

# 3 The selling and buying of food

## 3.1 The food retail market

### The structure of Australian food retailing

Small local shops were the only retail food outlets until about 1950, when the first self-service supermarkets came into operation in Australia. By 1954 there were 766 self-service outlets supplying 3.3 per cent of groceries. By 1968–69 one-third of groceries were sold through supermarkets, and this proportion increased to one-half by 1973–74.<sup>1</sup> In Australia in 1991 there were 4480 supermarkets and 381 roadside convenience stores;<sup>2</sup> in 1992 there were 5541 supermarkets and 402 convenience stores.<sup>3</sup>

Supermarkets are increasing in importance as fruit retailers, but the range of retail outlets still includes traditional greengrocers, retail produce markets and roadside stalls.<sup>4</sup> The 1992 Australian Supermarket Institute Survey found that 56 per cent of shoppers bought fresh fruit and vegetables at greengrocers and 11 per cent at roadside or market stalls, compared with 36 per cent buying at supermarkets (the question allowed multiple responses so the total can, and does, exceed 100 per cent).<sup>5</sup> Slightly fewer people had bought fresh produce at supermarkets and slightly more from speciality shops in 1990.<sup>6</sup> Fresh seafood is the main food product infrequently bought at supermarkets.

Another aspect of the food retail industry is the rise of the 'chain store', bringing a decrease in the number of operators and a trend towards vertical integration, with a cross-over of interests between, for example, wholesale distributors and retailers.<sup>7</sup> Vertical integration and cooperative agreements between food suppliers and food retailers have also seen the development of export initiatives in retailing. A major grocery wholesaler (Davids Holdings)<sup>8</sup> has recently embarked on joint wholesale–retail ventures in Malaysia and Singapore,<sup>8</sup> and Perth-based Foodland Associated Ltd has a 38 per cent interest in a New Zealand supermarket chain.<sup>9</sup>

From 1988 to 1991 the four major chains held 95 per cent of retail market share of dollar turnover for packaged goods (fresh meat and produce, smallgoods and general merchandise are not included).<sup>2,3</sup> In 1991 the two national chains (Coles–Myer and Woolworths) held 48.8 per cent of the grocery market; the 'discount' chains (Franklins, Jewel and Bi-Lo) held 26.5 per cent, and independents the remaining 24.7 per cent. The independent sector lost about 2 per cent of market share between 1989 and 1991.<sup>2</sup>

The retail sector grew by 3.6 per cent between June 1992 and June 1993, but food retailing growth was below the retail sector average. Grocery outlets ('grocers, confectioners, tobacconists') showed some growth but retail butchers and 'other food stores' showed a decline.<sup>10</sup> Quarterly turnover for 1992–93 for the food retail and service industries, shown in Table 3.1, illustrates this pattern.

**Table 3.1: Quarterly turnover at constant (1989–90) prices, 1992–93 (\$ million)**

| Retail area                           | Quarter         |                 |                 |                 |
|---------------------------------------|-----------------|-----------------|-----------------|-----------------|
|                                       | September 1992  | December 1992   | March 1993      | June 1993       |
| Grocers, confectioners, tobacconists  | 6 427.5         | 6 826.9         | 6 361.9         | 6 477.8         |
| per cent                              | 30.2            | 27.6            | 31.4            | 30.1            |
| Butchers                              | 606.2           | 654.5           | 584.8           | 619.0           |
| per cent                              | 2.8             | 2.6             | 2.8             | 2.9             |
| Other food stores                     | 1 522.9         | 1 606.1         | 1 413.5         | 1 386.0         |
| per cent                              | 7.2             | 6.5             | 6.9             | 6.4             |
| Hotels, liquor stores, licensed clubs | 2 459.3         | 2 753.7         | 2 447.7         | 2 474.3         |
| per cent                              | 11.5            | 11.1            | 11.9            | 11.5            |
| Cafes, restaurants                    | 1 061.7         | 1 157.0         | 1 016.3         | 978.8           |
| per cent                              | 5.0             | 4.7             | 4.9             | 4.6             |
| <b>Total retail</b>                   | <b>21 299.0</b> | <b>24 768.0</b> | <b>20 626.0</b> | <b>21 491.0</b> |

Source: Australian Bureau of Statistics<sup>10</sup>

### Availability of and access to retail facilities

In common with other operators within the food and nutrition system, the Australian food retail industry must service a population distributed very unevenly, from the high-density east coast metropolitan conglomerates to the diffuse population of inland townships and rural properties. The movement of fruit is a major activity, with the 'boomerang coast' (see Chapter 1) a single marketing entity, except for South Australia, where quarantine restrictions apply. Distance and quarantine restrictions also prevent the movement of all but a small amount of produce from Perth to the east coast.<sup>7</sup>

