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Commercialization of Food Consumption in Rural China

**Fred Gale, Ping Tang,
Xianhong Bai, and Huijun Xu**

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Commercialization of Food Consumption in Rural China

Fred Gale, Ping Tang, Xianhong Bai, and Huijun Xu

Abstract

Rural households in China have traditionally consumed food mostly grown on their own farms. While they continue to rely on self-produced grains, vegetables, meats, and eggs for a large portion of their diet, rural households are now purchasing more of their food as they enter the mainstream of the Chinese economy. Cash purchases of food by rural Chinese households increased 7.4 percent per year from 1994 to 2003. Consumption has shifted from self-produced to purchased food at a rate faster than can be explained by income growth or changes in other household characteristics. The move away from self-produced food is associated with lower consumption of staple grains, the most important self-produced food in rural Chinese diets. Food consumed away from home is one of the fastest growing categories of rural household expenditures, doubling in budget share from 1995 to 2001. Commercialization of food consumption is diversifying Chinese diets, broadening food markets, and creating new opportunities for retailers and product distributors.

Keywords: China, food, consumption, expenditures, rural, commercialization, subsistence agriculture, Engel analysis.

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Contents

Summary

Many analysts anticipate that China's changing food consumption patterns will affect world agricultural trade and create new export opportunities for farmers in the United States and other countries. Much of the attention is focused on the emerging consumer class in China's cities, but a careful assessment of China's food and agricultural markets requires an understanding of rural food consumption patterns as well. The rural population—historically about 80 percent of the total but now just over 60 percent—has historically been isolated from the urban economy, mostly engaged in semi-subsistence farming with relatively little cash income available.

What Is the Issue?

Much of the food in China is consumed on the farms of households who produce it. Consumption of self-produced food is a key difference between rural and urban food consumption and is a factor often ignored in studies of China's food markets. Though China's rural households carry on the tradition of growing most of their own food, as they enter the mainstream of the country's economy, they are purchasing more of their food than ever before. With its vast size, China's rural population is thus emerging as a huge viable market capturing the attention of food and agricultural industries in the United States and other countries. The addition of tens of millions of consumers into China's food system will likely have an effect on world markets.

What Did the Project Find?

Rural households minimize their expenditure on food by relying on self-produced grain and other foods to meet most of their basic energy and protein requirements. The cost of self-produced grain is just a fraction of the cost of purchased food, so consuming self-produced food frees up limited cash to spend on nonfood items, such as housing and school fees. China's rural households consume an estimated 2,600 calories per day with annual food expenditures of just $107.

While rural households in China show a persistent reliance on consumption of self-produced food, trends show a rise of 7.4 percent per year in commercialization, or cash purchases, of food from 1994 to 2003. Over the period, consumption of self-produced grain and vegetables declined and cash purchases of food rose at rates faster than can be explained by income growth.

Commercialization is most advanced among households with relatively high incomes and households in the more developed eastern provinces. However, even households with relatively high incomes self-produce most of the grain and vegetables they consume.

Food's share of rural household budgets in China is shrinking as rural residents spend proportionally more on school fees, housing, heath care, transportation, communications, and household goods. However, expenditures on food

consumed away from home in restaurants and cafeterias are one of the fastest growing items in rural budgets, doubling in share between 1995 and 2001.

Analysis of household expenditures also reveals that the shift from self-produced to purchased food cannot be explained by income growth or changes in other household characteristics. The commercialization of rural food markets may be attributable to factors that are difficult to measure, including improved communications, transportation, increased interchange between rural and urban populations, increased numbers of rural food stores and restaurants, and a shift from subsistence agriculture to cash crop production. The commercialization trend is integrating rural areas into larger regional and national markets, and food retailers and distributors are beginning to include the rural population in their marketing plans.

How Was the Project Conducted?

This study analyzes patterns of food consumption and expenditure using data from an annual rural household survey conducted by China National Bureau of Statistics. The analysis uses both published and unpublished data to provide a glimpse of China's rural households not previously documented. Trends analyzed include rural food expenditure and consumption patterns from the early 1990s to 2003, a period of rapid change and development of markets in China's rural economy. Econometric analysis of household survey records from three Chinese provinces for the years 1995 and 2001 helped show how expenditures vary across households at different income levels.

Commercialization of Food Consumption in Rural China

Introduction

Many analysts anticipate that changing food consumption patterns in China will create new export opportunities for U.S. food and agricultural products (Hsu, Chern, and Gale). Much of the attention is focused on changes stemming from the emerging consumer class in China's cities, but a careful assessment of China's food and agricultural markets requires an understanding of changes in rural food consumption patterns.

Rural residents make up the majority of China's population, and their food consumption patterns differ sharply from those of urban residents. The rural population—historically about 80 percent of the country's total but now just over 60 percent—has historically been isolated from the urban economy, mostly engaged in semi-subsistence farming. With relatively little cash income available, rural families traditionally have consumed mostly food they have grown themselves. Consumption of self-produced food is a distinctive characteristic of rural food consumption and is often overlooked in analyses of China's food markets. Many analyses assume that all households purchase food with cash, when, in fact, much of the food in China is consumed on the farms by households who produce it.

Consumption of self-produced food remains prevalent in rural areas, but rural consumers are now purchasing more of their food. Since the 1980s, China has liberalized its agricultural economy, promoted interregional trade, and improved transportation, communication and market infrastructure, making it easier for rural residents to sell and purchase food (Gale; Gilmour and Gale). Increased rural-urban migration and income growth associated with off-farm work have given rural consumers increased purchasing power. China's rural population is now emerging as a vast potential market that is capturing the attention of retail businesses and product distributors.

This study investigates how food consumption and expenditure patterns of China's vast rural population are evolving in response to changes in the Chinese economy. A focus of the report is analysis of consumption of self-produced food by rural households, in particular, the degree to which rural consumers are shifting from reliance on self-produced food to purchased food as their cash incomes and expenditures rise. The report also examines rural household expenditure allocations among different food and nonfood categories and the household characteristics that influence such expenditure patterns.

This study analyzes patterns of food consumption and expenditure using data from the annual rural household survey conducted by China's National Bureau of Statistics (see appendix). The analysis uses both published and unpublished data to provide a glimpse of rural households that has not been

previously available. Rural food expenditure and consumption trends analyzed in this report cover the early 1990s to 2003, a period of rapid change and development of markets in the rural Chinese economy. Econometric analysis of household survey records from three Chinese provinces captures variations in expenditures across households at different income levels.

Chapter 1

Self-Produced Food Minimizes Expenditure

China's rural population spends remarkably little on food, yet it is reasonably well-fed. Food spending by households in rural China averaged just 886 yuan ($107) per person in 2003, the equivalent of just 2.5 yuan (30 cents) per day. By comparison, per capita food expenditures in urban China were more than double the rural average, at 2,417 yuan ($292), and U.S. per capita expenditures were far higher ($5,465 for urban households and $4,739 for rural households in 2002).

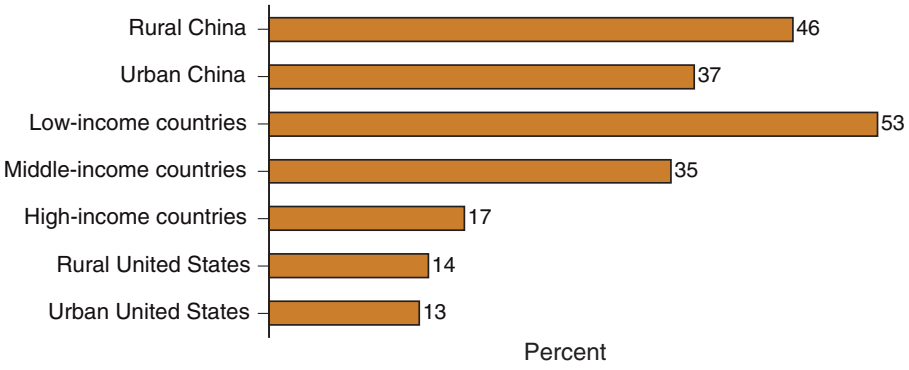
Such low levels of food expenditure suggest extreme poverty, yet rural people in China are generally not malnourished. The average caloric intake for rural Chinese persons was estimated at about 2,600 calories per day in 2003 (China National Bureau of Statistics, 2004b), above the minimum daily requirement.

Food expenditures, while low in absolute terms, are still the largest component of household budgets in rural China, accounting for nearly half of expenditures (fig. 1). The food share of expenditures in rural China is less than the average in low-income countries, but higher than in urban China and more than three times the food budget share in the United States. Clearly, food represents a major expense for households in rural China and likely influences their spending on other items.

How do China's rural citizens subsist on such low food expenditures? The price of food in rural China is very low, with many items selling for prices one-half, one-fourth, or even one-tenth the price of similar food items in

Figure 1

Food, beverage, and tobacco share of household expenditures, various countries



Note: China data are for 2003. U.S. data are for 2002. Other data are for 1996.

Sources: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004a); Seale et al.; and U.S. Bureau of Labor Statistics.

developed countries. Also, the typical diet in rural China consists largely of inexpensive food grains and vegetables, with relatively little meat, packaged food, or restaurant meals.

Household food self-sufficiency is another major strategy for minimizing rural household food expenditures in China. Nearly all rural Chinese households produce basic food grains, and most also produce vegetables and raise hogs or poultry, a large portion of which they consume on-farm.[1] Consumption of self-produced food frees up limited cash income for nonfood purchases. In 2003, cash accounted for only 62 percent, or 552 yuan ($67), of average rural food expenditures. The remaining 38 percent were noncash "expenditures": the imputed value of food grown by the farm family itself plus the value of food obtained through informal exchange or other nonpurchased sources (fig. 2).

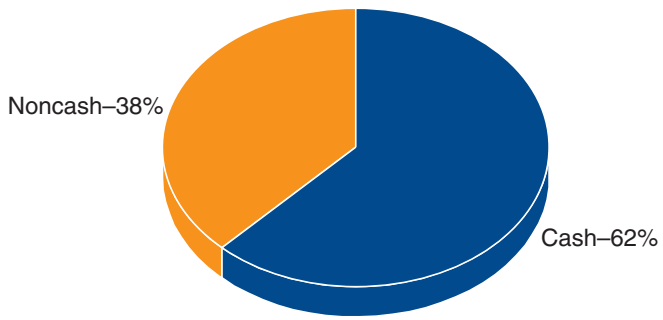
The value of noncash expenditures is imputed by China National Bureau of Statistics statisticians using estimated farm-gate producer prices. These prices are lower than retail purchase prices, so the noncash share of expenditures may actually understate the degree of reliance on self-produced food.

Food self-sufficiency allows China's rural households to meet their basic nutritional needs without having to rely on nonexistent or risky markets (Von Braun). Huang and Rozelle suggest that lack of market development constrained the consumption choices of Chinese rural households. In remote rural areas, transportation costs may discourage participation in markets by driving a wedge between effective purchase prices and sale prices (Yan). Lack of off-farm cash-generating employment opportunities also can force households to rely on self-produced food.

