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Food Prices and Food Consumption in Urban Mali

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Beatrice Lorge Rogers and Melanee Lowdermilk
Tufts University School of Nutrition

Executive Summary

This report presents the results of a study of food prices and food consumption in Bamako and the seven regional capital cities of Mali. The study made use of data from a household expenditure survey conducted from May 1985 to May 1986 which collected information on item purchased and amounts spent; the present study added information on the quantities purchased by returning to the markets in the cities where the survey had been conducted and measuring the local units in order to standardize them in kilos. Using this information, quantities purchased and prices paid per kilo could be computed.

Food Consumption Patterns

Cereals dominate the food consumption pattern in every city and in every expenditure class. Depending on the city, cereals account for between 61 and 84 percent of calories consumed. The proportion of food expenditure devoted to cereals varies from 26 to 44 percent.

Among the cereals, rice accounts for more than half the cereal calories consumed in six cities, and close to half in the other two. The coarse grains (millet, sorghum, and maize) are the next most important source of calories. Of these coarse grains, millet is the most important in most of the cities. (Millet and sorghum were not carefully distinguished in the data on which this study was based.) Maize is a much less important food than any of the other major grains, although it is more important in the cities of Tombouctou and Gao than elsewhere.

Other important sources of calories are peanuts and peanut butter, meat, and oil and sugar. All these non-cereal foods combined generally account for only about 20 percent of total calories, however.

Regional Variation

The similarities among regions are much more striking than their differences. In all the cities included in the study, the cereals, and in particular rice, dominate the diet. Maize appears to be more important in Gao, and to some degree in Tombouc-

tou, than in the other cities, but in all cases the quantity of maize purchased is much less than either rice or millet and sorghum.

Regional variation was more noticeable in the importance of peanuts and peanut butter, milk, meat and poultry, and oil. Meat and poultry are more important sources of calories and protein in Mopti, Tombouctou and Gao, and to some degree in Kayes, than in the cities of Bamako, Koulikoro, Segou, and Sikasso. Peanuts and peanut butter are quite important in Bamako, Sikasso, Segou, Koulikoro, and Kayes, and hardly appear at all in the consumption pattern of Tombouctou. The importance of sugar and of oil appears to be fairly stable across regions, except in Gao where oil is less significant.

Variation by Expenditure Level

The economic level of households in this study was measured by total household expenditure, averaged over the whole year and divided by the number of household members to get a per capita monthly expenditure figure. For computing expenditure quartiles, the imputed value of food consumed from home production and from gifts was added to the value of purchases. Expenditure quartiles were based on the distribution of households from all the cities in the sample, so that the expenditure level represented by each quartile is comparable across cities and regions.

The major effect of increasing expenditure level is an increase in the quantity consumed of all foods. It is noteworthy that the mix of foods in the diet remains quite similar at all income levels, but quantity consumed per capita, and total caloric and protein intake per capita, increase sharply. This rate of increase does not appear to level off at higher levels of expenditure.

The importance of cereals in the diet does not vary by expenditure class. More surprising, the proportions of rice and of coarse grains in cereal consumption do not vary by economic level. Consumption of both rice and coarse grains increases sharply with rising expenditure, but one does not appear to increase faster than the other. In all expenditure quartiles, the proportions of rice and of coarse grains is relatively constant.

In the cities of Bamako, Koulikoro, Sikasso, Segou and Mopti combined, meat shows increasing importance with rising income, though the effect is not very large. In Gao, the importance of peanuts declines with rising expenditure level, and both rice and coarse grains appear to increase relative to other foods.

The quantities purchased of all foods increase as total expenditure rises. It is striking is that no food can be identified as inferior, that is, there is no major food group whose

consumption declines with rising expenditure level. It appears that food consumption levels in Mali are low enough so that even at relatively high expenditure levels, households devote increasing income primarily to increasing the amount of food consumed rather than to shifting toward superior foods.

Effects of Prices

Consumption of both rice and the coarse grains (millet and sorghum) fall as their prices rise. The responsiveness of consumption to price changes is about the same for the two commodities. It is surprising that purchases of rice do not appear to be affected significantly by changes in the price of millet/sorghum. Changes in the price of rice, if they affect consumption of the coarse grains at all, do so in the same way as they affect consumption of rice: when rice prices go up, coarse grain consumption falls, as does rice consumption.