The structural change in retailing has affected the distribution of retail outlets, including food outlets, with fewer, more concentrated shopping centres. The result is greater distance between outlets, but greater choice of outlets at many locations. Access for some shoppers may be more difficult than in the past unless public transport arrangements are adequate. There have been several recent local-area studies of the availability and accessibility of retail food outlets; for example, in Penrith (outer western Sydney),<sup>11</sup> Redfern–Waterloo (an inner suburban, low-income area of Sydney),<sup>12,13</sup> Shellharbour Local Government Area (south of Wollongong, on the New South Wales south coast),<sup>14</sup> and Fitzroy (an inner suburban, low-income area of Melbourne).<sup>15</sup> Table 3.2 shows the proportion of population served by food outlets in these four studies; the suburban fringe areas are seen to be relatively under-serviced in comparison with the two inner urban areas, themselves deemed to have inadequate facilities.<sup>11,13–15</sup>

In the two fringe local government areas clustering of facilities has occurred, so that some areas, generally those with higher proportions of socioeconomically disadvantaged people, have very limited access. Brierley et al.<sup>11</sup> calculated that people living on the outer fringe of the Penrith Local Government Area had to travel over 10 km to the nearest food outlet.

On the other hand, a sample of urban supermarket shoppers did not rate convenience of location highly as the single most important factor when buying food. Factors that scored highly were quality produce (34 per cent) and low prices (29 per cent), with freshness (9 per cent), convenient location (7 per cent) and good variety (7 per cent) the only other factors of any importance.<sup>5</sup>

**Table 3.2: Access to food outlets, population per outlet, four local study areas**

| Type of outlet       | Redfern–Waterloo<br>NSW, 1989–90 | Shellharbour<br>NSW, 1992 | Fitzroy<br>Vic, 1989 | Penrith<br>NSW, 1991 |
|----------------------|----------------------------------|---------------------------|----------------------|----------------------|
| Population           | 14 000                           | 46 800                    | 18 000               | 135 000              |
| Supermarket          | 4670                             | 9720                      | 4500                 | 9000                 |
| Other groceries      | 780                              | 1730                      | 620                  | 880                  |
| Fresh fruit and veg. | 2800                             | 5200                      | 3000                 | 6760                 |
| Butcher              | 2800                             | 2230 <sup>(a)</sup>       | 3000                 | 2940                 |
| Bakery               | 3500                             | 3340                      | 2000                 | 5190 <sup>(b)</sup>  |
| Take-away            | 480                              | 1200                      | 530                  | 750                  |
| All outlets          | 150                              | 320                       | 200                  | 520                  |
| Restaurants, cafes   | 930                              | 1870                      | 180                  | na                   |
| Clubs, pubs          | 820                              | 6690                      | 500                  | na                   |
| Total eat-in         | 440                              | 1460                      | 130                  | 970                  |

na Not available

(a) Includes three fresh fish/chicken shops

(b) 1986 figure

Source: Hodge;<sup>13</sup> Lee;<sup>14</sup> Cox ;<sup>15</sup> Brierley et al.<sup>11</sup>

## Information about the food retail market

Retailers collect a large amount of data. The information is usually confidential, as would be expected in a highly competitive marketplace. Nevertheless, information rapidly becomes obsolete in market terms and could therefore become available well within the longer purview of public health nutrition monitoring. Near-current information may be made available, so long as any industry requirements for privacy are met.

One potential source of detailed data on food purchase patterns is shop checkout scanner results. In 1991 Australia shared with New Zealand the highest penetration of scanning at point of purchase in the world—78 per cent of retail outlets, compared with 66 per cent in the United States and 60 per cent in Japan and the United Kingdom.<sup>3</sup> One difficulty will be finding the resources to process the quantity of data available. The United States Department of Agriculture purchases monthly and annual data from the AC Nielsen Scantrack, which gives information on grocery store sales, obtainable to the level of individual brand and package size.<sup>16</sup> This provides sales and physical volume, selling price and percentage of stores selling, based on supermarket sales.

The Australian Supermarket Institute is a major industry organisation with retail and wholesale membership. Members account for 95 per cent of supermarket turnover in Australia. It is affiliated with the Food Marketing Institute, an international organisation, and in conjunction with this body conducted surveys of consumer

attitudes in 1990 and 1992. The 1992 survey was conducted in cooperation with the Federal Government's National Better Health Program.<sup>5</sup> The Australian Supermarket Institute also organises the Australian Supermarket Show, a forum for retailers and suppliers that has the potential to provide a meeting point for the trade and those interested in monitoring food trends.

Several publications are directed at the retail industry and are important sources of information on trends in marketing. *Retail World* and *Australian Supermarket News* are magazines for the supermarket industry, both with circulations of around 17 000; *Foodweek* is aimed at the food retail and wholesale trade; *Inside Retailing* is for the retail trade generally; and *B&T* is the advertising industry magazine. Annual publications provide a wide range of information, including industry statistics; examples are the *Grocery Industry Marketing Guide* (published by *Retail World*), the Nielsen annual *Review of Grocery Trends* (published by AC Nielsen in cooperation with *Australian Supermarket News*) and the *Foodweek* annual *Industry Yearbook and Directory of Suppliers*.