Most Grain and Vegetables Consumed Are Self-Produced

ERS estimated the self-produced (noncash) quantity of major food items consumed by rural households in China using data on per capita consumption and purchases reported by China's Rural Household Survey. The survey reports the quantity consumed and the quantity purchased for each major

Figure 2
Rural food expenditures, cash and noncash, 2003



Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

[1] ERS analyzed data from China's 1996 agricultural census and found that 93 percent of rural households produced grain, over 60 percent grew vegetables, and most also raised hogs or poultry. Most farms grow vegetables and raise hogs and chickens on a very small scale.

food item. Assuming that the quantity consumed is the sum of the quantity purchased and the quantity self-produced, ERS calculated the self-produced quantity as:

$$\text{Self-produced} = \text{Consumed} - \text{Purchased}. \quad (1)$$

The degree of reliance on self-produced food is estimated by expressing the quantity of self-produced food as a percentage of the quantity consumed. The result of this calculation using rural household data for 2003 is shown in table 1.[2]

Two food categories make up the bulk of food consumed: grains and vegetables. Over 80 percent of grains, beans, and potatoes consumed were self-produced; and 70 percent of vegetables consumed were self-produced (table 1). The average rural household member consumed 184.8 kg. of self-produced grains, beans, and potatoes and just 38.9 kg. of purchased grain. Consumption of self-produced vegetables averaged 75.3 kg. per person, and purchased vegetables averaged 32.1 kg.

Other important food items were also largely self-produced, including milk (68 percent), beef and mutton (54 percent), poultry and eggs (48 percent), pork (44 percent), fruit (39 percent), and edible oil (32 percent). In contrast, sugar, alcohol, tobacco, and fish products were mostly purchased.

Even High-Income Households Rely on Self-Produced Food

Households at all income levels in rural China rely heavily on self-produced food. In 2001, the poorest rural households (those in the bottom 10 percent ranked by total household expenditure per capita) in a sample from Jiangsu,

[2] ERS prepared tabulations similar to those shown in table 1 using an unpublished rural household survey conducted in 2000 by academic researchers from the Universities of Toronto and California and the China Academy of Sciences. The 2000 survey findings were comparable to ERS findings shown in table 1, with about 80 percent of grain and vegetables, 40 percent of pork, and half of edible oil consumed in rural China self-produced. The 2000 survey also showed that informal exchange was small. About 10 percent of households in the 2000 survey obtained rice, flour, or noodles through informal exchange, but the amount was equivalent to about 1 percent of grain consumed by the sample as a whole.

Table 1

Source and quantity of food consumed by rural household members, 2003

Food item	Consumed	Purchased	Self-produced	
			Quantity	Share
	Kilograms			*Percent*
Grains, beans, and potatoes	223.7	38.9	184.8	83
Vegetables	107.4	32.1	75.3	70
Milk	1.7	0.6	1.2	68
Beef and mutton	1.3	0.6	0.7	54
Poultry and eggs	8.0	4.2	3.9	48
Pork	13.8	7.8	6.0	44
Fruit and nuts	18.3	11.2	7.1	39
Edible oil	6.3	4.3	2.0	32
Fish, shrimp, and mollusks	4.7	3.9	0.8	16
Sugar	1.2	1.2	0.0	0
Alcohol	7.7	7.2	0.5	6

Note: Self-produced quantity is the difference between the quantity consumed and the quantity purchased. The share self-produced is the quantity self-produced as a percentage of quantity consumed.

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

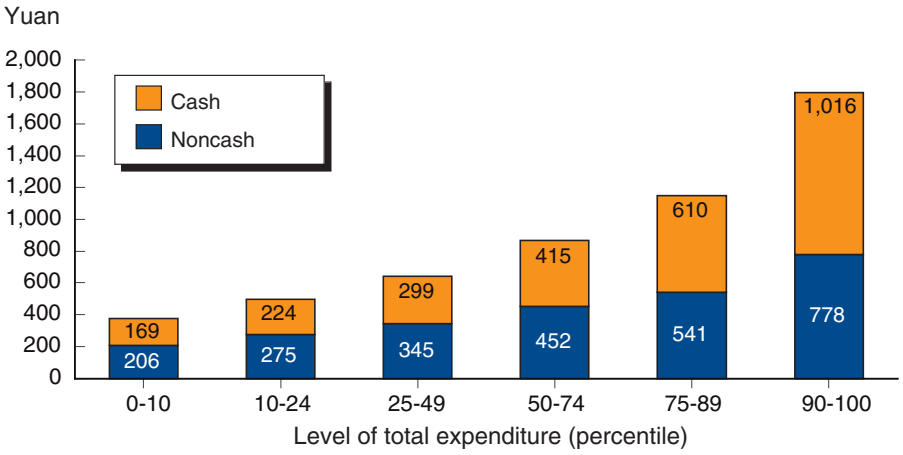
Henan, and Heilongjiang Provinces averaged just 169 yuan ($20) in cash food expenditures and 206 yuan ($25) in noncash food expenditures (fig. 3). Wealthier households had high cash and noncash food expenditures, but cash expenditures were particularly high. The wealthiest rural households (those in the top 10 percent ranked by total household expenditure per capita) averaged 778 yuan ($94) in noncash and 1,016 yuan ($123) in cash food expenditures. Cash accounted for 46 percent of food expenditures for the poorest rural households and 57 percent for the wealthiest. While there is a sharp decrease in reliance on noncash food sources as income/expenditure rises, it is noteworthy that even the wealthiest rural households relied on noncash sources for nearly half of their food expenditures.

Eastern Provinces Are Most Commercialized

Rural households in western provinces of China rely mostly on self-produced food, while those in the more developed eastern provinces and areas near large cities rely mostly on cash purchases of food. In 2003, the cash share of food expenditures was as high as 95 percent in rural parts of the Beijing municipality and exceeded 70 percent in other municipalities and wealthy coastal provinces (fig. 4). Rural households in these regions have relatively good access to food markets and many receive cash income from off-farm employment. The cash share of food expenditures was between 40 and 50 percent for most western provinces and autonomous regions. Guizhou, one of China's poorest provinces, had the lowest cash share of expenditures, at 37 percent. Most central provinces had cash food expenditures of 55-65 percent.

Figure 3

Cash and noncash food expenditures per capita, by level of total expenditure, 2001

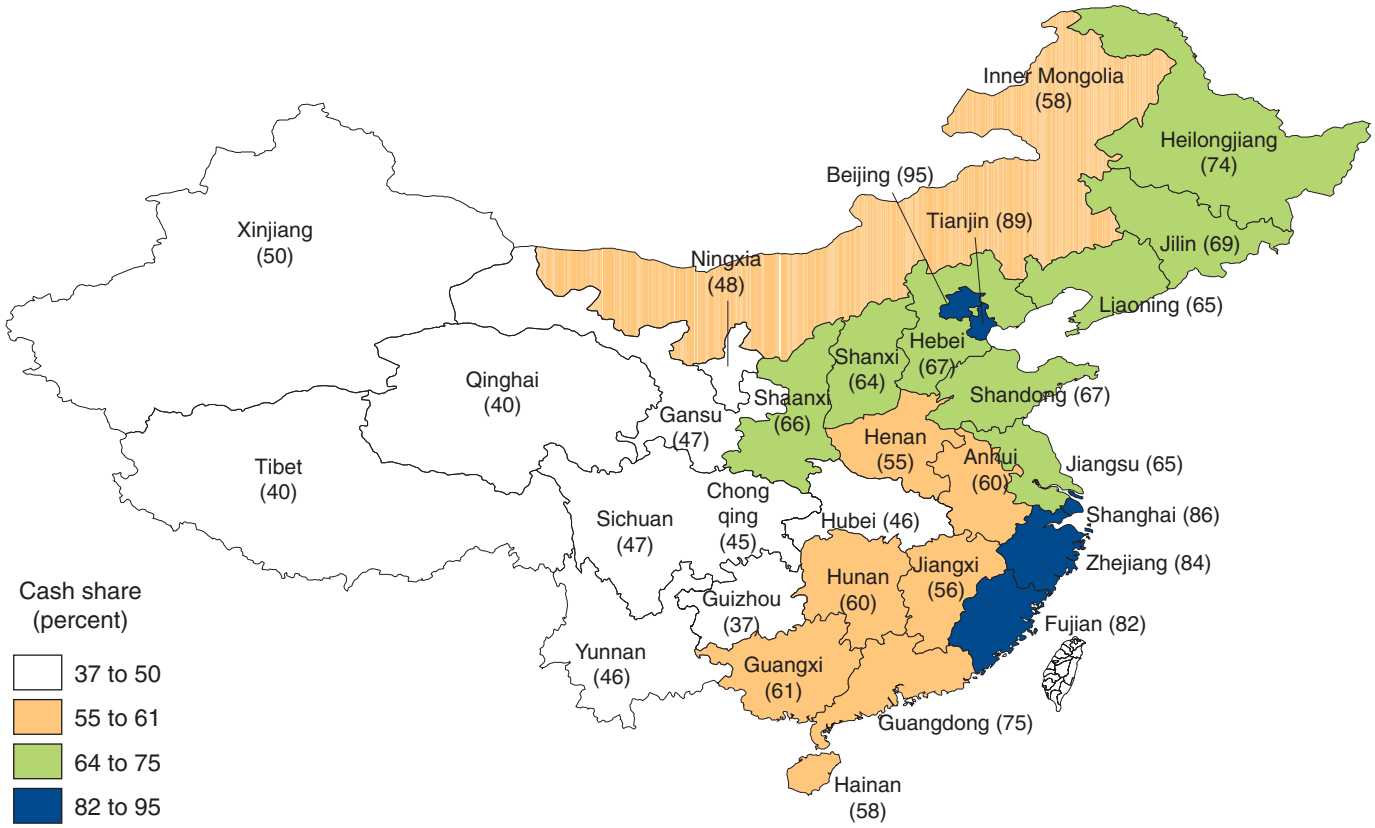


Note: Households from Jiangsu, Henan, and Heilongjiang Provinces were grouped into percentiles based on per capita living expenditures. The 0-10 category includes households with the lowest expenditures and 90-100 includes households with the highest expenditure. Chart shows average food expenditure for each group.

Source: Compiled by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).

Figure 4

Cash share of food expenditures, by province, 2003



Note: Figure shows cash food expenditures as a percentage of total food expenditures.

Sources: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

The regional difference in commercialization is most striking for meats (table 2). Rural households in eastern provinces purchased 85 percent of the pork they consumed in 2003, while central households purchased 56 percent and western households purchased just 29 percent. Eastern households also purchased a much higher share of their beef, mutton, poultry, and egg consumption. Consumption of fish products is highly commercialized in each region.

While rural household consumption of most nonstaple foods is highly commercialized in the eastern region, consumption of grains and vegetables is still reliant on self-production. Households in the eastern region purchased only 19 percent of their grain consumption in 2003, only slightly higher than the purchased shares in central and western regions. Eastern households purchased 29 percent of their vegetable consumption, and that was also higher than the shares in the central (20 percent) and western (18 percent) regions.

