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P R I C E I N D E X E S

CONCEPTS, SOURCES AND METHODS

1995

**AUSTRALIAN
PRODUCER AND FOREIGN TRADE
PRICE INDEXES**

CONCEPTS, SOURCES AND METHODS

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INQUIRIES

- *for further information about statistics in this publication and the availability of related unpublished statistics, contact Producer Price Indexes Section on Canberra (06) 252 6248.*
- *for further information about other ABS statistics, please refer to the back page of this publication.*

ABBREVIATIONS AND SYMBOLS USED

ABS	Australian Bureau of Statistics
AHECC	Australian Harmonized Export Commodity Classification
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASIC	Australian Standard Industrial Classification
BEC	Broad Economic Categories
n.e.c.	not elsewhere classified
n.e.s.	not elsewhere specified
RBA	Reserve Bank of Australia
SITC	Standard International Trade Classification

Chapter 1

Introduction

1.1 This publication provides a comprehensive description of the Producer and Foreign Trade Price Indexes published by the Australian Bureau of Statistics (ABS). Topics covered include what the indexes measure, the items included, the source of the prices information and how the indexes are produced. Some insight is also provided into the kinds of problems encountered by the ABS in compiling these indexes and how these problems are handled.

1.2 Following this introductory chapter are separate chapters for each of the producer and foreign trade price indexes. These chapters cover index-specific topics such as the nature and purpose of the index, the composition and weighting pattern used, data sources and problem areas.

1.3 More general topics are then covered in the remaining chapters. These include price collection, index calculation, index maintenance and dissemination.

1.4 This publication will be re-issued, from time-to-time, to incorporate updated material for individual price indexes resulting from their periodic rebasing and reweighting.

1.5 More information on topics presented in this publication can be obtained by writing to:

Director
Producer Price Indexes Section
Australian Bureau of Statistics
PO Box 10
BELCONNEN ACT 2616

Chapter 2

Historical background

2.1 Producer and Foreign Trade Price Indexes are classified under two categories:

- (a) Producer Price Indexes which measure the prices of goods moving between sectors of the Australian economy; and
- (b) Foreign Trade Price Indexes which price goods entering and leaving Australia.

Producer Price Indexes

2.2 The first price index of this kind compiled by the ABS was the Melbourne Wholesale Price Index, which was introduced in 1912 with index numbers compiled back to 1861. Prices were extracted from newspapers and trade publications, and index numbers were compiled up to 1961. The index related chiefly to basic materials and foods, weighted in accordance with consumption in about the year 1910. Neither the list of items nor the weighting was varied during the life of the index. A description of the index and a list of the items included was last published in Labour Report No. 38, 1949.

2.3 The next index published was the Wholesale Price (Basic Materials and Foodstuffs) Index, which was introduced in 1939 with index numbers available for the period 1928 to 1970. The index related to commodities in their basic or primary form and prices were obtained as near as possible to the point where they made their first effective impact on the local price structure. With few exceptions, prices were obtained from

Melbourne sources. The weights were based on estimates of the average annual consumption of the commodities in Australia during the period 1928-29 to 1934-35 inclusive. A list of the commodities included and other information concerning the index was last published in Labour Report No. 53, 1967.

2.4 The present range of producer price indexes was developed and produced progressively from the 1960's. The current indexes relate to three broad sectors of the economy:

(a) Building Industry:

Price Index of Materials Used in Building Other than House Building, Six State Capital Cities and Canberra (6407.0), first issue January 1969; and

Price Index of Materials Used in House Building, Six State Capital Cities and Canberra (6408.0), first issue September 1970.

(b) Manufacturing Industry:

Price Indexes of Copper Materials, Australia (6410.0), first issue October 1972 as *Price Indexes of Metallic Materials*;

Price Indexes of Materials Used in Manufacturing Industries, Australia (6411.0), first issue April 1975; and

Price Indexes of Articles Produced by Manufacturing Industry, Australia (6412.0), first issue June 1976.

(c) Mining Industry:

Price Indexes of Materials Used in Coal Mining, Australia (6415.0), first issue December 1988.

2.5 The following table draws on these producer and wholesale price indexes to provide a broad indication of long-term price changes. The indexes are given on a common reference base of 1968-69 = 100.0. The Melbourne Wholesale Price Index and Wholesale Price (Basic Materials and Foodstuffs) Index have been linked at 1928-29 to provide a continuous series.

TABLE 2.1 PRODUCER AND WHOLESALE PRICE INDEXES
(Reference base: Year 1968-69 = 100.0)

<i>Period</i>	<i>Melbourne Wholesale Price Index (All groups)</i>	<i>Wholesale Price (Basic Materials and Foodstuffs)</i>	<i>Price Index of Materials Used in House Building (All groups)</i>	<i>Price Index of Materials Used in Building Other than House Building (All groups)</i>	<i>Price Index of Materials Used in Manufacturing Industries (Manufacturing Division)</i>	<i>Price Index of Articles Produced by Manufacturing Industry (Manufacturing Division)</i>
1861	24.2					
1871	19.3					
1881	17.6					
1891	14.9					
1901	15.3					
1911	15.7					
1921	30.0					
1928-29	28.3	28.3				
1931-32		24.4				
1936-37		25.5				
1941-42		31.9				
1946-47		37.0				
1951-52		76.4				
1956-57		88.4				
1961-62		86.4				
1966-67		98.4	94.1	94.7		
1967-68		99.7	96.6	96.8		
1968-69		100.0	100.0	100.0	100.0	100.0
1969-70		101.3	104.3	104.6	102.6	103.9
1970-71			108.8	109.4	100.1	108.5
1971-72			115.4	116.5	102.6	113.9
1972-73			123.3	122.1	113.9	120.7
1973-74			142.3	138.1	134.7	134.6
1974-75			172.5	169.7	145.1	158.1
1975-76			195.8	195.3	158.6	177.8
1976-77			219.1	218.1	182.2	196.9
1977-78			237.1	236.5	198.5	213.8
1978-79			252.2	253.9	248.8	237.4
1979-80			284.9	286.9	321.8	274.9
1980-81			323.6	323.9	353.2	305.2
1981-82			355.3	359.8	358.9	328.9
1982-83			389.0	400.5	388.0	360.2
1983-84			419.2	422.6	402.1	382.8
1984-85			452.4	446.1	422.2	404.8
1985-86			484.6	481.7	442.9	430.3
1986-87			512.7	519.0	445.0	458.5
1987-88			551.5	564.6	470.3	492.1
1988-89			611.1	616.5	477.5	526.0
1989-90			658.1	665.3	502.4	559.9
1990-91			688.6	699.2	522.7	584.6
1991-92			690.1	703.2	509.6	586.7
1992-93			703.6	705.2	534.5	600.9
1993-94			737.1	715.2	525.9	607.3

Foreign Trade Price Indexes

Export Price Index

2.6 An index of export prices has been published by the ABS since 1901. The first index was compiled annually from 1901 to 1916-17 as a current weighted unit value index.

2.7 The method of calculation was changed in 1918 to incorporate fixed weights. The calculation of weights for all principal exports was based on the average quantities of exports for the period January 1897 to June 1916. These weights were applied to the average unit values of each export in successive years and a weighted average index of 'price' movements was derived. This index was published for the years 1897 to 1929-30.

2.8 An index of export prices was not published again until 1937 when two series of monthly export prices were published, compiled back to 1928. One index used fixed weights and the other used changing weights. The most important methodological change introduced with these indexes was the use of actual export prices in place of unit values. These indexes were compiled until 1962.

2.9 The next index was introduced in August 1962 with index numbers compiled back to July 1959. This was a fixed weights index with a reference base of 1959-60 = 100.0. The weights were based on the average annual value of exports during the five years 1956-57 to 1960-61. By 1969-70 there had been a substantial shift in the relative importance of commodities exported and from July 1969 a new interim series was linked to this index. The reference base was still 1959-60 = 100.0 but the weights used were based on the annual value of exports in 1969-70. Four new commodities —

iron ore, bauxite, alumina and mineral sands — were included. The interim index was published until June 1979 when it was replaced by an index on a reference base of 1974-75 = 100.0

2.10 The current Export Price Index, Australia (6405.0) was introduced in September 1990 with index numbers compiled from July 1989. This index has a reference base of 1989-90 = 100.0. The weights are based on the value of Australian exports for 1988-89.

Import Price Index

2.11 The first index of import prices produced by the ABS was introduced in May 1983. This index was compiled quarterly from September Quarter 1981 until June Quarter 1991 with a reference base of 1981-82 = 100.0. It replaced an import price index previously published by the Reserve Bank of Australia which used a reference base of 1966-67 = 100.0. The Reserve Bank's import price index was published from 1928 until September 1982.

2.12 An index of import prices was introduced in September 1991 with index numbers compiled monthly from April 1991. This index has a reference base of 1989-90 = 100.0. The weights are based on the average value of imports landed in Australia during 1988-89 and 1989-90.

2.13 To give a broad indication of long term changes, Table 2.2 draws on the available foreign trade price indexes.

2.14 Each of the current producer and foreign trade price indexes is compiled monthly. The index numbers are usually published about six to seven weeks after the end of the reference month.

TABLE 2.2 FOREIGN TRADE PRICE INDEXES
(Reference base: Year 1968-69 = 100.0)

<i>Year</i>	<i>Export Price Index (All groups)</i>	<i>Import Price Index (All groups)</i>
1901	15	
1911	17	
1921-22	25	
1931-32	18	22
1936-37	29	21
1941-42	27	35
1946-47	53	51
1951-52	123	92
1956-57	115	91
1961-62	94	94
1966-67	103	100
1967-68	98	99
1968-69	100	100
1969-70	101	103
1970-71	99	108
1971-72	102	114
1972-73	131	113
1973-74	157	131
1974-75	177	189
1975-76	193	214
1976-77	216	246
1977-78	227	278
1978-79	256	307
1979-80	309	403
1980-81	328	450
1981-82	332	458
1982-83	360	506
1983-84	369	524
1984-85	396	580
1985-86	417	659
1986-87	430	731
1987-88	469	742
1988-89	501	694
1989-90	527	729
1990-91	501	752
1991-92	472	749
1992-93	493	817
1993-94	484	843

Source: The sources used for the Import Price Index are the Reserve Bank of Australia Bulletin up to and including 1981-82, and the ABS Import Price Index (6414.0) thereafter.

Chapter 3

Basic features of price index construction

3.1 All Producer and Foreign Trade Price Indexes have the following elements:

- (a) A *regimen*. A list of index items selected to represent the range of goods within the scope of the particular index. The regimen for the Import Price Index, for example, is representative of goods imported into Australia.

- (b) *Weights*. The proportions in which price changes are combined are called weights and represent the relative importance of each index item in the total index.
- (c) *Prices*. The prices of a selection of specific goods to represent each item in the regimen.
- (d) A *reference base*. This is the base period of the index and is given a value of 100.0 (or 100). This value has been chosen as the base figure because it enables the ready calculation of percentage changes from the base period to the current period (i.e. current index number less 100 gives the percentage change from the base period).

3.2 All the indexes are compiled using the Laspeyres fixed weight formula:

$$I_i = \frac{\sum P_i Q_o}{\sum P_o Q_o} \times 100$$

where:

- I_i represents index numbers for the period i ;
- P_i represents prices in period i ;
- P_o represents base period prices; and
- Q_o represents base period quantities.

Chapter 4

Price index of materials used in building other than house building (6407.0)

Introduction

4.1 The Price Index of Materials Used in Building Other than House Building, Six Capital Cities and Canberra, was first published in January 1969 on a reference base of 1966-67 = 100.0 and using a weighting pattern derived from estimated materials usage in 1966-67. Monthly index numbers are available for this first series of this index for the period July 1966 to January 1981. A description of the first series, including its composition and weighting pattern, is given in the January 1969 issue of Catalogue Number 6407.0 and in Labour Report No. 54, 1969.

4.2 Rebased indexes were introduced in February 1981 on a reference base of 1979-80 = 100.0 and were linked to the previous series. An index for Darwin was published for the first time in September 1982 on a reference base of 1981-82 = 100.0 and an index for Canberra was introduced in November 1987 on a reference base of 1986-87 = 100.0.

4.3 The current indexes were introduced in December 1993 on a reference base of 1989-90

= 100.0 and linked to the previous series. The Darwin index was discontinued.

Nature and Purpose

4.4 This index measures changes in prices of selected materials used in the construction of buildings other than houses in capital city statistical divisions. It is used by both the government and private sectors primarily for adjusting business contracts. It is used also for economic analysis.

4.5 The building types directly represented in the index are:

- flats and other dwellings (excluding detached houses);
- hotels, motels and hostels;
- shops;
- factories;
- offices;
- other business premises;
- education buildings;
- health buildings; and
- other non-residential buildings.

4.6 The index relates to all materials, fittings and fixtures which form an integral part of the structures of buildings other than houses and which are customarily installed before the buildings are occupied. Materials used in constructing electrical, water and gas mains to buildings from public mains are included, as are materials used in constructing sewerage and drainage services from the buildings to public sewerage and drainage systems. Materials used in the construction of external works associated with buildings (e.g. paths and surface parking areas) are also included if they are integral parts of the building's construction.

4.7 Although many of the selected materials are also used in house building, in building repair, maintenance and alteration work, as well as in civil engineering work (e.g. roads, drains, bridges), the weighting pattern of the index is not applicable to those other activities of the construction industry.

4.8 Since the weights used are based on an average materials usage for a range of different building types, the index movements are not necessarily representative of price movements of materials used in any particular building or any other type of building.

Composition and Weighting

4.9 The index includes 63 items which are combined into 10 industry of origin groupings, 15 special combinations and an 'All Groups' index.

4.10 Table 4.1, at the end of this chapter, sets out a complete list of the items and the industry of origin groups. Table 4.2 sets out the special combinations included for the six State capital cities and Canberra. The tables also show the relative importance of each item in terms of its percentage contribution to the All Groups, industry of origin, or special combination in the reference base year 1989-90.

4.11 The items were selected and allocated weights in accordance with the estimated average values of materials used in the construction of buildings (other than houses) commenced in the five years ended June 1992. The same weighting pattern is used for each of the capital cities and is applied to local price measures when calculating index numbers for each capital city.

4.12 The index for the six State capital cities combined is a weighted average of the individual city indexes. The relative weighting of each State capital city is in proportion to the average value of work done on building (other than house building) in each State capital city in the five years ended June 1992. The combining weights used for the six capital cities index are:

Sydney	0.427
Melbourne	0.285
Brisbane	0.091
Adelaide	0.089
Perth	0.096
Hobart	0.012
Total	1.0000

4.13 The estimated values used to determine the item weights were derived from data reported for a sample of buildings drawn from

ABS building completion statistics. In general, all buildings valued at less than \$500,000 at completion were excluded from the sample.

4.14 The materials included in the rebased index and the relative weights assigned to them are based on the estimated average usage of building materials, in buildings other than houses. The estimates were based on material usage in a sample of representative buildings. In deriving these estimates, the ABS employed the services of a consultant firm of quantity surveyors who derived the data from bills of quantities which were priced for materials only. Labour and other costs were not included.

4.15 Some of the items carry not only their own weight but also the weight of similar items not directly priced.

Classification

4.16 As noted earlier, the items that comprise the index have been combined into 10 groups on an industry of origin basis. The groups are defined in terms of the Groups (three digit level) of the 1993 edition of the Australian and New Zealand Standard Industrial Classification (ANZSIC).

4.17 The 'industry of origin' is not necessarily the industry which supplies the materials to the builder. Rather it is the industry in which the material is primarily produced, determined in accordance with the classification rules of the ANZSIC. For instance, many of the materials are sold to builders by wholesalers, but the materials are classified to the appropriate producing industries, rather than the wholesale trading industries. Some materials used in constructing buildings in Australia are imported. These are allocated to the same industry of origin as similar Australian produced materials.

4.18 The special combinations of materials, referred to earlier, group together materials used for particular purposes. The groupings used have been identified as being of particular interest to users of the index. The broad groupings are:

- All groups, excluding electrical materials and mechanical services components;

- Electrical materials;
- Mechanical services components; and
- Plumbing materials.

Data Sources — Prices

4.19 Prices are collected at the mid point of the month, or the nearest trading day, to which the index refers. They relate to specified standards of each material and are obtained from representative suppliers of the materials used in buildings (other than houses). These suppliers include manufacturers, wholesalers, building supply merchants, hardware stores and importers.

4.20 In general the point of pricing is delivered on site but in some cases it has been necessary to use the nearest realistic price available (e.g. delivered to electrical contractors store). Local prices are used in the indexes for each capital city.

4.21 As far as possible, actual transaction prices are used in the index — that is prices actually paid by building contractors or subcontractors to suppliers for materials delivered onto the building sites in the metropolitan area of each capital city.