As well as the retail industry itself and its journals, several agencies collect information for or about the industry or about its customers. Some information could be available for use as part of a food and nutrition monitoring strategy. Again, there may be restrictions on reporting this material because of privacy requirements, but this is unlikely to have a great effect on its value for monitoring. A greater limitation on the usefulness of some of these data for nutrition monitoring will be their specificity. For example, AC Nielsen Australia produces an annual report on sales volume and value of grocery items (including some foods) at national and State level, based on warehouse withdrawal data, but food descriptions are not available and the items surveyed vary from year to year because the research is conducted on categories requested by clients. In retrospect, this further reduces the capacity of the data to show trends. In prospect, it raises the possibility of negotiating for inclusion of some indicator (or sentinel) foods.

A range of market research agencies conduct relevant qualitative and quantitative or semi-quantitative research, and prospects for collaboration could be explored. At least two such agencies have information about the food retail sector for the last two to three years—for example, the Young and Rubicam Food Team, with a dietary survey of 1100 people,<sup>17</sup> and the Roy Morgan Research Centre, with data on food purchases to brand and product type level.<sup>18</sup>

Aside from specific studies, there are some difficulties to be resolved in collating information on food retailing from less specific data collections. The Australian Bureau of Statistics retail trade data and household expenditure data, for example, include tobacco with food, and food retailing from a commercial viewpoint is a subset, albeit a large one, of grocery retailing. As noted in Chapter 2, the Australian Bureau of Statistics does not yet produce data on fine levels of product differentiation; for example, on reduced-fat dairy products or wholemeal versus refined cereal products.

The industry itself is potentially the best source of such data. Information currently available has great potential for describing the environment in which food is purchased. Table 3.3, listing the unit sales to a very detailed level of top grocery lines from Brisbane wholesaler Queensland Independent Wholesalers (QIW), is an example of such information. The pre-eminence of soft drinks is remarkable.

**Table 3.3: Forty grocery lines from QIW warehouse withdrawals, unit sales, early 1993**

|  |   |
|--|---|
| 1 Coca-Cola 375 mL can                     | 21 Kirks Club Lemon 375 mL                      |
| 2 Coca-Cola 1 litre                        | 22 Mars Bar 60 g                                |
| 3 Coca-Cola 2 litre                        | 23 Hamper corned beef 340 g                     |
| 4 Tally-ho                                 | 24 Black & Gold thickened cream 300 mL          |
| 5 Diet Coke 375 mL can                     | 25 Coca-Cola 500 mL                             |
| 6 Dixiebell margarine 500 g                | 26 Meadow Lea margarine 500 g                   |
| 7 Nestle condensed milk                    | 27 Wrigley PK chewing gum                       |
| 8 Daffodil polyunsaturated margarine 500 g | 28 Kellogg's Corn Flakes 550 g                  |
| 9 Diet Coke 1 litre                        | 29 Heinz baked beans 440 g                      |
| 10 CSR white sugar                         | 30 Bic lighter                                  |
| 11 B&G margarine 500 g                     | 31 Golden Circle beetroot                       |
| 12 Riviera cigars Big Boss                 | 32 Cadbury Cherry Ripe                          |
| 13 Panadol tablets 24s                     | 33 Weet-Bix 375 g                               |
| 14 Black & Gold rashers middle 250 g       | 34 Black & Gold polyunsaturated margarine 500 g |
| 15 CSR white sugar 2 kg                    | 35 Mrs McGregor's table margarine 500 g         |
| 16 Bushells tea blue 250 g                 | 36 Black & Gold butter 500 g                    |
| 17 Kirks lemonade 375 mL                   | 37 Heinz spaghetti 440 g                        |
| 18 Maggi 2 min. chicken noodles 85 g       | 38 Weet-Bix 750 g                               |
| 19 Diet Coke 2 litre                       | 39 Kit-Kat 45 g                                 |
| 20 Bundaberg sugar 2 kg                    | 40 Pepsi Cola 375 mL can                        |

*Note:* The data cover grocery, confectionery and perishables, excluding cigarettes but not other tobacco products  
*Source:* Adapted by permission from *Foodweek*<sup>19</sup>

### **Food prepared or eaten away from home**

Few statistics on food prepared or eaten away from home are available; more information is needed. Cafe and restaurant trade accounts for about 5 per cent of retail turnover compared with about 40 per cent for food outlets and 11–12 per cent for hotels and other liquor outlets.<sup>10</sup> As an example of the influence of this sector, McDonalds Australia Limited, with 338 outlets, had a total monthly turnover of \$65.5 million in 1992.<sup>20</sup> This was about 0.8 per cent of total retail turnover (see Table 3.1).

