

Chinese Household Food Spending and Income

Until the 1980s, Chinese households devoted more than half of their expenditures to food, reflecting both the central importance of food in Chinese culture and the historic vulnerability of the Chinese population to food insecurity. The dominance of food spending in Chinese budgets has diminished as income has grown—following the familiar “Engel’s Law”—but food remains the single largest item in household budgets. Food’s share of spending has declined to under 40 percent for urban households and about 45 percent for rural households.

Household incomes in China, when converted to U.S. dollars at the official exchange rate, seem low. The average household income of the top 10 percent of urban Chinese households (about 4.5 percent of all households) is just \$2,641 per person (about \$7,000 per household), still quite low by U.S. standards (table 1).² Most Chinese households had per capita incomes less than \$1,000 per year in 2003. The middle 20 percent of urban households had incomes averaging \$880 per person. The average for the middle 20 percent of rural households was just \$275, an amount that included the imputed value of self-produced crops consumed onfarm.

China’s Gross Domestic Product (GDP) has grown very rapidly (9-10 percent per year) since China began market reforms in 1978, but income growth has not been uniform across all Chinese households (Khan and Riskin, 2005). Between 2000 and 2003, average per capita income for the

²Converted to U.S. dollars at the official exchange rate of 8.28 Chinese yuan per dollar that prevailed during 2003. Bramall (2001) and Khan and Riskin (2005) suggest that these data understate income by excluding the rental value of owned housing, subsidies, and illegal income. See appendix 1, “China Household Survey Data,” for more information.

Table 1
Average household income by income percentile, 2003

Household income percentile	Share of all households	Per capita income		Household income ¹	
		<i>Percent</i>	<i>Yuan</i>	<i>Dollars</i>	<i>Yuan</i>
Urban:					
90-100	4.5	21,837	2,641	58,524	7,077
80-89	4.5	13,123	1,587	36,220	4,380
60-79	8.9	9,763	1,181	28,021	3,388
40-59	8.9	7,279	880	22,055	2,667
20-39	8.9	5,377	650	16,831	2,035
10-19	4.5	3,970	480	13,022	1,575
0-9	4.5	2,590	313	8,807	1,065
Rural:					
80-100	11.1	6,347	767	22,215	2,686
60-79	11.1	3,207	388	12,507	1,512
40-59	11.1	2,273	275	9,319	1,127
20-39	11.1	1,607	194	6,908	835
0-19	11.1	866	105	3,984	482

Note: Data were obtained from separate urban and rural household surveys. Share of all households was calculated based on 2003 national statistics indicating 44.7 percent of 371 million households were urban. Original values converted to dollars at official exchange rate of 8.28 yuan/dollar that prevailed during 2003.

¹Estimated by multiplying per capita income by average persons per household.

Source: ERS analysis of China National Bureau of Statistics data.

top tier of urban households grew at double-digit rates far exceeding GDP growth (fig. 1). However, income growth for low-income urban and rural households—the majority of China’s households—was well below GDP growth. Slow income growth for rural households (55 percent of the population) has become a major policy concern in China, but income growth has been even weaker among low-income urban households. Average income for the lowest decile of urban households actually declined slightly between 2000 and 2003.³

Patterns of food expenditure reflect the increase in income inequality. Expenditures by the top tier of households—China’s emerging class of professionals and entrepreneurs (Senauer and Goetz, 2003; Gale, 2006)—have grown at double-digit rates. Food expenditures were nearly stagnant for the bottom 20 percent of urban households. Food expenditures by rural households grew 2.6 percent annually.

The uneven distribution of income growth magnifies the importance of understanding how food consumption patterns vary across income classes. Income and food expenditure growth have been disproportionately concentrated at the upper end of the income distribution, so the consumption patterns of high-income households may have been disproportionately influential in driving food demand and market developments.