4.22 Sales taxes levied on building materials are included in the prices used to compile the index. Materials used in the construction of Commonwealth, State and Local Government owned buildings are exempt from sales tax; materials used in most non-government health and education buildings, and buildings used for religious and charitable purposes are also exempt. At any particular time when there is a change in the rate of sales tax on building materials, the movement in the index takes into account the proportion of materials sold subject to sales tax and the proportion of materials exempt.

4.23 At the time that such changes take place the ABS publishes conversion factors to enable users to either include the full effects of sales tax changes or exclude entirely those effects, depending upon the use they wish to make of the index.

Data Sources — Weights

4.24 There are two broad levels at which weights are used in the compilation of index numbers. At one level are the item weights, which were mentioned earlier, and are provided in Tables 4.1 and 4.2. These weights are commonly called *regimen item weights* and are fixed between the periodic reviews of the whole index. For the current index regimen a sample of buildings in each building type was selected from ABS building completion statistics. Details of the materials used in these buildings were obtained from consultant quantity surveyors.

4.25 At the other level are the *sample weights*. These are the weights given to each of the precise specifications from within the sample of specifications selected to represent a regimen item. Over time, a particular sample of specifications may become unrepresentative of its regimen item. (For example, the relative importance of the specifications in the sample may change, or a specification may no longer be sold.) Under these circumstances, the sample and/or its weights will need to be changed, otherwise the accuracy of the price movements being measured may be adversely affected. The sample weights are kept under continual review in accordance with the program of sample review and maintenance discussed in Chapter 12.

4.26 Sample weights are determined using information obtained by personal interviews with suppliers of materials to builders.

Special Pricing Considerations

Materials supplied to individual order

4.27 Some materials which are supplied to individual order, such as structural steel, present special problems in the measurement of price change over time because the same item is not being sold in consecutive price periods. The method used to measure price change for these types of materials is referred to as *model pricing*. A particular design which has recently been made and which is representative of a supplier's output is specified in detail and becomes the model. Respondents recast the model and provide prices each month for the fixed detailed specifications of the model. Although the 'models' priced may not be

regularly sold, they do provide a consistent measure of price change where the items actually sold vary over time in terms of design and quality.

Discounts

4.28 For the purpose of measuring price change the aim is to determine actual prices being paid. It is therefore necessary to seek measures of 'special' discounts, when they occur, in addition to normal 'trade' discounts.

The measurement of special discounts poses a problem because of the many and varied forms they take and the manner in which they may be applied. Continual attention is given to this problem and changes in special discounts are incorporated in the index, to the extent that they are determined.

**TABLE 4.1 PRICE INDEX OF MATERIALS USED IN BUILDING OTHER THAN HOUSE BUILDING
COMPOSITION AND WEIGHTING**

<i>ANZSIC Code(a) Description</i>	<i>Percentage contribution to All groups</i>	
	<i>Groups</i>	<i>Items</i>
<i>231-232 Wood and wood products</i>	<i>5.51</i>	
Structural timber		0.67
Plywood, hardboard and softboard		0.99
Timber doors ready made		0.72
Timber windows ready made		0.15
Built in wooden furniture		1.85
Wooden shelves, racks, partitions and other joinery		1.13
<i>262 Ceramics</i>	<i>3.49</i>	
Clay bricks		1.40
Ceramic tiles		1.19
Ceramic Sanitaryware		0.90
<i>263 Cement, Lime, Plaster and Concrete products</i>	<i>16.22</i>	
Cement		0.27
Ready mixed concrete		9.42
Precast concrete pipes and drainage products		0.11
Concrete masonry blocks		0.97
Other precast concrete products		3.33
Fibrous cement		0.78
Plaster and plaster products		1.34
<i>271 Iron and steel</i>	<i>3.83</i>	
Steel decking, cladding and sheet products		2.88
Cast iron pipes and fittings		0.38
Steel pipes		0.64
<i>274 Structural metal products</i>	<i>27.17</i>	
Structural steel		8.37
Reinforcing steel bar		5.85
Reinforcing steel fabric and mesh		0.88
Aluminium windows		5.70
Aluminium screens, doors, louvres and other fabricated products		1.64
Suspended ceilings and access floors		1.05
Steel windows, doors, louvres, grilles and roller shutters		0.49
Other fabricated steel products		2.77
Fire doors		0.42

(a) Index items grouped according to Australian and New Zealand Standard Industrial Classification (ANZSIC) 1993.

**TABLE 4.1 PRICE INDEX OF MATERIALS USED IN BUILDING OTHER THAN HOUSE BUILDING
COMPOSITION AND WEIGHTING — *continued***

<i>ANZSIC</i> <i>Code(a) Description</i>	<i>Percentage contribution to All groups</i>	
	<i>Groups</i>	<i>Items</i>
275 Sheet metal products	3.09	
Steel gutters and downpipes		0.19
Ductwork used in air conditioning		2.09
Metal ducting and cable trays		0.32
Sheet steel sanitaryware		0.49
276 Fabricated metal products	4.00	
Builders' hardware — hinges, catches, handles, bolts, etc.		1.16
Taps, valves and other fittings		0.70
Sprinkler and hydrant systems		2.14
285 Electrical equipment and appliances	7.93	
Fire alarm systems		0.80
Mains cable		1.46
Circuitry		0.51
Electrical materials used in air conditioning		0.72
Light fittings		1.91
Lamps		0.17
Switches, outlets and plugs		0.18
Switchboards		1.58
Hot water units		0.20
Emergency Generators		0.40
286 Industrial machinery and equipment	12.47	
Air conditioning package units		1.72
Cooling and heating equipment — air conditioning		1.49
Other air conditioning equipment		1.93
Registers and fans used in air conditioning		1.39
Elevators, escalators and travelators		5.94
Other materials	16.29	
Sand, aggregate and filling		0.10
Carpet		2.60
Paint and other coatings		0.85
Bituminous plastic and other sealant sheeting		1.79
Glass products		4.12
Insulation		1.51
Non-ferrous pipes and fittings		1.54
Natural and artificial stone		1.53
Plastic floor coverings		0.32
Plastic conduit and accessories		0.16
Plastic pipes, downpipes and fittings		0.33
Other plastic products		0.54
Communications and security equipment		0.90
All Groups	100.00	100.00

(a) Index items grouped according to Australian and New Zealand Standard Industrial Classification (ANZSIC) 1993.

**TABLE 4.2 PRICE INDEX OF MATERIALS USED IN BUILDING OTHER THAN HOUSE BUILDING
COMPOSITION AND WEIGHTING — SPECIAL COMBINATIONS**

<i>ANZSIC Code(a) Description</i>	<i>Percentage contribution to All groups</i>	
	<i>Groups</i>	<i>Items</i>
<i>Conductors</i>	<i>31.34</i>	
Mains cable		23.30
Circuitry		8.04
<i>Conduit and accessories</i>	<i>7.53</i>	
Metal ducting and cable trays		5.03
Plastic conduit and accessories		2.50
<i>Switchboards and switchgear</i>	<i>28.01</i>	
Switches, outlets and plugs		2.81
Switch and distribution boards		25.20
<i>Lamps and light fittings</i>	<i>33.12</i>	
Light fittings		30.36
Lamps		2.76
All electrical materials	100.00	100.00
<i>Air conditioning</i>	<i>53.44</i>	
Air conditioning packaged units		9.03
Cooling and heating equipment - air conditioning		7.77
Registers and fans used in air conditioning		7.30
Ductwork used in air conditioning		10.98
Piping used in air conditioning		4.45
Electrical materials used in air conditioning		3.78
Other air conditioning equipment		10.13
<i>Fire protection installations</i>	<i>15.43</i>	
Fire alarm systems		4.20
Sprinkler and hydrant systems		11.23
<i>Elevators, escalators and travelators</i>	<i>31.13</i>	
Elevators, escalators and travelators		31.13
All mechanical services	100.00	100.00
<i>Hydraulic plumbing materials</i>	<i>88.90</i>	
Ceramic sanitaryware		16.60
Cast iron pipes and products		3.39
Steel piping		11.65
Sheet steel sanitaryware		9.12
Taps, valves and other fittings		13.00
Hot water units		3.77
Non ferrous pipes		28.34
Plastic pipes and fittings		3.03
<i>Drainage materials</i>	<i>7.56</i>	
Plastic pipes and fittings		3.16
Precast concrete pipes		2.14
Cast iron pipes and fittings		2.26
<i>Roof plumbing materials</i>	<i>3.54</i>	
Steel gutters and downpipes		3.54
All plumbing materials	100.00	100.00

(a) Index items grouped according to Australian and New Zealand Standard Industrial Classification (ANZSIC) 1993.

Chapter 5

Price index of materials used in house building (6408.0)

Introduction

5.1 The Price Index of Materials Used in House Building, Six State Capital Cities, was first published in September 1970 on a reference base of 1966-67 = 100.0. The weighting pattern was derived from estimated materials usage in 1968-69. Monthly index numbers are available for this first series for the period July 1966 to September 1986. A description of the first series, including its composition and weighting pattern, is given in the September 1970 issue of the publication (Catalogue No 6408.0) and in *Labour Report No. 55*, 1970.

5.2 The current indexes for the six State capital cities, were introduced in October 1986 on a reference base of 1985-86 = 100.0 and were linked to the previous series. An index for Canberra was published for the first time in February 1988 on a reference base of 1986-87 = 100.0. A review of the index is expected to be completed in 1995. The resulting index will have a reference base of 1989-90 = 100.0.

Nature and Purpose

5.3 The index measures changes in prices of selected materials used in the construction of houses in each capital city Statistical Division. It is used by both the government and private

sectors primarily for adjusting business contracts. It is used also for economic analysis.

5.4 A house is defined as a detached building, predominantly used for long term residential purposes and consisting of only one dwelling unit. The index does not purport to represent buildings of any kind other than detached houses.

5.5 Although many of the selected materials are also used in buildings other than houses, and in house repair, maintenance and alteration work, the index is not strictly applicable to those other activities of the building industry.

5.6 Since the weights are based on average materials usage for a range of different house types, the index is not necessarily representative of the price movements for materials used in any one particular type of house.

Composition and Weighting

Six State Capital Cities

5.7 The items were selected and allocated weights in accordance with the reported values of each material used in selected representative houses constructed in or about 1985-86. Each capital city has an individual weighting pattern, which reflect differences in the relative usage of the different materials in the various cities, and differences in price levels between the cities in the base period.

5.8 The index includes 38 items for the six State capital cities although not all of them apply to each city. For example, concrete bricks and blocks are included for Hobart only, while heating systems are included only for Melbourne and Hobart.

5.9 Table 5.1 sets out a complete list of the items and shows the relative importance of each, in terms of its percentage contribution to 'Total materials', in each city in the reference base year 1985-86.

5.10 The index for the six State capital cities combined is a weighted average of the individual city indexes. The relative weighting of each capital city is in proportion to the average value of work done on house building in each capital city in the three years ended June

1986. The combining weights used for the index are:

Sydney	0.2666
Melbourne	0.3325
Brisbane	0.1510
Adelaide	0.0929
Perth	0.1405
Hobart	0.0165
Total	1.0000

Canberra

5.11 The index includes 34 items for Canberra combined to produce a 'Total materials' index. Table 5.1 provides the complete Canberra weighting pattern showing the relative importance of each item in that city in the reference base year 1986-87.

5.12 The weighting pattern for Canberra is based on average materials usage for a range of

different house types constructed in Canberra in or about 1985-86.

Data Sources — Prices

5.13 The same data sources for prices are used in this index as for the Materials Used in Building Other than House Building index. See paragraphs 4.19 to 4.23.

Data Sources — Weights

5.14 The same data sources for weights are used in this index as for the Building Other than House Building index, except that houses are selected rather than other buildings. See paragraphs 4.25 to 4.27.

Special Pricing Considerations

5.15 The main problem encountered in compiling the index is to ensure actual transactions prices are obtained. See the discussion in paragraph 4.28 as it relates to the House Building index as well as the Building Other than House Building index.

**TABLE 5.1 PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING
COMPOSITION AND WEIGHTING**

<i>Materials</i>	<i>Percentage contribution of items and groups to All groups</i>							<i>Canberra</i>
	<i>Sydney</i>	<i>Melbourne</i>	<i>Brisbane</i>	<i>Adelaide</i>	<i>Perth</i>	<i>Hobart</i>	<i>Weighted average of six State capital cities</i>	
	<i>(1985-1986 100.0)</i>						<i>(1986-87 - 100.0)</i>	
<i>Concrete mix, cement and sand</i>	9.13	7.94	9.78	10.86	9.78	7.78	9.06	10.03
Ready mixed concrete	8.03	6.68	8.60	9.65	8.20	6.48	7.81	8.82
Cement	0.58	0.71	0.70	0.54	0.97	0.74	0.70	0.68
Sand	0.52	0.55	0.48	0.67	0.61	0.56	0.55	0.53
<i>Cement Products</i>	7.13	5.98	5.17	6.84	6.99	8.90	6.44	7.36
Fibrous cement sheets	2.76	2.02	2.52	1.78	3.21	1.29	2.43	1.94
Concrete tiles	4.37	3.96	2.65	5.06	3.78	4.56	3.96	5.42
Concrete bricks and blocks	—	—	—	—	—	3.05	0.05	—
<i>Clay bricks and tiles</i>	8.90	8.88	8.40	8.60	15.71	5.65	9.70	7.45
Clay bricks	7.58	7.64	8.40	7.97	14.25	5.65	8.67	7.45
Terracotta tiles	1.32	1.24	—	0.63	1.46	—	1.03	—
<i>Timber board and joinery</i>	35.27	36.47	33.24	34.78	24.56	35.63	33.82	34.48
Structural timber	20.35	19.39	21.24	21.67	16.62	19.82	19.75	18.14
Plywood and board	1.10	2.10	1.07	—	—	2.17	1.19	2.01
Timber doors and frames	2.94	2.53	3.28	2.64	1.58	3.00	2.64	2.42
Timber windows	2.46	4.13	0.74	3.14	0.75	2.33	2.58	4.36
Cupboards and built-in furniture	8.42	8.32	6.91	7.33	5.61	8.31	7.66	7.55
<i>Steel products</i>	3.91	2.85	3.19	3.36	4.93	2.68	3.52	2.81
Steel beams, sections and angles	1.96	1.10	1.38	1.08	2.17	1.12	1.52	1.05
Steel door frames	—	—	—	—	0.93	—	0.13	—
Reinforcing steel	1.95	1.75	1.81	2.28	1.83	1.56	1.87	1.76
<i>Other metal products</i>	13.19	12.07	17.94	13.14	15.58	15.97	13.92	11.39
Metal sheet, fascia and guttering	2.22	2.67	4.29	2.21	2.65	3.70	2.77	2.56
Builders hardware	3.04	2.84	3.03	2.90	2.81	3.01	2.93	2.72
Aluminium windows and doors	5.74	4.00	8.28	5.74	7.81	6.77	5.85	3.57
Copper pipes and fittings	1.14	1.28	1.14	1.27	1.29	1.23	1.22	1.27
Taps and valves	1.05	1.28	1.20	1.02	1.02	1.26	1.15	1.27
<i>Plumbing fixtures</i>	4.42	4.14	4.25	4.07	3.74	3.77	4.16	4.66
Toilet suites	0.67	0.83	0.70	0.70	0.75	0.79	0.74	1.00
Handbasins	0.43	0.37	0.44	0.38	0.36	0.36	0.40	0.62
Sinks	0.60	0.56	0.61	0.53	0.61	0.50	0.58	0.40
Wash troughs	0.51	0.42	0.45	0.50	0.51	0.46	0.47	0.31
Baths	1.14	0.94	0.90	1.07	0.80	0.85	0.98	0.90
Shower screens	1.07	1.02	1.15	0.89	0.71	0.81	0.99	1.43

TABLE 5.1 PRICE INDEX OF MATERIALS USED IN HOUSE BUILDING
COMPOSITION AND WEIGHTING — *continued*

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Chapter 6

Price indexes of articles produced by manufacturing industry (6412.0)

Introduction

6.1 The Price Indexes of Articles Produced by Manufacturing Industry, Australia, was first published in June 1976, with indexes compiled from July 1968. The composition and weighting patterns of the indexes were based on the value of production in 1971-72 (as reported in the 1971-72 Census of Manufacturing Establishments). The indexes were on a reference base of 1968-69 = 100.0.

6.2 The index was reviewed in 1990 with a second series introduced from May 1990. The second series' (the current series) composition and weighting pattern is based on the value of production in 1986-87 (as reported in the 1986-87 Census of Manufacturing Establishments). The indexes are on a reference base of 1988-89 = 100.0.

Nature and Purpose

6.3 These indexes measure movements in the prices of articles produced by manufacturing industry. For the purpose of the index, manufacturing industry is defined to be establishments classified to the Manufacturing Division of the Australian Standard Industrial Classification (ASIC), 1983 edition. The ABS has recently introduced a new industrial classification, the Australian and New Zealand

Standard Industrial Classification (ANZSIC), 1993 edition. This classification will be incorporated in the index at the next review of the index.