A recent study revealed that 60 per cent of men and 57 per cent of women surveyed from April 1991 to March 1992 purchased fast food in the previous four weeks; 16 per cent of men and 15 per cent of women purchased home-delivered pizza. The proportion was highest in the 18–24 age group and declined with age (see Table 3.4).<sup>18</sup>

**Table 3.4: Fast food buyers during previous four weeks, by age and sex, April 1991 to March 1992 (per cent)**

| Sex / age group  | Purchasing in last four weeks | Home pizza delivery |
|------------------|-------------------------------|---------------------|
| <b>Sex</b>       |                               |                     |
| Male             | 60                            | 16                  |
| Female           | 57                            | 15                  |
| <b>Age group</b> |                               |                     |
| 18–24            | 84                            | 28                  |
| 25–44            | 70                            | 21                  |
| 45–64            | 43                            | 8                   |
| 65 and over      | 20                            | 2                   |

Source: Morgan<sup>18</sup>

## 3.2 The price and cost of food\*

Many factors influence food prices, including direct production costs, the effects of demand, international price fluctuations, indirect imposts such as transport and storage costs, and taxes. Data on trends in the price of food are available from the Australian Bureau of Statistics and published in summary form in the *Consumer Price Index* series (catalogue number 6401.0) and *Average retail prices of selected food items* (catalogue number 6403.3). These data can be used to compare trends in the price of food relative to other commodity groups and to compare with information on weekly earnings to assess trends in the relative affordability of various food items over time.

In this section Melbourne data are used as the example of how data from available sources can be used for monitoring the food and nutrition system. There is a capability to perform the same analyses for other capital cities, and possibly for other regions.

### Trends in food prices, 1980–81 to 1991–92

The accepted indicator of price is Consumer Price Index (CPI), which measures the average price of a 'basket' of goods and services representing a high proportion of expenditures by metropolitan wage- and salary-earner households. Price movements are monitored for many retail outlets including supermarkets, department stores, hotels and restaurants. The CPI measures price change over time, at quarterly intervals. It does not provide a comparison between relative price levels at a particular time; for example, the CPI data do not say whether bread costs more than caviar. The CPI does not include prices from non-metropolitan areas and so is limited in application; there are also limitations in its application to population subgroups, particularly low-income groups.

\* The major contribution of Steve Crowley to the preparation and drafting of this section is gratefully acknowledged.

**Table 3.5: Price change of broad household expenditure groups, Melbourne, 1980–81 to 1991–92 (per cent)**

| Broad expenditure group           | Nominal change <sup>(a)</sup> | Real change <sup>(b)</sup> |
|-----------------------------------|-------------------------------|----------------------------|
| CPI                               | 120                           | na                         |
| Food                              | 108                           | -12                        |
| Housing                           | 136                           | +16                        |
| Clothing                          | 99                            | -21                        |
| Household equipment and operation | 110                           | -10                        |
| Transport                         | 116                           | -4                         |
| Tobacco and alcohol               | 160                           | +44                        |
| Health and personal services      | 159                           | +47                        |
| Recreation and education          | 91                            | -29                        |

na Not applicable

(a) In determining the price change between 1980–81 and 1991–92, the average of the index numbers for each of the four quarters September 1980 – June 1981 was taken as the base index and the average of the index numbers for the four quarters September 1991 – June 1992 was taken as the final year for comparison

(b) Real price change refers to change in each broad expenditure group relative to change in overall CPI  
*Source:* Australian Bureau of Statistics *Consumer Price Index* series, Cat. no. 6401.0

The ‘basket’ of goods from which the CPI is determined covers eight categories of goods and services: food, housing, clothing, household equipment and operation, transportation, tobacco and alcohol, health and personal care, and recreation and education.

Table 3.5 compares the trend in price changes for various household commodity and service groups in the last decade, using the Melbourne data as the example. Changes are based on September quarter – June quarter years. The reference year is September 1980 – June 1981.

### Individual food price changes

The eight CPI groups can be further divided into 35 subgroups, which can in turn be broken down into a number of expenditure classes. The food items are separated into eight subgroups. The price changes to food item level during the decade for Melbourne appear in Table 3.6.

Thus, generally, cereal products, meals out and take-away foods, soft drinks, ice-cream and confectionery are relatively more expensive than they were a decade ago. Fresh fruit and vegetables are much more affordable now compared with processed fruit and vegetables and, of all these products, only fruit juice has had a relative increase in price between 1980 and 1992. In real terms, cooking fats and oils, butter, margarine and eggs have halved in cost in this time.

The 12-year trend in food price changes masks short-term fluctuations. For example, the decline in fresh vegetable prices in the last two years is substantial, whereas fresh fruit prices have stabilised. Figure 3.1 illustrates the fluctuations in price since 1980–81, using quarterly moving averages. It shows that for most food items price movements have significantly reduced in the last two to three years, in line with Australia’s low overall inflation rate.