Self-Produced Food Meets Basic Nutritional Needs at Low Cost

ERS estimated rural household energy, protein, and fat intake derived from purchased and self-produced food items using per kilogram coefficients

Table 2

Share of rural household consumption that was purchased, by commodity and region, 2003

Commodity	East	Central	West
		Percent	
Beef and mutton	87	46	33
Pork	85	56	29
Fish, shrimp, and mollusks	85	83	80
Fruit	75	64	44
Eggs	70	44	33
Poultry	57	40	32
Vegetables	29	20	18
Grain	19	18	15

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

obtained from China nutrition experts and per capita consumption and purchase quantities of various food items. In equation (2), the purchased quantity of food item i is denoted as P_i, the self-produced quantity S_i and the energy derived per kilogram from food item i as k_i. The self-produced share of calories is calculated as:

$$s = \frac{\sum_i kiSi}{\sum_i ki(Si + Pi)} \qquad (2)$$

ERS made similar calculations for fat and protein.[3]

Based on data for 2003, rural households in China obtained 65 percent of their calories and 68 percent of protein from self-produced foods. They obtained just 35 percent of calories and 32 percent of protein from purchased foods (fig. 5). In contrast, 58 percent of fat comes from purchased foods. Calories and protein are derived primarily from grains, which make up the bulk of the diets of rural Chinese households and are mostly self-produced. Fat intake comes largely from edible oils and pork, which are mostly purchased rather than self-produced.

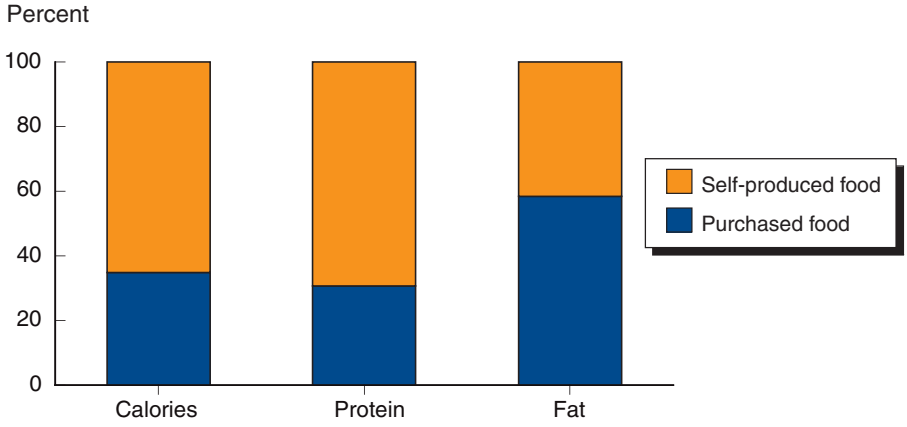
Popkin has described a nutrition transition from plant-based diets to more diverse, higher fat diets taking place in many developing countries. This transition is reflected in the nutritional content of self-produced and purchased foods. Traditionally, Chinese households obtained their basic energy and protein requirements mostly from self-produced grains and vegetables. As households gain discretionary income, they purchase more meats, oils, and processed food, which have a higher fat content. This pattern is also consistent with Popkin's observation that the traditional Chinese low-fat diet appears to be a product of poverty rather than health- and nutrition-consciousness.

The reliance on self-produced grain is likely motivated by the low cost of achieving basic nutritional intake from this food source. ERS estimates that the cost of producing enough self-produced grain to provide the average daily intake of 2,600 calories was just 335 yuan ($40) in 2001 (table 3). The cash outlays to purchase inputs (such as fertilizer, pesticides, and machinery

[3] The amounts of various foods consumed away from home in restaurants and cafeterias are not reported by the survey. Only total spending on food away from home is available. The calculations included food consumed away from home by assuming that expenditures were allocated to food away from home in the same shares as for food at home. ERS did not have information on the composition of food-away-from-home expenditures. A sample survey by Ma et al. showed that urban households tend to eat a higher proportion of meat in meals away from home.

Figure 5

Source of energy, protein, and fat intake, rural Chinese households, 2003



Note: Estimated by multiplying coefficients developed by China nutrition experts by per capita quantities of purchased and self-produced foods.

Source: Estimated by USDA's Economic Research Service from China National Bureau of Statistics (2004b) and unpublished data.

Table 3

Estimated cost of caloric intake from different food sources, 2001

Food item	Price per kilogram[1]	Energy yield[2]	Annual cost of 2,600 calories per day[3]
	Yuan	*Calories per kg.*	*Yuan*
Self-produced grain	0.89	2,540	335
Cash outlays[4]	.53	2,540	200
Labor cost[5]	.36	2,540	135
Purchased:			
Grain	1.60	2,540	600
Pork	9.30	3,950	2,230
Poultry	7.70	2,240	3,260
Eggs	4.30	1,300	3,140
Fish	5.70	660	8,200

[1]Average calculated using 2001 rural household survey data from Jiangsu, Henan, and Heilongjiang Provinces.
[2] China nutrition department unpublished estimates.
[3] Cost = (Price ÷ Energy yield) x 2,600 x 365.
[4] Input costs and taxes per kilogram of output of grain calculated from National Development and Reform Commission data.
[5] Labor cost per kilogram of grain output calculated from National Development and Reform Commission data.

Sources: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (2001); National Development and Reform Commission; and unpublished data.

services) and pay taxes constituted just 200 yuan ($24), while the labor cost was another 135 yuan ($16). However, most labor requires little or no cash outlay since it is provided mainly by family members. Family labor has little opportunity cost since off-farm work opportunities are limited and work occurs for only a few days at planting and harvest. Thus, rural households may consider only the cash costs of 200 yuan ($24) as the cost of producing grain for their own consumption.

An intake of 2,600 calories obtained entirely from purchased grain would cost 600 yuan ($73), three times the cost of obtaining the same number of calories from self-produced grain. Calories from purchased pork cost over 10 times as much as those from self-produced grain, and the cost of calories from poultry, eggs, and fish is even higher. Thus, rural families can obtain their basic caloric intake from self-produced grain with minimal cash expenditure and a modest labor input. The scarcity of cash income and the abundance of underemployed rural labor probably encourage this cash-saving strategy.

ERS estimates average per capita consumption of self-produced grains in rural China of 185 kg. (see table 1), equivalent to about 1,300 calories per day, about half of the average caloric intake of rural Chinese people. Production of 185 kg. of grain requires 89 yuan ($11) in cash outlays for inputs, 6 days of labor, and just 0.5 mu of cropland (mu equals about one-sixth acre). The minimal labor requirements of grain production leave plenty of labor free for off-farm work or other activities. The average household cropland holding of 2 mu per person is also adequate to provide household food grain needs with 1.5 mu available for cash crop, livestock feed production, or other uses (see box, “Household Economics in Rural China”).

Because rural households meet most of their basic nutrition requirements by consuming self-produced grain, they are able to devote most of their scarce cash income to expenditures on housing, schooling, transportation, and other nonfood goods and services. Even households with members employed off-farm and those with small land holdings can grow grain for their own consumption.

Household Economics in Rural China

China's more than 200 million rural households have, on average, four persons who must be fed, clothed, housed, educated, treated for medical problems, and provided with other goods and services. A rural household has limited labor, land, livestock, machinery, and other resources that can be used to grow food for consumption or to generate cash income by growing cash crops or working for wages.

In 2003, rural households averaged three able-bodied laborers and two mu (one-third acre) of cropland per person. (Under China's collective land ownership system, village authorities allocate land to each rural household based on various criteria, including the number of household members that must be fed and the number of available farm laborers.) Grain production requires only 11 days of labor per mu (National Reform and Development Commission), but off-farm earning opportunities for rural Chinese workers are limited due to geographic isolation of many villages and a surplus of rural laborers. Workers are mainly employed in agriculture, but most rural households have at least one member working off-farm at wages that are frequently 10 yuan ($1.20) per day. Many households have one or more members who are able to perform farm labor but do not work off-farm due to age or child-care responsibilities.

In 2003, the average net income per rural household member was 2,622 yuan ($317), most of which was derived from farming. Average cash income from wages was 917 yuan ($111). Given limited cash income availability, the array of household expenditures, and the minimal labor requirements of grain production, most rural Chinese households rely heavily on self-produced grain for their diets.

Rural Chinese households at a glance, 2003

Item	Unit	Average value
Persons per household	Number	4
Laborers per household	Number	3
Cropland per person	Mu	2
Grain yield[1]	Kg. per mu	350
Grain consumed per year	Kg.	224
Self-produced grain consumed per year	Kg.	185
Living expenditures per capita	Dollars	235
Food expenditures per capita	Dollars	107

[1] Source: National Development and Reform Commission.

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b), except where noted.

Chapter 2

Commercialization of Rural Food Consumption

While the rate of food self-sufficiency remains high in rural China, it is falling rapidly as rural consumers gain more income and become integrated into the larger economy. Expanding off-farm employment, rural-urban migration, and the geographic spread of cities are giving rural people access to cash income and food markets. The share of rural income received in cash rose from 49 percent in 1980 to 82 percent in 2003, and rural retail sales per capita rose from 127 yuan ($44) in 1980 to 1,400 yuan ($170) in 2003.[1] Refrigerator ownership per 100 households rose from just 1.2 to 16 over the period, an indicator of growing affluence and a sign that rural households are diversifying their diets to include perishable food.

[1] Retail sales below county level divided by rural population, not adjusted for inflation. Values converted to dollars using official exchange rates for corresponding years.

Cash Expenditures Rising

In 1980, China's rural households made just 30 percent of their food expenditures in cash. Strong growth in the rural economy during the 1980s led to an early period of commercialization of rural food expenditures (Huang and Rozelle; Wu). The cash share of food expenditures was about 45 percent during the early 1990s and grew to over 60 percent in 2003.

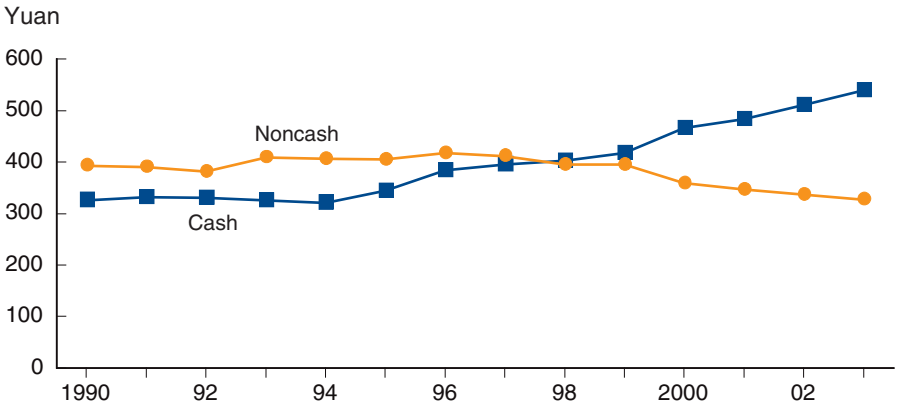
Since the mid-1990s, rural food consumption has been in the midst of a decade-long period of commercialization. After adjusting food expenditures for inflation using the retail food price index, ERS finds that cash food expenditures in rural China grew at an annual average rate of 7.4 percent from 1994 to 2003 (fig. 6). In contrast, inflation-adjusted noncash food expenditures declined during the same period. These data suggest that rural consumers are purchasing more food with cash while consuming less self-produced food.

