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## The future pattern of food consumption and marketing

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Undoubtedly, population growth will in the future lead to an increase in the general market size, although this factor will be of much greater importance to developing than to the developed economies. It is, however, the individual's requirements and pattern of food consumption which is of more interest to a study of future markets for individual products such as those derived from animals.

It is commonly accepted that as real incomes rise a declining proportion is spent on food. In the UK, for example, it has, in the decade between 1958 and 1968, dropped from 26% to 21% (Central Statistical Office, 1969). At the same time it is accepted that as real incomes rise an increasing proportion of food expenditure will be switched to foods with a high protein: energy ratio such as those derived from animals rather than plants. Although there is evidence of such increases, the broad food categories used prevents detailed comment.

The most useful data for detailed observation of consumer behaviour (see annual reports of the National Food Survey Committee, Ministry of Agriculture, Fisheries and Food, 1967, 1968, 1969) relate to household consumption and exclude meals eaten outside the home. Although canteen, restaurant and institutional eating is increasing (Department of Employment and Productivity, 1969), household consumption is by far the larger proportion and can be used to demonstrate fundamental relationships. Table 1 shows figures derived from these surveys. The breakdown is fairly broad but clearly illustrates the importance of poultry, pork and processed meats as contributors to growth in *per caput* meat consumption. They are, moreover, realizing an increasing share of total meat sales while the more traditional meats are unaltered or even declining. For dairy products, cheese shows an increasing importance while full price milk and butter remain comparatively stable. Eggs show but slight increase.

Table 1. *Average annual consumption per household of principal animal products and relative importance of individual meats*

	1960		1962		1964		1966		1968*	
	(kg)	(%)								
Beef and veal	12.90	24.35	13.28	23.89	12.57	22.94	11.98	21.23	11.44	20.17
Mutton and lamb	9.77	18.47	9.91	17.81	9.29	16.94	9.26	16.40	8.42	14.84
Pork	2.98	5.63	3.37	6.07	3.43	6.26	4.07	7.21	3.73	6.58
Poultry	2.48	4.68	3.37	6.07	4.00	7.29	5.34	9.45	6.05	10.66
Bacon and ham	7.84	14.82	8.20	14.74	7.84	14.30	7.82	13.84	7.59	13.39
Offal and game	2.86	5.41	2.71	4.88	2.71	4.95	2.57	4.55	2.46	4.34
Processed†	14.09	26.64	14.76	26.54	14.98	27.32	15.42	27.32	17.03	30.02
Total meat	52.91	100	55.61	100	54.83	100	56.45	100	56.71	100
Full price liquid										
milk	5.90	—	5.97	—	5.84	—	5.90	—	5.81	—
Total cheese	4.48	—	4.60	—	4.67	—	4.59	—	5.03	—
Butter	8.37	—	9.14	—	8.81	—	8.98	—	9.05	—
Eggs	6.84	—	6.90	—	6.52	—	7.03	—	6.87	—

\*Preliminary estimates.

†Includes: corned meat, cooked meat, tinned meat, quick-frozen meat, sausages, meat pies and rolls, and other meat products.

The principal factors influencing such changes are relative prices, personal incomes and consumers' tastes. Since prices are the net result of interaction between consumer demand and food supply situations, the interrelationship between price and consumption is not considered direct in this paper. It is, however, a fairly plausible assumption that real incomes will continue to increase and the relationship of *per caput* consumption and expenditure to such changes is important in projecting future patterns of consumption.

Estimates of income elasticities (Ministry of Agriculture, Fisheries and Food, 1967, 1968, 1969) show that, in general, animal products, like fruit and vegetables, can be expected to be in increasing demand as real incomes rise although the decline in elasticity estimates in recent years for most of these products should be noted. The two most interesting points are the differing elasticities for varying cuts of the same meat, and the discrepancy between quantity and expenditure elasticities. Thus, for beef, the carcass form remains a desirable product with a positive income elasticity while canned meat is an inferior food whose consumption declines with increasing income. A similar contrast is evident for liquid and skimmed milk. In general, it appears that it is the 'better' cuts or 'quality' animal products which are likely to be in greater demand as incomes rise.

For all meats, expenditure elasticities are higher than quantity elasticities; the difference frequently being referred to as a quality elasticity, as reflected by the higher prices paid by consumers with higher incomes. Higher prices are, of course, paid not only for 'quality' but also for extra services such as trimming, packaging, delivery and personal service; aspects of consumers requirements which seems likely to be of increasing importance in the future.