**Table 3.6: Price change of selected food items, Melbourne, 1980–81 to 1991–92 (per cent)**

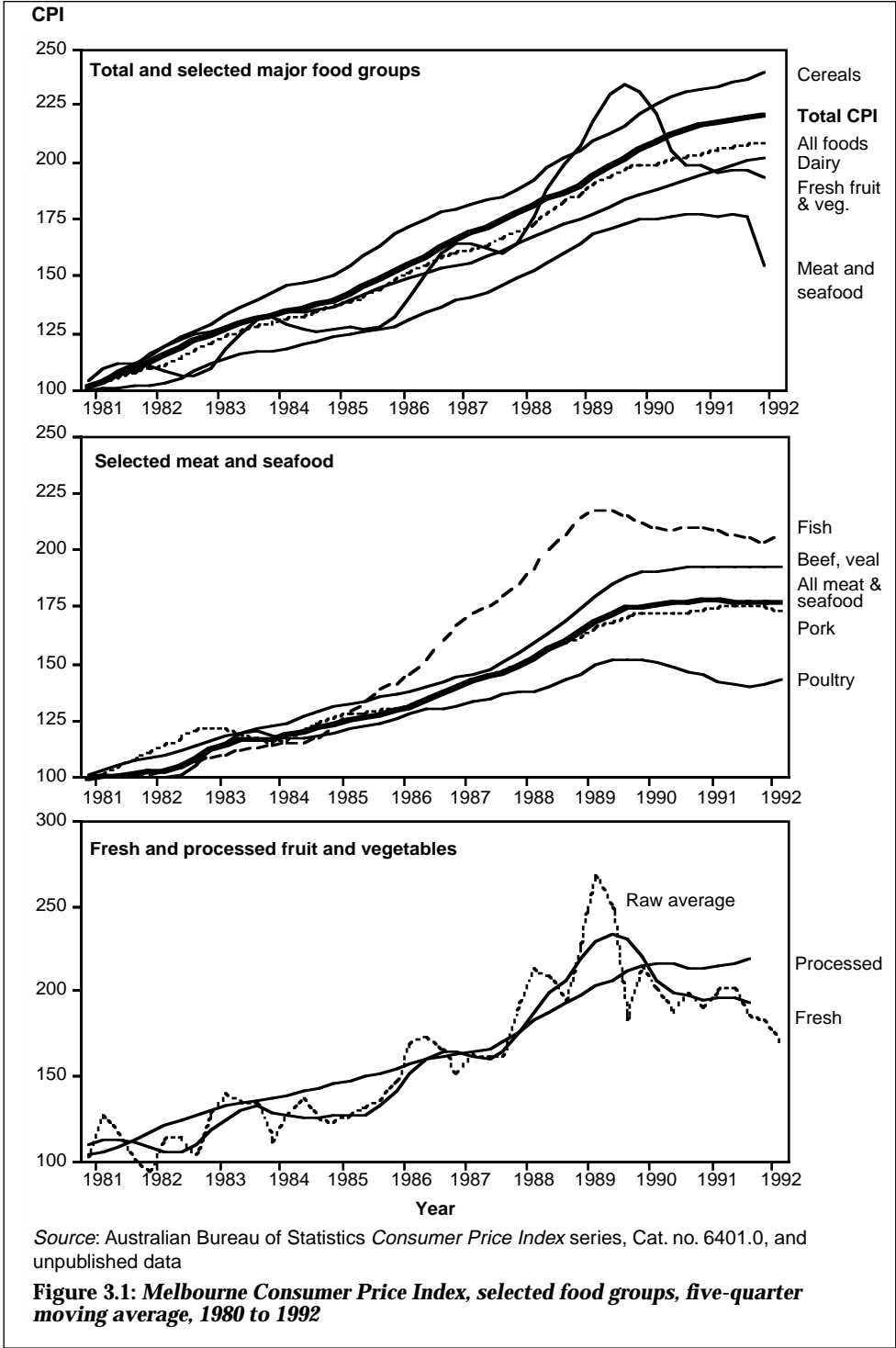
| Food group / item   | Nominal change <sup>(a)</sup> | Real change <sup>(b)</sup> |
|---|-------------------------------|----------------------------|
| <b>All food</b>   | <b>107.8</b>                  | <b>-12.3</b>               |
| <b>Meat and seafood</b>                                       | <b>76.9</b>                   | <b>-43.2</b>               |
| Beef and veal   | 93.4                          | -26.7                      |
| Lamb and mutton   | 78.5                          | -41.6                      |
| Pork  | 76.0                          | -44.1                      |
| Poultry   | 40.4                          | -79.7                      |
| Bacon and ham   | 44.8                          | -75.3                      |
| Processed meat  | 82.2                          | -37.9                      |
| Fish  | 103.9                         | -16.3                      |
| <b>Dairy products</b>   | <b>101.8</b>                  | <b>-18.3</b>               |
| Milk and cream  | 93.5                          | -26.6                      |
| Butter  | 78.8                          | -41.3                      |
| Cheese  | 128.6                         | +8.5                       |
| Other dairy   | 81.3                          | -38.8                      |
| <b>Cereal products</b>  | <b>137.5</b>                  | <b>+17.4</b>               |
| Bread   | 136.4                         | +16.3                      |
| Cakes and biscuits  | 136.4                         | +16.3                      |
| Breakfast cereals   | 137.3                         | +17.2                      |
| Other cereal products   | 125.1                         | +5.0                       |
| <b>Fresh fruit and vegetables</b>                             | <b>92.7</b>                   | <b>-27.4</b>               |
| Fresh fruit   | 99.7                          | -20.4                      |
| Fresh vegetables  | 89.7                          | -30.4                      |
| Fresh potatoes  | 63.2                          | -56.9                      |
| <b>Processed fruit and vegetables</b>                         | <b>118.3</b>                  | <b>-1.8</b>                |
| Processed fruit   | 118.6                         | -1.5                       |
| Processed vegetables  | 110.2                         | -9.9                       |
| Fruit juice   | 129.2                         | +9.1                       |
| <b>Soft drinks, ice-cream and confectionary<sup>(a)</sup></b> | <b>123.1</b>                  | <b>+7.8</b>                |
| <b>Meals out and take-aways<sup>(c)</sup></b>                 | <b>127.3</b>                  | <b>+12.0</b>               |
| Meals out   | 120.6                         | +5.3                       |
| Take-aways  | 134.4                         | +19.1                      |
| <b>Other foods<sup>(c)</sup></b>                              | <b>84.4</b>                   | <b>-30.9</b>               |
| Eggs  | 35.9                          | -79.4                      |
| Sugar   | 109.1                         | -6.3                       |
| Margarine   | 56.7                          | -58.6                      |
| Cooking fats, oils  | 55.0                          | -60.3                      |