More Purchased Food, Less Self-Produced Grain

Between 1995 and 2003, per capita purchases by China's rural households increased for all food items except staple grains (table 4). Increases in purchases ranged from 30 percent for pork to nearly 300 percent for milk. Decreases in grain purchases are probably attributed to the general decline in grain consumption in China. Households also reduced their consumption of self-produced grain, vegetables, edible oil, and fish products. Households increased their consumption of self-produced pork, beef, mutton, poultry, eggs, milk, fruit, and nuts, a trend that likely reflects the increased overall consumption of these items. Overall, consumption of each of these items grew 17 percent or more.

Figure 6

Real food expenditures: cash and noncash, rural China, 1990-2003



Note: Noncash expenditures calculated by subtracting cash expenditures from total living expenditures. Deflated using retail food price index.

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

Table 4

Change in per capita consumption, purchases, and self-production of food by rural China households, 1995-2003

	Change in:		
Food item	Consumption	Purchased	Self-produced
		Percent	
Grains, beans, potatoes	-14	-2	-17
Vegetables	2	71	-13
Edible oil	8	74	-40
Pork	30	30	31
Beef and mutton	77	38	134
Poultry and eggs	50	84	25
Milk	167	293	132
Fish and shellfish products	17	57	-25
Fruit and nuts	39	47	27

Note: Based on average quantities consumed and purchased in 1995 and 2003.

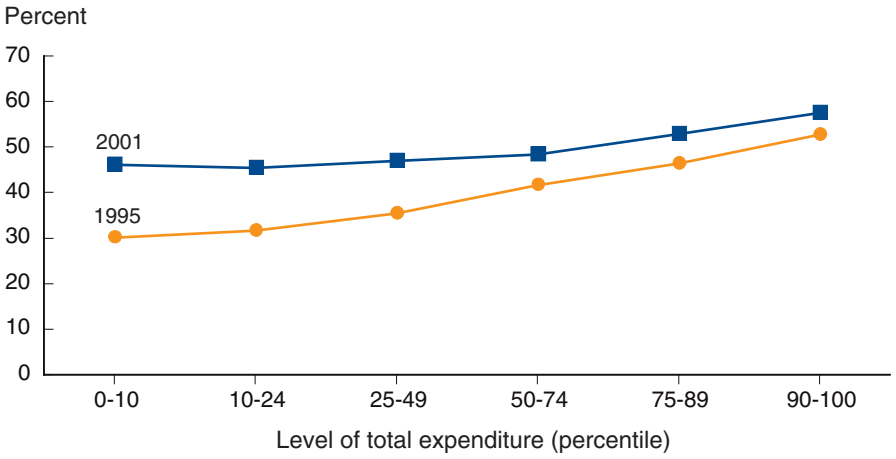
Source: Calculated by USDA's Economic Research Service from China National Bureau of Statistics, (2004b).

Low-Income Households Commercialized Fastest

Between 1995 and 2001, the cash share of food expenditures rose for rural households at all income levels, but the increase was especially fast for low-income rural households. The cash share of food expenditures made by the poorest households (those in the lowest 10 percent of households ranked by total per capita household expenditure) rose from 30 percent in 1995 to 46 percent in 2001, a gain of 16 percentage points (fig. 7). Over the same period, the average cash share for the wealthiest households rose just 4 percentage points, to 57 percent. The difference in cash share of food expenditures between households at different total expenditure levels clearly diminished by 2001. The rising cash share of food expenditures results from

Figure 7

Cash share of food expenditures by household expenditure level, 1995 and 2001



Note: Households from Jiangsu, Henan, and Heilongjiang Provinces were grouped into percentiles based on per capita living expenditures for each of the 2 years. The 0-10 category includes households with the lowest expenditures and 90-100 includes households with the highest expenditures. Chart shows average cash share of food expenditures for each group.

Source: Estimated by USDA's Economic Research Service using unpublished data compiled by China National Bureau of Statistics, Rural Survey Organization (1995, 2001).

both an absolute decline in per capita noncash expenditures and an increase in cash expenditures. The decrease in noncash expenditures reflects the decline in self-produced grain and vegetable production observed in table 4 and a decline in grain prices between 1995 and 2001 (see box, "Volatile Prices Had Little Effect on Food Consumption"). Rising cash expenditures reflect increased purchases of most commodities.

Volatile Prices Had Little Effect on Food Consumption

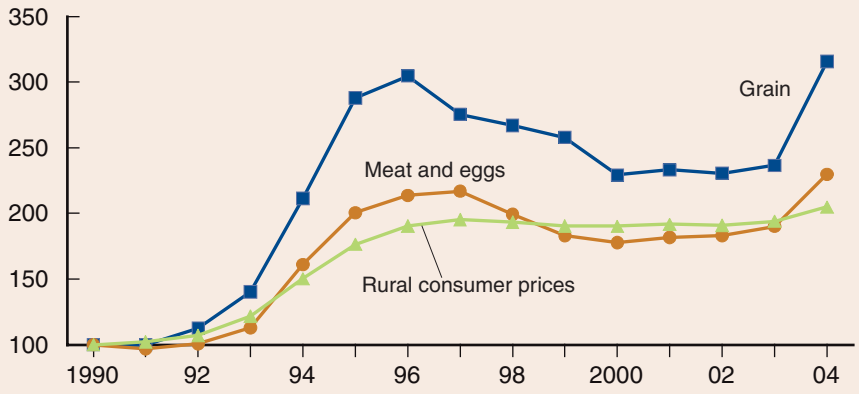
Chinese food prices went through a decade-long cycle of inflation and deflation during 1993-2003. The years 1993-96 were a period of general inflation in the Chinese economy, but food prices rose faster than other prices. Retail grain prices tripled and meat prices more than doubled during this period. From 1997 to 2000, food prices generally fell, with the decline sharpest for grains. Prices were generally stagnant from 2000 to 2003. Prices began rising sharply again in late 2003 and early 2004, with grain prices surging by 30-40 percent.

The effect of price changes on rural consumers is complex since they are consumers *and* producers of food (see Singh et al.; Tong et al.; and Yan). High prices for farm products reinforce the usual substitution effect of a price increase by encouraging farm households to sell food products to the market instead of consuming them onfarm. However, higher food prices also enrich farmers by increasing their potential income from farm sales. This income effect potentially increases farmers' demand for food, offsetting the substitution effect. Consequently, the effect of higher food prices on food consumption by rural households could be either positive or negative, depending on whether the substitution effect or income effect is larger.

The offsetting income and substitution effects suggest that rural household food consumption is less sensitive to price changes than is urban consumption. Recent trends in rural grain consumption in China have not been strongly influenced by prices. Per capita grain consumption fell steadily during 1993-2003, through periods of both rising and falling prices.

China price trends, 1990-2004

Index (1990=100)



Note: Indexes calculated based on indexes published by China National Bureau of Statistics. Indexes reporting year-on-year changes were converted to indices with a base year of 1990.

Source: Calculated by USDA's Economic Research Service from China National Bureau of Statistics, 2004a.

Chapter 3

Household Expenditure Analysis

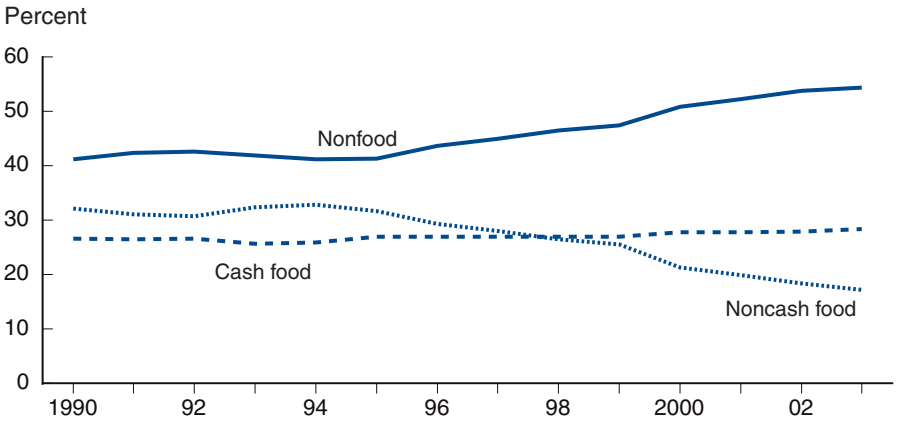
Food's share of household spending typically falls as income and expenditures increase, a relationship known as "Engel's law." In rural China, the share of household expenditures attributable to cash food purchases actually increased slightly from 26 percent in the early 1990s to 28 percent in 2003, which means that spending on cash food purchases kept up with the 70-percent real increase in all household expenditures over the past decade (fig. 8). On the other hand, the noncash food share of rural household expenditures fell sharply from over 30 percent in 1993 to under 20 percent in 2003. The trend in the nonfood share of household budgets was the mirror image of the decline in noncash food share, rising from around 40 percent in 1993 to over 50 percent in 2003. Thus, rural household spending shifted from noncash food to cash food and nonfood expenditures.

To gain a better understanding of these trends, ERS analyzed changing expenditure patterns of a large sample of rural households for 1995 and 2001 (see appendix). The cross-sectional relationship between various expenditure categories was estimated for each year to ascertain changes in relationships. Household-level data enable researchers to identify changes in different categories of food expenditures as incomes rise and the relationships between household characteristics and expenditure patterns change. ERS also investigated the effects of household characteristics such as landholdings, family size, presence of children, educational attainment, and refrigerator ownership on food expenditure patterns.

Finally, ERS investigated patterns of change in different categories of cash expenditure. Do some food items attract proportionately more expenditures than others as expenditures rise? Which nonfood categories consume the most expenditure?

Figure 8

Chinese rural household budget shares, 1990-2003



Source: Compiled by ERS from China National Bureau of Statistics, 2004b.

Model

ERS employed the Working-Leser model, a simple model with desirable properties which expresses the household's budget share of each item, j, as a linear function of the logarithm of household expenditures (Wu; Seale et al.). The model provides information on the tendency of households at different income levels and with different characteristics to allocate expenditures among different budget categories. Demographic characteristics were added to the model. We did not include prices as explanatory variables.[1]

ERS estimated the following regression model:

$$w_{ij} = a_j + b_j Ln(Y_i) + \Sigma_k c_{jk} X_{ik} + e_i \quad (3)$$

where w_{ij} is the share of expenditures made on category j by household i $(p_j q_{ij}/Y_i)$,

Y_i is per capita total living expenditure made by household i,

X_{ik} are household characteristics,

e_i is a random error term,

a_j, b_j, c_{jk}, are parameters to be estimated for each expenditure item j.

When b_j=0, the item's budget share remains constant as expenditures increase. If b_j<0, the item's budget share falls as expenditures rise and b_j>0 indicates that the item's budget share increases. Since the budget shares always sum to 1, an increase in one item's budget share must be offset by a decreasing share for other items.

According to this model, the expenditure elasticity for item j, n_j, is expressed as:

$$n_j = 1 + (b_j/w_j). \quad (4)$$

The falling budget share for noncash food expenditures observed in figure 8 suggests that this expenditure category has a low (possibly negative) expenditure elasticity, while the stable cash food expenditure share suggests an expenditure elasticity of approximately 1.0 for cash food purchases. The rising budget share for nonfood expenditures suggests an elasticity exceeding 1.0 for the nonfood category.