Consumer tastes as such are difficult to quantify. One further piece of analysis may, however, be extracted from the National Food Surveys (Ministry of Agriculture,

Fisheries and Food, 1967, 1968, 1969) which throws some light on the broad aspect of taste. Using the relationships derived between consumption and prices, and between consumption and income it is possible to predict consumption levels in any given year. Any deviation between predicted and actual consumption levels can be attributed to changes in taste or habits (and residual error). The National Food Survey results, expressed as an index, are reproduced in Table 2. The picture which emerges is one of substantially constant demand for carcass beef and veal, bacon and ham, liquid milk and eggs. Mutton and lamb, and processed cheese show a weakening of underlying demand and, indeed, without relatively low prices and increasing incomes, lamb consumption might well have declined. In contrast, poultry, pork, processed meats, and cream are shown to be in increasing demand, implying a favourable change in consumer tastes.

Table 2. *Annual indices of strength of demand for animal products*

	1962	1963	1964	1965	1966	1967
Meat	100	99	99	100	101	101
Beef and veal	99	102	98	99	100	102
Mutton and lamb	109	102	101	95	98	95
Pork	95	98	95	100	107	96
Poultry	78	84	91	112	124	121
Bacon and ham	103	99	101	100	100	98
Canned meat (excluding corned)	89	90	107	111	98	106
Other bacon and ham (cooked including canned)	97	96	104	98	102	104
Meat products	88	95	95	99	107	119
Dairy products	—	—	—	—	—	—
Full price liquid milk*	102	103	98	97	101	101
Cream	94	91	100	105	109	103
Processed cheese	104	100	109	100	94	94
Butter	103	100	99	100	98	100
Eggs	100	97	100	101	101	101

\*Estimate by author using National Food Survey data from annual reports of the National Food Survey Committee (Ministry of Agriculture, Fisheries and Food, 1967, 1968, 1969).

The products for which a strengthening of demand is suggested are also those which have had lower *per caput* consumption levels. Increased demand may, therefore, represent not only a simple taste preference but also a desire for greater variety in the diet.

These results suggest serious problems for the mutton and lamb composite which apparently faces a decline in consumer acceptance. Beef and veal, and bacon and ham are in a more favoured position in that consumer tastes have apparently not altered although growth must be limited to income gains which influence consumption modestly, and to population growth, unless substantial price reductions are possible. The more intensive livestock products, pork and poultry, and most processed meats, show signs of gains for the future.

Consumer tastes are but one way of referring to the very complex subject of

consumer requirements which involve a whole range of attitudes, beliefs, and abilities to discriminate, between different foodstuffs. Work at Newcastle upon Tyne has so far concentrated mainly on carcass beef although it is now being extended to the interesting problems of mutton and lamb.

As a result of product tests with about 2000 consumers (Brayshaw, Carpenter & Perkins, 1967), who ate in their homes, on separate occasions, steaks, first differing in tenderness, then in fattiness, and finally, in so far as it is possible to tell, in flavour, it was concluded that the characteristic of overriding importance, by which at the present time consumers judge their eating quality, is tenderness. In each of the tests with steaks of ranging fattiness and flavour the different degrees of tenderness were also known. From this it was found that dissatisfaction with flavour or fattiness was often more than compensated, in expressions of general satisfaction, because the meat was reasonably tender. Steaks which might, in the laboratory, be loosely described as ranging from reasonably to extremely tender, that is giving a Warner Bratzler shear reading of from about 22 (9.98 kg) to 11 lb (4.99 kg), were voted tender by more than 50% of the sample of consumers, and were liked, at least moderately, by 76%.

The tests also showed that most consumers can distinguish between steaks with only 4 or 5% difference in visible fat. Despite this, when uncooked steaks were judged for acceptability of fat content, no clear preference was expressed unless the amount of visible fat differed by about 16%. Then, of course, the leaner steaks were preferred. It seems likely that about 85% of market requirements, for sirloin steaks, is for those with between 20% and 35% of visible fat.

Flavour is a matter of considerable controversy, partly because of problems of objective measurement and partly because the word may well be used by consumers with reference to general eating satisfaction rather than to taste. The Newcastle test assumed that barley beef had a milder less characteristic flavour than that from more mature animals. It was then shown that quite large samples of consumers could not, on average, distinguish these differences in flavour and, therefore, could not express any preference. Certainly, it seems that barley beef, at least, would not be unacceptable to consumers on account of any flavour characteristic.

This result does not, however, diminish the importance of flavour as a merchandising feature. There is good reason for stating that consumers in general do prefer steaks with a relatively strong beef flavour even though their palates are not able to discriminate easily. Those consumers who thought their sample steak to have a strong flavour generally found it more satisfying. Consequently, merchandising policies which emphasize the characteristic of flavour are more likely to be successful than those which ignore it.

Since these results were common to all socio-economic groups there appear to be some important conclusions which can be tentatively drawn from these results. First, the mass of consumers do not appear to be as discriminating in their judgement of eating quality as some would expect; implying that the difference between expenditure and quantity elasticities may be accounted for by services rather than actual quality differences. Secondly, tenderness is of overriding importance, with

leanness being the second most important characteristic of consumer acceptability, particularly at time of purchase, while flavour remains of principal interest to merchandising policy.

