS methods. The 3SLS results are used here and presented in Table 3.

⁸ Data covering the longer period, 1949-91, will be provided to researchers upon request.

Table 3. Three-Stage-Least-Squares Estimates of the Supply and Demand Equations

Parameters	Estimates	Standard Errors	t-statistics ^a
Supply Equation:			
C_1	-20.7215	2.1668	-9.5630*
P_t	1.1226	0.0839	13.3742*
LA_t	0.1726	0.1264	1.3658
FER_t	-0.32×10^{-4}	0.73×10^{-3}	-0.0446
LD_t	0.10×10^{-3}	0.12×10^{-4}	8.5119*
HRS_t	0.2109	0.0722	2.9195*
$NGCA_t$	-3.7283	1.3771	-2.7073*
MCI_t	6.6352	1.0069	6.5892*
Urban Demand:			
C_2	-0.0428	0.0507	-0.8449
P_{ut}	-0.0498	0.0628	-0.7935
I_{ut}	0.0308	0.0052	5.9708*
B_{ut}	-0.0308	0.0052	5.9708*
Rural Demand:			
C_3	0.3544	0.1700	2.0844*
P_{rt}	-0.0985	0.2045	-0.4817
I_{rt}	0.2387	0.0509	4.6886*
Y_{3t}	-0.3955	0.1003	-3.9451*
HRS_{rt}	-0.2121	0.0561	-3.7842*

a: The t-statistics marked with an * are asymptotically significant at the .05 level.

The supply equation

Except for fertilizer, the estimated coefficients all have the expected signs. Under structural adjustment, producers have been price responsive in supplying the free-market. Individual production units appear to act as rational economic agents. Estimates of the coefficients for the production inputs land and labor were positive as expected, and the estimated coefficient of land was very significant. The estimated coefficient for fertilizer has a negative sign but close to zero and not significant. The allocation of fertilizer in China is closely related to various campaign programs and not to market forces. This input market provides an opportunity for China to eliminate

additional distortions.

HRS represented an institutional adjustment of the organization of farms as farmers responds in the free-market. The estimated coefficient for HRS was asymptotically significant at the .05 level and suggests that the fewer distortions a farmer has to adjust to, the higher the work effort exerted for the market. This in turn leads to more efficient production and higher output. This result parallel (Lin's) estimate that the shift from the production-team system to HRS had a positive and significant effect on agricultural growth and came primarily from increased factor productivity. The estimated coefficient for the multiple cropping index was also positively and significantly related to the free-market supply of agricultural goods. One would expected that a high cropping intensity would have a strong positive impact on market supply. Finally, NGCA shows a negative but significant relationship to market supply. This result is consistent with the Chinese reality that cash crops are under a state procurement system. For Instance, in 1990, 90.9 percent of the cotton was purchased under the state procurement system while only 36 percent of the grain was purchased by the state.

Demand Equations

Urban demand.--All signs for the estimated coefficients in the urban demand equation were as expected, but the asymptotic test of the estimated coefficient for price was not significant. The coefficient for income was significant, and the rationed foods shows a negative and significant relationship with free-market

demand which indicates that rationed goods, as one would suspect substitute for market goods. Rationed goods are usually cheaper than free-market goods, and this result, simply shows the rationality of consumers and is consistent with Wang and Chern's finding that, if the current rationing system remains unchanged, the demand for non-staple food can be expected to increase.

Rural Demand--As with urban demand, the signs of the estimated coefficient were as expected. Also, as with urban demand, the estimated price coefficients was not significant. The other estimated coefficients were significant. The results indicate that food produced for home consumption substitute for market goods⁹. The higher the consumption of home products, the lower the demand for market goods. Finally, the estimated coefficient for HRS suggests that the more access the farmers have to land and other inputs, the less their demand for market goods. Although the model did not permit a delineation of the linkage, it is believed that greater freedom for farmers in terms of production and consumption results in increased production for home consumption. And, although Chinese farmers are becoming more and more integrated into the market economy, they continue to have a strong sense of self-sufficiency¹⁰.

⁹ To our knowledge, the relationship between home consumption and market goods has not been studied--in China.

¹⁰ The survey mentioned earlier indicated that 43 percent of the farmers had as their first priority the use of land to grow products for their own consumption.

Estimated Elasticities

Estimated price and income elasticities calculated at the means are listed in Table 4. These measures help to characterize

Table 4. Calculated Elasticities at the Means of Variables

Parameter	Estimates	Standard error	t-Statistics ^a
E ₁	2.04	0.15	13.37*
E ₂	-0.40	0.50	-0.80
E ₃	1.43	0.24	6.00*
E ₄	-0.24	0.51	-0.48
E ₅	1.65	0.35	4.69*

Note: E₁=price elasticity of supply; E₂=price elasticity of urban demand; E₃=income elasticity of urban demand; E₄=price elasticity of rural demand; E₅=income elasticity of rural demand.

a: The t-statistics marked with an * are asymptotically significant at the .05 level.

the Chinese free-market supply of and demand for agricultural products. The estimated price elasticity of supply is a very elastic 2. This estimate seems high in comparison to those in other countries. For examples, most estimates of aggregate supply in Africa are below 0.5 (Chhibber, p. 128). The aggregate long-run supply response in Argentina was estimated by Cavello (p. 133) to be 1.78--an estimate closer to our result. There are three factors which lead us to believe that our estimate may not be unreasonable. First, one would expect a greater responsiveness to only that portion of aggregate output going into the free market in China. Secondly, the Chinese farmers are entrepreneurial and would be expected to adjust both production effort and home consumption decisions in responding to the free market signals. Thirdly, fresh vegetables comprise a significant part (76 percent) of the produce

sold in the free market and farmers can respond more quickly in a production environment where there are multiple crops per season.

The estimated price elasticity of urban demand was negative. The estimate suggests that a one percent decrease in the (average) price of agricultural goods, results in a 0.4 percent increase in quantity demanded. The price elasticity for rural demand is $-.24$. Both price elasticities had large standard errors.

The estimated income elasticities for urban and rural consumers were 1.43 and 1.65, respectively, which would indicate that the budget share for free-market agricultural goods increased as incomes increased during the period studied. As stated above, seventy-six percent of the free-market supply of crops were vegetables--high-valued food items for which one would expect higher income elasticities than would be the case for all food. The estimated income elasticities for both rural and urban consumers exceeded their associated standard errors.

Concluding Remarks

The present study analyzed the effect of structural adjustment in the food sector in China during the last decade. Here we used structural adjustment, as the degree of China's openness to the outside world and its price and non-price reform. There are many other elements of structural adjustment.

Generally speaking, the Chinese agricultural economy is formed and operated by the government and by basic economic units--urban households as consumers and rural firms as producers and consumers. By inspecting both structural adjustment of organizations of these

basic units and price adjustment, we explored the changing behavior of producers and consumers. An empirical model was constructed and used to evaluate the impacts of price and institutional adjustment on market supply and demand of agricultural goods. The most striking feature of this "coming out" of the Chinese economy has been the rapid increase in production and of real incomes of the people.

Data were collected to analyze the free-market part of the Chinese food economy. Producers have been price responsive in supplying the free market. This result suggests that Chinese officials should put further emphasis on price reform and look for opportunities to eliminate restrictions such as, quota price, above quota price and rationed price, and let markets play their role in resource and budget allocations. Countries attempting programs of structural adjustment and greater privatization of productive enterprises in the agricultural sector would be well advised to learn from China's experiences in using a gradual approach to removing distortions caused by tight government regulations. Finally, China still has a long way to go in both their agricultural input and product markets. Further reform should continue to stimulate their economy.

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