The model also includes household demographic characteristics, X_{ik}, that may affect food expenditures. These characteristics include the area of land cultivated by the household, the area of the household's family plot, refrigerator ownership, number of family members residing in the household, the number of small children (under age 6), the number of school-age children (ages 6-15), and the education level of laborers in the household.

First, ERS estimated the model using three expenditure categories—cash food, noncash food, and nonfood—to compare the expenditure elasticities.[2] The model used total household living expenditures as an explanatory variable. It was expected that cash food spending would have a larger expenditure elasticity than noncash food spending. The time series analysis in the previous

[1] The effect of prices on food consumption is complex because rural households are both consumers and producers of food (Singh et al.; Yan). See box, "Volatile Prices Had Little Effect on Food Consumption," for details.

[2] ERS did not separate nonfood expenditures into cash and noncash spending since our interest is mainly in food expenditures and noncash spending for nonfood items was small. Noncash expenditures on nonfood items averaged 57 yuan ($7) per person in 2001, most of which was devoted to housing.

section suggests that noncash food spending may have a negative expenditure elasticity. ERS also investigated changes in elasticities over time.

Second, ERS investigated allocations of cash expenditures among different food and nonfood categories. Engel functions were estimated for cash food expenditure items using total cash expenditure by the household as the independent variable. This analysis provided insight on the types of food that are purchased most frequently as China's rural households increase their participation in cash markets. Food expenditure elasticities were compared with nonfood elasticities to provide perspective on the role of food expenditures in households' cash budgets. Finally, ERS examined the association between various expenditures and household characteristics.

Cash/Noncash Food Expenditure

The analysis compared expenditure allocations among cash food, noncash food, and nonfood items by rural households at different income levels. Results from the 2 years studied show how expenditure relationships may have changed during the period of rapid commercialization of food consumption identified earlier in this report.

The model used household data from Heilongjiang, Henan, and Jiangsu Provinces for 1995 and 2001. Data for over 9,000 households in the three provinces were available for each year to estimate budget share equations for cash food, noncash food, and nonfood expenditures, a total of six equations. F-statistics indicated that the independent variables added significant explanatory power to the models, and t-statistics indicated that most regression coefficients were significantly different from zero. R^2 values were about .20 for the cash food equations and .35 for the noncash food and nonfood equations.[3]

[3] Descriptions of variables and expenditure categories are provided in appendix table 1. Full results of the regression estimates are reported in appendix tables 2 and 3.

The trends in mean expenditure shares in the sample of households are consistent with the national data shown in figure 8. The cash food share rose slightly, the noncash food share fell sharply, and the nonfood expenditure share rose sharply between 1995 and 2001 (table 5). However, the expenditure coefficients and elasticities estimated from the cross-section data appear to be inconsistent with the trends in budget shares over time. Between 1995 and 2001, the mean cash food share rose, but the estimate of the cash food expenditure elasticity is less than 1, suggesting that the budget share devoted to cash food expenditures should fall as total expenditure rises. The estimated cash food expenditure elasticity was .85 for 1995 and was even lower, at .77, in 2001.

Not surprisingly, the noncash food expenditure elasticity is even lower, at .52. While this elasticity is clearly less than 1 (implying a sharply declining budget share), it is also significantly greater than 0, suggesting that noncash food expenditure increases as income rises, as observed in figure 3. However, the aggregate data for 1996-2003 showed that inflation-adjusted noncash food expenditures decreased not only as a share of household budgets, but also in absolute terms (see fig. 6), suggesting that the noncash food expenditure elasticity would be negative. The nonfood expenditure elasticity is significantly greater than 1, as expected.

Table 5

Summary of estimated expenditure elasticities for rural households, 1995 and 2001

Item	Year	Expenditure category		
		Cash food	Noncash food	Nonfood
Mean share of household expenditure	1995	.254	.377	.369
	2001	.284	.239	.477
Expenditure coefficient*	1995	-.037	-.181	.218
	2001	-.065	-.115	.180
Expenditure elasticity	1995	.85	.52	1.59
	2001	.77	.52	1.38

* = Effect of a one-unit change in Ln (total expenditure) on the expenditure share. All coefficients are statistically significantly different from zero, with 95 percent confidence.

Note: Data are from Jiangsu, Henan, and Heilongjiang Provinces.

Source: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).

The elasticities obtained from the cross-section analysis under-predict the growth in household expenditures on cash food and nonfood purchases. For example, actual cash food expenditures grew 19 percent from 2000 to 2003, about the same rate as growth in total household expenditures. However, the cash food expenditure elasticity of .77 estimated from 2001 data suggests that cash food expenditures would have grown less than 15 percent. Similarly, the model also fails to predict the absolute decline in noncash food expenditures. The model predicts a falling budget share for noncash food expenditure, but it does not predict the absolute decline in noncash food expenditures that actually occurred.

Inconsistency between positive cross-sectional grain expenditure elasticities and secular decline in grain consumption over time was noted by Huang and David. The apparent inconsistency can be resolved if changes in other factors offset the effects of rising expenditures over time. For example, Huang and David attributed declining grain consumption in Asia to rising urbanization.

It is likely that the switch from self-produced to purchased food was driven by structural changes in the rural economy over the past decade—a phenomenon referred to as "market development" by Huang and Rozelle. Better access to food markets as a result of better transportation and communications, greater mobility of the rural population, expansion of food retail outlets into rural areas, and the rising ownership of home refrigerators and other factors enabled rural households at a given income level to consume a larger share of purchased food in 2001 than in 1995.[4]

Factors representing ease of access to food markets are difficult to observe and could not be captured well in the model. Between 1995 and 2001, rural markets and retail establishments increased in number, rural retail sales per capita rose, rural households received more income in cash, and they obtained more complementary items, such as electricity, refrigerators, and other appliances.

The model did include several household characteristics, including refrigerator ownership, migration, land holdings, and family composition, that

[4] The sharp decline in grain prices from their peak in 1996 reduced the imputed value of noncash grain expenditure (since expenditure equals price times quantity). However, the fall in grain prices does not explain the decline in quantity of self-produced grain consumed. The fall in grain prices should have encouraged households to consume larger quantities of grain, but our analysis indicates that the quantity consumed—both self-produced and purchased—decreased during this period.

provide additional insights about rural household expenditure decisions (table 6). Households that own refrigerators tend to allocate more of their budgets to cash food and less to noncash food expenditure. The rise in refrigerator ownership may be one factor that contributed to rising food purchases. The number of migrants working outside their home town increased sharply from 11 to 36 per 100 households between 1995 and 2001. Migrants are associated with a small shift of expenditures from cash food to nonfood expenditure. Other household characteristics affected cash and noncash food expenditures in 2001, but changes in these factors do not explain the shift from noncash to cash food expenditures. Larger households spend more on nonfood items, households with larger farms tend to consume more self-produced food, families with school-age children shift expenditures from cash food to nonfood items, and households with more educated members tend to spend slightly less on noncash food.

Cash Expenditure Elasticities

Estimates of cash expenditure shares show shifts in cash food expenditures among different categories of food and nonfood items as cash expenditures grow. Patterns of cash expenditures are particularly important since they determine the growth in market demand for various types of food and nonfood items.

Food was the largest single use of cash for China's rural households, accounting for 45.7 percent of cash expenditures in the sample during 1995 (table 7). Food remained the largest single cash expenditure item in 2001, but its share of household budgets fell by 4.8 percentage points to 40.9 percent. Clothing had the second-largest share of budgets, 14.1 percent, in 1995, but its share fell by nearly 5 percentage points by 2001. In 2001, education and recreation (primarily school fees and education-related expenses)[5] accounted for the second-largest share of budgets, at 11.7 percent. Spending on durable goods was low, on average, at 2.5 percent of budgets. Other expenditures were distributed relatively evenly across other

[5] For this study, we made some changes to the usual categorization of household expenditures used by China National Bureau of Statistics (see app. table 1). A "durable goods" category was created, which includes electrical and mechanical devices (usually included in the education and recreation category) and household appliances and furniture (usually categorized with household items). This study's "education and recreation" category includes primarily education-related services and goods, while the "durable goods" category includes primarily consumer goods. Utilities and housing were categorized separately. Nondurable household items were included in the "other nonfood" category.

Table 6

Changes in household characteristics and estimated effects on cash and noncash food expenditures

Characteristic	Unit	Sample mean		Effect on household budget share (2001):		
		1995	2001	Cash food	Noncash food	Nonfood
Log of household expenditure	Logarithm	7.42	7.57	**-.0650**	**-.1150**	**.1800**
Refrigerator owned	Number	.04	.12	**.0400**	**-.0310**	**-.0100**
Migrants working outside hometown	Number	.11	.36	**-.0070**	-.0020	**.0100**
Size of household	Persons	4.30	4.00	**-.0150**	**-.0090**	**.0240**
Cultivated land area	Mu	10.80	12.10	**-.0006**	**.0010**	**-.0003**
Family plot size	Mu	.70	.30	.0001	.0018	-.0020
Children under age 6	Number	.21	.19	-.0040	-.0020	.0060
Children age 6-15	Number	.74	.72	**-.0200**	**-.0060**	**.0260**
Persons with senior high school education or higher	Number	.32	.34	**.0076**	**-.0144**	**.0068**

Note: Coefficients were estimated from 2001 data using ordinary least squares. Coefficients in bold type are significantly different from zero with 95 percent confidence. Effects for the three budget shares sum to 0 for each characteristic. Data are from Jiangsu, Henan, and Heilongjiang Provinces.

Source: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).