These results suggest that as rice prices rise, households do not tend to shift their consumption toward the cheaper millet and sorghum in order to protect total calorie consumption. Rather, a rise in rice prices seems to result in an overall loss in real income which reduces purchases of rice and also possibly of millet/sorghum. Households apparently keep the proportions of rice and coarse grains consumed relatively constant, so the two are relatively independent, rather than acting as substitutes in consumption.

It appears that, as beef prices rise, consumers substitute peanut butter in their consumption pattern, but that when the price of peanut butter rises, consumers do not alter their consumption of beef. The biggest effect of a change in peanut butter prices is on peanut butter purchase, while the substitution effect dominates in the effect of changing beef price.

Access to Home-Produced Food and Gifts

In the survey on which this study was based, information was collected on whether households had access to any of about ten foods (including all the grains, meat, poultry, fish, milk, peanuts, and several other foods) either from their own home production or from gifts. In general, the value of food consumed from these non-purchased sources simply added a constant to the average consumption in each city and in each round of the survey. An exception is Gao, where the value of these non-purchased foods close to doubled the amount of food consumed in the first round. This is consistent with the fact that large amounts of food aid were still available in Gao in May - September 1985.

Non-purchased food accounts for an average of four percent of the value of food consumption. Sixty-eight percent of households have no access to any home-produced or gift food. The

importance of such food does not appear to vary much by expenditure class, except that access to non-purchased millet declines slightly with rising expenditure level.

Access to non-purchased rice reduces market purchases of rice and of peanut butter, but not of coarse grains. This is one more indication that rice and coarse grains do not readily substitute for each other in consumption.

Caloric and Protein Consumption

Average per capita daily calorie consumption falls below the FAO/WHO recommended intake levels in the lower two expenditure quartiles of all the cities in the study. Protein consumption falls below these levels in the lowest quartile of expenditure in all cities. These results suggest that as much as half the urban population is at risk of inadequate food consumption.

Calorie and protein consumption levels are very strongly related to expenditure level, rising sharply in the higher quartiles. The rate of increase in calorie and protein consumption does not appear to level off at higher expenditure levels. It is possible that households of higher economic status share their food with people outside the household, so the per capita consumption figures overstate actual intake.

The prices of coarse grains, peanut butter, and beef show a significant effect on total calorie consumption. An increase in the price of any of these foods, controlling for changes in the others, is associated with a decline in calorie intake. The effect of a change in rice price on total calorie consumption is not significant. This indicates that consumers substitute some other calorie sources (but not millet and sorghum, according to our data) when the price of rice rises. Further work is needed to identify thiese substitute foods.

Policy Considerations

The results of this study suggest that the focus of food policy in Mali on cereal supply and price is well justified. Cereals dominate the diet in every region and income class. Rice is the most important cereal in the diet of every income class, accounting for half or more of cereal calories. Maize is not a major food in any of the cities except Tombouctou. Millet is the second most important cereal after rice.

Consumers do not appear to substitute coarse grains for rice very readily when rice prices rise or coarse grain prices fall (within the range of prices observed in this study). The effect of a changing rice price on overall food consumption appears to

be the same as the effect of a change in income: if the price of rice goes up, consumption of rice and possibly also of coarse grains goes down. Changes in millet/sorghum price do not appear to affect rice consumption. The price of rice does not directly affect total calorie intake (in the five-city group used in the multivariate analysis); the price of coarse grains is negatively related to calorie consumption.

The dominance of rice may be explained by the much smaller amount of labor, time, and fuel required to prepare it, compared to millet, sorghum and maize. Appropriate technologies to make preparation of coarse grains easier might promote the substitution of coarse grains for rice when rice prices rise.

The study identified no foods which could be called inferior. Quantities consumed per capita of all foods rise with rising income level. Therefore no food appears to be self-targeting toward the poor.

Dietary adequacy appears to be a problem at least in the lowest two expenditure quartiles in all cities. Protein availability appears to be inadequate in the lowest quartile; calorie availability is below recommended levels in the lower two quartiles.

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