

The cost of processing and distributing food in the United Kingdom

J. A. BEAUMONT, *Agricultural Economist, Ministry of Agriculture, Fisheries and Food*

This article describes a method of estimating the costs of processing and distributing food by taking the difference between total food inputs, valued at ship's side and farm gate, and the total final expenditure on food by consumers, businesses, government and overseas buyers.

Food processing and distribution are taken in this paper to include the marketing functions involved in bringing to final consumers both the products of domestic agriculture and food imports. The principal marketing functions are those of assembly, preparation, manufacturing, storage, grading, packaging, transport and selling. The costs involved in these activities are approximately equal to the cost of the food at farm gate and ship's side; they currently account for about 12 per cent of total consumers' expenditure on all goods and services.

A number of studies have been made abroad, notably in the USA, of changes in the costs of food marketing. Methods have varied from studies of individual commodities or sectors, to the costing of a fixed basket of goods, or to a broader aggregate approach. The latter approach

has been adopted in this paper to derive estimates of the cost of food marketing in the United Kingdom. The methodology adopted was broadly similar to that used by Wollen and Turner(1) in an earlier study. The estimates obtained are taken to represent the value added to food inputs in the marketing process. The value added, derived in this way, should not be equated with the net output of food manufacturing and food distribution for a number of reasons. In particular because the cost of non-food material inputs, which are normally excluded from the value of net output, are included for this study. Furthermore the food marketing bill, as calculated by the methods described in this paper, includes the value added by firms handling food but whose principal activity is normally outside the food sector. Similarly it excludes the value added to non-food items marketed by firms in the food sector.

The value added in food marketing may be mainly attributed to three broad sectors—food manufacturing, wholesaling and retailing. This breakdown of function

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TABLE A

	Home production	Imports	Adjustment item ⁽¹⁾	Total input	Index 1962/63 = 100	Total expenditure on food	Exports	Adjustment item ⁽²⁾	Total output	Index 1962/63 = 100	Cost of processing and distribution	Index 1962/63 = 100	Percentage mark-up on inputs	Processing and distribution cost as a percentage of total output
	£ million					£ million					£ million			
At current prices														
1962/63	1,357	1,305	+ 31	2,693	100	5,322	101	— 8	5,415	100	2,722	100	101.1	50.3
1963/64	1,383	1,362	+ 90	2,835	105	5,510	146	+ 8	5,664	105	2,829	104	99.8	49.9
1964/65	1,456	1,403	+ 85	2,944	109	5,724	140	+16	5,880	109	2,936	108	99.7	49.9
1965/66	1,528	1,442	+ 87	3,057	114	5,999	136	— 2	6,133	113	3,076	113	100.6	50.2
1966/67	1,560	1,453	+108	3,121	116	6,240	130	+16	6,386	118	3,265	120	104.6	51.1
1967/68	1,612	1,466	+131	3,209	119	6,418	131	+35	6,584	122	3,375	124	105.2	51.3
1968/69	1,693	1,556	+175	3,424	127	6,692	156	+24	6,872	127	3,448	127	100.7	50.2
1969/70	1,789	1,589	+234	3,612	134	7,088	209	— 7	7,290	135	3,678	135	101.8	50.5
At constant prices (1962/63—1964/65 average)														
1962/63	1,389	1,373	+ 44	2,806	100	5,351 ⁽³⁾	111	—10	5,452	100	2,646	100	94.3	48.5
1963/64	1,401	1,373	+ 78	2,852	102	5,476 ⁽³⁾	137	+ 5	5,618	103	2,766	105	97.0	49.2
1964/65	1,418	1,359	+ 79	2,856	102	5,473 ⁽³⁾	136	+13	5,622	103	2,766	105	96.8	49.2
1965/66	1,431	1,384	+ 89	2,904	103	5,553 ⁽³⁾	144	— 3	5,694	104	2,790	105	96.1	49.0
1966/67	1,427	1,402	+ 97	2,926	104	5,611 ⁽³⁾	140	+15	5,766	106	2,840	107	97.1	49.3
1967/68	1,461	1,390	+ 93	2,944	105	5,675 ⁽³⁾	140	+31	5,846	107	2,902	110	98.6	49.6
1968/69	1,475	1,392	+131	2,998	107	5,663 ⁽³⁾	154	+18	5,835	107	2,837	107	94.6	48.6
1969/70	1,499	1,377	+159	3,035	108	5,717 ⁽³⁾	184	—14	5,887	108	2,852	108	94.0	48.4

(1) The input adjustment figure comprises deductions for the value of food produced on farms for farmers own consumption, and for non-commercial production on gardens and allotments. It includes additions for purchase tax and SET, together with an estimate of the market value of the food components of manufactured food exports.