6.4 The indexes are constructed on a *net sector* basis. Each index relates only to those articles produced by defined *sectors* of the Australian manufacturing industry for sale or transfer to other sectors, for export, or for use as capital equipment. Articles which are sold or transferred to other establishments within the sector for further processing are excluded.

6.5 The *net sector* approach means that:

- (a) The *All Manufacturing Industry Index* represents price movements of goods which are produced by establishments in the Manufacturing Division, for sale or transfer to establishments outside the Manufacturing Division, for export, or for use as capital equipment. Articles sold or transferred by establishments in the Manufacturing Division to other establishments in that division for further processing are outside the scope of this index. In other words, the pricing and weights for the *All Manufacturing Industry Index* reflects sales and transfers of articles *at the point of exit from the Manufacturing Division*.
- (b) The *net Subdivision Indexes* for each of the subdivisions represent movements in prices of goods produced by establishments in the respective subdivisions, for sale or transfer to other subdivisions within the Manufacturing Division or to establishments outside the Manufacturing Division, for export, or for use as capital equipment. The pricing and weights for the *net Subdivision Indexes* reflect, in general, sales and transfers of articles *at the point of exit from the respective Subdivisions*.

Composition and Weighting

6.6 Tables 6.1 to 6.14 set out details of the items included in the Division and Sub-division indexes and their relative weights.

6.7 The articles included in the index (i.e. the items) were selected and allocated weights on the basis of the estimated net value of production in 1986-87. In general, an index

item equates with an ASIC class (i.e. the 4 digit level within the ASIC).

6.8 The net value of production of each item was estimated using a two stage approach:

- (a) the 'gross' value of production was derived from data collected in the 1986-87 Census of Manufacturing Establishments; and
- (b) the 'gross' values were converted to a 'net sector' basis using relationships about the usage of manufacturing output shown in the 1982-83 Input-Output tables.

6.9 In the following areas it was necessary to supplement and/or adjust the Manufacturing Census data:

- (a) *Commission production.* In a number of areas of manufacturing (e.g. petroleum refining, refining of metals, clothing production) a significant proportion of production is on a commission basis, i.e. the manufacturer processes the articles concerned on a commission basis for the owner. For these articles, it was necessary to adjust the manufacturing census data to reflect the full value of the articles produced and not just the value of the commission work. The areas where these adjustments were significant were:

- gold refining;
- petroleum refining;
- meat processing;
- wool scouring;
- silver, lead and zinc refining; and
- clothing production.

- (b) *Other income.* In some areas, manufacturing establishments derive significant income from activities other than the sale of manufactured articles. In the following cases, these activities have been included within the scope of the index:

- (i) *advertising* – included in the value of production in the publishing industry (ASIC classes 2641 and 2642). In this area the value of sales does not provide a true measure of the value of production in this industry as a

significant number of publications (e.g. suburban newspapers) are either free or have very low cover prices. This reflects the fact that advertising revenue represents a high proportion of the revenue of firms in this industry. A more realistic assessment of the value of production in this industry is therefore obtained if advertising and sales revenue are combined.

- (ii) *repair activities* – included in the value of production in the following areas: aircraft, railway stock and locomotives; and ship and boat manufacture (ASIC classes 3241, 3242, 3243 and 3244). In these areas, repair activity is significant and the distinction between repair activity and manufacturing is blurred as repairs include major rebuilding of equipment.

Data Sources – Prices

6.10 Most of the prices used in these indexes relate to the mid-point of the month, or the nearest trading day, to which the index relates. Prices are generally obtained from principal manufacturers of the articles concerned, but in some cases prices collected for other indexes are used (adjusted to the correct selling basis, as far as possible). Prices collected are manufacturers' selling prices, exclusive of excise and sales tax, and reflect the effects of subsidies and bounties paid to manufacturers.

6.11 The prices reflect industry selling practices. For example, if costs such as handling and distribution are included in the manufacturer's selling price, this is the price used in the index. Where handling and distribution charges are paid separately by the purchaser, the prices used exclude such charges.

6.12 As far as possible, actual transaction prices are used in the index — the prices actually paid by buyers of manufacturers' products.

Special Pricing Considerations

Unique products

6.13 Unique products pose special problems in the measurement of price change as the same product is not produced on an on-going basis. For example, fabricated structural steel where the product is unique to a particular customer, industrial equipment which is built to the customers' design and large ships which are built as one-off designs. In these situations, a technique known as 'model' pricing is used to measure price change. A particular product (or design) of some recent period, which is typical of the firm's output, is specified in detail and becomes the 'model'. The firm is then asked to supply, each month, a price for that 'model', i.e. re-cost the specification at current costs. Although the 'model' product may not be regularly sold (or even sold at all), it does provide a consistent measure of price change over time in a field where the items actually sold vary in terms of design and quality.

Articles sold infrequently

6.14 Some items, especially large items of capital equipment, take a considerable time to construct and are sold on the basis of a contract sale price plus various escalation and supplementary payments over the period of construction. As the item is not sold on a regular basis this poses a problem for estimating prices in those months where sales have not occurred. The following techniques are used in these situations:

- (a) the price movements of similar equipment are used to impute price movements for these items; or
- (b) an estimated price is derived using information from the respondent on escalation and other payments; i.e. a price is estimated for a 'notional' item completed and sold in the period in question.

**TABLE 6.1 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX**

	<i>Percentage contribution of articles to the Manufacturing Division index(a)</i>
<i>Food, beverages and tobacco</i>	<i>24.08</i>
Meat products	6.12
Milk products	3.18
Fruit and vegetable products	1.35
Margarine and oils and fats n.e.c.	0.52
Flour mill and cereal food products	0.97
Bread, cakes and biscuits	2.32
Other food products	5.12
Beverages and malt	3.76
Tobacco products	0.74
<i>Textiles</i>	<i>2.72</i>
Textile fibres, yarns and woven fabrics	1.39
Other textile products	1.33
<i>Clothing and footwear</i>	<i>4.56</i>
Knitting mills	0.72
Clothing	3.06
Footwear	0.78
<i>Wood, wood products and furniture</i>	<i>5.43</i>
Wood and wood products	3.27
Furniture and mattresses	2.16
<i>Paper, paper products and printing</i>	<i>7.42</i>
Paper and paper products	1.41
Printing and allied industries	6.01
<i>Chemicals and chemical products</i>	<i>5.79</i>
Basic chemicals	1.54
Other chemical products	4.25
<i>Petroleum products</i>	<i>4.32</i>
Petroleum refining	4.20
Petroleum and coal products n.e.c.	0.12
<i>Non-metallic mineral products</i>	<i>5.05</i>
Glass and glass products	0.59
Clay products and refractories	0.93
Cement and concrete products	2.86
Other non-metallic mineral products	0.67

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the Manufacturing Division) in 1986-87, valued at relevant prices in 1988-89.

TABLE 6.1 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX – continued

	<i>Percentage contribution of articles to the Manufacturing Division index(a)</i>
<i>Basic metal products</i>	9.90
Basic iron and steel	1.99
Basic non-ferrous metals	7.06
Non-ferrous metal basic products	0.85
<i>Fabricated metal products</i>	6.93
Structural metal products	3.34
Sheet metal products	1.63
Other fabricated metal products	1.96
<i>Transport equipment</i>	8.87
Motor vehicles and parts	6.55
Other transport equipment	2.32
<i>Other machinery and equipment</i>	11.40
Photographic, professional and scientific equipment	0.73
Appliances and electrical equipment	6.39
Industrial machinery and equipment	4.28
<i>Miscellaneous manufacturing</i>	3.53
Leather and leather products	0.18
Rubber products	0.71
Plastic and related products	1.89
Other manufacturing	0.75
Manufacturing Division	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the Manufacturing Division) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.2 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FOOD, BEVERAGES AND TOBACCO — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Meat products</i>	25.57
Meat (except smallgoods or poultry)	17.35
Poultry	4.21
Bacon, ham and smallgoods n.e.c.	4.01
<i>Milk products</i>	13.08
Liquid milk and cream	5.66
Butter	2.38
Cheese	2.40
Ice cream and frozen confections	1.31
Milk products n.e.c.	1.33
<i>Fruit and vegetable products</i>	5.59
Fruit products	2.44
Vegetable products	3.15
<i>Margarine and oils and fats n.e.c.</i>	2.36
Margarine and oils and fats n.e.c.	2.36
<i>Flour mill and cereal food products</i>	4.32
Cereal foods and baking mixes	4.32
<i>Bread, cakes and biscuits</i>	9.52
Bread	4.93
Cakes and pastries	2.51
Biscuits	2.08
<i>Other food products</i>	21.03
Raw sugar	3.08
Confectionery and cocoa products	3.22
Processed seafoods	3.44
Prepared animal and bird foods	6.17
Food products n.e.c.	5.12
Beverages and malt	15.48
Soft drinks, cordials and syrups	5.47
Beer	6.93
Wine and brandy	3.08
<i>Tobacco products</i>	3.05
Tobacco products	3.05
Food, beverages and tobacco	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.3 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
TEXTILES — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Textile fibres, yarns and woven fabrics</i>	56.72
Cotton ginning	6.16
Wool scouring and top making	20.04
Man-made fibres and yarns	4.14
Man-made fibre broadwoven fabrics	10.19
Cotton yarns and broadwoven fabrics	7.52
Worsted yarns and broadwoven fabrics	3.31
Woollen yarns and broadwoven fabrics	3.03
Narrow woven and elastic textiles	2.33
<i>Other textile products</i>	43.28
Household textiles	3.66
Textile floor coverings	19.26
Felt and felt products	1.86
Canvas and associated products n.e.c.	6.76
Rope, cordage and twine	1.44
Textile products n.e.c.	10.30
Textiles	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.4 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
CLOTHING AND FOOTWEAR — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Knitting mills</i>	15.89
Hosiery	5.24
Cardigans and pullovers	6.22
Knitted goods n.e.c.	4.43
<i>Clothing</i>	66.98
Men's trousers and shorts; work clothing	10.36
Men's suits and coats; waterproof clothing	5.07
Women's outerwear n.e.c.	24.01
Foundation garments	2.34
Underwear and infants clothing n.e.c.	14.35
Headwear and clothing n.e.c.	10.85
<i>Footwear</i>	17.13
Footwear	17.13
Clothing and footwear	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.5 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
WOOD, WOOD PRODUCTS AND FURNITURE — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Wood and wood products</i>	60.58
Log sawmilling	9.13
Resawn and dressed timber	9.91
Veneers and manufactured boards of wood	2.99
Wooden doors	2.63
Wooden structural fittings and joinery n.e.c.	25.42
Wooden containers	1.59
Hardwood chips	6.12
Wood products n.e.c.	2.79
<i>Furniture and mattresses</i>	39.42
Furniture (except sheet metal)	33.65
Mattresses (except rubber)	5.77
Wood, wood products and furniture	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.6 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
PAPER, PAPER PRODUCTS AND PRINTING — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Paper and paper products</i>	25.26
Pulp, paper and paperboard	1.46
Paper bags (including textile bags)	1.45
Solid fibre containers	4.80
Corrugated fibreboard containers	10.48
Paper products n.e.c.	7.07
<i>Printing and allied industries</i>	74.74
Publishing	14.90
Printing and publishing	24.09
Paper stationery	6.81
Printing and bookbinding	28.94
Paper, paper products and printing	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.7 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
CHEMICALS AND CHEMICAL PRODUCTS — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Basic chemicals</i>	42.57
Chemical fertilisers	11.16
Industrial gases	1.17
Synthetic resins and rubber	20.38
Organic industrial chemicals n.e.c.	5.05
Inorganic industrial chemicals n.e.c.	4.81
<i>Other chemical products</i>	57.43
Ammunition, explosives and fireworks	3.32
Paints	11.36
Pharmaceutical and veterinary products	14.93
Pesticides	3.12
Soap and other detergents	12.54
Cosmetics and toilet preparations	6.83
Inks	1.74
Chemical products n.e.c.	3.59
Chemicals and chemical products	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.8 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
PETROLEUM PRODUCTS — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Petroleum refining</i>	97.30
Petroleum refining	97.30
<i>Petroleum and coal products n.e.c.</i>	2.70
Petroleum and coal products n.e.c.	2.70
Petroleum products	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.9 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
NON-METALLIC MINERAL PRODUCTS — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Glass and glass products</i>	15.78
Glass and glass products	15.78
<i>Clay products and refractories</i>	19.37
Clay bricks	11.67
Refractories	2.25
Ceramic tiles and pipes	2.71
Ceramic goods n.e.c.	2.74
<i>Cement and concrete products</i>	52.17
Cement	6.38
Ready mixed concrete	26.40
Concrete pipes and box culverts	3.92
Concrete products n.e.c.	15.47
<i>Other non-metallic mineral products</i>	12.68
Plaster products and expanded minerals	6.42
Glass wool and mineral wool products	2.38
Non-metallic mineral products n.e.c.	3.88
Non-metallic mineral products	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

TABLE 6.10 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
BASIC METAL PRODUCTS — SUBDIVISION INDEX

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Basic iron and steel</i>	35.01
Iron and steel basic products	28.15
Iron casting	1.82
Steel casting	1.57
Steel pipes and tubes	3.47
<i>Basic non-ferrous metals</i>	51.26
Copper smelting, refining	3.81
Silver, lead, zinc smelting, refining	7.04
Alumina	11.30
Aluminium smelting	12.95
Nickel smelting, refining	5.79
Non-ferrous metal n.e.c. smelting, refining	10.37
<i>Non-ferrous metal basic products</i>	13.73
Aluminium rolling, drawing, extruding	8.37
Non-ferrous metals n.e.c. rolling, drawing, extruding	3.94
Non-ferrous metal casting	1.42
Basic metal products	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

TABLE 6.11 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FABRICATED METAL PRODUCTS — SUBDIVISION INDEX

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Structural metal products</i>	40.37
Fabricated structural steel	23.93
Architectural aluminium products	13.51
Architectural metal products n.e.c.	2.93
<i>Sheet metal products</i>	29.54
Metal containers	10.94
Sheet metal furniture	2.43
Sheet metal products n.e.c.	16.17
<i>Other fabricated metal products</i>	30.09
Cutlery and hand tools n.e.c.	1.54
Springs and wire products	6.88
Nuts, bolts, screws and rivets	2.30
Metal coating and finishing	2.06
Non-ferrous steam, gas and water fittings	3.10
Boiler and plate work	1.56
Metal blinds and awnings	1.67
Fabricated metal products n.e.c.	10.98
Fabricated metal products	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.12 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
TRANSPORT EQUIPMENT — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Motor vehicles and parts</i>	73.68
Motor vehicles	56.10
Motor vehicle bodies, trailers, caravans	4.86
Motor vehicle instruments and electrical equipment n.e.c.	2.07
Motor vehicle parts n.e.c.	10.65
<i>Other transport equipment</i>	26.32
Ships	8.40
Boats	2.42
Railway rolling stock and locomotives	9.74
Aircraft	5.76
Transport equipment	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

**TABLE 6.13 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
OTHER MACHINERY AND EQUIPMENT — SUBDIVISION INDEX**

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Photographic, professional and scientific equipment</i>	6.38
Photographic and optical goods	2.07
Photographic film processing	2.05
Measuring, professional and scientific equipment n.e.c.	2.26
<i>Appliances and electrical equipment</i>	56.05
Radio and TV receivers; audio equipment	2.40
Business equipment	14.42
Electronic equipment n.e.c.	12.33
Refrigerators and household appliances	1.77
Water heating systems	8.86
Electric and telephone cable and wire	1.68
Batteries	14.59
<i>Industrial machinery and equipment</i>	37.57
Agricultural machinery	3.48
Construction machinery	1.03
Materials handling equipment	3.99
Wood and metal working machinery	2.04
Pumps and compressors	2.57
Commercial space heating and cooling equipment	2.04
Dies, saw blades and machine tool accessories	2.93
Food processing machinery	2.03
Industrial machinery and equipment n.e.c.	17.46
Other machinery and equipment	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

TABLE 6.14 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MISCELLANEOUS MANUFACTURING — SUBDIVISION INDEX

	<i>Percentage contribution of articles to the Subdivision index(a)</i>
<i>Leather and leather products</i>	7.50
Leather tanning and fur dressing	6.33
Leather and leather substitute goods n.e.c.	1.17
<i>Rubber products</i>	16.53
Rubber tyres, tubes, belts, hose and sheets	11.63
Rubber products n.e.c.	4.90
<i>Plastic and related products</i>	61.42
Flexible packaging and abrasive papers	18.72
Rigid plastic sheeting	1.21
Plastic products n.e.c.	41.49
<i>Other manufacturing</i>	14.55
Ophthalmic articles	1.08
Jewellery and silverware	2.03
Brooms and brushes	1.44
Signs and advertising displays	4.75
Sporting equipment	2.04
Writing and marking equipment	1.02
Manufacturing n.e.c.	2.19
Miscellaneous manufacturing	100.00

(a) Percentage contributions to the index aggregate based on estimated net production (i.e. production for sale or transfer outside the subdivision) in 1986-87, valued at relevant prices in 1988-89.

