

## PROCEEDINGS OF THE NUTRITION SOCIETY

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### SYMPOSIUM ON 'NUTRITION—VALUE FOR MONEY'

#### **Some findings of the National Food Survey of Great Britain**

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The National Food Survey is a continuous sampling enquiry into the domestic food consumption and expenditure of private households in England, Wales and Scotland. Each participating housewife keeps a detailed record for one week, giving the description, quantity and cost of all food entering the home, except for a few items which other members of the household often purchase for themselves, such as sweets and chocolate. Alcoholic drink is also excluded; no household survey has yet elicited the truth on that subject. The number and type of meals eaten outside the home are recorded, but not their cost or composition. Information about characteristics of the household obtained in the Survey enables nutritional assessments to be made.

The income grade (no longer called social class) of the household is determined by the gross weekly income of its head, or of the principal earner if the head is retired; but for econometric analysis the net income of the whole family is used as explanatory variable. Probably the best single measure of the effect of income is the income elasticity of total food expenditure (Baines, 1977) measured from the regressions of the logarithm of total food expenditure on the logarithm of net family income within closely defined household types. Since 1975 this elasticity has been less than 0.2. The estimate of 0.10 in 1976 was probably the lowest value ever recorded anywhere; in 1977 it was back to 0.14. These are cross-sectional estimates, if one can regard a year as a point in time.

Why were income differences in food expenditure so compressed in 1975 and 1976? The amounts of food obtained had been gradually falling in all income grades since 1970, higher income groups showing the greatest fall. The higher income groups had suffered proportionately larger reductions in real disposable incomes during successive phases of incomes policy; further, they were in a better

position to reduce food wastage (which tends to be greater the larger the income) and to take up any 'slack' because of their better storage facilities and their ability to buy in bulk.

At first sight the general fall in household food expenditure in real terms during the seventies seems surprising, since real incomes in 1975 were one-sixth higher than in 1970 (a more rapid increase than during the late sixties) and the income elasticity of demand for food, though very low, was still positive. Any individual food can be replaced by another if its price rises, but there is no substitute for food as a whole. Part of the fall in household food expenditure can be attributed to reduced wastage in all groups, a very little to the increase in outside meals and some may be due to a reduction in energy needs as activities become less strenuous. A possible contributory cause is that, under the special conditions, real incomes outpaced the purchasing power of housewives. Inflation was unprecedentedly rapid; food prices were increasing faster than prices generally and in the short run, inertia and monetary illusion would tend to transfer purchasing power from housewives, usually female, to breadwinners, usually male, and thus from food to sectors with a masculine orientation, such as motoring, alcoholic drink and recreation. This is admittedly tentative; the changes could formally be explained by a price elasticity for food numerically greater than the income elasticity.

Regional differences, though persistent and of fascinating complexity, are of less importance than in past generations. Trends are still set by Greater London, with its high incomes, sedentary habits and central markets. Households in the London area are well above the general level in expenditure, quantum of purchases and cost of energy. Scotland has low food expenditure, though it pays higher prices for food than any English region; not, however, for energy, because of the plainer living which is there associated with high thinking. The south-west of England and the rural areas are well below the national average for food expenditure, the difference being largely made up by free supplies from gardens and allotments. The lowest value of food obtained for consumption, including free supplies, has latterly been in the East Midlands, which have been losing ground.

Among regional preferences for particular foods or food groups are beef in Scotland (% above the average for Great Britain in 1970-75) (28); lamb in Greater London (47); pork in the West Midlands (31); butter in Wales (31); flour in the North of England (50), Yorkshire/Humberside (42) and the East Midlands (38); cooking fats in Yorkshire/Humberside (42) and East Midlands (31); 'other' fats in London (39); poultry and fresh fruit in London (30); fish in Yorkshire/Humberside (28).

These are all positive preferences. Negative departures from the average for Great Britain are mostly not as great; they include margarine in London (% below the national average) (33), pork in the North-West (29), coffee in Wales (27) and a whole range of foods in Scotland: pork (57), lamb (56), fresh green vegetables (54), flour (47); cooking fats (39), poultry (31) and coffee (29). The contrast between Scotland and the north-east of England in respect of flour and cooking fats

presumably reflects a difference in facilities. Scotland shows even larger shortfalls for peas and beans, both fresh and frozen. Yet in nutritional terms the differences between Scotland and England are now quite small, except for vitamins A and C.