(2) The output adjustment item includes additions to cover ships' stores and government expenditure on food for the services. A deduction is incorporated for the value of food produced on farms for farmers' own consumption. An estimate of the value of stock changes is also included.

(3) Valued at 1963 prices..

The influence of different treatments of purchase tax and SET on estimates of the cost of food processing and distribution

TABLE B

	Purchase tax and SET excluded from marketing bill by addition to food inputs			Purchase tax and SET excluded from marketing bill by deduction from total expenditure on food			Purchase tax and SET included as part of marketing bill		
	1 Cost of processing and distribution £ million	2 Percentage mark-up on inputs	3 Processing and distribution cost as a percentage of total output	4 Cost of processing and distribution £ million	5 Percentage mark-up on inputs	6 Processing and distribution cost as a percentage of total output	7 Cost of processing and distribution £ million	8 Percentage mark-up on inputs	9 Processing and distribution cost as a percentage of total output
1962/63	2,722	101.1	50.3	2,722	102.8	50.7	2,766	104.4	51.1
1963/64	2,829	99.8	49.9	2,829	101.8	50.4	2,884	103.7	50.9
1964/65	2,936	99.7	49.9	2,936	101.8	50.4	2,995	103.8	50.9
1965/66	3,076	100.6	50.2	3,076	102.8	50.7	3,142	105.1	51.2
1966/67	3,265	104.6	51.1	3,265	107.8	51.9	3,358	110.9	52.6
1967/68	3,375	105.2	51.3	3,375	108.9	52.1	3,484	112.4	52.9
1968/69	3,448	100.7	50.2	3,448	104.9	51.2	3,586	109.1	52.2
1969/70	3,678	101.8	50.5	3,678	106.7	51.6	3,844	111.6	52.7

would approximate to the food manufacturing industry (SIC Minimum List Headings 211—218, 221, 229 and 232), wholesale food distribution (Minimum List Heading 810) and retail food distribution (Minimum List Heading 820 and part of 821). Such a breakdown cannot however be readily undertaken because of lack of up-to-date information on wholesale and retail structure, activities and margins.

A summary of the aggregate marketing bill calculations on a current and constant price basis is shown in Table A, for the years 1962/63 to 1969/70. On the input side, domestic agricultural output and food imports are valued as in the article in this issue on 'Measuring self-sufficiency for food and drink'.(2) Domestic output is valued at market prices and excludes agricultural subsidies, whether paid directly to the farmers or indirectly to the marketing sector; food imports are valued on a cif basis. In both instances the figures exclude items not intended for human consumption such as inedible by-products and cereals for use as animal feedingstuffs. The input adjustment item incorporates a deduction for food produced for own consumption on farms, and for non-commercial production in gardens and allotments. It also includes an addition for purchase tax and SET receipts. A further addition is made for the food component of exports.

The major items on the output side of the calculation are consumers' expenditure and exports. Consumers' expenditure covers household food expenditure as defined for the National Accounts together with the ingredient cost of food to caterers. The estimate of marketing costs excludes, therefore, the value added by commercial and institutional caterers. Export figures are as quoted in the relevant divisions of the Trade Accounts. The output adjustment item includes an addition to cover shops' stores and government expenditure on food for the services. A deduction is made equal to the value of food produced and consumed on farms. An estimate of the value of stock changes is also incorporated in the adjustment item.

As may be seen from the first part of Table A, there was a continuous increase in the value of food inputs

and total consumers' expenditure on food over the period 1962/63 to 1969/70. In current price terms total output increased by £1,875 millions or 35%. This comprised an increase of £919 millions, or 34% in food inputs and a rise of £956 millions, or 35% in the cost of marketing. The marketing cost expressed as a percentage mark-up on food inputs, increased between 1963/64 and 1967/68 but in 1968/69 it declined, because of a noticeable increase in the price of food imports in that year which was not matched by an equivalent rise in the value of total final expenditure.