Chapter 7

Price indexes of materials used in manufacturing industries (6411.0)

Introduction

7.1 The Price Index of Materials Used in Manufacturing Industries, Australia was first published in April 1975 on a reference base of 1968-69 = 100.0. The index had a weighting pattern derived from the value of estimated manufacturing materials usage in 1971-72. Monthly index numbers were compiled for the period July 1968 to November 1985. A description of the first series, including its composition and weighting pattern, is given in the April 1975 issue of the publication (Catalogue No. 6411.0).

7.2 The current indexes were introduced in December 1985 on a reference base of 1984-85 = 100.0 and were linked to the previous series. A review of the index is expected to be completed in 1995. The resulting index will have a reference base of 1989-90 = 100.0.

Nature and Purpose

7.3 The indexes measure changes in prices of materials (including fuels) used by establishments classified to the Manufacturing Division of the Australian Standard Industrial Classification (ASIC), 1983. Separate price indexes are published for materials used in the Manufacturing Industry as a whole, for 14 separate Manufacturing *sectors* (defined in

terms of ASIC Subdivisions or ASIC Groups) and for selected groups of materials classified according to whether the material is home produced or imported. The ABS has recently introduced a new industrial classification, the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. This classification will be incorporated in the index at the next review of the index.

7.4 The indexes are used by both the government and private sectors primarily for adjusting business contracts. They are also used for economic analysis.

7.5 Since the weights used are based on an average materials usage for a range of establishments classified to each respective manufacturing sector, the index movements are not necessarily representative of price movements experienced by any particular manufacturing establishment.

7.6 The indexes are compiled and published on a *net sector* basis. Each index includes only those materials which are used in defined *sectors* of the Australian manufacturing industry and which have been produced by establishments outside that sector. That is, they:

- exclude semi-processed materials which have been purchased by establishments in a particular manufacturing sector from other establishments in the sector; but
- include materials produced by Australian establishments classified to other manufacturing sectors or to other ASIC Divisions (e.g. Mining); and
- include imported materials (whether manufactured or not).

7.7 Thus, the pricing basis and the weights used for these *net sector* indexes reflect purchases and transfers at the point of entry to each respective manufacturing sector.

Composition and Weighting

7.8 Table 7.1 provides the composition and weighting of the Manufacturing Division index. Materials are classified according to whether they are imported or home produced. Within each of these categories materials have been grouped on the basis of the ASIC industry of

origin (i.e. the industry in which, in accordance with the classification rules of ASIC, the materials are primarily produced in Australia or the industry in which the materials would be classified had they been produced in Australia). Percentage contributions in 1984-85 of individual materials to the relevant commodity groups and to the Manufacturing Division as a whole are provided.

7.9 The composition and weighting of each of the *sector* indexes (defined in terms of ASIC Subdivisions or ASIC Groups) is given in Tables 7.2 to 7.15.

7.10 The items included in the indexes were selected on the basis of values of materials used in 1977-78 as reported in the Census of Manufacturing Establishments. With a few exceptions the selected items were allocated weights in accordance with the estimated value of manufacturing usage (net) in 1977-78. The exceptions are:

- (a) *Cereal grains*, which were allocated weights based on estimated manufacturing usage in 1977-78 and 1978-79;
- (b) *Fuels* (e.g. crude petroleum, natural gas, electricity), which were allocated weights on the basis of estimated 1982-83 usage; and
- (c) *Live animals*, which were allocated weights based on the average value of slaughtering in 1981-82, 1982-83 and 1983-84.

7.11 The 1977-78 Census of Manufacturing Establishments provided usage values on a gross basis. These were adjusted to the required net basis using the inter-industry usage information provided in Input-Output tables for that year. The resulting 1977-78 weights were revalued to 1984-85 prices using appropriate price index series.

Data Sources – Prices

7.12 In general, prices are collected at the mid-point of each month, or the nearest trading day. For those materials subject to significant price variation throughout the month, and for which a mid-month price would not be representative, average monthly prices are collected after the end of the month. Such

materials include agricultural materials, and metal ores and concentrates.

7.13 The prices relate to specified standards of each material and are obtained from representative respondents. Prices of home produced materials are generally obtained from manufacturers who use the material, though in some cases it is easier to obtain them from the supplier (e.g. for electricity). Prices of imported materials are generally obtained from the importers, including manufacturers who import directly.

7.14 Pricing for these indexes is at the point at which the material physically enters the defined manufacturing *sector*. Thus, in general, prices are collected on a delivered into store basis.

7.15 As far as possible, actual transaction prices are used in this index – that is, prices actually paid by manufacturers to the suppliers of the materials. Some pricing problems are discussed in paragraphs 7.22 to 7.29.

Data Sources – Weights

7.16 The weighting patterns provided in Table 7.1 and 7.2 show the regimen item weights for the Manufacturing Division and Subdivision indexes. These weights remain fixed between the periodic reviews of the whole index.

7.17 The main data sources used to derive these weights were:

- (a) the 1977-78 Census of Manufacturing Establishments which provided details of the individual materials and the value of their usage by each sector; and
- (b) the 1977-78 Input-Output tables which provided the details of the intra-industry usage, needed to derive weights on a net sector basis.

7.18 The 1977-78 Input-Output tables also provided the information required to estimate the proportions of each material that were imported and locally produced.

7.19 In a few cases these major data sources were supplemented by other information as follows:

- *Cereal grains.* A single year's usage was not considered appropriate because of volatility in the production of wheat, barley, oats, sorghum and rice. As a result, the average value of manufacturing usage of these cereal grains in 1977-78 and 1978-79 was used.
- *Crude petroleum.* Significant changes in the relativities between imported and home produced crude petroleum had taken place since 1977-78. As a result, 1982-83 data obtained from *Overseas Trade Data* (ABS) and *Australian Energy Statistics* (then Department of Resources and Energy) were used.
- *Fuels.* Significant changes in patterns of usage had also taken place between mains gas, natural gas, coal, fuel oil and electricity since 1977-78. *Australian Energy Statistics*, 1982-83 was used to reflect these changes.
- *Live animals.* As with cereal grains, the volatility in slaughtering of cattle, sheep, pigs and chickens was considered sufficient to warrant the use of more than one year's data. For these items the average value of slaughterings in the period 1981-82 to 1983-84 was used.

7.20 A second level of weights used are the *sample weights*. These are the weights given to each precise specification in the sample of specifications selected to represent a regimen item. Over time these weights may change as the relative importance of the specifications in the sample change, or as the selection of specifications in the sample changes. The sample weights are kept under continual review in accordance with the program of sample review and maintenance discussed in Chapter 12.

7.21 The main data source for determining sample weights is the supplier of the material prices. Information is obtained by personal interview.

Special Pricing Considerations

Pricing of transferred goods

7.22 Transfers which do not take place in the open market present problems in the measurement of price change. For example, a

vertically integrated enterprise extracts a mineral (mining activity) and also processes it (manufacturing activity). Since the material is transferred from one part of the enterprise to another there is usually no transaction price. In such instances, various methods of imputing changes in market prices have been adopted. Depending on the circumstances and the availability of data, these methods include:

- using opportunity costs based, for example, on the price of the material in an established market; or
- changes in cost based on the expenses actually incurred in obtaining the material.

Pricing Seasonal Materials

7.23 In the case of seasonal materials such as fruit and vegetables, where deliveries do not occur over the whole year, the previous season's prices are repeated for the months outside the selling season until the next season's prices become operative.

Estimated Prices

7.24 For some items, such as sugar cane, the prices are only determined annually and the final prices do not become known until sometime after the relevant season or contract period. Estimates of the current period price are used until the final price becomes available. Incorporation of the final price may involve revisions to already published index numbers.

Pricing of Electricity

7.25 For electricity used by manufacturers there is not a 'price' in the same sense as for other materials. Rather, a tariff structure is established with the price varying with the amount of electricity used.

7.26 To overcome this problem a sample of manufacturing establishments has been chosen to represent usage across the tariff range. This procedure reduces the risk of misreporting prices due to missing changes in the tariff structure.

7.27 Other large users maintain contracts with the electricity authorities by which special prices are charged. These prices are collected by personal visits to the users.

Pricing of Water

7.28 There are similar problems in collecting prices for water, further complicated because there are two components to the tariff:

- (a) water rates – a charge based on the value of the property using the water. The amount paid in water rates entitles the user to consume a certain quantity of water; and

- (b) water charge – a payment, per kilolitre, made for water consumed in excess of the entitlement given by the water rate.

7.29 Again, a representative sample of users has been chosen and the average usage of water over the previous five years has been determined for each user. A price is then collected each month for the consumption of that average amount of water.

TABLE 7.1 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Manufacturing Division index(a)</i>
IMPORTED MATERIALS	34.54
Agricultural materials	1.22
Tobacco leaf	0.46
Cocoa beans	0.16
Coffee beans	0.37
Natural rubber	0.23
Mining materials	7.76
Crude petroleum and condensates	6.64
Crude petroleum and condensates	6.64
<i>Other mining</i>	<i>1.12</i>
Natural phosphates	0.68
Sulphur	0.44
Manufactured materials	25.56
<i>Textile fibres, yarns and fabrics</i>	<i>3.78</i>
Scoured wool	0.26
Synthetic fibres	0.34
Synthetic yarns	1.05
Synthetic woven fabrics	0.49
Cotton woven fabrics	1.30
Worsted and woollen woven fabrics	0.12
Knitted fabrics	0.22
<i>Pulp, paper and materials made of paper</i>	<i>2.59</i>
Newsprint	0.80
Paperboard and felts	0.31
Printing, writing and other papers	0.89
Wood-pulp	0.47
Paper and fibreboard bags and containers	0.12
<i>Chemicals and chemical based materials</i>	<i>5.67</i>
Synthetic resins	1.14
Synthetic rubber	0.11
Dyes and whites	0.19
Sodium-based chemicals	0.69
Other chemicals	3.37
Antibacterials, insecticides and drenches	0.06
Pharmaceutical materials	0.11
<i>Basic iron and steel</i>	<i>2.17</i>
Steel bars and rods	0.31
Steel plate, sheet and strip	1.30
Steel pipes, tubes and fittings	0.56

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.1 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX – continued

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Manufacturing Division index(a)</i>
<i>Components for machinery and equipment</i>	<i>6.09</i>
Internal combustion engines	0.22
Motor vehicle instruments and electrical equipment	0.26
Motor vehicles, unassembled	1.34
Other motor vehicle parts and equipment	1.38
Photographic materials	0.32
Electronic equipment and parts	0.75
Parts and components for household appliances	0.32
Electrical measuring, controlling, regulating and starting apparatus	0.51
Electric motors	0.40
Tractors, unassembled	0.27
Bearings	0.32
<i>Other manufactured materials</i>	<i>5.26</i>
Vegetable oils and fats	0.57
Fish, partly processed	0.11
Timber, rough sawn	0.52
Plywood and veneers	0.33
Fuel oil	0.39
Derivatives of petroleum refining (b)	0.53
Plate, sheet and safety glass	0.27
Refractories	0.24
Springs and wire	0.28
Nuts, bolts, screws and rivets	0.34
Leather, dressed	0.17
Tyres	0.37
Plastic bags, containers and packaging	0.34
Plastic film and sheet	0.80
HOME PRODUCED MATERIALS	65.46
Agricultural, forestry and fishing materials	27.47
<i>Live animals</i>	<i>13.32</i>
Poultry	1.41
Sheep and lambs	2.00
Cattle and calves	8.62
Pigs	1.29

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents.

TABLE 7.1 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX – continued

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Manufacturing Division index(a)</i>
<i>Other agricultural materials</i>	<i>12.16</i>
Eggs	0.10
Grapes, currants, sultanas and raisins	0.55
Apples	0.14
Oranges	0.13
Peaches	0.08
Other fruit	0.13
Potatoes	0.15
Peas	0.11
Tomatoes	0.16
Other vegetables	0.19
Barley	0.35
Oats	0.08
Oilseeds	0.24
Rice	0.43
Sorghum	0.15
Wheat	2.09
Wool	1.28
Milk	3.10
Sugar cane	1.86
Peanuts	0.12
Tobacco leaf	0.32
Cotton	0.40
<i>Hardwood and softwood logs</i>	<i>1.22</i>
Hardwood logs	0.83
Softwood logs	0.39
<i>Fish, prawns and lobsters</i>	<i>0.77</i>
Lobsters	0.41
Prawns	0.20
Fish	0.16
Mining materials	32.86
<i>Metal ores and concentrates</i>	<i>7.26</i>
Iron ore	1.06
Bauxite	1.58
Copper concentrates	0.74
Gold, unrefined	0.98
Nickel concentrates	0.94
Silver-lead concentrates	0.82
Zinc concentrates	0.71
Tin concentrates	0.31
Manganese ore	0.12
<i>Coal, crude petroleum and gas</i>	<i>22.91</i>
Coal	0.95
Crude petroleum	20.40
Natural gas	1.56

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.1 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MANUFACTURING DIVISION INDEX – continued

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Manufacturing Division index(a)</i>
<i>Other mining materials</i>	2.69
Gravel, crushed and broken stone	1.43
Sand	0.72
Limestone	0.28
Clay	0.08
Salt	0.13
Gypsum	0.05
Electricity and water	5.13
<i>Electricity</i>	<i>4.38</i>
Electricity	4.38
<i>Water</i>	<i>0.75</i>
Water	0.75
MANUFACTURING DIVISION	100.00

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.2 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FOOD, BEVERAGES AND TOBACCO — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Agricultural, forestry and fishing materials	72.96
<i>Live animals</i>	<i>33.87</i>
Poultry	3.59
Sheep and lambs	5.09
Cattle and calves	21.92
Pigs	3.27
<i>Other agricultural materials</i>	<i>36.24</i>
Eggs	0.27
Grapes, currants, sultanas and raisins	1.82
Apples	0.47
Oranges	0.43
Peaches	0.26
Other fruit	0.43
Potatoes	0.46
Peas	0.33
Tomatoes	0.51
Other vegetables	0.55
Barley	1.05
Oats	0.26
Oilseeds	0.78
Rice	1.32
Sorghum	0.48
Wheat	6.57
Milk	9.66
Sugar cane	6.06
Peanuts	0.52
Tobacco leaf	2.46
Cocoa beans	0.46
Coffee beans	1.09
<i>Fish, prawns and lobsters</i>	<i>2.85</i>
Lobsters	1.49
Prawns	0.76
Fish	0.60
Mining materials	0.49
<i>Coal, crude petroleum and gas</i>	<i>0.49</i>
Natural gas	0.49
Manufactured materials	23.92
<i>Food, beverages and tobacco</i>	<i>1.9</i>
Vegetable oils and fats	1.52
Fish, partly processed	0.38
<i>Pulp, paper and materials made of paper</i>	<i>3.15</i>
Paper and fibreboard bags and containers	3.15

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.2 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FOOD, BEVERAGES AND TOBACCO — SUBDIVISION INDEX — continued

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
<i>Chemicals and chemical based materials</i>	<i>0.75</i>
Feed supplements for animals	0.28
Food additives, chemical-based	0.47
<i>Petroleum products</i>	<i>0.49</i>
Fuel oil	0.49
<i>Non-metallic mineral products</i>	<i>2.35</i>
Glass bottles and jars	2.35
<i>Fabricated metal products</i>	<i>10.48</i>
Metal cans and containers	10.48
<i>Miscellaneous manufacturing</i>	<i>4.80</i>
Plastic bags, containers and packaging	4.80
Electricity and water	2.63
<i>Electricity</i>	<i>1.70</i>
Electricity	1.70
<i>Water</i>	<i>0.93</i>
Water	0.93
Food, beverages and tobacco	100.00

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.3 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
TEXTILES — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Agricultural, forestry and fishing materials	40.10
<i>Other agricultural materials</i>	<i>40.10</i>
Wool	30.88
Cotton	9.22
Manufactured materials	59.01
<i>Textiles, clothing and footwear</i>	<i>44.45</i>
Scoured wool	6.08
Synthetic fibres	2.22
Synthetic yarns	14.36
Synthetic woven fabrics	1.66
Cotton woven fabrics	18.46
Worsted and woollen woven fabrics	1.67
<i>Chemicals and chemical based materials</i>	<i>14.09</i>
Synthetic resins	4.35
Dyes and whites	7.77
Other chemicals	1.97
<i>Petroleum products</i>	<i>0.47</i>
Fuel oil	0.47
Electricity and water	0.89
<i>Water</i>	<i>0.89</i>
Water	0.89
Textiles	100.00

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.4 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
CLOTHING — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Manufactured materials	100.00
<i>Textiles, clothing and footwear</i>	95.59
Synthetic fibres	6.13
Synthetic yarns	18.06
Synthetic woven fabrics	16.91
Cotton yarns	4.99
Cotton woven fabrics	19.56
Worsted and woollen yarns	3.83
Worsted and woollen woven fabrics	2.01
Printed cloth	17.83
Knitted fabrics	6.27
<i>Miscellaneous manufacturing</i>	4.41
Leather, dressed	1.04
Skins, dressed, hair or wool retained	3.37
Clothing	100.00

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.5 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FOOTWEAR — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Manufactured materials	100.00
<i>Textiles, clothing and footwear</i>	2.63
Synthetic fibres	1.55
Cotton yarns	0.69
Cotton woven fabrics	0.39
<i>Pulp, paper and materials made of paper</i>	0.90
Paper and fibreboard bags and containers	0.90
<i>Chemicals and chemical based materials</i>	4.56
Synthetic resins	0.82
Synthetic rubber	1.71
Adhesives and glues	2.03
<i>Miscellaneous manufacturing</i>	91.91
Leather, dressed	79.07
Plastic footwear components	6.64
Plastic foam and sponge	6.20
Footwear	100.00

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.6 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
WOOD, WOOD PRODUCTS AND FURNITURE — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Agricultural, forestry and fishing materials	27.79
<i>Hardwood and softwood logs</i>	<i>27.79</i>
Hardwood logs	17.67
Softwood logs	10.12
Manufactured materials	67.52
<i>Textile fibres, yarns and fabrics</i>	<i>12.04</i>
Synthetic yarns	1.81
Synthetic woven fabrics	1.60
Printed cloth	8.63
<i>Wood, materials made of wood</i>	<i>21.97</i>
Timber, rough sawn	13.57
Plywood and veneers	8.40
<i>Chemicals and chemical based materials</i>	<i>10.78</i>
Synthetic resins	2.91
Synthetic rubber	0.77
Other chemicals	2.17
Industrial paints, enamels and clears	2.06
Adhesives and glues	2.87
<i>Petroleum and coal products</i>	<i>2.95</i>
Fuel oil	0.73
Derivatives of petroleum refining (b)	2.22
<i>Non-metallic mineral products</i>	<i>2.24</i>
Plate, sheet and safety glass	2.24
<i>Basic metal products</i>	<i>7.20</i>
Coiled steel wire	0.65
Steel plate, sheet and strip	3.11
Aluminium shapes and sections	3.44
<i>Fabricated metal products</i>	<i>3.02</i>
Springs and wire	2.48
Nuts, bolts, screws and rivets	0.54
<i>Other manufactured materials</i>	<i>7.32</i>
Plastic film and sheet	2.48
Plastic foam and sponge	4.84
Electricity and water	4.69
<i>Electricity</i>	<i>4.69</i>
Electricity	4.69
Wood, wood products and furniture	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents.