(a) In determining the price change between 1980–81 and 1991–92, the average of the index numbers for each of the four quarters September 1980 – June 1981 was taken as the base index and the average of the index numbers for the four quarters September 1991 – June 1992 was taken as the final year for comparison

(b) Real price change refers to change in each broad expenditure group relative to change in overall CPI

(c) For the period 1980–81 to 1990–91

Source: Australian Bureau of Statistics *Consumer Price Index* series, Cat. no. 6401.0, and unpublished data



The relative differences in prices within each broad food group are of importance in considering nutritional value for money. Figure 3.1 shows the relative price changes for the product subgroups within the meat group of foods, compared with the group average. Poultry has become a cheaper purchase than other foods in this group since the mid-1980s.<sup>21</sup> The price of fish, on the other hand, has increased more than the group average (although the difference has been less in the last two to three years).

### **Shorter term and seasonal variations in food price**

The fresh produce groups are those for which price fluctuations are most evident, since these groups are subject to seasonal availability and the inherent uncertainties of primary production. The major factor in the fresh fruit and vegetable price change has been the significant reduction in prices in recent years, but even within that relatively short period prices fluctuated widely. Figure 3.1 illustrates this by comparing the raw quarterly price index with the five-quarter moving average used normally to smooth out short-term fluctuations.

### **Indicators of retail price levels**

The Australian Bureau of Statistics quarterly report *Average retail prices of selected food items* (catalogue number 6403.0) includes prices for each capital city to a finer level of detail than the *Consumer Price Index* series and provides information on prices for foods including specified grades, qualities and brands. The 'average prices' are indicators of price levels and price changes for the items concerned rather than true averages.

Table 3.7 shows one way in which these data can be used: information on the change in average retail prices from 1980 to 1990 is combined with average weekly earnings for males to obtain an indication of the affordability of food. Male earnings are used because average weekly earnings for women before 1982 are unavailable.

The results are highly consistent with the CPI information and provide an extra level of differentiation. Thus it can be seen that, while milk became cheaper between 1980 and 1990, cheese became dearer; cereal products other than rice were relatively more expensive in 1990, but meat products generally became cheaper. On average, income earners would have to work less in 1990 to be able to buy chocolate, jam and sugar, and while beer purchased in a public bar was dearer, beer bought in bulk became more affordable.

### **Changes in demand**

What is purchased may be influenced by the price of goods and a range of other factors. The sensitivity of food purchases to changes in other factors such as price or income (the 'elasticity of demand'—see Box 3.1) may have nutritional significance and deserves further investigation.

#### **Price**

Food buying patterns may change as a consequence of price-induced substitutions between and within different expenditure groups. Examples might be a tendency to change from fruit drink to fruit juice as the price differential between the two products diminishes, or a change to or away from frozen vegetables as the fresh product undergoes its seasonal price variations, or the forgoing of discretionary food items in favour of non-food items.