Consumer beliefs or attitudes such as those expressed about flavour are of considerable importance for the future pattern of consumption for it is such features of their behaviour which will limit or encourage the demand for animal protein substitutes based on vegetable, bacteriological, or fungal proteins, and processed forms of more conventional animal products. The attitude of the housewife is particularly important since provision of food can be one of the most emotional areas in her life. They are particularly opposed to experimenting with the main dish which, of course, involves meat as its main part (Lintas Special Products, 1968).

Perhaps the best-known example illustrating the importance of attitude is that of instant mashed potato which, because of wartime experience, had a very unfavourable image with consumers. It took not only a technically improved product, but adoption by firms with well-established trading names, considerable advertising, and a new post-war generation of housewives before this attitude changed and the product was accepted.

Such problems of consumers and especially housewives attitudes are often claimed to present intractable problems of measurement but some attempts are made. Unfortunately, most such enquiries are made by commercial firms in furtherance of their business activities and remain unpublished. An example of the attitude problems faced by newer processed foods is available, however, for quick-frozen beefburgers (Hill, 1970). As part of a consumer survey, Birds Eye frozen beefburgers were compared for different factors with thirteen other items used in mid-week meals. These included such products as lamb chops, beef stew and fish-fingers. In terms of the nourishment factor, beefburgers rate at the bottom of the list of products. Since nourishment is an important attribute to housewives a serious problem was evident. Subsequent advertising was, therefore, directed to reassuring housewives of the meaty ingredients of beefburgers.

Such attitude factors will clearly influence the growth of demand for synthetic animal products. The growth in sales of instant milk, instant potatoes, and the long acceptance of substitute butter, point clearly to the possibilities. Because of the impact and importance of consumers' attitudes, it seems likely that for meat such products will, at least at the outset, be largely confined to processed or convenience foods, where they will replace cheaper animal products and are not necessarily identified individually, or where spices can disguise any detectable flavour differences.

Undoubtedly, the single most outstanding development in food marketing has been the growth of self-service and supermarket retailing so that by 1969, 64.1% of grocers' turn-over reached customers in this way (Nielsen, A. C., Co. Ltd., 1970). By 1969, 41% of grocers' sales were made by multiples with ten or more branches. While bacon, poultry and processed meats are widely sold through such outlets, carcass meat sales have met considerable resistance. Between 1961 and 1966, however, there was a 9.6% reduction in the number of specialist butchers (Board of Trade, 1970) and non-butchers' sales of carcass meat increased from 9.5 to 13%.

Undoubtedly, we are to see a considerable growth in supermarket sales of carcass meat in the 1970's.

Factors restricting the growth of supermarket sales such as consumer resistance to self-service, low turn-over per store, some lack of success in central prepacking and inability to order from a central buying point without inspection are now being overcome. In particular, this has involved more standardized meat production methods, improved standards of hygiene in slaughtering and transport, developments in packaging such as vacuum wrappings of primal cuts, and concentration among large meat wholesalers (Board of Trade, 1968). At the same time, such developments, particularly in packaging, refrigeration and transport, are likely to increase the competition that animal products face from vegetables. Indeed, an increased interest in imported 'exotic' vegetables is widely reported.

Meat is a highly important purchase to housewives and if supermarkets can attract such custom they are likely to sell her her other requirements. In attempts to achieve this, carcass meats are, like poultry and bacon, being directed to more standardized and semi-processed products. Wholesaler, supermarket and large independent meat retailers are correspondingly specializing in their own function.

Advertising and innovation go hand in hand with these developments in retailing and food manufacturing and, as most new products involve some form of preservation, packaging or preparing, processed animal products are favoured by these developments in marketing. Similarly, the need for precise financial control of large wholesaling, manufacturing and retailing organizations mitigates against the more traditional forms of animal products such as liquid milk, carcass meat and shell eggs with their built-in variability and perishability, suggesting, at least, more intensive production methods, and more formal, possibly contractual, relationships among buyers and sellers. The continued decline in both livestock and wholesale meat markets is evidence of such changes.

Both consumer requirements and structural changes in marketing suggest an increase in *per caput* demand for processed and standardized animal products. There is likely, however, to remain for a long time a firm demand for the more traditional animal products, particularly meats, which in the minds of most individuals constitute such a basic part of food. As incomes rise, competition will be felt from vegetables and, with changing attitudes, from synthetics so that forecasts of substantial growth in demand for carcass beef, lamb and liquid milk may prove optimistic. However, it would be over-pessimistic to suggest that existing demand and market trends will lessen the use of animals for food unless their continued use can only be achieved at increasingly high costs.

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