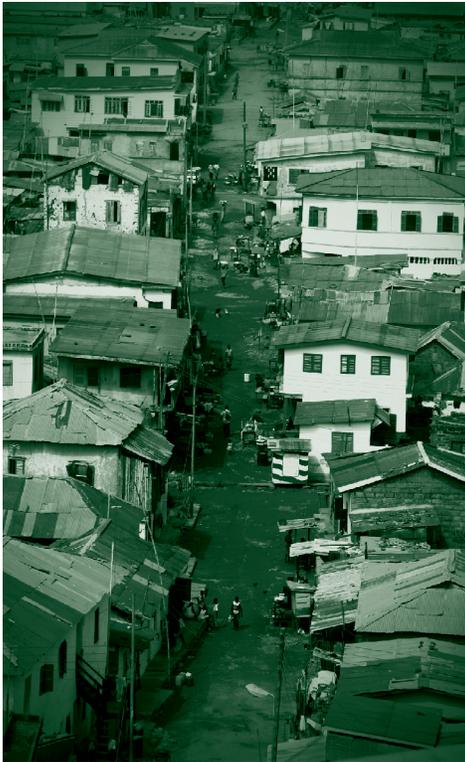


Food Prices and the Welfare of Poor Consumers

Ethan Ligon

Increases in food prices will increase the number of the world's poor and will have the greatest impact on the very poorest. But the most visible impact will not be to nutrition.



The most visible consequences of a large increase in food prices are likely to be decreases in schooling rates, health expenditures, and other similar investments as the need to purchase food—at higher prices—crowds out expenditures on other goods.

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How do increases in the cost of food affect the world's poor consumers? Standard demand theory tells us that there will be two important effects. First, there is a substitution effect: changes in the price of food relative to other goods will lead to a decrease in (compensated) demand for food. Second, there is an income effect: an increase in the price of food reduces the remaining budget available for purchases of all goods. This much is true for all consumers, rich and poor. But here we are guided by one of the oldest and most robust of empirical observations regarding consumer demand in economics: Engel's Law, derived from analysis of household budgets of working-class Belgians in the nineteenth century. Engel's statement of the eponymous law is sometimes translated as "The poorer the family, the greater the proportion of its total expenditure that must be devoted to the provision of food." The size of the income effect will be larger for poor consumers than for rich ones. Engel's Law is buttressed by common sense: at very low levels of income, the threat of starvation limits the consumer's ability to substitute away from food and so increases in food prices have a larger effect on poor households.

Engel noted an important corollary: the share of total expenditures devoted to food is "the best measure of the material standard of living." It follows, then, that it is the consumers with the lowest "material standard of living" that will be most harmed by an increase in food prices. This corollary goes beyond the general observation that increases in prices hurt poor households just because they are poor. Poorer households are more vulnerable

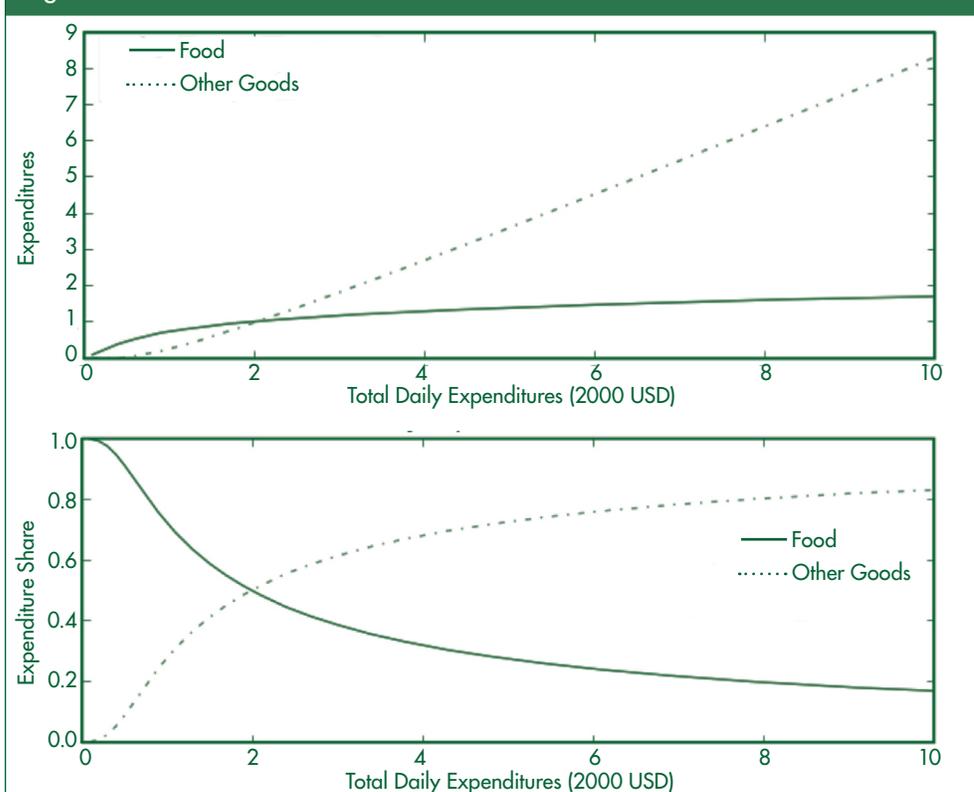
to increases in food prices than they are to increases in other prices. This corollary may seem obvious, but it actually is not predicted by standard economic models, which generally assume that the budget share of food is constant.