The declining importance of income and of location means that the composition of the household is now much the most important determinant of food habits and nutritional standards. The Survey keeps a continuous record of families in eleven main categories, classified by the numbers of adults and of children under 18. Over half the households, comprising over one-third of all persons, contain no children. In such households the rate of fall-off in per caput expenditure on food increases with increasing household size, presumably because of economies of scale. In families of two adults with children, the rate of fall-off in food expenditure per head with increasing numbers of children diminishes with each additional child, partly because the average age of the children increases with family size, as does total net family income.

In large and poor families over half the energy is still derived from carbohydrate; in higher-income families with adults only, the proportion is about 41%. For fat, the range is from 45% of all energy in the more favoured households to about 37% in the less favoured. (The Norwegian government announced in 1975 that it aimed to reduce the proportion of energy derived from fat from 42 to 35% by 1990 (Eeg-Larsen & Øgrim, 1976). For protein the range is very small, nearly all groups obtaining 12–13% of their energy from animal or vegetable protein, the relative contribution of animal protein ranging from approximately 69–56%.

These are not very wide spans; we can clearly speak of a national diet with quite definite characteristics. This is the British way of life. It would be possible to define more extreme groups than those contrasted above, but their small numbers would not support this form of analysis.

A weakness in the diet of the vulnerable groups is that they obtain less of each nutrient/4.3 mJ (1000 kcal) than do others, except for carbohydrate and vegetable protein. Of course they obtain their energy, and to a less extent their nutrients, more cheaply than the more favoured households.

The extent to which households in the sample obtain value for money can be measured by evaluating the nutrients obtained for one penny from particular foods and from all food, so that the 'best buys' in this sense can be defined. In 1975, for example, margarine and sugar were still the cheapest sources of energy, though the energy from sugar was 'empty'; white bread was the cheapest source of protein; margarine, best source of fat and vitamin D; liquid milk, of calcium; liver, of iron, riboflavin and total vitamin A; breakfast cereals (in the wide sense) of thiamin and nicotinic acid equivalent; fruit juices, of vitamin C (Ministry of Agriculture Fisheries and Food, 1977).

The ordinary housewife would not think in these terms; she and those whom she serves are naturally slow to change their habits, and she is buying satisfaction for them and for herself, including the liberation of her time. Larger and less frequent purchases and the use of convenience foods both have this end in view in different ways.

Bulk purchases require improved storage facilities. In 1956 only 8% of households had a refrigerator; ownership had risen to 33% by 1962 when the Survey somewhat belatedly took up the topic, and in 1977 reached 94% in the Survey sample. Ownership is now the rule in all types of household; it is about 80% even for pensioner households and single adults living alone. It is no longer appropriate to make comparisons between households with and without a refrigerator, since the latter group is vanishingly small; but during the transition period the purchasing habits of households with a refrigerator differed from those of corresponding households without one. In the careful language of the National Food Survey Committee 'The pattern of food consumption of households with a refrigerator tend(ed) to resemble that which characterize(d) otherwise similar households without a refrigerator but with a higher average income... Households with a refrigerator obtained relatively more of their energy from protein and fat and less from carbohydrate, and a higher proportion of their total protein from animal sources' (Ministry of Agriculture, Fisheries and Food, 1964). In brief, the whole pattern was shifted up-market. It would be wrong to dogmatize on which was cause and which effect; probably families bought a refrigerator because of an attitude towards food which expressed itself both in that purchase and in the dietary pattern. It is unlikely that improved nutrition was in their mind; probably the factors involved were economy, convenience and even prestige.