Food is a necessity that absorbs about half of the income of China’s poor households, but food’s share of spending and income declines as households gain more income (fig. 2). The wealthiest urban households devoted 30 percent of their expenditures but only 20 percent of their disposable *income* to food. The ratios of food expenditure to income and to total expenditures are both 47 percent for the poorest urban households, about equal to the median rural household’s food expenditure share.⁴

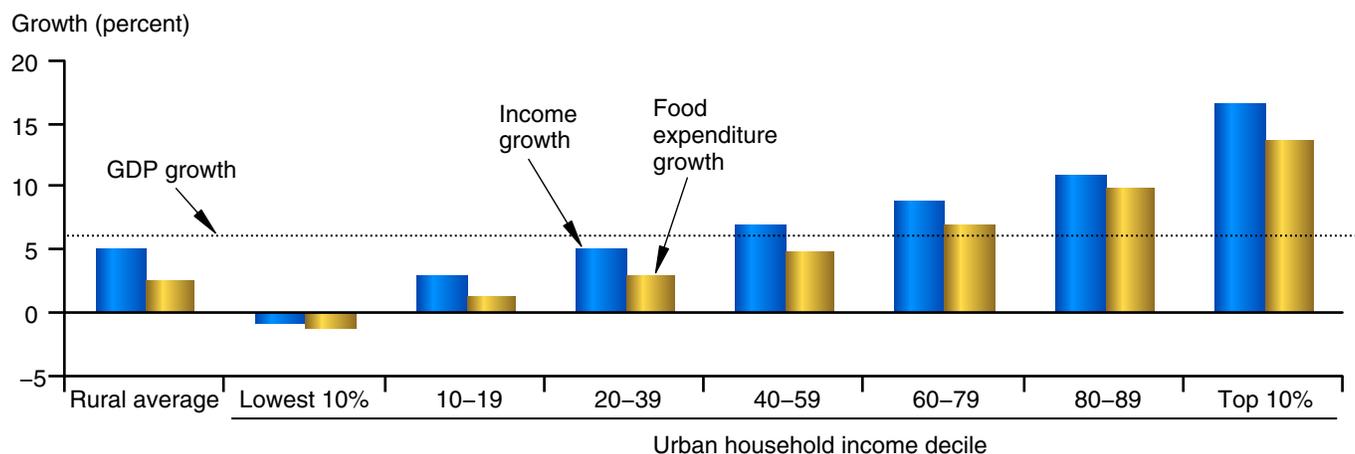
As their incomes rise, Chinese households tend to change the structure of their diets (Gale, 2003; Hsu et al., 2002; Guo et al., 2000; Gould, 2002; Wu, 1999). For low-income urban households, pork and eggs are the dominant

³Skilled workers, entrepreneurs, and government officials have experienced rapid income growth, but many industrial and government workers have been laid off or forced into early retirement by downsizing of state-owned enterprises and government bureaucracies. Low productivity in farming keeps farm earnings from rising, and a huge supply of unskilled workers prevents their wages from rising.

⁴By comparison, the 2004 average food share of expenditures for U.S. households was 13 percent. The food share of expenditures exceeds the share of income spent on food because the top 10 percent of Chinese urban households save about one-third of their income.

Figure 1

Average annual growth in household income and food expenditure, 2000–03, by income class



Source: Calculated by ERS from China National Bureau of Statistics data.

sources of animal protein, but purchases of fish and poultry rise more quickly as income increases (fig. 3). Among the lowest income households, pork purchases are more than double fish and seafood purchases. But among China's highest income households, purchases of pork are roughly equal to purchases of fish and seafood. Similarly, low-income households purchase more eggs than poultry, but high-income households' purchases of eggs and poultry are roughly equal.

In contrast, per capita consumption of traditional staple foods (grains and vegetable oils) tends to fall or remain stagnant as income rises. Average rice and wheat flour consumption is lower among households with higher incomes while consumption of grain products (breads, noodles, dumplings) tends to rise slightly as income increases (fig. 4).⁵ Consumption of cooking oil is nearly the same for all urban income classes. These consumption patterns reflect the transition from a starch-based to an animal protein-based diet as income rises.

The relationship between consumption and income seemingly weakens as income rises (fig. 3). This is most evident for pork and egg purchases, which rise with income at low income levels but appear to plateau at high income levels. The apparent linear relationships between purchases of poultry, fish, and seafood and the log of income suggest that income elasticity declines as income rises.⁶ In other words, the increase in pork and egg consumption in response to a 1-percent increase in income is greater for low-income consumers than for high-income consumers.