TABLE 7.7 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
PAPER, PAPER PRODUCTS, PRINTING AND PUBLISHING — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Agricultural, forestry and fishing materials	3.60
<i>Hardwood and softwood logs</i>	<i>3.60</i>
Hardwood logs	3.60
Mining materials	3.21
<i>Coal, crude petroleum and gas</i>	<i>3.21</i>
Coal	1.13
Crude petroleum and condensates	0.00
Natural gas	2.08
Manufactured materials	85.71
<i>Pulp, paper and materials made of paper</i>	<i>49.67</i>
Newsprint	16.35
Paperboard and felt	5.93
Printing, writing and other papers	18.12
Wood-pulp	9.27
<i>Chemicals and chemical based materials</i>	<i>23.16</i>
Synthetic resins	6.14
Sodium-based chemicals	2.03
Other chemicals	4.52
Printing inks	7.33
Adhesives and glues	2.23
Petroleum additives, chemical based	0.91
<i>Petroleum and coal products</i>	<i>5.41</i>
Derivatives of petroleum refining (b)	5.41
<i>Other machinery and equipment</i>	<i>3.08</i>
Photographic materials	3.08
<i>Other manufactured materials</i>	<i>4.39</i>
Plastic film and sheet	4.39
Electricity and water	7.48
<i>Electricity</i>	<i>6.54</i>
Electricity	6.54
<i>Water</i>	<i>0.94</i>
Water	0.94
Paper, paper products, printing and publishing	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents.

TABLE 7.8 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
BASIC CHEMICALS AND OTHER CHEMICAL PRODUCTS — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Group index(a)</i>
Mining materials	17.88
<i>Coal, crude petroleum and gas</i>	2.37
Natural gas	2.37
<i>Other mining materials</i>	15.51
Salt	1.54
Natural phosphates	9.12
Sulphur	4.85
Manufactured materials	76.06
<i>Food, beverages and tobacco</i>	5.66
Inedible tallow	2.55
Vegetable oils and fats	3.11
<i>Pulp, paper and materials made of paper</i>	2.19
Paper and fibreboard bags and containers	2.19
<i>Chemicals and chemical based materials</i>	35.94
Synthetic resins	3.54
Other chemicals	26.11
Antibacterials, insecticides and drenches	1.04
Pharmaceutical materials	1.77
Sodium-based chemicals	3.48
<i>Petroleum and coal products</i>	16.40
Fuel oil	0.83
Derivatives of petroleum refining (b)	15.57
<i>Non-metallic mineral products</i>	2.42
Glass bottles and jars	2.42
<i>Basic metal products</i>	1.54
Non-ferrous metals, refined (c)	1.54
<i>Fabricated metal products</i>	3.92
Metal cans and containers	3.92
<i>Other manufactured materials</i>	7.99
Plastic bags, containers and packaging	7.99
Electricity and water	6.06
<i>Electricity</i>	4.75
Electricity	4.75
<i>Water</i>	1.31
Water	1.31
Basic chemicals and other chemical products	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents. (c) Excludes gold and silver.

TABLE 7.9 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
PETROLEUM AND COAL PRODUCTS — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Group index(a)</i>
Mining materials	99.59
Coal, crude petroleum and gas	99.59
Crude petroleum and condensates	99.13
Natural gas	0.46
Manufactured materials	0.41
Chemicals and chemical based materials	0.41
Petroleum additives, chemical based	0.41
Petroleum and coal products	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.10 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
NON-METALLIC MINERAL PRODUCTS — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Mining materials	68.12
<i>Metal ores and concentrates</i>	<i>1.88</i>
Manganese ore	1.88
<i>Coal, crude petroleum and gas</i>	<i>8.84</i>
Coal	2.36
Natural gas	6.48
<i>Other mining materials</i>	<i>57.4</i>
Gravel, crushed and broken stone	33.61
Sand	15.08
Limestone	4.78
Clay	2.67
Gypsum	1.26
Manufactured materials	24.41
<i>Pulp, paper and materials made of paper</i>	<i>3.35</i>
Paper and fibreboard bags and containers	3.35
<i>Chemicals and chemical based materials</i>	<i>16.20</i>
Sodium-based chemicals	3.87
Other chemicals	11.37
Adhesives and glues	0.96
<i>Petroleum and coal products</i>	<i>1.51</i>
Fuel oil	1.51
<i>Basic metal products</i>	<i>3.35</i>
Slag from steel manufacturing	3.35
Electricity and water	7.47
<i>Electricity</i>	<i>6.00</i>
Electricity	6.00
<i>Water</i>	<i>1.47</i>
Water	1.47
Non-metallic mineral products	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.11 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
BASIC METAL PRODUCTS — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Mining materials	65.86
<i>Metal ores and concentrates</i>	56.48
Iron ore	7.68
Bauxite	12.58
Copper concentrates	5.95
Gold, unrefined	8.25
Nickel concentrates	7.43
Silver-lead concentrates	6.50
Zinc concentrates	5.69
Tin concentrates	2.40
<i>Coal, crude petroleum and gas</i>	7.41
Coal	4.73
Natural gas	2.68
<i>Other mining materials</i>	1.97
Sand	0.67
Limestone	1.30
Manufactured materials	23.95
<i>Chemicals and chemical based materials</i>	9.27
Sodium-based chemicals	4.90
Other chemicals	4.37
<i>Petroleum and coal products</i>	10.01
Fuel oil	6.23
Derivatives of petroleum refining (b)	3.78
<i>Non-metallic mineral products</i>	4.67
Refractories	4.67
Electricity and water	10.19
<i>Electricity</i>	9.55
Electricity	9.55
<i>Water</i>	0.64
Water	0.64
Basic metal products	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents.

TABLE 7.12 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
FABRICATED METAL PRODUCTS — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Mining materials	0.54
Coal, crude petroleum and gas	0.54
Natural gas	0.54
Manufactured materials	97.43
Chemicals and chemical based materials	4.35
Synthetic resins	1.81
Other chemicals	1.40
Industrial paints, enamels and clears	1.14
<i>Petroleum and coal products</i>	<i>0.89</i>
Derivatives of petroleum refining (b)	0.89
<i>Non-metallic mineral products</i>	<i>1.36</i>
Plate, sheet and safety glass	1.36
<i>Basic metal products</i>	<i>88.86</i>
Coiled steel wire	8.24
Steel bars and rods	14.70
Steel plate, sheet and strip	33.64
Steel structural sections	7.39
Steel pipes, tubes and fittings	6.25
Zinc, refined	1.92
Aluminium shapes and sections	11.72
Copper and brass shapes and sections	5.00
<i>Other manufactured materials</i>	<i>1.97</i>
Plastic film and sheet	0.98
Plastic foam and sponge	0.99
Electricity and water	2.03
Electricity	2.03
Electricity	2.03
Fabricated metal products	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (b) Includes benzene, benzol, mineral turpentine, white spirit and petroleum solvents.

**TABLE 7.13 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
TRANSPORT EQUIPMENT — SUBDIVISION INDEX**

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Mining materials	0.44
Coal, crude petroleum and gas	0.44
Natural gas	0.44
Manufactured materials	97.61
Textile fibres, yarns and fabrics	2.32
Synthetic woven fabrics	0.53
Textile floor coverings	1.79
<i>Wood, materials made of wood</i>	<i>1.33</i>
Timber, dressed	1.33
<i>Chemicals and chemical based materials</i>	<i>6.29</i>
Synthetic resins	1.24
Industrial paints, enamels and clears	5.05
<i>Non-metallic mineral products</i>	<i>1.48</i>
Plate, sheet and safety glass	1.48
<i>Basic metal products</i>	<i>22.01</i>
Steel plate, sheet and strip	11.99
Steel castings and forgings	3.57
Aluminium shapes and sections	3.28
Copper and brass shapes and sections	1.31
Non-ferrous metal castings and forgings	1.86
<i>Fabricated metal products</i>	<i>11.04</i>
Springs and wire	3.42
Nuts, bolts, screws and rivets	7.62
<i>Transport equipment</i>	<i>35.83</i>
Internal combustion engines	2.81
Motor vehicle instruments and electrical equipment	2.75
Motor vehicles, unassembled	14.96
Other motor vehicle parts and equipment	15.31
<i>Other machinery and equipment</i>	<i>4.67</i>
Electrical measuring, controlling, regulating and starting apparatus	2.09
Bearings	2.58
<i>Other manufactured materials</i>	<i>12.64</i>
Tyres	8.17
Plastic components for transport equipment	4.47
Electricity and water	1.95
Electricity	1.95
Electricity	1.95
Transport equipment	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

TABLE 7.14 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
OTHER MACHINERY AND EQUIPMENT — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Mining materials	0.36
Coal, crude petroleum and gas	0.36
Natural gas	0.36
Manufactured materials	97.51
Pulp, paper and materials made of paper	1.12
Paper and fibreboard bags and containers	1.12
<i>Chemicals and chemical based materials</i>	<i>9.83</i>
Synthetic resins	3.69
Other chemicals	4.58
Industrial paints, enamels and clears	1.56
<i>Basic metal products</i>	<i>45.06</i>
Steel bars and rods	2.27
Steel plate, sheet and strip	13.67
Steel structural sections	2.52
Steel castings and forgings	2.62
Steel pipes, tubes and fittings	1.63
Non-ferrous metals, refined (b)	1.10
Silver, refined	1.48
Aluminium shapes and sections	6.09
Copper and brass shapes and sections	9.11
Non-ferrous metal castings and forgings	4.57
<i>Fabricated metal products</i>	<i>9.49</i>
Springs and wire	2.94
Nuts, bolts, screws and rivets	6.55
<i>Other machinery and equipment</i>	<i>23.18</i>
Photographic materials	1.82
Electronic equipment and parts	5.87
Parts and components for household appliances	2.68
Electrical measuring, controlling, regulating and starting apparatus	4.75
Electric motors	2.70
Tractors, unassembled	2.34
Bearings	3.02
<i>Other manufactured materials</i>	<i>8.83</i>
Rubber hose and tubing	2.71
Plastic film and sheet	0.88
Plastic components for other machinery and equipment	3.52
Plastic foam and sponge	1.72
Electricity and water	2.13
Electricity	2.13
Electricity	2.13
Other machinery and equipment	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85. (c) Excludes gold and silver.

TABLE 7.15 PRICE INDEXES OF MATERIALS USED IN MANUFACTURING INDUSTRIES
COMPOSITION AND WEIGHTING
MISCELLANEOUS MANUFACTURING — SUBDIVISION INDEX

<i>Category, Group, Subgroup and Material</i>	<i>Percentage contribution of materials to the Subdivision index(a)</i>
Agricultural, forestry and fishing materials	3.71
<i>Other agricultural materials</i>	3.71
Natural rubber	3.71
Manufactured materials	92.99
<i>Food, beverages and tobacco</i>	8.05
Hides and skins	8.05
<i>Textile fibres, yarns and fabrics</i>	15.14
Synthetic woven fabrics	7.39
Cotton woven fabrics	1.31
Printed cloth	6.44
<i>Pulp, paper and materials made of paper</i>	1.62
Paperboard and felt	0.37
Printing, writing and other papers	1.25
<i>Chemicals and chemical based materials</i>	55.52
Synthetic resins	38.45
Synthetic rubber	6.29
Other chemicals	8.85
Printing inks	1.23
Adhesives and glues	0.70
<i>Basic metal products</i>	4.60
Steel bars and rods	0.66
Steel plate, sheet and strip	0.69
Gold, refined	1.12
Silver, refined	0.24
Aluminium shapes and sections	1.89
<i>Fabricated metal products</i>	1.89
Wire fabric	1.89
<i>Other manufactured materials</i>	6.17
Leather, not dressed	0.58
Skins, dressed, hair or wool retained	0.30
Plastic film and sheet	5.29
Electricity and water	3.30
<i>Electricity</i>	3.30
Electricity	3.30
Miscellaneous manufacturing	100.0

(a) Percentage contributions to the index aggregate based on estimated net usage (i.e. usage of materials produced outside of the Manufacturing Division) in 1977-78, valued at relevant prices in 1984-85.

Chapter 8

Price indexes of copper materials (6410.0)

Introduction

8.1 The indexes currently included in Catalogue No. 6410.0 were first published in the October 1972 issue of *Price Indexes of Metallic Materials* (6410.0) as the Price Indexes of Copper Materials Used in the Manufacture of Electrical Equipment. In January 1986, the title of that publication was changed and the series for the other metallic materials (iron and steel, aluminium, copper and brass, and zinc) were transferred to *Price Indexes of Materials Used in Manufacturing Industries, Australia* (6411.0).

8.2 The first series was published on a reference base of 1968-69 = 100.0 and provided monthly index numbers from July 1968 to August 1983. A description of the first series, including its composition and weighting pattern, is given in the October 1972 issue of *Price Indexes of Metallic Materials* (6410.0) and in *Labour Report No. 57, 1972*.

8.3 From September 1983 to May 1984 the publication of the series was discontinued because serious deficiencies had been detected in the samples of prices used.

8.4 Revised series, on a reference base of 1983-84 = 100.0, were introduced in June 1984 and provided revised monthly index numbers from July 1983. The appendix to the June 1984

issue of *Price Indexes of Metallic Materials, Australia* (6410.0) provides a detailed description of the revised indexes, including their composition and weighting.

8.5 The change to the publication in January 1986 did not include any changes of substance for these series. They are still published on a reference base of 1983-84 = 100.0 and use the composition and weighting pattern that was introduced in June 1984.

Nature and Purpose

8.6 The publication contains index numbers for copper materials used in the manufacture of three types of electrical equipment, namely:

- industrial electric motors;
- distribution transformers; and
- power transformers.

8.7 The index for industrial electric motors is intended to measure price movements of copper materials used in manufacturing electric motors intended for industrial applications only. As a result, this index does not necessarily reflect the price movements of copper materials used in the manufacture of other smaller types of electric motors, such as those used as components in white goods or other domestic appliances.

8.8 The indexes are used primarily for adjusting business contracts.

Composition and Weighting

8.9 The items included in each index, and their percentage contributions, are shown in Table 8.1 at the end of this chapter.

8.10 It should be noted that some items are included in more than one index. Enamelled winding wire is an item in both the industrial electric motors index and the distribution transformers index; strip is included in all indexes; and busbar is included in the industrial electric motors index and power transformers index. The types of each material priced reflect those actually used in the manufacture of each type of electrical equipment. For example, the prices for strip reflect the current usage of paper covered strip, enamelled strip or bare strip in each type of equipment.