In these calculations purchase tax and SET have been regarded as a cost incurred by manufacturers and distributors but, because of their special nature, they have been removed from the marketing bill by adding them to the value of food inputs as a component of the adjustment items in Table A. An alternative method, used by Wollen and Turner, involves subtracting tax from total output. A comparison of the results obtained using these two alternative methods is shown in Table B, together with the case where taxes are retained as part of the overall marketing bill. In the latter case, illustrated in columns 7 to 9, higher estimate of the marketing costs are obtained in both absolute and relative terms. While in the other two instances (shown in columns 1 to 6), the costs are the same in absolute terms but differ in percentage terms, being calculated in relation to different bases. Because of the rise in tax receipts between 1962/63 and 1969/70 the disparity between the three series of estimates of percentage mark-up increased over the period.

Changes in the cost of marketing represent the net effect of a large number of separate factors, the influence of which must be taken into account when interpreting the changes in the cost of food marketing. Among those factors whose variation will cause a movement in the marketing bill are the volume of goods handled, the nature of the products and the product mix. The first factor may influence the absolute value of marketing cost while the last two may also bring about change in its relative size. In particular an increase in the degree of processing incorporated in products and a movement towards

the consumption of such products might be expected to cause an increase in the relative size of the marketing bill. In addition changes may arise from alterations in the ratio of cost of non-food inputs to cost of food inputs. This in turn will be affected by developments in technology as well as changes in the size and efficiency of firms engaged in production and distribution. A further factor of importance is the change in the economic relationship between firms in adjacent sectors. In recent years, for example, differences in the degree of rationalisation between food manufacturers and distributors have led to a strengthening in the bargaining position of the retailers *vis-a-vis* the manufacturers. An additional influence on the size of the marketing spread is the relative importance of imported and domestically produced food inputs, as well as the balance between raw and processed food imports.

Recalculation of the cost of marketing, using input and output series valued at constant prices, gives some indication of the relative importance of some of the factors underlying changes in the mark-up. This revaluation has the effect of holding constant the relationship between the input and output prices of each product identified in the analyses so as to maintain a constant absolute and percentage unit marketing cost. Any changes in the absolute and percentage margins indicated by the constant price calculation may therefore be attributed to changes in volume and in the relative importance of the various products. On this basis the relatively constant percentage mark-up indicated in the lower half of Table A suggests that any movement in the relative importance of various commodities was roughly offsetting. Under these circumstances the £206 million rise noted in the constant price marketing cost may be attributed to volume increases. The remaining £750 million increase in marketing costs measured in current price terms represents the net influence of all the remaining factors. At first glance it may appear that the suggestion that movements between differing types of products have been

offsetting is at odds with the well-known movement towards the consumption of those products which incorporate a higher degree of processing and in-built convenience. This may not however be the paradox which it appears for, while the calculation at constant prices isolates the effect of movement between products of varying margins (the latter based on the position during the base period), it does not isolate the changes due to an increasing amount of processing *within* any particular product group. Any increases in the overall marketing bill on this latter account would be included in the remaining rise of £750 million. Taking into account the apparent magnitude of the movement towards convenience foods together with the inflation of other costs, particularly labour, over the period under consideration, it would seem surprising that the percentage mark-up on food inputs at current prices has shown so little change. This suggests that the increase in marketing costs might have been somewhat larger but for the improved economic performance of the food marketing sector.

Conclusions

The rate of growth in final expenditure on food has been matched by the increases in the value of agricultural and fisheries supplies, the percentage of final selling value represented by the costs of processing and distribution having remained virtually unchanged over the period. The relative stability of these marketing costs, despite the trend towards increased consumption of processed and convenience foods, suggests that improvements in marketing techniques and advances in food technology have to some extent offset the costs of additional services provided by manufacturers and distributors.

References

- (1) 'The cost of food marketing', G. H. Wollen and G. Turner, *Journal of Agricultural Economics*, Vol XXI, No. 1, 1970.
- (2) 'Measuring self-sufficiency for food and drink in the United Kingdom', L. J. Angel, *Economic Trends*, No. 217, November 1971 (HMSO).