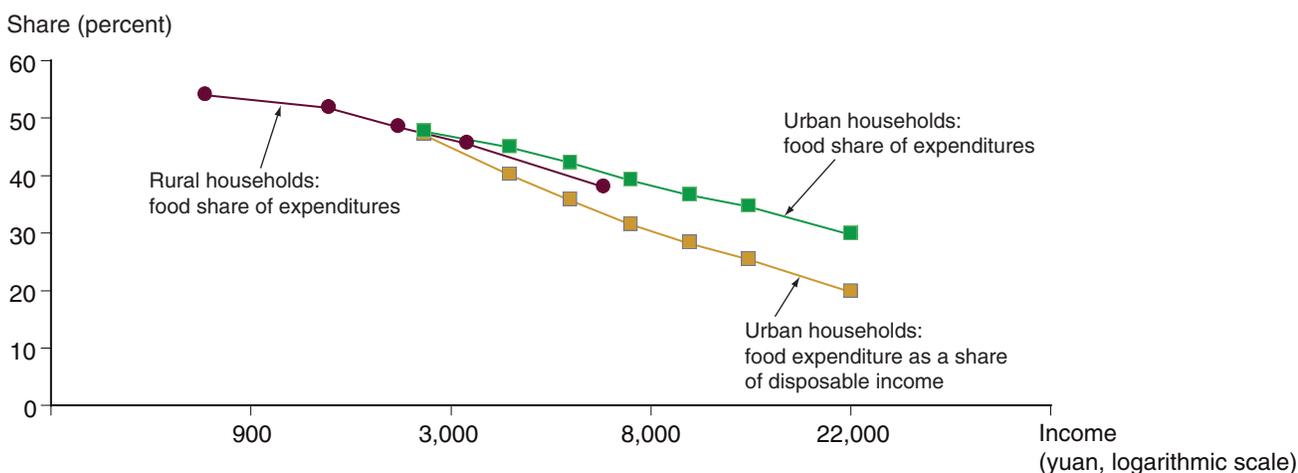
The unit value (expenditures divided by quantity purchased) of foods consumed rises with income. This pattern is most evident for fish and seafood (fig. 5). In 2003, households in the lowest urban income category paid an average of 8.15 yuan per kg for aquacultural food products, less than half the average paid by households in the highest income class. The unit value paid for meat also increases with income, but the unit value paid

⁵The strong negative relationship between flour consumption and income shown in figure 4 largely reflects north-south patterns of income and grain consumption. A disproportionate share of China's high-income households lives in southern China where the population consumes large amounts of rice and little wheat flour (Xin et al.). Conversely, flour consumption is high in northern and western China where incomes tend to be low.

⁶Mathematically, figures 3 and 4 depict the change in the absolute quantity purchased, Q , against the log of income, $\ln y$. If the slope of the line $(\Delta Q)/(\Delta \ln y)$ is greater than zero and constant, then the elasticity $(\Delta \ln Q)/(\Delta \ln y)$ declines as y and Q increase.

Figure 2

Importance of food expenditure, urban and rural Chinese households, by income level, 2003

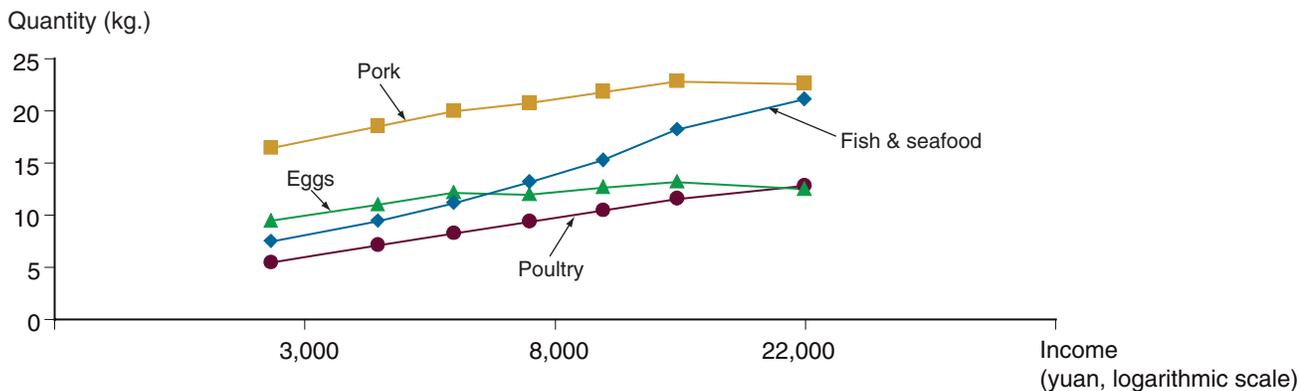


Note: Chart shows average food expenditures as a share of all household expenditures for urban and rural households and the ratio of food expenditures to disposable income for urban households. Averages are shown for household income quintiles for rural households. Averages for the top and bottom two deciles and middle three quintiles are shown for urban households. Income in Chinese yuan is net income for rural households and disposable income for urban households.