8.11 The items were selected and allocated weights in accordance with the estimated average values of copper materials used in the manufacture of each type of equipment in the year 1982-83, and revalued to the relevant prices applying in the reference base year of 1983-84.

8.12 The weights attributed to each of the items in the indexes reflect the average usage by industry in 1982-83 and, as such, do not necessarily reflect the relative values of materials used by particular manufacturers.

Data Sources — Prices

8.13 Prices are collected at the mid point of the month to which the index refers, or the nearest trading day. They relate to specified standards of each material and are those charged by manufacturers or distributors of copper materials to electrical equipment manufacturers.

8.14 The point of pricing is 'delivered into store'. As far as possible, actual transactions prices are used.

Data Sources — Weights

8.15 There are two broad levels at which weights are used in the compilation of index numbers. At one level are the *item weights*, which were mentioned earlier and are provided in Table 8.1. These weights are commonly called *regimen item weights* and are fixed between the periodic reviews of the whole index. For these indexes, the values used were derived from data supplied by a sample of manufacturers for representative types of equipment in each category.

8.16 At the other level are the *sample weights*. These weights are kept under continual review in accordance with the program of sample review and maintenance discussed in Chapter 12. The main data source for determining sample weights is the suppliers of copper materials to manufacturers; weighting information is obtained by personal interview.

**TABLE 8.1 PRICE INDEXES OF COPPER MATERIALS
COMPOSITION AND WEIGHTING**

<i>Index, Material</i>	<i>Percentage contribution to index(a)</i>
Industrial electric motors index	
Enamelled winding wire	59.4
Strip	33.1
Busbar	6.7
Cable	0.8
All materials	100.0
Distribution transformers index	
Enamelled winding wire	82.5
Strip	17.5
All materials	100.0
Power transformers index	
Strip	98.3
Busbar	1.7
All materials	100.0

(a) Percentage contributions reflect estimated usage in 1982-83 revalued to average 1983-84 prices.

Chapter 9

Price indexes of materials used in coal mining (6415.0)

Introduction

9.1 The *Price Indexes of Materials Used in Coal Mining, Australia*, was first published in February 1989 on a reference base of 1987-88 = 100.0. The Indexes have been compiled for each month from July 1988.

Nature and Purpose

9.2 The indexes measure price movements in materials used in the two types of (black) coal mining, namely:

- open cut; and
- underground mining.

9.3 The indexes measure changes in the prices of materials used in the ongoing mining process. That is, the removal of overburden, the extraction, washing and preparation of the coal, and its transportation to the railhead.

9.4 For the purpose of these indexes, materials are defined as being consumables and those replacement parts that normally have a life span of less than 12 months (although, for some more durable items, this may extend up to three years). That is, they include those items that are normally regarded as being consumed in the mining process and exclude items of capital equipment.

9.5 In determining whether particular replacement parts were within the scope of the indexes, attention was paid to industry practice (i.e. whether the items are generally regarded as capital items) and to the cost and durability of the item. Replacement parts having a high cost and a long life-span (e.g. dragline pinions and gears) are regarded as capital equipment and are thus outside the scope of the indexes.

Composition and Weighting

9.6 Tables 9.1 and 9.2 set out details of the items included in the indexes.

9.7 The items included were selected and allocated weights on the basis of the estimated average usage of materials in coal mining over the three years to June 1987.

9.8 The estimated values used to determine the item weights were derived from data reported from a sample of coal mines. The sample was selected to give appropriate representation to open cut and underground mines located in New South Wales and Queensland.

9.9 Since the weights are based on an average materials usage from a range of coal mines with particular characteristics, the index is not necessarily representative of price movements for materials used in any particular mine.

Data Sources — Prices

9.10 Prices are collected at the mid point of the month to which the index refers or the nearest trading day. They relate to specified standards of each material and are obtained from representative suppliers of the materials used in coal mines.

9.11 In general, the point of pricing is delivered on mine site or to the primary storage site for a group of mines.

9.12 As far as possible, actual transaction prices are used (i.e. the prices actually paid by coal mines to suppliers for materials delivered on mine site). The prices used therefore include all relevant taxes and charges and freight costs, and are net of any discounts and rebates.

9.13 The ABS asks respondents to report details of the discounts they offer so that actual transaction prices can be calculated. However,

as coal mining materials suppliers offer different types of discounts to buyers (e.g. quantity discounts and competitive discounts), the identification of the discounts and the way in which they are applied by sellers pose considerable problems for the ABS. To the extent that discounts are identified and can be measured, their effects are taken into account in calculating the index.

Data Sources — Weights

9.14 There are two broad levels at which weights are used in the compilation of index numbers. The first is the item weights mentioned earlier and shown in Tables 9.1 and 9.2. These weights are commonly called *regimen item weights* and are fixed between the

periodic reviews of the whole index. As discussed previously, the regimen item weights used in the current index are based on usage by a sample of coal mines.

9.15 The second level of weights is the *sample weights*. These weights are the weights given to each precise specification in the sample of specifications selected to represent a regimen item. The sample of specifications priced and the sample weights are subject to regular review and may change at any time.

9.16 The main source of data for determining sample weights is the suppliers of materials to mines.

**TABLE 9.1 PRICE INDEXES OF MATERIALS USED IN COAL MINING,
COMPOSITION AND WEIGHTING
OPEN CUT MINING**

<i>Category, Group and Material</i>	<i>Percentage contribution of materials used in 1987-88</i>	
	<i>Material to Group</i>	<i>Group and material to Category</i>
<i>Distillate and lubricants</i>	100.0	20.3
Distillate	83.3	16.9
Lubricants	16.7	3.4
<i>Explosives</i>	100.0	17.3
Wet explosives	44.5	7.7
Dry explosives	49.7	8.6
Accessories	5.8	1.0
<i>Mechanical spare parts</i>	100.0	22.7
Rubber tyred earth-moving equipment	70.9	16.1
Dragline and electric shovel parts	23.8	5.4
Impact Tips	5.3	1.2
<i>Washplant compounds</i>	100.0	6.2
Magnetite	35.4	2.2
Flocculents and washplant reagents	32.3	2.0
Washplant screens	32.3	2.0
<i>Electricity — open cut</i>	100.0	21.0
Electricity	100.0	21.0
<i>Other materials — open cut</i>	100.0	12.5
Electrical parts	24.8	3.1
Tyres	31.2	3.9
Miscellaneous materials — open cut	44.0	5.5
Open cut		100.0

**TABLE 9.2 PRICE INDEXES OF MATERIALS USED IN COAL MINING,
COMPOSITION AND WEIGHTING
UNDERGROUND MINING**

<i>Category, Group and Material</i>	<i>Percentage contribution of materials used in 1987-88</i>	
	<i>Material to Group</i>	<i>Group and material to Category</i>
<i>Mine roof supports</i>	100.0	27.3
Roof bolts and resins	63.4	17.3
Roof timber and props	27.8	7.6
Steel roof supports	8.8	2.4
<i>Mechanical spare parts</i>	100.0	20.8
Continuous miners	67.3	14.0
Longwall spares	32.7	6.8
<i>Electrical materials</i>	100.0	7.8
Electrical cables	24.4	1.9
Other electrical parts	75.6	5.9
<i>Washplant materials</i>	100.0	6.3
Magnetite	38.1	2.4
Flocculents and washplant reagents	25.4	1.6
Washplant screens	36.5	2.3
<i>Electricity -- underground</i>	100.0	22.2
Electricity	100.0	22.2
<i>Other materials -- underground</i>	100.0	15.6
Hydraulic oils, lubricants and distillate	27.6	4.3
Miscellaneous materials — underground	72.4	11.3
Underground		100.0

Chapter 10

Export Price Index (6405.0)

Introduction

10.1 An index of export prices has been published by the ABS since 1901 — see paragraphs 2.6 to 2.10.

Nature and Purpose

10.2 The current Export Price Index, Australia, was reviewed in 1990. It is a fixed weights index compiled on a reference base of 1989-90=100.0, with the weights based predominantly on Australian exports for 1988-89. Prior to the 1990 review, the index was compiled on a reference base of 1974-75=100.0 with a weighting pattern based on Australian exports over the 3 years to June 1977.

10.3 The index measures changes in the prices of all exports of merchandise from Australia, including re-exports (that is, goods which are imported into Australia and exported at a later date without physical alteration). The index numbers for each month relate to prices of exports actually shipped during that month.

Composition and Weighting

10.4 Tables 10.1, 10.2 and 10.3 set out details of the items included in the index and their relative weights.

10.5 The commodities represented in the index were selected predominantly on the basis of their export values for 1988-89. Weights were allocated in accordance with these values. In a

number of cases, adjustments were made to reflect more current information.

10.6 The commodities represented constitute approximately 95 per cent of the total value of exports recorded for 1988-89, taking into account the fact that many of the commodities carry not only their own weight but also the weight of unpriced commodities whose prices are considered to move in a similar manner.

Classifications

10.7 The commodities included in the current index have been combined into broad index groups in three ways. Index numbers are produced for groupings defined in terms of the Sections (2 digit), Chapters (2 digit) and Headings (4 digit) of the Australian Harmonised Export Commodity Classification (AHECC), 1988 edition and updated to July 1990; Sections (1 digit) and Divisions (2 digit) of the Standard International Trade Classifications (SITC); and on an industry of origin basis defined in terms of the Divisions (1 digit) and Subdivisions (2 digit) of the Australian Standard Industrial Classification (ASIC), 1983 edition. The industry of origin is not necessarily identical with the industry from which the exports are made. For example, exports made by traders or by marketing authorities are classified to the appropriate producing industries rather than the wholesale trading industries from which they are actually exported. The ABS has recently introduced a new industrial classification, the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition. This classification will be incorporated in the index as soon as practicable.

Prices

10.8 In general, prices are obtained from major exporters of the selected commodities included in the index. The prices used in the index are the prices at which the goods physically leave Australia, i.e., the prices are *free on board* at main Australian ports of export.

10.9 As the prices used in the index are expressed in Australian currency, changes in the relative value of the Australian dollar against overseas currencies (in particular the major trading currencies such as the US dollar, Japanese yen, pound sterling and German DM) can have a direct and significant impact on the

price movements of the many commodities that are sold in terms of prices expressed in overseas currencies. Forward exchange cover is *excluded* from the prices used in the index.

10.10 The prices collected and used in compiling the index relate to specified standards, grades, types, etc., of each commodity with the aim of incorporating in the index price changes for exports of representative goods of constant quality. Wherever possible, prices to specific major export markets are used for each of the goods priced, in order to lessen the impact of price variations attributable solely to changes in market destinations. In most cases, prices are combined using fixed weights between markets. Weights between markets are reviewed from time to time and revised where necessary.

Special Pricing Considerations

Greasy wool

10.11 A high proportion of Australian-produced greasy wool is sold through the auction system and the bulk of auctioned wool is exported. Thus auction prices are considered appropriate for use in the Export Price Index. The price series used is the wool market indicator price. In order to allow for the delays involved between sale at auction and shipment from Australia, this indicator is incorporated in the index with a lag of six weeks. Scoured wool and wool tops are treated in the same fashion as other commodities in the index, that is prices are obtained from major exporters.

Goods shipped at an unknown price

10.12 Where the price of exported goods is unknown at the time of shipment, the price used

in the index on an interim basis is generally that for similar goods exported from Australia. When it becomes known, the price for the goods, adjusted to a *free on board* basis and expressed in terms of Australian dollars, is used in the index. This may result in revisions for the period in which the estimated price is used.

Seasonal exports

10.13 Some agricultural commodities are sold and exported for only part of the year. The practice adopted in such cases is to repeat the last reported price until shipment of the next season's exports occur. Where the commodity is sold in terms of currency other than Australian dollars the repeated foreign currency price is converted to Australian dollars using the exchange rate applicable at that point in time.

Nil shipments

10.14 In practice a wide range of the commodities included in the index are not exported on an ongoing basis, especially in the case of exports to a particular destination. It is thus necessary to estimate a price for the commodity in the months in which it is not exported. Prices are estimated using the following methods:

- (a) movements in world commodity prices (e.g. London Metal Exchange prices);
- (b) movements in the prices of similar products exported by that or other exporters; and
- (c) the last reported price adjusted for subsequent movements in exchange rates.

**TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC)**

	Percentage contribution of	
	AHECC Items to Chapters	AHECC Chapters to Divisions
LIVE ANIMALS, ANIMAL PRODUCTS		100.00
<i>Live animals</i>	100.00	5.71
Live sheep and goats	100.00	
<i>Meat and edible meat offal</i>	100.00	63.53
Meat of bovine animals, fresh	21.66	
Meat of bovine animals, frozen	57.62	
Meat of sheep or goats, fresh or frozen	10.66	
Offal of animals, fresh and frozen	10.06	
<i>Fish and crustaceans</i>	100.00	13.61
Crustaceans, molluscs, fresh, frozen etc.	100.00	
<i>Dairy products, eggs, edible products of animal origin</i>	100.00	17.15
Milk and cream, concentrated or sweetened	52.16	
Butter and other fats derived from milk	13.12	
Cheese and curd	34.72	
VEGETABLE PRODUCTS		100.00
<i>Edible vegetables, some tubers</i>	100.00	5.47
Onions, shallots, garlic and leeks	18.26	
Dried leguminous vegetables	81.74	
<i>Edible fruit and nuts</i>	100.00	6.04
Citrus fruit, fresh or dried	12.78	
Grapes, fresh or dried	70.00	
Apples, pears and quinces, fresh	17.22	
<i>Cereals</i>	100.00	75.82
Wheat and meslin	82.52	
Barley	9.03	
Oats	1.86	
Rice	5.06	
Grain sorghum	1.53	
<i>Products of milling industry</i>	100.00	6.30
Wheat or meslin flour	12.43	
Malt, whether or not roasted	67.97	
Wheat gluten, whether or not dried	19.60	
<i>Oil seeds and other seeds</i>	100.00	6.37
Oil seeds and other seeds	100.00	

TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
ANIMAL OR VEGETABLE FATS AND OILS		100.00
<i>Animal or vegetable fats and oils</i>	100.00	100.00
Fats of bovine animals, sheep, goats	82.69	
Margarine, edible mixtures of fats and oils	17.31	
PREPARED FOODSTUFFS		100.00
<i>Preparation of meat, fish or crustaceans</i>	100.00	8.07
Other prepared or preserved meat, offal	48.87	
Crustaceans, molluscs, prepared, preserved	51.13	
<i>Sugars and confectionary</i>	100.00	59.63
Cane or beet sugar and pure sucrose	100.00	
<i>Cocoa and cocoa preparations</i>	100.00	2.02
Chocolate and preparations with cocoa	100.00	
<i>Preparations of cereals, flour</i>	100.00	6.49
Malt extract, food preparations of meal flour or starch not containing cocoa	63.51	
Bread, pastry, cakes and biscuits	36.49	
<i>Preparation of vegetables, fruit and nuts</i>	100.00	7.06
Fruit, nuts and edible parts of plants	100.00	
<i>Beverages, spirits and vinegar</i>	100.00	11.19
Waters, natural, artificial and aerated	20.85	
Beer made from malt	20.08	
Wine of fresh grapes, fortified wines	59.07	
<i>Residue from food industry</i>	100.00	5.54
Flours, meals and pellets of meat, meat offal and fish unfit for human consumption	26.52	
Preparations used in animal feeding	73.48	

TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
MINERAL PRODUCTS		100.00
<i>Salt, sulphur, earths</i>	100.00	1.66
Salt and pure sodium chloride	100.00	
<i>Ores, slag and ash</i>	100.00	40.07
Iron ores and concentrates, iron pyrites	45.66	
Manganese ores and concentrates	4.67	
Copper ores and concentrates	3.56	
Aluminium ores and concentrates	2.73	
Lead ores and concentrates	2.14	
Zinc ores and concentrates	10.42	
Tin ores and concentrates	5.04	
Uranium	9.49	
Titanium ores and concentrates	9.04	
Niobium, tantalum, vanadium, zirconium ore	7.25	
<i>Mineral fuels and oils</i>	100.00	58.27
Coal, briquettes, coke and semi coke	70.25	
Petroleum oils and crude	6.87	
Petroleum oils and those other than crude	14.79	
Petroleum gases and other gases	8.09	
PRODUCTS OF CHEMICAL OR ALLIED INDUSTRIES		100.00
<i>Inorganic chemicals</i>	100.00	74.15
Alumina	100.00	
<i>Organic chemicals</i>	100.00	4.27
Cyclic hydrocarbons	100.00	
<i>Pharmaceutical products</i>	100.00	6.62
Human blood, animal blood, vaccines	13.46	
Medicaments	86.54	
<i>Tanning or dyeing extracts</i>	100.00	4.26
Other colouring matter, preparations	100.00	
<i>Albuminoidal substances</i>	100.00	1.72
Casein, caseinates, casein glues	100.00	
<i>Photographic goods</i>	100.00	6.34
Photographic film, paper, unexposed	100.00	
<i>Miscellaneous chemical products</i>	100.00	2.64
Insecticides, rodenticides, fungicides	100.00	

**TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)**

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
PLASTIC AND RUBBER ARTICLES THEREOF		100.00
<i>Plastics and articles thereof</i>	100.00	73.11
Polymers	42.33	
Polyacetals, other polyethers and resins	19.70	
Tubes, pipes and hoses and fittings thereof	22.22	
Plates, film, of plastics, non-cellular	15.75	
<i>Rubber and articles thereof</i>	100.00	26.89
New pneumatic tyres, of rubber	100.00	
RAW HIDES AND SKINS		100.00
<i>Raw hides and skins</i>	100.00	100.00
Raw hides, skins of bovine, equine animals	46.72	
Raw skins of sheep and lambs, not tanned	28.41	
Leather of equine or bovine animals	24.87	
WOOD AND ARTICLES OF WOOD		100.00
<i>Wood and articles of wood</i>	100.00	100.00
Woodchips	100.00	
PULP OF WOOD OR OF OTHER CELLULOSIC MATERIAL		100.00
<i>Paper and paperboard</i>	100.00	54.45
Uncoated paper, paperboard for writing	26.52	
Other uncoated paper, paperboard in roll	42.13	
Other paper, cellulose fibres cut to size	31.35	
<i>Printed books, newspapers, other articles of paper pulp</i>	100.00	45.55
Printed books, newspapers, other articles of paper pulp	100.00	
TEXTILES AND TEXTILE ARTICLES		100.00
<i>Wool, animal hair</i>	100.00	89.23
Wool, not carded or combed	95.95	
Wool, animal hair, carded or combed	4.05	
<i>Cotton, not carded or combed</i>	100.00	10.77
Cotton, not carded or combed	100.00	

TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
GOLD, DIAMONDS AND COIN		100.00
<i>Gold, diamonds and coin</i>	100.00	100.00
Diamonds not mounted or set	8.96	
Gold, unwrought or in powder form	82.97	
Coin	8.07	
BASE METALS AND ARTICLES OF BASE METALS		100.00
<i>Iron and steel</i>	100.00	10.66
Ferro-alloys	7.39	
Ferrous waste and scrap, remelting ingots	28.14	
Semi-finished goods, iron, non-alloy steel	10.56	
Flat-rolled goods, iron, hot-rolled, not clad, plated or coated	5.21	
Flat-rolled products, iron, non-alloy steel, clad, plated or coated	48.70	
<i>Articles of iron and steel</i>	100.00	4.11
Other tubes, pipes of iron or steel	22.28	
Structures and parts of them (not buildings)	39.02	
Other articles of iron and steel	38.70	
<i>Copper and articles thereof</i>	100.00	7.64
Refined copper, copper alloys, unwrought	83.49	
Copper bars, tubes, rods and profiles	16.51	
<i>Nickel and articles thereof</i>	100.00	12.10
Nickel mattes, nickel oxide sinters	67.82	
Unwrought nickel	32.18	
<i>Aluminium and articles thereof</i>	100.00	50.17
Unwrought aluminium	86.99	
Aluminium waste and scrap	5.26	
Aluminium plates, sheets, strips > 0.2mm	7.75	
<i>Lead and articles thereof</i>	100.00	8.07
Unwrought lead	100.00	
<i>Zinc and articles thereof</i>	100.00	7.25
Unwrought zinc	100.00	

TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
MACHINERY AND MECHANICAL APPLIANCES		100.00
<i>Machinery and mechanical appliances</i>	100.00	75.76
Spark-ignition or rotary engines	21.89	
Parts for use solely with engines	8.92	
Pumps for liquids, liquid elevators	5.03	
Parts for cranes, bulldozers, etc	11.08	
Harvesting or threshing machinery	4.00	
Machinery not specified elsewhere for preparation and manufacture of food and drink	4.19	
Automatic data processing machines and parts thereof	31.80	
Machinery for sorting etc., earth, ores	6.03	
Taps, cocks, valves for boilers, tanks, vats	3.91	
Bearings, transmission shafts, cranks	3.15	
<i>Electrical machinery, equipment</i>	100.00	24.24
Electrical apparatus, telephones	16.51	
Records, tapes, other recorded media	20.40	
Transmission apparatus for telephone, TV	12.80	
Reception apparatus for telephone	10.84	
Electrical apparatus for circuits	20.93	
Insulated wire and cables, conductors	18.52	
VEHICLES, AIRCRAFT AND VESSELS		100.00
<i>Vehicles other than railway</i>	100.00	53.24
Cars, vehicles for transport of persons	45.35	
Motor vehicles for transport of goods	6.80	
Parts and accessories for motor vehicles	47.85	
<i>Aircraft, spacecraft and parts</i>	100.00	32.26
Aircraft, spacecraft and parts	100.00	
<i>Ships, boats and floating structures</i>	100.00	14.50
Cruise and cargo ships, ferries, barges	45.10	
Yachts, canoes, rowing boats	54.90	
OPTICAL, PHOTOGRAPHIC, MEDICAL APPARATUS		100.00
<i>Optical, photographic tools</i>	100.00	100.00
Optical fibres, cables, lenses etc.	15.47	
Medical/dental instruments and orthopaedic appliances	61.69	
Instruments for physical analysis	22.84	

TABLE 10.1 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO AUSTRALIAN HARMONISED EXPORT COMMODITY
CLASSIFICATION (AHECC) — (continued)

	<i>Percentage contribution of</i>	
	<i>AHECC Items to Chapters</i>	<i>AHECC Chapters to Divisions</i>
MISCELLANEOUS MANUFACTURED ARTICLES		100.00
<i>Furniture and prefabricated structures</i>	<i>100.00</i>	<i>55.17</i>
Furniture and prefabricated structures	100.00	
<i>Toys, games and sports needs</i>	<i>100.00</i>	<i>44.83</i>
Toys, games and sports needs	100.00	

**TABLE 10.2 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO THE STANDARD INTERNATIONAL TRADE
CLASSIFICATION (SITC) — REVISION 3**

<i>SITC</i> <i>Code</i>	<i>Description</i>	<i>Percentage contribution of</i>	
		<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>to SITC</i> <i>Sections</i> <i>(1 digit)</i>	<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>and Sections</i> <i>(1 digit) to</i> <i>All Groups</i>
0	FOOD AND LIVE ANIMALS CHIEFLY FOR FOOD	100.00	20.99
00	Live animals	2.38	0.50
01	Meat and meat preparations	27.59	5.79
02	Dairy products and birds' eggs	7.19	1.51
03	Fish, crustaceans and molluscs, and preparations thereof	6.58	1.38
04	Cereals and cereal preparations	35.68	7.49
05	Vegetables and fruit	6.29	1.32
06	Sugar / honey	12.48	2.62
07	Coffee, tea, cocoa, spices and manufactures thereof	0.43	0.09
08	Animal feed	1.14	0.24
09	Miscellaneous edible products and preparations	0.24	0.05
1	BEVERAGES AND TOBACCO	100.00	0.49
11	Beverages	100.00	0.49
2	CRUDE MATERIALS, INEDIBLE, EXCEPT FUELS	100.00	27.12
21	Hides, skins and furskins raw	3.72	1.01
22	Oil seeds etc	2.06	0.56
24	Cork and wood	3.83	1.04
26	Textile fibres and their wastes	49.49	13.42
27	Crude fertilisers and crude minerals (excluding coal, petroleum and precious stones)	1.62	0.44
28	Metal ores/scrap	39.28	10.65
3	MINERAL FUELS, LUBRICANTS AND RELATED MATERIALS	100.00	15.49
32	Coal / coke / briquettes	70.30	10.89
33	Petroleum, petroleum products and related materials	21.63	3.35
34	Gas	8.07	1.25
4	ANIMAL AND VEGETABLE OILS, FATS AND WAXES	100.00	0.24
41	Animal oils and fats	100.00	0.24
5	CHEMICALS AND RELATED PRODUCTS N.E.S.	100.00	7.41
51	Organic chemicals	4.32	0.32
52	Inorganic chemicals	74.23	5.50
53	Dyeing, tanning and colouring materials	4.32	0.32
54	Medical and pharmaceutical products	6.61	0.49
57	Plastics in primary form	3.78	0.28
58	Plastics in non-primary form	2.29	0.17
59	Chemical materials and products n.e.s.	4.45	0.33

TABLE 10.2 EXPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO THE STANDARD INTERNATIONAL TRADE
CLASSIFICATION (SITC) — REVISION 3 — (continued)

<i>SITC</i> <i>Code</i>	<i>Description</i>	<i>Percentage contribution of</i>	
		<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>to SITC</i> <i>Sections</i> <i>(1 digit)</i>	<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>and Sections</i> <i>(1 digit) to</i> <i>All Groups</i>
6	MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL	100.00	13.53
61	Leather, leather manufactures n.e.s. and dressed furskins	2.51	0.34
62	Rubber manufactures n.e.s.	1.26	0.17
64	Paper, paperboard and articles of paper pulp, paper or paperboard	2.44	0.33
66	Non-metallic mineral manufactures n.e.s.	4.66	0.63
67	Iron and steel	13.15	1.78
68	Non-ferrous metals	75.98	10.28
7	MACHINERY AND TRANSPORT EQUIPMENT	100.00	6.41
71-75	Industrial and office machinery	51.48	3.30
76-77	Telecommunications, sound and electrical equipment n.e.s.	16.07	1.03
78	Road vehicles (including air cushion vehicles)	17.32	1.11
79	Other transport equipment	15.13	0.97
8	MISCELLANEOUS MANUFACTURED ARTICLES	100.00	1.89
81-82	Prefabricated buildings, building fittings and furniture	8.99	0.17
87	Professional, scientific and controlling instruments and apparatus n.e.s.	44.44	0.84
88	Photographic apparatus, etc., and optical goods n.e.s., watches and clocks	24.87	0.47
89	Miscellaneous manufactured articles n.e.s.	21.70	0.41
9	COMMODITIES AND TRANSACTIONS NOT CLASSIFIED ELSEWHERE	100.00	6.43
97	Gold, non-monetary (excluding gold ores and concentrates)	100.00	6.43

Chapter 11

Import price index (6414.0)

Introduction

11.1 The Import Price Index is compiled for each month from April 1991 on the *reference base: Year 1989-90 = 100.0*. Previously it had been compiled as a quarterly series, on the *reference base: Year 1981-82 = 100.0* from September quarter 1981 until June quarter 1991.

11.2 Prior to the introduction of the ABS index the Reserve Bank of Australia published an import price index on the reference base year of 1966-67 = 100.

11.3 The weighting pattern of the index is based on the value of merchandise imports landed in Australia during 1988-89 and 1989-90.

Nature and Purpose

11.4 The Import Price Index measures changes in prices of imports of merchandise into Australia. The index numbers for each month relate to prices of imports landed in Australia during the month.

11.5 The index is used by both government and private sectors for economic analysis and for adjusting business contracts. The index is also used as input into other ABS statistics such as the Constant Price Estimates of the National Accounts.

Composition and Weighting

11.6 The index, either directly or indirectly, covers about 95 per cent of merchandise imported during 1988-89 and 1989-90. Ninety three per cent of the items are directly represented. Two per cent of the items are not directly represented, however these items are indirectly represented by directly priced imports whose prices are considered to move similarly. Relevant directly represented items therefore carry not only the weight of priced items but also the weight of these unpriced items.

11.7 Approximately five per cent of all merchandise imported is neither directly nor indirectly represented because of the inherent difficulties in pricing the items to a constant quality. These unrepresented items include:

- live animals (not for food);
- jewellery and other articles of precious metal n.e.s.;
- military equipment;
- special transactions;
- commodities not classified according to kind;
- works of art, collectors pieces, antiques; and
- ships of various types.

11.8 The index is a *fixed weights index*. The items included in the index were selected on the basis of the value of merchandise imports landed in Australia during 1988-89 and 1989-90.

11.9 Tables 11.1 to 11.3 at the end of this chapter set out the composition and weighting patterns for the four classifications used in the Import Price Index (see paragraphs 11.10 to 11.13 for details of the classifications used).

Classifications Used

11.10 The primary classification system used to compile the previous Import Price Index was the *Australian Import Commodity Classification (AICC)*.

11.11 Following analysis of the results of a survey of users of the index, the *Standard*

International Trade Classification (SITC), *Revision 3* was chosen as the primary classification system for the new index.

11.12 To comply with international statistical agreements, indexes are also published according to the *Combined Australian Customs Tariff and Statistical Nomenclature* (Customs Harmonised Tariff), based on the international *Harmonised System* (HS).

11.13 Indexes are also produced classified according to the 1993 edition of the *Australian and New Zealand Standard Industrial Classification* (ANZSIC), (previously *Australian Standard Industrial Classification* (ASIC), 1983 edition) and the 1986 edition of the United Nations' *Classification by Broad Economic Categories* (BEC).

11.14 The composition and weighting pattern for each of the four classifications used in the Import Price Index are shown in Tables 11.1 to 11.3 at the end of this chapter.

Data Sources — Prices

11.15 Prices of individual shipments are obtained from major importers of the selected items.

11.16 Imports are priced on a *free on board* country of origin basis. Freight and insurance charges involved in shipping the goods from foreign to Australian ports are therefore excluded from the prices used in the index, as are Australian import duties.

11.17 Prices for specified goods are, in general, collected each month from importers. In some instances, e.g. infrequently imported goods, importers may be asked to provide prices each quarter rather than monthly.

11.18 All prices used in the Import Price Index are expressed in Australian currency. As a result, changes in the relative values of the Australian dollar and overseas currencies can have a direct impact on price movements of imports that are purchased in foreign currencies. Prices reported in a foreign currency are converted to Australian dollars using the exchange rate prevailing at the time of departure from the foreign port. Where foreign currency purchase prices use forward exchange

cover, the prices used in the index *exclude* the forward exchange cover.

Data Sources — Weights

11.19 The weighting patterns provided in Tables 11.1 to 11.3 are the 'regimen item' weights and remain fixed between reviews of the index.

11.20 The data sources used to derive the weights were the values of Australian imports of merchandise during 1988-89 and 1989-90. See paragraph 11.6 and 11.7 for details of indirectly represented commodities and exclusions.

11.21 Weighting at the sub-regimen level (usually equating to the 5 digit level of the SITC) is not fixed and may vary from time to time. This allows for the replacement of obsolete commodities and for changes in import patterns that may take place between index reviews. Sample weights used at this sub-regimen level reflect the latest available patterns of imports derived from foreign trade data. These sample weights are kept under continual review, as discussed in Chapter 12.

Special Pricing Considerations

Infrequently imported commodities

11.22 A number of items for which prices are collected are not imported on a regular basis, causing problems in deriving price changes in periods between shipments. Several methods are employed in an attempt to overcome this problem:

- (a) the frequency of the pattern of imports is a consideration in selecting importers as respondents;
- (b) prices for periods in which no shipments occur may be estimated using exchange rate variations in the value of the Australian dollar during these periods. That is, the assumption is made that the foreign currency price has not changed since the previous shipment and that the only factor affecting the price is the value of the Australian dollar relative to the transaction currency; or
- (c) commodities traded in world markets (e.g. some metals) may have their prices

estimated between shipments by reference to prevailing commodity prices as quoted by sources such as commodity exchanges. These sources are also used to verify reported price movements and expected trends.

Pricing of transferred goods

11.23 Items may be imported from a 'parent' or affiliated company overseas at a 'transfer' price. This transfer of goods, which does not take place in the open market, can present problems for measuring price changes. In such cases importers are requested to provide realistic market prices wherever possible.

Pricing to constant quality

11.24 For a number of items imported it is not always possible to price an identical specification over any length of time. In some instances an item of a particular specification may only be imported on a 'one off' basis. As an example, items such as industrial machinery may be imported to the importer's specification. Solutions could include:

- (a) the pricing of a 'base model' rather than an item which may consist of the 'base' but have different options or specifications each time it is imported; and
- (b) the use of 'model pricing' to calculate the price of the various components of a 'dummy' item each period.

11.25 In some areas items are constantly changing through technological change, changes in demand, production techniques, etc. Electronic equipment and motor vehicles are just two examples where models, and their

quality, are constantly changing. As with all ABS price indexes, considerable attention is given in such cases to ensure that any price used in the production of an index has been adjusted to remove the impact of quality change. See Chapter 14 for a more detailed discussion of the treatment of quality change.

Linking

11.26 As a result of the new classifications used, it is not possible to make direct comparisons between all of the index series in the previous and current Import Price Index.

11.27 SITC is sufficiently similar to AICC, at the published level, to allow direct linking of the indexes compiled under SITC with most of the former AICC indexes. However, it is not possible to directly link indexes compiled under AICC to those compiled under the Customs Harmonised Tariff.

11.28 As the 1993 ANZSIC is similar to the previously used ASIC, it is possible to link some old and new indexes. Similarly, indexes compiled under BEC can also be linked.