**Table 3.7: Minutes of paid work needed to purchase various food products, Melbourne, 1980 and 1990(a)**

| Food group                         | Unit      | 1980          |         | 1990          |         |
|------------------------------------|-----------|---------------|---------|---------------|---------|
|                                    |           | Av. qtr price |         | Av. qtr price |         |
|                                    |           | (cents)       | Minutes | (cents)       | Minutes |
| <b>Dairy products</b>              |           |               |         |               |         |
| Milk, carton, delivered            | 2x600 mL  | 63            | 10      | 91            | 7       |
| Cheese, processed, sliced, wrapped | 250 g     | 63            | 10      | 157           | 10      |
| Butter                             | 500 g     | 102           | 17      | 211           | 13      |
| <b>Cereal products</b>             |           |               |         |               |         |
| Bread, white loaf, sliced          | 680 g     | 56            | 8       | 143           | 10      |
| Breakfast cereal, corn-based       | 500 g     | 80            | 13      | 232           | 15      |
| Flour, self-raising                | 1 kg      | 55            | 8       | 144           | 10      |
| Rice, medium grain                 | 500 g     | 36            | 5       | 51            | 3       |
| <b>Meat and seafoods</b>           |           |               |         |               |         |
| Rump steak                         | 1 kg      | 640           | 103     | 1143          | 73      |
| Chuck steak                        | 1 kg      | 346           | 57      | 627           | 40      |
| Lamb loin chops                    | 1 kg      | 388           | 63      | 772           | 50      |
| Lamb forequarter chops             | 1 kg      | 289           | 47      | 445           | 28      |
| Pork loin chops                    | 1 kg      | 413           | 67      | 731           | 47      |
| Chicken, frozen                    | 1 kg      | 213           | 35      | 305           | 20      |
| Sausages                           | 1 kg      | 238           | 38      | 410           | 27      |
| Salmon, pink                       | 220g can  | 123           | 20      | 278           | 18      |
| <b>Fresh fruit and vegetables</b>  |           |               |         |               |         |
| Oranges                            | 1 kg      | 50            | 8       | 114           | 7       |
| Potatoes                           | 1 kg      | 39            | 7       | 90            | 5       |
| Tomatoes                           | 1 kg      | 126           | 20      | 280           | 18      |
| Carrots                            | 1 kg      | 57            | 10      | 127           | 8       |
| <b>Other food</b>                  |           |               |         |               |         |
| Eggs                               | 55g 1 doz | 125           | 20      | 182           | 12      |
| Sugar, white                       | 2 kg      | 93            | 15      | 207           | 13      |
| Margarine, polyunsaturated         | 500 g     | 91            | 15      | 144           | 10      |
| Pineapple, sliced                  | 450g can  | 48            | 8       | 82            | 5       |
| Chocolate, milk block              | 200 g     | 98            | 17      | 149           | 10      |
| <b>Alcoholic drinks</b>            |           |               |         |               |         |
| Beer, low alcohol                  | 24x375 mL | na            | na      | 1915          | 123     |
| Beer, full strength                | 12x740 mL | 1056          | 170     | 1974          | 128     |
| Draught beer, full strength        | 285 mL    | 54            | 8       | 146           | 10      |
| Scotch nip, public bar             | 30 mL     | 82            | 13      | 210           | 13      |

na Not applicable

(a) Based on estimated nett male average wage rate for 38-hour week, with 40 per cent tax rate assumed

Source: Australian Bureau of Statistics, Cat. nos 6403.0, 6350.0

### Box 3.1 Elasticity of demand

Demand for an item or group of items (food, for example) may be more or less sensitive to changes in price, income or other factors. The term used by economists to express the degree of sensitivity is 'elasticity of demand' ( $\eta$ ). It is a measure of the effect of change in some factor on the quantity of a commodity purchased (in economic parlance, 'consumption' or 'demand'). Elasticity of demand describes numerically the effect of the particular factor on quantity purchased for any defined 'good', assuming that everything else remains unchanged (for example, if price is the factor then income, price changes in other goods, tastes, availability, and so on, will be constants).

In general terms,  $\eta = \Delta Q\% / \Delta x\% = \partial Q / \partial x \cdot x / Q$ , where  $Q$  = is the quantity purchased (that is, demand) and  $x$  is the factor considered. Essentially, 'elastic' = sensitive and 'inelastic' = insensitive. The effects of factors associated with changes in food purchase behaviour constitute an important issue and elasticities of demand (and possibly supply) are potentially useful ways to express those effects for monitoring purposes.

The range of values of elasticity is as follows:

| Values of $\eta$     | Relation between $x$ and $Q$                            | Comment                      |
|----------------------|---|------------------------------|
| $\eta < 0$           | inverse   | e.g. price elasticity        |
| $\eta > 0$           | direct  | e.g. income elasticity       |
| $0 <  \eta  < 1$     | $\hat{O}\Delta Q\% \hat{O} < \hat{O}\Delta x\% \hat{O}$ | demand inelastic             |
| $\eta = \pm 1$       | $\Delta Q\% = \pm \Delta x\%$                           | proportional change          |
| $ \eta  > 1$         | $ \Delta Q\%  >  \Delta x\% $                           | demand elastic               |
| $\eta \in \pm\infty$ | $\Delta Q\% \rightarrow \pm\infty$                      | demand 'perfectly elastic'   |
| $\eta = 0$           | $Q$ independent of $x$                                  | demand 'perfectly inelastic' |

Some elasticities of demand are as follows:

Own-price elasticity of demand,  $\eta_P = \Delta Q\% / \Delta P\%$ , where  $P$  = own price

Cross-price elasticity of demand of good 'i' on good 'j',  $\eta_{ij} = \Delta Q_i\% / \Delta P_j\%$

Income elasticity of demand,  $\eta_Y = \Delta Q\% / \Delta Y\%$ , where  $Y$  = income

Advertising elasticity of demand on good 'i',  $\eta_{A_i} = \Delta Q_i\% / \Delta P_a\%$ , where  $P_a$  is advertising expenditure.