Table 7

Estimated effects of rural household characteristics on cash budget shares for food and nonfood items, 2001

Item	Cash expenditure category[1]								
	Food	Clothing	Utilities	Durable goods	Housing	Health and medical	Transportation and communication	Education and recreation	Other goods and services
	Share								
Mean budget share:									
1995	.457	.141	.045	.0350	.0710	.0560	.0290	.0870	.080
2001	.408	.093	.061	.0250	.0610	.0740	.0760	.1170	.085
Expenditure elasticity	.690	.830	.670	1.810	2.370	1.260	1.270	1.250	.930
	----------Effects on household budget shares----------								
Regression explanatory variables:									
Log cash expenditures	**-.125**	**-.016**	**-.020**	**.012**	**.064**	**.019**	**.021**	**.032**	**-.006**
Refrigerator ownership	**.036**	**.006**	**.021**	**.002**	**-.015**	**-.015**	**.023**	**-.037**	-.001
Persons w/ high school education	.0045	**.0052**	**-.00230**	-.00110	**-.0005**	**-.0106**	**.0072**	**.0125**	-.0006
Cultivated land area	**-.0003**	.0001	**-.00027**	.00005	-.0001	-.0001	**.0002**	.0001	.0000
Family plot size	.0007	-.0009	.00002	.00060	**.0028**	-.0014	-.0012	-.0024	**.0017**
Migrants working elsewhere	**-.011**	.000	**-.0032**	**.0028**	**.007**	**-.004**	**.014**	**-.008**	-.001
Children age 7-16	**-.034**	**.008**	**-.0034**	-.0011	**-.007**	**-.007**	-.002	**.049**	**-.006**
Children age 0-6	-.003	**.005**	.0014	-.0001	.001	**.023**	.003	**-.027**	-.001
Household size (persons)	**-.025**	**-.005**	**-.005**	**.0015**	**.013**	.002	**.003**	**.011**	.000

Item	Cash food expenditure category[1]							
	Grains	Vegetables	Edible oils	Meats and eggs	Fish	Other foods	Tobacco/ alcohol	Food away from home
	Share							
Mean budget share:								
1995	.068	.039	.034	.105	.020	.088	.085	.018
2001	.056	.034	.026	.093	.018	.069	.073	.038
Expenditure elasticity	.600	.540	.320	.660	.670	.600	.660	1.540
	----------Effects on household budget shares----------							
Regression explanatory variables:								
Log cash expenditures	**-.023**	**-.016**	**-.018**	**-.032**	**-.006**	**-.028**	**-.025**	**.020**
Refrigerator ownership	-.002	**.005**	.000	**.018**	**.007**	**.013**	**.007**	**-.012**
Persons w/ high school education	-.0022	.0001	**-.0011**	-.0011	.0004	**.0017**	.0005	**.0062**
Cultivated land area	**-.0004**	.0000	**-.0001**	-.0001	**.0000**	.0000	**.0002**	.0001
Family plot size	.0006	-.0003	.0000	-.0003	-.0001	.0003	.0010	-.0006
Migrants working elsewhere	**-.003**	**-.005**	**-.002**	**-.004**	**-.001**	**-.003**	**-.005**	**.011**
Children age 7-16	**-.003**	**-.003**	.000	**-.009**	**-.002**	**-.003**	**-.012**	-.002
Children age 0-6	**-.004**	.000	**-.001**	.000	.000	**.014**	**-.005**	**-.006**
Household size (persons)	**-.004**	**-.003**	**-.003**	**-.009**	**-.001**	**-.008**	**-.002**	**.005**

[1]See appendix table 1 for description of expenditure categories.

Note: Table shows coefficients from Engel regressions. Coefficients in bold type were significantly different from zero with 95 percent confidence. Data are from Jiangsu, Henan, and Heilongjiang Provinces, 2001. The elasticities for "other food at home" and "other services and nonfood items" were calculated using the Engel aggregation condition that the elasticities of all items weighted by their budget shares sum to 1. Data are from Jiangsu, Henan, and Heilongjiang Provinces.

Source: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).

categories. Housing accounted for only 6.1 percent of expenditures in 2001. Most rural Chinese households build or refurbish their own houses, often with unpaid help from neighbors and friends, on land allocated by their village. Few rural Chinese families pay rent or mortgages. Housing expenses may be unusually high in a year when construction takes place and minimal in other years.

Engel regressions for various cash expenditure categories indicate that rural households tend to spend additional cash disproportionately on nonfood items, such as housing, education and recreation, health care, transportation and communications, and durable goods.[6] Food, clothing, and utilities (electricity, fuel, and water) are "necessities" for which the budget share declines as expenditures rise. The food cash expenditure elasticity was .69, significantly less than 1. All nonfood items except clothing and utilities had cash expenditure elasticities of 1 or higher. Housing had the largest cash expenditure elasticity of any major item, at 2.37, followed by durable goods, at 1.81. The elasticities for health, transportation and communications, and education and recreation were in a narrow range of 1.25 to 1.27. The elasticity for other goods (mainly household goods and services, jewelry, cosmetics, and funerals and other services) was .93.

[6] Results estimated from data for 1995, but not reported here, were mostly similar to the estimates for 2001.

The changes in mean budget shares between 1995 and 2001 are not entirely consistent with the expenditure elasticities. The mean per capita cash living expenditure in the sample rose more than 50 percent between 1995 and 2001. The budget shares devoted to food and clothing fell sharply, consistent with their low expenditure elasticities, but the budget shares for housing and durable goods—the categories with the highest elasticities—also fell. Price changes and cyclical factors may have influenced the budget shares for the 2 years. China's rural economy was growing rapidly during 1995, but it was in a period of retrenchment in 2001. Rural housing construction and purchases of "big ticket" durable goods, such as home appliances, televisions, and furniture, may have been unusually low during 2001 due to slow income growth that year.[7] Declining food and clothing prices may have exaggerated the decline in food and clothing budget shares. Wider availability of electricity, water, and fuels in rural areas and increased fees for utilities may have boosted the utilities budget share. Transportation and communication's share of budgets rose sharply as the rural population became more mobile, thus paying more bus and rail fares and purchasing bicycles and scooters. Telephones and other communications systems also became more widely available in rural China by 2001.

[7] Data on fixed asset investment show that rural household investment increased sharply in 1995 and fell in 2001 (China National Bureau of Statistics, Rural Survey Organization, 2003).

Food away from home clearly stands out as the one food expenditure item that is taking a larger share of household budgets as expenditures rise (see box, "Rapid Growth in Away-From-Home Food Spending"). Between 1995 and 2001, all at-home food items had decreasing cash budget shares and cash expenditure elasticities mostly in the range of .6 to .8, significantly less than 1. Food away from home's share doubled from just 1.8 percent of expenditures in 1995 to 3.7 percent in 2001. Food away from home's cash expenditure elasticity was one of the largest of any category, food or nonfood. Food away from home's expenditure elasticity was about equal to that of durable goods, but the food away from home share of rural budgets exceeded that of durable goods in 2001.

Rapid Growth in Away-From-Home Food Spending

The fastest growing component of rural food consumption is food consumed away from home. During the 1990s, the number of restaurants, cafeterias, and other food vendors grew rapidly, even in rural areas. It became easier to travel to towns and cities for restaurant meals, and rural people ate more meals at factory canteens and other work sites.

In 1995, just 3.2 percent of rural food spending was on food away from home, but the away-from-home share more than tripled to 11.2 percent in 2003. Away-from-home food was the only component of food spending to capture a larger share of total household living expenditures during the period. By 2003, away-from-home-food spending accounted for 5 percent of all rural household expenditures and 18 percent of rural cash expenditures. ERS estimates indicate that food away from home has one of the largest cash expenditure elasticities of any budget item and is associated with migration.

China National Bureau of Statistics household surveys report only total expenditures on food consumed away from home; no information is collected about what foods are purchased. The only information about away-from-home food purchases is available from a survey of urban consumers conducted by China's Academy of Sciences (Ma et al.) in 1998, which showed that away-from-home meals included a higher proportion of meat (38 percent of away-from-home expenditures) and "other foods" (24 percent) than did at-home meals (28 percent meat and 15 percent "other foods"). At-home meals include a higher proportion of staple food grains. Similar consumption patterns likely hold for rural households' away-from-home spending.[1] Thus, the rising consumption of food away from home tends to raise demand for meat and other high-value foods and probably increases intake of fat and protein.

[1] While there is no statistical evidence, casual observation suggests that much food away from home consumed by rural persons is at worksites as well as restaurants. Rural meals away from home may include a smaller proportion of meat and high-value foods than do urban meals away from home.

Rural per capita expenditures on food away from home, 1990-2002

Year	Amount	Share of food expenditures	Share of cash food expenditures	Share of all expenditures
	Yuan	*Percent*		
1990	8.29	2.4	5.3	1.4
1995	24.88	3.2	7.0	1.9
2000	63.97	7.8	13.8	3.8
2002	89.61	10.6	17.5	4.9
2003	99.28	11.2	18.0	5.1

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

All at-home food items had decreasing shares of cash budgets between 1995 and 2001, and their cash expenditure elasticities were all .67 or lower. Among specific at-home food items, meat and eggs accounted for the largest share of cash expenditures, followed by tobacco and alcohol. While grain and vegetables accounted for the largest part of the rural Chinese diet, their share of cash expenditures was relatively low because these commodities were largely self-produced, not purchased. Edible oils (.32) and vegetables (.54) had the smallest cash expenditure elasticities. Other cash expenditure elasticities of at-home food items ranged from .60 to .67.

The cash expenditure models also estimated the effects of household characteristics. As in the earlier analysis, refrigerator ownership tends to be associated with greater cash food expenditures. The expenditure equations for specific food categories show that refrigerator ownership is most strongly associated with meat expenditures, followed by "other foods" (including milk and processed foods) and fish. This pattern suggests, not surprisingly, that households owning refrigerators tend to spend more on perishable foods.

Households with larger cultivated land area tended to make slightly lower cash expenditures on food, especially on grain, but family plots were not significantly associated with food expenditures. Households with migrant members working elsewhere tended to spend more on food away from home and transportation/communications and less on at-home food items. Households with high school-educated members (most rural people have a junior middle school or primary school education) tended to spend slightly more on food away from home and "other food" (dairy, fruit, and processed foods) and less on health care. Lower health care spending may reflect access to subsidized health care for more educated persons who are more likely to be employed by government organizations.

Family composition affects how households allocate their spending. The presence of school-age children is associated with larger cash expenditures on education and less on food and most other categories. This reflects rising school fees in rural areas, which apparently has induced families with school-age children to divert cash away from other items to pay for education. The negative effect associated with school-age children is strongest for tobacco and alcohol. The presence of children under age 7 is associated with greater spending on "other food" (probably reflecting greater spending on dairy products) and health care. Larger family size is associated with greater budget shares devoted to housing and education and less devoted to at-home food and most nonfood items.

Summary of Household Expenditure Analysis

This analysis confirms that rural households in China tend to spend a disproportionate amount of their incremental income on nonfood goods and services, especially housing and education. The shift in food expenditures from noncash (self-produced) to cash (purchased) food occurred faster than can be explained by growth in expenditure. The shift might be explained in part by rising refrigerator ownership (which boosts spending on perishable foods) and migration (which shifts spending to food away from home and

transportation and communications), but most of the change was due to factors not included in the model, which may have included the spread of markets and retail stores to rural areas, better transportation, and more information about markets and food products. Spending on food away from home is one of the fastest rising expenditure items in rural China. In 2001, expenditures on food away from home exceeded expenditures on durable goods. Changes in China's rural economy over time seem to have resulted in shifting of expenditures to education, transportation, communications, electricity, water, and fuel.

Chapter 4

Implications of Rural Food Commercialization

China's rural population, numbering 700 to 800 million, is beginning to attract the attention of food retailers. Changing rural food consumption patterns will also have an effect on cropping patterns. As commercialization increases, more food will pass through markets instead of being consumed on the farms where it is grown. Increased consumption of purchased food is also altering the character of rural diets.

Emergence of the Rural Market

China's rural population has long been ignored by food retailers but is now emerging as a viable market. Cash food expenditures by rural households in 2003 totaled over $50 billion. The rural market is beginning to attract the attention of retailers and product distributors who are encountering intense competition for urban Chinese markets. As rural food consumption continues to commercialize, more food will pass through markets, more food will be processed, and more value will be added to food products through distribution and marketing. This, in turn, will create many new market opportunities in food processing, marketing, and retail. In recent years, supermarket chains have opened outlets in rural areas, and the Chinese government is actively encouraging the development of rural retail networks, including the transformation of rural market fairs into modern supermarkets.