It is not all about food! The main consequence of sharply increased prices for food staples is not that more poor people go hungry, or that we will see sharp increases in malnutrition. Indeed, nutrition may even improve—as households substitute from preferred diets to more basic foodstuffs, they may be less happy but better nourished. Instead, the main consequence of increased food prices is that poor consumers, forced to devote a larger share of their budgets to food, will have to reduce expenditures on other important things, including investments in health, education, and other nonfood items.

Modeling Consumer Behavior

To try to understand the effects of sharp increases in food prices for the welfare of the world's poor, it is useful to employ a simple economic model. The model is as standardized as possible, but must accommodate two important real-world features often missed by the simplest models. First, the share of food expenditures in the budget should fall as income increases. Second, the expenditure elasticity of food should fall below one for wealthy consumers. The expenditure elasticity can be thought of as the rate at which food expenditures increase relative to the rate at which total expenditures increase. In general, expenditure elasticities are one of the main tools that economists use to measure the way in which demand varies by wealth. In the specific case of food, it is well known that changes in the total expenditures

Figure 1. Wealth and Demand



of wealthy households result in much smaller changes in food expenditures for those same households.

I have chosen values of parameters to roughly match some features of the real world. Because we want the model to capture the fact that expenditure elasticities of food demand can vary with wealth, we use what I will term a “variable elasticity of substitution” system of demands. This system uses a slightly richer parameterization of utility functions than is usual in applied work.

A household’s utility depends on its consumption of both food and non-food goods. The approach adopted here differs from the usual approach in two ways. First, there is a (very small) subsistence level of food expenditure required to survive. Second (and much more important for the present exercise), people are assumed to be much more sensitive to variation in their food consumption than they are to variation in their consumption of other goods.

I use data on food expenditure elasticities and budget shares estimated from populations with very different

levels of wealth and find values of preference parameters that allow the assumed demand system to match them. These include, on the poor end, data from rural households in the state of Maharashtra in India in 1983, estimates of food expenditure elasticities in the United Kingdom in 1983, and estimates for food shares from a large collection of poverty assessment surveys conducted by the World Bank. Choosing preference parameters to fit the different food-share expenditure elasticities reported by these sources, generates an estimate of a subsistence level of food consumption and an estimate that households are roughly four times more sensitive to variation in food consumption than they are to variation in nonfood consumption. The aim is to better model how (or whether) the poor become rich over time by making the model match data from both poor and rich populations.

I define a poor consumer as one whose expenditures on food exceed half of the total budget—at 2005 prices, a poor household has a total expenditure of less than about \$2 per day, as

shown in Figure 1. At such low levels of expenditure, one might suppose that there could not be a great deal of variation in the composition of budgets but, in fact, there is a great deal of variation in expenditure shares among the poor. For the very poorest (with total expenditures of pennies per day), the total share of food approaches one. But even slightly richer people have very different budgets, as expenditures on nonfood items (e.g., clothing, shelter, medicine) increase much more rapidly than do food expenditures as one crawls away from the barest subsistence.

When a consumer’s expenditures fall, the shortfall will affect nonfood more than food, regardless of expenditure level. As shown in Figure 2, when a poor (less than \$2 per day in expenditures) consumer suffers even a small reduction in income, there can be a very large impact on how the budget is allocated. In particular, the need for food can crowd out expenditures on other goods or investments.

A large increase in food prices would have a dramatic impact on the number of poor people worldwide. Figure 3 illustrates the effects of a 50 percent increase in food prices on expenditure shares for differently situated consumers. From the figure, we can see that an increase in food prices of this magnitude changes the level of total expenditures below which food shares are greater than one half from about \$2.00 to about \$2.50. Engel’s corollary then suggests that, in the face of a 50 percent increase in food prices, the poverty line should also increase to \$2.80. Combining this estimate with estimates of the cumulative distribution of world income indicates that this increase in food prices would yield an increase of roughly 30 percent in the total number of the world’s poor.