Source: ERS analysis of data from China National Bureau of Statistics, urban and rural household surveys.

Figure 3

Annual per capita purchases of livestock products, by income level, urban Chinese households, 2003

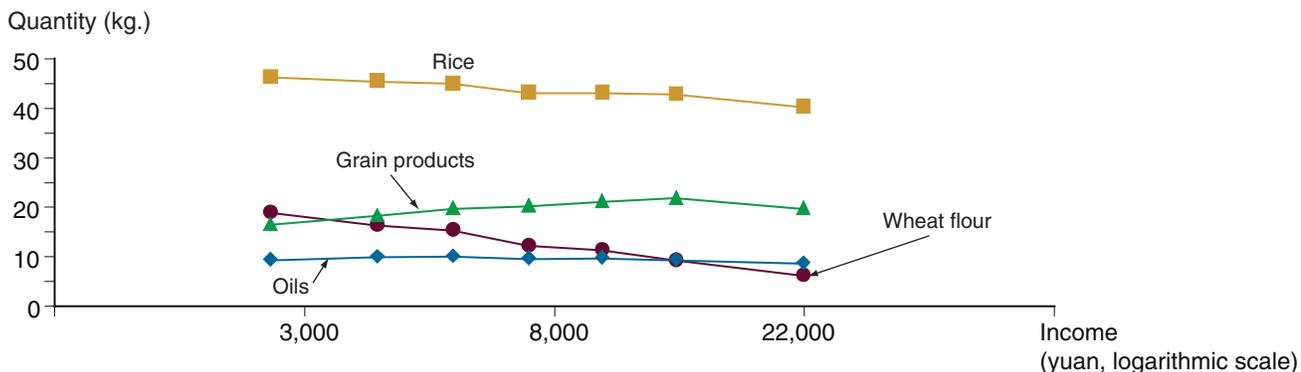


Note: Chart shows average annual per capita purchases by income group.

Source: ERS analysis of China National Bureau of Statistics, urban household survey data.

Figure 4

Annual per capita purchases of grains and oils, by income level, urban Chinese households, 2003

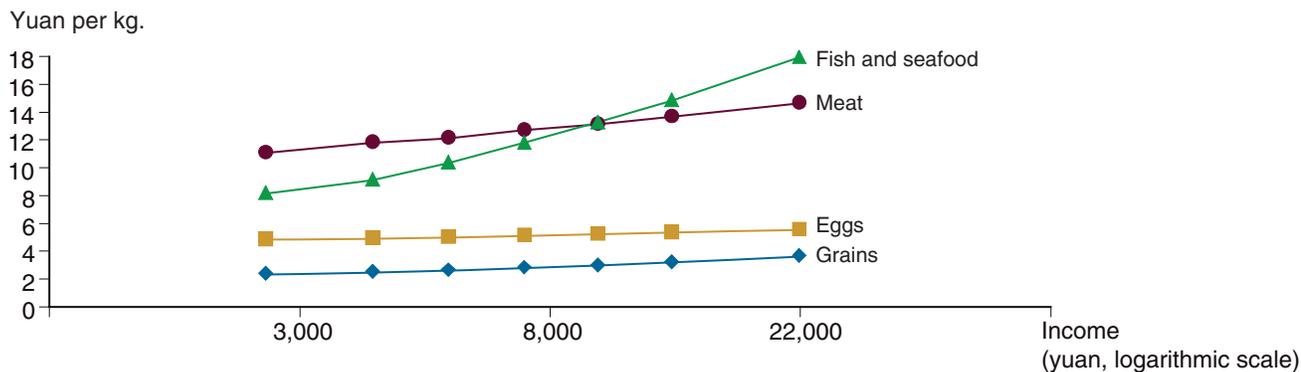


Note: Chart shows average annual per capita purchases by income group.

Source: ERS analysis of China National Bureau of Statistics, urban household survey data.

Figure 5

Average unit value of food purchases, selected food items, by household income, urban Chinese households, 2003



Note: Chart shows average per capita expenditures divided by per capita purchases for each income group.

Source: ERS analysis of China National Bureau of Statistics, urban household survey data.

for eggs—a relatively homogeneous product—increases only slightly with income, from 4.82 to 5.5 yuan per kg. The difference in unit value by income reflects the purchase of processed products, better cuts of meat, branded or packaged products, and more costly products (e.g., shrimp versus fish) by higher income consumers.