Using the limited Australian estimates and inferring from the international literature where Australian food estimates are not available, some patterns can be seen at the aggregate broad food group level. There are, however, examples of unexpected purchasing behaviour by consumers that strongly suggest that influences other than price are at work. Consumption of carcass meat (based on apparent consumption data) has fallen despite overall significant price reductions and a high price elasticity of demand. For cheese the opposite is the case, with an increase in consumption despite real price increases, and cheese is supposedly sensitive to price changes. Overall cereal consumption, particularly of breakfast cereals, has also increased despite real increases in price.

In Australia little information is available on the influence of price on domestic consumption of food products. The Australian Bureau of Agricultural and Resource Economics has done some work on meat and seafood.<sup>22</sup> Australian and international estimates of the price elasticity of demand for food products vary to a surprising extent, probably because of differences in periods over which the analyses are undertaken, the statistical procedures used, and the data bases analysed. Nevertheless, there is a consistent pattern of price elasticity of many staple foods such as potatoes, bread, milk (both full fat and skim), sugar and many fresh vegetables, all with estimated price elasticities close to zero ( $0.30 \leq |\eta| < 0$ ), thus reflecting a low response to price changes, as is to be expected of foods perceived to be staples. Purchases of some foods—for example, cheese and carcass meat—are very sensitive to price changes (for example,  $\eta = -2.0$  for some manufactured milk products). A Canadian study found own-price elasticities for foods eaten at home to range from  $\eta = -0.027$  for dairy foods to  $\eta = -0.5$  for meats, for fruits and vegetables,  $\eta = -0.072$ , for cereal and bakery products,  $\eta = -0.044$ , and for other foods eaten at home,  $\eta = -0.037$ .<sup>23</sup> Thus the meat group of foods appears to be considered as a relative 'luxury' rather than a staple food.

The increase in cheese consumption may be a result of the increasing use of cheese in take-away foods such as pizza and other processed-type food products. It is not possible to determine the change in consumption of cheese in the home. Some of the cereal increase may be a result of the increase in ethnic minorities in Australia.

## Advertising

Advertising has also been shown to influence purchasing behaviour. Total food store and supermarket expenditure on advertising (metropolitan and regional television, radio, and metropolitan daily and Sunday newspapers) was \$61 million in 1988, \$65.5 million in 1989, and \$68.2 million in 1990.<sup>9</sup> (It should be noted that these increases covered increased media rates, so exposure was static over those years.) Foodstore expenditure on television advertising in 1991 was estimated at \$60 million;<sup>2</sup> it can be deduced that the bulk of food advertising expenditure goes to television advertising.

Although it is apparent that food sellers act on the assumption that advertising does influence food purchase behaviour, the form of the relationship is yet to be elucidated. Using checkout scanner data, Nielsen Marketing Research was able to demonstrate an increase in total category sales resulting from television advertising promotion of a new product in the category.<sup>9</sup> (Information about the nature of the product was not available, although it was indicated that own-price elasticity was high.) One other case study carried out by Nielsen Marketing Research demonstrated a doubling in the brand and total category sales in response to a brand promotion; the sales increased in the week of promotion, returned to the original level in the following weeks, and repeated this pattern in response to another week of promotion about two months later.<sup>2</sup>

Although these instances suggest a link, it must be remembered that purchasing behaviour is different for different commodities and for particular items within categories. A Canadian estimate of advertising elasticities of demand for food products demonstrates a consumer perception of meats as (in economic parlance) a relative 'luxury' food ( $\eta=+1.9$ ) when compared with other foods bought for consumption at home: for fruits and vegetables  $\eta=+0.83$ , for cereal and bakery goods  $\eta=+0.81$ , for dairy products  $\eta=+0.695$ , and for other foods  $\eta=+0.339$ .<sup>23</sup> In addition, it was found that advertising made own-price elasticity less negative. One finding was that for dairy products purchased for consumption at home, consumers were more responsive to changes in advertising than to changes in relative prices.

## Income

Very few consumer demand studies in the economic literature differentiate between the sensitivity of the various socioeconomic groups to price changes. Investigation of income elasticities of demand may be an important component of a monitoring strategy for food purchase behaviour (see Box 3.1). The Canadian data of Chang and Green suggest that demand is more responsive to changes in income than to changes in prices or advertising but that advertising tends to reduce consumer response to income changes.<sup>23</sup> More research needs to be done to determine responses to food price changes, particularly within lower income groups.