Yet noting that there would be a 30 percent increase in the number of poor only begins to get at the consequences of such a large increase in food prices. Not

Figure 2. Expenditure Elasticities for Food

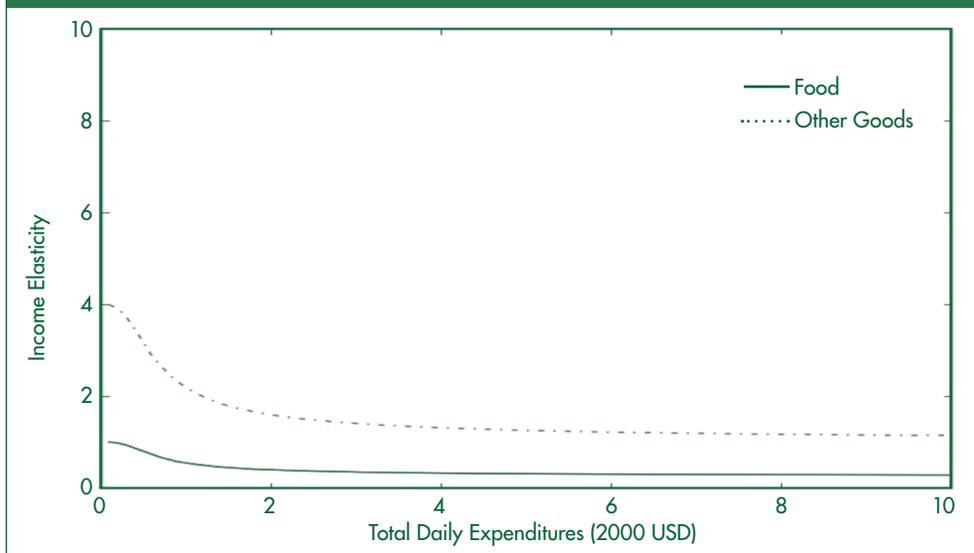
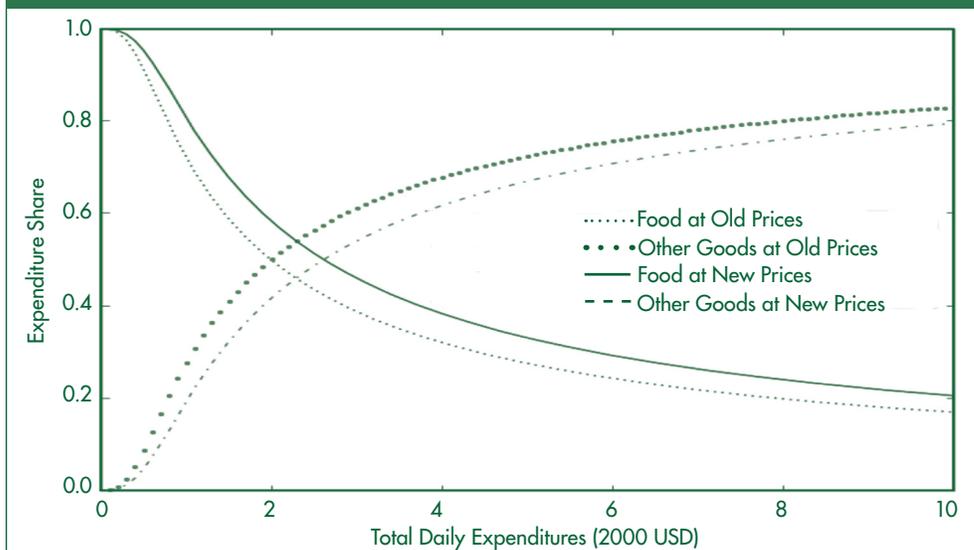


Figure 3. Consequences of a 50 Percent Food Price Increase for Expenditure Shares



only would there be many more poor, but the poorest would be most hurt. Wealthier consumers with low food expenditure shares are not much harmed by even quite large increases in food costs, but in the face of a 50 percent increase in food prices, a poor household will have to cut nonfood expenditures by more—for the poorest households, much more—than 50 percent. For example, the average rural Maharashtran household in 1983 spent 80 percent of its income on food. A 50 percent increase in food prices would cause this household to decrease its nonfood consumption by more than 80 percent and its food consumption by 44 percent.

Conclusion

Two simple facts about food demand—that the share of food expenditures in the consumer’s budget falls as total expenditures increase, and that for wealthy households the expenditure elasticity of food demand is less than one—combined with estimates of household food expenditure elasticities imply enough of the structure of the demand system to draw some fairly robust conclusions about the effects of increases in food prices on poor households.

Taking a poor household to be one who spends more than half of its income on food, a 50 percent increase in food prices implies an increase in the

poverty line from about \$2.00 to about \$2.80 and a global increase of roughly 30 percent in the total number of poor households. The poorest households, having the largest budget devoted to food, are harmed the most, and this harm is most visibly manifested not in reductions in food consumption and consequent malnutrition, but in reductions in nonfood expenditures and investments. The most visible consequences of a large increase in food prices are likely to be decreases in schooling rates, health expenditures, and other similar investments, as the need to purchase food at higher prices overwhelms the need to spend on other goods.

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