Food consumed away from home is one of the fastest growing segments of rural household expenditures. Estimated expenditure elasticity of 1.5 suggests that 10-percent annual growth in rural household expenditures would increase away-from-home food expenditures by 15 percent annually. This suggests double-digit growth in restaurants, cafeterias, street vendors, and other food service establishments serving the rural population. Per capita expenditures suggest that rural households spend $9 billion per year on food away from home, and a 15-percent growth rate would generate more than $1 billion in annual growth for the rural food service sector.

Rural household expenditures on food consumed at home have grown more slowly than expenditures on other items, but income growth of 10 percent should lead to at-home cash food expenditure growth of about 7 percent, or more than $2 billion annually. Sales in rural supermarkets and convenience stores may grow in double digits as rural households shift their expenditures away from wet markets, roadside vendors, and informal exchange to modern food stores.

While China's rural market is large, it is widely dispersed over 31 provinces, more than 2,000 counties, and 700,000 villages. Commercialization of food is advanced in the rural areas of China's east coast, but has

been slower in many poorer provinces of China's hinterland. However, these regional differences are diminishing due to an array of factors, including construction of new roads, availability of automobile and bus transportation, dissemination of mobile phones, television, the Internet and other communications to rural areas, reduced barriers to interprovincial trade, the emergence of national retail chains, and government policy that encourages investment and economic development in central and western provinces.

Adjustment in Crop Plantings

As consumption of self-produced food declines in rural China, farms will devote less cropland to small-scale rice, wheat, and vegetable production for family subsistence. The freed-up cropland used for rice and wheat in coastal areas of China will likely be diverted to produce high-value commercial crops, such as vegetables, fruits, specialty crops, and concentrated livestock production. Grain production will likely become more concentrated on larger farms in central and northeastern regions of China that have a comparative advantage in producing grain. Greater consumption of livestock products will require either more land devoted to feed grains and oilseeds or greater imports of feed grains and livestock products.

Such adjustments are constrained by China's land tenure system that features communal village ownership of agricultural land. Village authorities allocate small plots on an egalitarian basis to village members, who hold long-term leases on the land. Sub-leasing arrangements are possible in many villages, but land can only be sold by village authorities. The land tenure system ensures that nearly all rural households have enough land to grow their own food, but lack of land markets prevents structural adjustments from taking place.

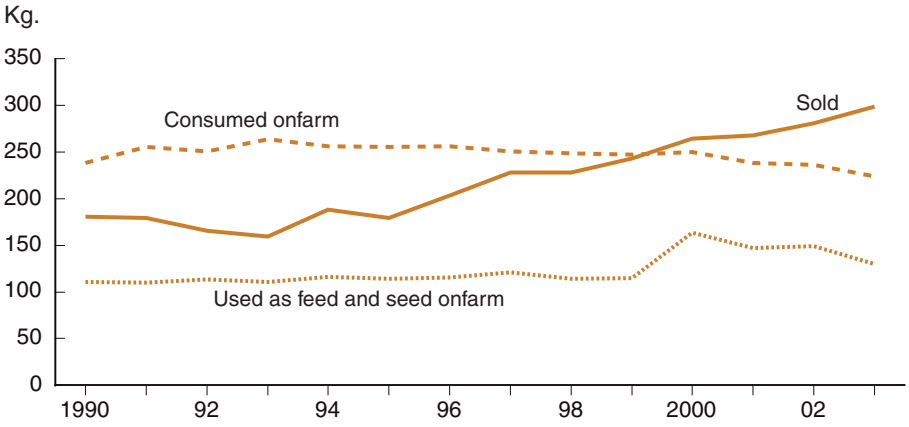
More Food Enters Markets

Historically, the high rate of food self-sufficiency in rural China meant that most food never left the farms where it was grown. Rural household surveys indicate that only 25 percent of grain produced in 1985 was sold to markets, while 75 percent was consumed by farm families, used as feed or seed, or stored on farms. Most other food commodities were also primarily used on farms.

With rising productivity and declining consumption of self-produced commodities, a larger proportion of agricultural products are entering market channels. For example, rural household surveys indicate that the amount of grain sold per rural household member rose from 180 kg. in 1995 to 300 kg. in 2003, an increase of 120 kg., or 66 percent (fig. 9). In 1995, rural households consumed significantly more grain than they sold. In 2003, the proportions were reversed, as sales exceeded consumption. Marketings of other agricultural commodities also increased during this period. The rising proportion of commodities sold means that farmers are producing more for markets than for their own consumption.

Figure 9

Rural household per capita grain uses, 1990-2003



Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b).

Rising Calorie and Fat Intake

Many studies have suggested that a shift from small-scale subsistence farming to larger scale cash crop production in developing countries has a detrimental impact on the nutritional status of rural households by reducing their access to basic foods. However, the commercialization of Chinese agriculture has coincided with an improvement in calorie and protein intake (Lohmar), consistent with evidence from other developing countries presented by Von Braun. Food insecurity is now relatively rare in rural China.

Commercialization of food consumption may be a leading factor in the rapid increase in fat intake occurring in China and other developing countries (Guo et al.). The transition from food self-sufficiency to commercialization in rural China appears to be an important factor that shifts diets away from grain and vegetables to purchased foods including meats and restaurant meals that have a higher fat content. Obesity-related health problems are becoming more common in China, but they concentrated among the urban population. The fat content in the rural diet, while increasing, is still relatively low.

Conclusions

Chinese rural households are able to meet most of their basic nutritional requirements at minimal expense by consuming self-produced food, mostly grains and vegetables. This self-sufficiency strategy frees up scarce cash for expenditures on housing, school fees, and other nonfood expenditure items. Even well-off rural households self-supply a large portion of their food. Self-sufficiency may be a rational response to the lack of cash income and limited access to retail food markets in rural China.

Now that rural households are entering the mainstream of the Chinese economy, they are becoming less reliant on subsistence food production. This study finds that households reduced consumption of self-produced food and increased purchases of food at a rate faster than can be explained by income growth or changes in other household characteristics during the late 1990s and early 21st century.

The reasons for the shift away from self-produced food consumption are not clear. The development of markets cited by Huang and Rozelle, including improved transportation infrastructure and the opening of rural supermarkets and restaurants, could be contributing to the shift. The increased migration and travel of rural persons probably also promotes cash food expenditures, especially consumption of food at work sites and cafeterias. Increasing ownership of refrigerators, other kitchen appliances, and availability of electricity are also hastening the shift away from subsistence. Declining consumption of self-produced grain could partly reflect farmers' shift away from grain production toward cash crops as rural households have been given greater freedom in choosing what to plant.

China's transition to commercialized food consumption may have been especially fast due to its unprecedented rapid economic growth (8-10 percent annual GDP growth since 1978), market liberalization, infrastructure development, and increasing integration between the rural and urban economies. In contrast, it is interesting to note that self-sufficiency in food production increased in some Eastern European countries following their transition from central planning to market economies in the 1990s (Kostov and Linguard). This may have been a rational response to deteriorating economic security (high unemployment and inflation) and distribution of land from large state farms to individuals during this period.

In the 21st century, it is likely that self-production of food will diminish and commercialization of rural food markets in China will continue. This will bring tens of millions of consumers into the global food system and put more agricultural commodities into formal market channels. While the impact of each farm household's increased cash food expenditure is small, the vast size of the rural population means that commercialization will have a significant impact on world food markets.

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Appendix—China Rural Household Survey

China's rural household survey (RHS), conducted annually by China National Bureau of Statistics, Rural Survey Organization (RSO), is a rich source of information on household consumption patterns. Unlike many surveys that record food purchases over a few weeks or rely on respondent recall, the RHS collects consumption, purchase, and expenditure data using diaries kept over the course of an entire year.

The survey is designed to monitor growth in income and living standards and evaluate progress in China's efforts to alleviate poverty by collecting detailed information on the production, exchange, consumption, asset accumulation, and social activities of a national sample of rural residents. Data are used for rural policymaking at all levels of government and for compiling national economic accounts.

The survey collects data from 68,000 households in about 9,000 villages of 857 counties selected from the 31 provinces, autonomous regions, and municipalities using a complex multistage stratified sampling method. A representative sample of counties is chosen from each province, and sample villages are selected from the counties. A stratified sample of households is chosen from each of the sample villages. Stratification is based on per capita net income, supplemented by population. The sample is representative at the national and provincial levels. The sample of households is systematically rotated over a 5-year cycle.

The RHS collects information on 1,000 items, including (1) village-level characteristics, (2) basic household information, (3) production and sales, (4) total income, expenditure, and net income, (5) total cash income and cash expenditure, (6) grain balance, and (7) food consumption. Expenditure categories are shown in appendix table 1.

Respondents record all economic activities (production, purchases, sales, consumption) in a diary over the course of the entire year. Respondent households record both cash and in-kind transactions. Local assistant enumerators periodically visit households to record, check, and organize the diary book and to assist illiterate respondents. County interviewers often go to villages to supervise the recording, to provide guidance or help, and to collect the diary books periodically. At the end of each calendar year, interviews are arranged to collect community information, data on individuals, and some additional household information such as fixed asset ownership.

After the diary records are coded, the data are entered into a computer and checked in the county survey branch. County survey branches send data diskettes to provincial organizations and then to RSO in Beijing. RSO and provincial organizations check, aggregate, and tabulate the data. Tabulations of the data are published in annual and quarterly statistical reports and in research papers.

Information about consumption and expenditures are collected in detail through recording the quantity and purchase price, family consumption, and

durable goods owned at year-end. Average selling prices are used to impute the value of in-kind consumption. Consumption information is classified into eight aspects: food; clothing; residence; household facilities, articles and services; medicines and medical services; transport and post-telecommunication services; cultural, educational, recreational articles and services; and other commodities and services. Consumption expenditure refers to the outlay during the survey period. The survey records actual expenditure for purchasing houses, housing material, and durable consumer goods rather than imputed rent.

Appendix table 1
Rural household survey expenditure categories used in this report

Food category	Description
Grain	Rice, wheat, potatoes, corn, sorghum, and other cereals and their processed products, such as dry noodles and cakes. Grain processed into soybean oil, bean curd, vermicelli, and wine are not included. Grain consumption is calculated in rough grain weight.
Vegetables	Fresh, dried, and processed vegetables; roots; tubers; stems; flowers; tofu, and other bean products.
Edible oils	Vegetable oils and animal fats.
Meat and poultry products	Live, fresh, frozen, and cooked products. Egg products are converted to the equivalent weight of fresh eggs.
Aquatic products	Fish, shrimps, crabs, cowry, and algae from fresh water or marine, counted at their fresh weight.
Tobacco and alcohol	Cigarettes, other tobacco products, tobacco, wine, beer, and liquor.
Other food at home	Tea, soft drinks, dry and fresh fruit, melons, nuts, candies, cakes, flavorings, sugar and sweets, milk, and milk products. Fresh milk, milk power, yogurt, and related milk products are converted into fresh-milk equivalents.
Food away from home	Meals at restaurants, snack bars, tea houses, and food stalls, and purchases of tea, cold drinks, and other food. Includes expenses for food at meetings and hospital stays.
Clothing	Cloth, garments, hats, footwear, laundry, and patching.
Utilities	Electricity fees, water, gas, coal, and firewood.
Durable goods	Furniture, household appliances, and electrical and mechanical items for entertainment or education.
Housing	Construction materials, repair and decoration of houses, and rent.
Health	Medicines, medical and health services, and repair of medical appliances.
Transportation and communications	Purchase and repair of vehicles and communications devices; train, bus, and airplane fare; freight; postal and communications fees; and fuel for vehicles.
Education and recreation	Tuition, school, training, and recreation fees; books; newspapers; magazines; paper; stationery; and cultural items.
Other nonfood goods and services	Jewelry, cosmetics, household items, bedding, small hardware, repairs of small items, funerals, and other goods and services.