The growth in ownership of deep-freezers has paralleled that of refrigerators half a generation earlier. A question on possession of a deep-freezer that is suitable for long-term storage of food was first asked in 1970, when 3% of households had such an appliance. Detailed tabulations of food purchases by owners of deep-freezers were introduced in 1973, when the proportion was 8%; in 1977, after two hot summers, the ownership reached 36%, and by now it will exceed 40%. The possession of a deep-freezer (almost always with a refrigerator as well) appears to have greater influence on purchasing behaviour than does that of a refrigerator alone. It encourages bulk-buying; this increases the week-to-week variation and makes the Survey more difficult. In 1975, 12% of households still had neither appliance; the three groups obtained much the same per caput value of food for consumption, but this uniformity concealed some quite marked differences in dietary pattern, the most obvious being the far greater use of most frozen convenience foods by freezer-owners than by refrigerator-owners or those with neither. For the ubiquitous frozen peas and beans, however, the possession of a refrigerator alone served to raise consumption to a level not far below that for freezer-owning households. There was an offset: freezer-owners spent less than other households on canned and other convenience foods.

The series has a demographic oddity: as freezer-owning expanded, the three groups (freezer-owners, refrigerator-owners, others), which are in descending order of average household size, all diminished in average size, even the lowest, since the shift from this category was principally among the larger households.

By the early nineties freezer-owning may be taken for granted, as the possession of a refrigerator is today. Only during the transition can associated effects be

directly studied. Nutritionally they may not be very important, unless importance is attached to an enhanced intake of vitamin C.

Freezer-owning first took off in the farmhouse and the country house, and freezer-owners still record about twice as great a value of garden, allotment and other 'free' produce as do other households. The doubling and redoubling of their numbers since 1972 may have some association with the reversal of the long-term decline in such self-supplies, though the main cause was doubtless the escalation of food prices which encouraged people to take allotments or even dig up their lawns. In 1953, the last full year of rationing, 4% of all household food (reckoning by retail value) was obtained without money payment. By 1960 this was below 3%; from 1965 to 1973 it fluctuated between 2–2.5%; by 1977 it was again close to 3%.

Another feature of the middle seventies was the temporary reintroduction of consumer subsidies on milk, cheese, butter, bread, flour and tea. Food subsidy payments by the Exchequer rose from 2p/head in 1973 to 22p/head in 1975, and clearly helped to shift demand. Between 1972 and 1975 expenditure on the subsidized foods rose by 35% and their price by 30%. In contrast, expenditure on all other foods rose by 63% and their price index by 69%. Thus there was a switch in purchases to the foods subsidized, the real value increasing by 4.0% while unsubsidized foods showed a fall of 3.3%.

In addition to these general subsidies on certain commodities, there were and are welfare subsidies on milk and school meals. The Survey does not usually attempt to record quantities consumed by individuals, but from 1971 an exception was made for liquid milk, in order to monitor the effect of changes in the entitlement to cheap welfare milk and free school milk. The evidence is that the initial impact was taken by adults in the family, particularly mothers, rather than the children; but the nutritional consequences, if any, depend on what, if anything, replaces the milk which they would otherwise have drunk.

Another special study shows that the incidence of school dinners and packed lunches is greatest in the south-west and in rural areas generally, and lowest in Scotland; it is higher in London than in other conurbations; it increases with the housewife's age and is high in one-parent families.

The treatment of school meals is part of the allowance made for meals eaten outside the home, each meal being assigned a standard value according to what is regarded as its relative importance in the diet. These weightings were corrected, probably over-corrected, in 1960 to take account of the decreased importance of breakfast, and in 1975 to allow for the relative decrease in the importance of lunch (still called 'dinner' in Annual Reports) in relation to the evening meal. There were also breaks due to changes in the definition of a person in 1961 and 1972. Hence it is difficult to give a long series for 'average net balance', the proportion of meals eaten in one's own home or someone else's. In the early fifties this was about 96%; by the middle sixties it was around 93%, and it has not fallen much since, certainly not since 1974.

Since the informant is the housewife, the Survey cannot cover items customarily

bought by other members of the family. Since 1975, however, information has been collected on soft drinks, though it is not yet included in the main tables; per caput consumption in families with children, even single-parent families, is well above that in wholly adult households.

This short paper has indicated some of the questions which the National Food Survey can answer. The Survey is not a substitute for individual dietary studies; it needs supplementing by direct evidence on the catering sector, and by anthropometric results and medical assessments; but its continuity since 1940 and its national coverage since 1950 make it unique in the world.

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