Source: Compiled by USDA's Economic Research Service from China National Bureau of Statistics (2004b) and classification by authors.

Appendix table 2

Expenditure regressions, 1995 and 2001

Year	Cash expenditure item	Intercept	Ln (total household expenditure)	Own refrigerator	Persons with senior high school education	Cultivated land area	Family plot area	Size of household	Migrants	Children age 7-15	Children under age 6	Jiangsu Province	Henan Province	R-square
1995	Cash food	.7400	-0.03716	0.06046	0.0122	-0.0013	-0.0045	-0.01813	0.0013	-0.0108	0.0017	-0.1227	-0.17998	0.216
N=9070		(36.1)	(-14.2)	(11.2)	(6.0)	(-10.1)	(-5.9)	(-16.5)	(0.4)	(-7.59)	(0.6)	(-24.6)	(-37.6)	
	Noncash food	1.5276	-0.18088	-0.05661	-0.0129	0.0018	0.0052	-0.00601	-0.009	-0.0036	-0.0063	0.2106	0.14356	0.382
		(61.4)	(-57.1)	(-8.6)	(-5.2)	(11.3)	(5.6)	(-4.5)	(-2.3)	(-2.09)	(-1.9)	(34.8)	(24.7)	
	Nonfood	-1.2671	0.21804	-0.00385	0.0008	-0.0005	-0.0007	0.02414	0.0077	0.0144	0.0046	-0.0879	0.03642	0.382
		(-53.9)	(72.9)	(-0.6)	(0.3)	(-3.2)	(-0.7)	(19.2)	(2.1)	(8.8)	(1.4)	(-15.4)	(6.6)	
2001	Cash food	0.8896	-0.0646	0.0398	0.0076	-0.0007	0.0001	-0.0157	-0.0075	-0.0193	-0.0039	-0.0362	-0.0999	0.178
N=9664		(49.2)	(-29.0)	(11.1)	(3.8)	(-7.3)	(0.1)	(-12.0)	(-3.8)	(-11.1)	(-1.3)	(-8.3)	(-24.1)	
	Noncash food	1.001	-0.1151	-0.0305	-0.0144	0.001	0.0019	-0.0083	-0.009	-0.0071	-0.0027	0.1336	0.1532	0.338
		(53.6)	(-50.0)	(-8.2)	(-6.9)	(10.6)	(1.5)	(-6.1)	(-1.0)	(-4.0)	(-0.8)	(29.7)	(35.7)	
	Nonfood	-0.8906	0.1796	-0.0093	0.0068	-0.0003	-0.002	0.0239	0.009	0.0264	0.0066	-0.0975	-0.0533	0.369
		(-43.5)	(71.2)	(-2.3)	(3.0)	(-3.3)	(-1.5)	(16.2)	(4.2)	(13.4)	(1.9)	(-19.8)	(-11.3)	

Dependent variable is the expenditure item's share of household expenditures. Estimated with ordinary least squares using household data from Jiangsu, Henan, and Heilongjiang Provinces. Values in parentheses are t-values.

Source: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).

Appendix table 3

Cash expenditure regressions by expenditure category, 2001

Cash expenditure item	Intercept	Ln (total household expenditure)	Own refrigerator	Persons with senior high school education	Cultivated land area	Family plot area	Size of household	Migrants	Children age 7-15	Children under age 6	Jiangsu Province	Henan Province	R-square
Grain	0.305583	-0.02264	-0.00151	-0.00216	-0.00036	0.000629	-0.00375	-0.00254	-0.00315	-0.00431	-0.08799	-0.09105	0.234
	(36.6)	(-22.13)	(-0.72)	(-1.84)	(-6.73)	(0.9)	(-4.98)	(-2.19)	(-3.11)	(-2.38)	(-35.08)	(-37.52)	
Vegetables	0.15427	-0.01577	0.00481	0.000017	-0.00002	-0.00034	-0.00268	-0.00471	-0.00333	0.000051	0.001653	0.00725	0.145
	(39.9)	(-33.29)	(4.96)	(0.03)	(-0.76)	(-1.05)	(-7.69)	(-8.8)	(-7.11)	(0.06)	(1.42)	(6.45)	
Edible oils	0.171418	-0.0176	0.000483	-0.00105	-0.0001	0.000045	-0.00281	-0.00181	0.000362	-0.00149	-0.01008	-0.016	0.172
	(47.7)	(-39.95)	(0.54)	(-2.07)	(-4.47)	(0.15)	(-8.68)	(-3.64)	(0.83)	(-1.91)	(-9.34)	(-15.32)	
Meat and poultry products	0.330193	-0.03173	0.017541	-0.00107	-0.00006	-0.00029	-0.0094	-0.00388	-0.00882	-0.0001	0.041489	0.02775	0.154
	(41.4)	(-32.43)	(8.75)	(-0.95)	(-1.14)	(-0.43)	(-13.05)	(-3.51)	(-9.11)	(0)	(17.3)	(11.96)	
Aquatic products	0.064863	-0.00589	0.007274	0.000361	0.000041	-0.0001	-0.00149	-0.0009	-0.00226	-0.0003	0.015209	-0.01113	0.255
	(26.4)	(-19.54)	(11.77)	(1.04)	(2.59)	(-0.5)	(-6.71)	(-2.65)	(-7.58)	(-0.56)	(20.57)	(-15.55)	
Tobacco and alcohol	0.250218	-0.02474	0.006857	0.000491	0.000169	0.000965	-0.00229	-0.00511	-0.01191	-0.00509	0.022421	0.008956	0.092
	(33.7)	(-27.16)	(3.67)	(0.47)	(3.57)	(1.55)	(-3.42)	(-4.97)	(-13.21)	(-3.16)	(10.04)	(4.14)	
Other food at home	0.296262	-0.02762	0.012794	0.001748	-0.000007	0.000303	-0.00787	-0.00252	-0.00299	0.014248	-0.00338	-0.0129	0.2
	(56.6)	(-43.03)	(9.73)	(2.37)	(-0.21)	(0.69)	(-16.65)	(-3.47)	(-4.71)	(12.54)	(-2.14)	(-8.47)	
Food away from home	-0.14083	0.020617	-0.0121	0.006154	0.000059	-0.00058	0.005038	0.010799	-0.00138	-0.0059	0.014167	0.019108	0.06
	(-15.3)	(18.21)	(-5.22)	(4.73)	(1.01)	(-0.75)	(6.05)	(8.45)	(-1.23)	(-2.95)	(5.11)	(7.12)	
Cash food	1.431974	-0.12537	0.036142	0.004494	-0.00028	0.000635	-0.02525	-0.01066	-0.03349	-0.00279	-0.00651	-0.06801	0.289
	(80.9)	(-57.75)	(8.12)	(1.8)	(-2.44)	(0.43)	(-15.8)	(-4.35)	(-15.59)	(-0.73)	(-1.22)	(-13.21)	
Clothing	0.2165	-0.0164	0.0061	0.0052	0.0001	-0.0009	-0.0049	-0.0005	0.0081	0.0049	-0.011	0.0081	0.061
	(24.77)	(-15.24)	(2.79)	(4.22)	(1.46)	(-1.23)	(-6.23)	(-0.39)	(7.63)	(2.57)	(-4.19)	(3.19)	
Utilities	0.2334	-0.0202	0.021	-0.0023	-0.0003	0.00002	-0.0048	-0.0032	-0.0034	0.0014	-0.0138	-0.0097	0.081
	(33.71)	(-23.75)	(12.02)	(-2.36)	(-6.01)	(0.03)	(-7.68)	(-3.37)	(-4.00)	(0.92)	(-6.65)	(-4.83)	
Durable goods	-0.1364	0.02	0.0009	-0.0011	0.00016	0.00034	0.0032	0.0047	-0.0017	-0.0012	0.009	0.0137	0.04
	(-15.00)	(17.85)	(0.39)	(-0.88)	(2.69)	(0.44)	(3.89)	(3.77)	(-1.49)	(-0.61)	(3.29)	(5.18)	
Housing	-0.595	0.0836	-0.0357	-0.0147	0.0002	0.0028	0.0187	0.011	-0.0047	-0.0009	-0.0071	0.0261	0.155
	(-35.74)	-40.96	(-8.54)	(-6.27)	(1.64)	(2.03)	(12.47)	(4.79)	(-2.43)	(-0.24)	(-1.41)	(5.37)	

Continued--

Appendix table 3

Cash expenditure regressions by expenditure category, 2001—Continued

Cash expenditure item	Intercept	Ln (total household expenditure)	Own refrigerator	Persons with senior high school education	Cultivated land area	Family plot area	Size of household	Migrants	Children age 7-15	Children under age 6	Jiangsu Province	Henan Province	R-square
Health and medical	-0.0488	0.0195	-0.015	-0.0107	-0.0001	-0.0014	0.0027	-0.0038	-0.0075	0.0225	-0.0209	-0.0132	0.029
	(-3.47)	(11.29)	(-4.24)	(-5.38)	(-1.15)	(-1.16)	(2.12)	(-1.95)	(-4.39)	(7.37)	(-4.93)	(-3.21)	
Transportation and communications	-0.0844	0.0206	0.0227	0.0072	0.0002	-0.0012	0.0025	0.0136	-0.0019	0.0031	-0.0031	-0.0064	0.053
	(-7.16)	(14.27)	(7.66)	(4.33)	(2.57)	(-1.23)	(2.31)	(8.35)	(-1.32)	(1.21)	(-0.87)	(-1.87)	
Education and recreation	-0.192	0.0327	-0.0362	0.0125	0.0001	-0.0024	0.01	-0.0086	0.0497	-0.0267	0.04	0.0263	0.14
	(-11.34)	(15.74)	(-8.5)	(5.25)	(1.15)	(-1.66)	(6.53)	(-3.66)	(24.19)	(-7.27)	(7.87)	(5.35)	
Other nonfood goods and services	-0.0338	0.0086	-0.0024	-0.0008	0.0000	0.0014	0.003	0.0011	-0.0045	-0.0029	0.0027	0.0148	0.012
	(-3.71)	(7.71)	(-1.06)	(-0.64)	(-0.33)	(1.86)	(3.61)	(0.86)	(-4.06)	(-1.49)	(1.00)	(5.59)	

Note: Dependent variable is the expenditure item's share of cash expenditures. Estimated with ordinary least squares using household data from Jiangsu, Henan, and Heilongjiang Provinces. N = 9,664. Values in parentheses are t-values. Note: Data are from Jiangsu, Henan and Heilongjiang Provinces.

Source: Estimated by USDA's Economic Research Service from unpublished data compiled by China National Bureau of Statistics (1995, 2001).