11.29 Under the previous Import Price Index, annual indexes were calculated as the simple average of the four quarters of the financial year. From 1991-92, the annual index has been calculated as the simple average of the twelve months of the financial year. Subject to the limitations of the linked quarterly and monthly indexes, these annual indexes are directly comparable.

TABLE 11.1 IMPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO THE STANDARD INTERNATIONAL TRADE
CLASSIFICATION (SITC) — REVISION 3

<i>SITC</i> <i>Code</i>	<i>Description</i>	<i>Percentage contribution of</i>	
		<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>to SITC</i> <i>Sections</i> <i>(1 digit)</i>	<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>and Sections</i> <i>(1 digit) to</i> <i>All Groups</i>
0	FOOD AND LIVE ANIMALS CHIEFLY FOR FOOD	100.00	3.63
02	Dairy products and birds' eggs	6.58	0.24
03	Fish, crustaceans and molluscs, and preparations thereof	28.92	1.05
05	Vegetables and fruit	26.51	0.96
07	Coffee, tea, cocoa, spices and manufactures thereof	22.94	0.83
09	Miscellaneous edible products and preparations	15.05	0.55
1	BEVERAGES AND TOBACCO	100.00	0.81
11	Beverages	75.81	0.61
12	Tobacco and tobacco manufactures	24.19	0.20
2	CRUDE MATERIALS, INEDIBLE, EXCEPT FUELS	100.00	3.32
23	Crude rubber (including synthetic and reclaimed)	7.98	0.27
24	Cork and rubber	41.62	1.38
25	Pulp and waste paper	18.01	0.60
26	Textile fibres and their wastes	12.67	0.42
27	Crude fertilisers and crude minerals (excluding coal, petroleum and precious stones)	19.72	0.65
3	MINERAL FUELS, LUBRICANTS AND RELATED MATERIALS	100.00	5.31
33	Petroleum, petroleum products and related materials	100.00	5.31
4	ANIMAL AND VEGETABLE OILS, FATS AND WAXES	100.00	0.26
42	Fixed vegetable fats and oils	100.00	0.26
5	CHEMICALS AND RELATED PRODUCTS N.E.S.	100.00	10.69
51	Organic chemicals	21.84	2.33
52	Inorganic chemicals	14.19	1.52
53	Dyeing, tanning and colouring materials	4.41	0.47
54	Medical and pharmaceutical products	14.81	1.58
55	Essential oils and perfume materials, toilet, polishing and cleaning preparations	6.09	0.65
56	Fertilisers (excluding crude fertilisers)	4.56	0.49
57	Plastics in primary form	13.37	1.43
58	Plastics in non-primary form	9.08	0.97
59	Chemical materials and products n.e.s.	11.65	1.25
6	MANUFACTURED GOODS CLASSIFIED CHIEFLY BY MATERIAL	100.00	16.98
61	Leather, leather manufactures n.e.s. and dressed furskins	1.78	0.30
62	Rubber manufactures n.e.s.	8.86	1.50
63	Cork and wood manufactures (excluding furniture)	2.84	0.48
64	Paper, paperboard and articles of paper pulp, paper or paperboard	16.04	2.72
65	Textile yarn, fabrics, made-up articles n.e.s. and related products	24.45	4.15
66	Non-metallic mineral manufactures n.e.s.	12.58	2.14
67	Iron and steel	13.09	2.23
68	Non-ferrous metals	4.66	0.79
69	Manufactures of metals n.e.s.	15.70	2.67

TABLE 11.1 IMPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO THE STANDARD INTERNATIONAL TRADE
CLASSIFICATION (SITC) — REVISION 3 — (continued)

<i>SITC</i> <i>Code</i>	<i>Description</i>	<i>Percentage contribution of</i>	
		<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>to SITC</i> <i>Sections</i> <i>(1 digit)</i>	<i>SITC</i> <i>Divisions</i> <i>(2 digit)</i> <i>and Sections</i> <i>(1 digit)</i> <i>to</i> <i>All Groups</i>
7	MACHINERY AND TRANSPORT EQUIPMENT	100.00	45.50
71	Power generating machinery and equipment	5.90	2.69
72	Machinery specialised for particular industries	12.03	5.47
74	General industrial machinery and equipment n.e.s. and machine parts n.e.s.	12.92	5.88
75	Office machines and automatic data processing machines	16.19	7.37
76	Telecommunications and sound recording and reproducing equipment	8.29	3.77
77	Electrical machinery, apparatus, appliances n.e.s. and parts thereof	11.94	5.43
78	Road vehicles (including air cushion vehicles)	23.21	10.56
79	Other transport equipment	9.52	4.33
8	MISCELLANEOUS MANUFACTURED ARTICLES	100.00	13.04
81	Prefabricated buildings, sanitary plumbing, heating and lighting fixtures and fittings n.e.s.	2.16	0.28
82	Furniture and parts thereof	5.00	0.65
83	Travel goods, handbags and similar containers	3.22	0.42
84	Articles of apparel and clothing accessories	13.40	1.75
85	Footwear	5.44	0.71
87	Professional, scientific and controlling instruments and apparatus n.e.s.	17.76	2.32
88	Photographic apparatus, etc., and optical goods n.e.s., watches and clocks	12.58	1.64
89	Miscellaneous manufactured articles n.e.s.	40.44	5.27
9	COMMODITIES AND TRANSACTIONS NOT CLASSIFIED ELSEWHERE	100.00	0.46
97	Gold, non-monetary (excluding gold ores and concentrates)	100.00	0.46

**TABLE 11.2 IMPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO THE AUSTRALIAN AND NEW ZEALAND STANDARD
INDUSTRIAL CLASSIFICATION (ANZSIC) — 1993 EDITION**

<i>ANZSIC Code Description</i>		<i>Percentage contribution</i>
		<i>ANZSIC Sub-divisions to ANZSIC Divisions</i>
A	AGRICULTURE, FORESTRY, FISHING AND HUNTING	100.00
1	Agriculture	100.00
B	MINING	100.00
13	Oil and gas	83.68
15	Other non-metallic minerals	16.32
C	MANUFACTURING	100.00
21	Food, beverages and tobacco	4.31
221-222	Textiles	4.58
223-226	Clothing, footwear and leather	2.85
23	Wood and paper products	4.93
241-243	Printing, publishing and recorded media	2.17
25	Petroleum, coal, chemical and associated product	15.28
26	Non-metallic mineral products	2.09
271-273	Basic metal products	4.11
274-276	Fabricated metal products	3.23
281-282	Transport equipment	16.19
283-286	Other machinery and equipment	37.07
29	Miscellaneous manufacturing	3.19

TABLE 11.3 IMPORT PRICE INDEX — COMPOSITION AND WEIGHTING
INDEX ITEMS GROUPED ACCORDING TO BROAD ECONOMIC CATEGORIES (BEC)

BEC Code	Description	Percentage contribution of		
		3 digit BEC categories to 2 digit BEC categories	2 digit and 3 digit BEC categories to 1 digit BEC categories	Items and BEC categories to All Groups
1	FOOD AND BEVERAGES		100.00	4.20
11	Primary	100.00	24.42	1.03
111	Mainly for industry	28.49	6.96	0.29
112	Mainly for household consumption	71.51	17.46	0.74
12	Processed	100.00	75.58	3.17
121	Mainly for industry	12.42	9.39	0.39
122	Mainly for household consumption	87.58	66.19	2.78
2	INDUSTRIAL SUPPLIES NOT ELSEWHERE SPECIFIED		100.00	29.57
21	Primary		4.93	1.46
22	Processed		95.07	28.11
3	FUELS AND LUBRICANTS		100.00	4.46
31	Primary		49.11	2.19
32	Processed	100.00	50.89	2.27
321	Motor spirit	24.53	12.48	0.56
322	Other	75.47	38.41	1.71
4	CAPITAL GOODS (EXCLUDING TRANSPORT EQUIPMENT) AND PARTS AND ACCESSORIES THEREOF		100.00	30.09
41	Capital goods (excluding transport equipment)		69.13	20.80
42	Parts and accessories		30.87	9.29
5	TRANSPORT EQUIPMENT AND PARTS AND ACCESSORIES THEREOF		100.00	17.45
51	Passenger motor cars		26.65	4.65
52	Other	100.00	36.66	6.39
521	Industrial	92.28	33.83	5.90
522	Non-industrial	7.72	2.83	0.49
53	Parts and accessories		36.69	6.41
6	CONSUMER GOODS, NOT ELSEWHERE SPECIFIED		100.00	14.23
61	Durable		26.91	3.83
61	Semi-durable		42.93	6.11
63	Non-durable		30.16	4.29

Chapter 12

Price collection

Introduction

12.1 ABS producer and foreign trade price indexes measure price changes, over time, in broad sectors of the Australian economy and foreign trade. Transactions for each of those sectors may cover purchases and sales of thousands of different items at a wide variety of prices. The sheer volume and complexity of these transactions means that it is impossible to collect prices for every item or to take into account every price at which items are sold. Consequently, it is necessary to adopt a sampling approach, i.e. to price a sample of items from a sample of respondents.

Sample Approach Used

12.2 ABS price indexes are based on judgement samples, where the sample is selected on the basis of the knowledge and judgement of staff compiling the index. The alternative of using probability (or scientific) sampling would be far more difficult and expensive to use. In particular:

- factors other than sales volume are important when selecting items and respondents. These include availability of prices on an ongoing basis, degree of price dispersion and the pricing behaviour of respondents.
- judgement sampling is more practical in the day to day operations of price collection, where items and respondents regularly need to be replaced.

12.3 Interviews with respondents, market reports, foreign trade and manufacturing census data and other information all help to form the basis for the selection and ongoing maintenance of samples of respondents and items (specifications) for pricing. This information is essential in developing a comprehensive understanding of the market and making appropriate judgements in the sample selection process.

12.4 The effectiveness of this sample approach depends on the representativeness at each level of an index. A 'chain of representativeness' approach is adopted in which:

- (a) key commodities are selected to adequately represent the price movements for all the commodities which come within the scope of the particular price index;
- (b) respondents are selected to adequately represent all the suppliers/users of the selected commodities;
- (c) specifications are selected from each respondent to adequately represent the whole product range within the selected commodity description; and
- (d) transaction prices are obtained for each selected specification which best represent the price movements of all transactions in the selected specification.

12.5 The use of judgement sampling has implications for the selection of replacement specifications or respondents. Generally, specifications and respondents will be representing a category of specifications or respondents, not just themselves (e.g. a respondent may represent medium sized firms or a specification may represent a broader product grouping). Therefore the selection of replacements takes into account these characteristics and, as far as possible, ensures that they are still covered by the new specification or respondent.

Establishing and Maintaining Samples

12.6 Price indexes are only as valid as the samples of prices upon which they are based. Consequently, in selecting the samples for index items with a large weight in a published series, the aim is to cover those businesses accounting for a high proportion of sales or purchases of

the products making up the index item. For less significant items, coverage may be fairly low but care is taken to ensure that the selected businesses are representative of all the businesses trading in the item.

12.7 Price reporting by businesses is initiated by a personal visit by an ABS officer. The selection of a particular specification for pricing is made in consultation with the respondent. The aim is to identify particular products that will best reflect the price movements of all the products sold or purchased by the business which are within the scope of the relevant index item.

12.8 Price indexes aim to reflect changes in *market transaction prices*. Thus, the specifications identify the precise terms under which transactions are typically made. Prices collected take account of discounts, surcharges, conditions of sale, order sizes, type of customer, etc. List prices are only used where most transactions in a specification occur at the list price.

12.9 When selecting specifications to be priced the following factors are considered:

- the relative importance of the item in an index: more important items are given greater attention.
- the degree of homogeneity within the index item: more homogeneous items require smaller samples.
- influences which can cause prices of some specifications to move differently from others within the item; it is important to reflect all the significant influences in the sample.
- the extent to which the specification can be expected to be continuously available for pricing; preference is given to specifications for which transaction prices are available on a continuous basis.
- whether the specification can be clearly described in terms of quantity and quality, so that prices can be collected over time for an item of constant quality.

12.10 Over time, the samples of respondents and specifications may become unrepresentative, or the proportions in which they are combined to calculate the index numbers may become outdated. The samples of respondents and specifications are therefore reviewed regularly to ensure that they remain representative. When new or changed samples are incorporated in the index the resulting index numbers are adjusted to ensure that only price movements, and not any effect of the sample change, are shown.

Price Collection Procedures

12.11 Prices for the Producer and Foreign Trade Price Indexes are predominantly collected using mail questionnaires. A small number of prices are collected from administrative sources, e.g. the Wool Market Indicator, rather than directly from businesses.

12.12 Each questionnaire is specific to a particular respondent and uses terminology agreed with the respondent. They describe in detail the specifications being priced and the basis on which the prices are to be reported. This facilitates the accurate reporting of prices while minimising the burden on the respondent.

12.13 In addition, on a monthly rotational basis, a small number of prices for important items are collected using other procedures; i.e., a brief personal visit, supplementary mail questionnaire or telephone interview. These approaches are used to obtain market information and to confirm that the index is accurately reflecting current market conditions.

Price Collection Timetable

12.14 Almost all the index prices are collected on a monthly basis, at the mid-point of the month to which the index relates or the nearest trading day. This approach assumes that monthly price movements are adequately represented by movements in prices between two dates a month apart.

12.15 However, there are some items subject to significant price variation throughout the month. Examples include agricultural materials, metal ores and concentrates and imported

materials generally. In these cases, prices are collected at the end of each month and respondents are asked to report average prices applicable during that month.

12.16 In a very small number of cases, such as for sugar cane where prices are known to be set once each year, prices are collected annually.

Chapter 13

Price index number compilation

Introduction

13.1 Producer and Foreign Trade Price Indexes are compiled using the Laspeyres fixed weight approach. This involves six main stages each month :

- (a) checking the accuracy of the prices collected;
- (b) calculating price movements (price relatives) for each specification in each sample;
- (c) replacing specifications, as necessary;
- (d) combining the specification price relatives to produce fine level component index numbers;
- (e) combining the fine level component index numbers to produce index numbers for published series; and
- (f) calculating percentage changes and index points movements to supplement the published index number series.

13.2 Each of these stages involves numerous detailed steps. It is beyond the scope of this document to explain all the steps in detail, but a broad outline of each stage is given below.

Checking the Prices Collected

13.3 As soon as the price collection forms are received by the ABS they are checked for completeness and the reported data is loaded

into the computer. The data is in the form of 'raw price elements' such as list prices, various discounts, transport charges, sales tax, etc. from which the transactions prices are calculated for use in the index.

13.4 A series of checks, or edits, are applied to the transactions prices to ensure their accuracy. These include comparisons with prices previously collected from the same respondent, and with prices reported by other respondents for the same item. Any prices that appear to be unusual or abnormal are verified with the respondent and corrected where necessary.

13.5 The process of checking and verifying reported prices also provides one of the means of ensuring that the quality of the specification priced in the current period is the same as that priced in previous periods. The procedures for identifying and dealing with changes in quality are described in Chapter 14.

Calculating Price Relatives

13.6 Once the prices data have been verified, a price relative (or price movement from the base period) is calculated for each specification. This is a straightforward procedure which uses the formula:

$$\text{Price Relative (Specification A)} = \frac{\text{Current Period Price (A)}}{\text{Base Period Price (A)}} \times 100$$

Thus, if specification A has a price in the current period of \$12.50 and had a price in the base period of \$8.00 the price relative in the current period would be:

$$\frac{12.50}{8.00} \times 100 = 156.25$$

Replacement of Specifications

13.7 From time to time specifications have to be replaced either because the respondent is no longer able to provide a price, or because market conditions have changed and the specification is no longer appropriate (for example, a new model car being sold). The general procedure in these situations is to collect prices for overlapping periods for both the old specification and the new one. The new specification is 'spliced' into the sample in such

a way that its price relative reflects only price movements and is not affected by the change in specification.

13.8 This procedure is illustrated in the following example:

Specification	Price		
	Base Period	Period 1	Period 2
A	\$8.00	\$12.50	—
B	—	\$15.00	\$16.00

In period 1, the price relative for specification A would be calculated as:

$$\frac{12.50}{8.00} \times 100 = 156.25$$

In period 2, the price relative for specification B would be calculated as:

$$\text{Price Relative of A (Period 1)} \times \frac{\text{Price B (Period 2)}}{\text{Price B (Period 1)}}$$

$$= 156.25 \times \frac{\$16.00}{\$15.00}$$

$$= 166.67$$

13.9 Thus, only the price movement for specification B from Period 1 to Period 2 of 6.67 per cent has been included and not the price change from specification A to specification B.

13.10 This approach is equivalent to estimating a base period price for specification B using the assumption that the price movement from the base period to period 1 would have been the same as was recorded for specification A. That is, the nominal base period price for B:

$$\begin{aligned} &= \text{Base Period Price (A)} \times \frac{\text{Price B (Period 1)}}{\text{Price A (Period 1)}} \\ &= \$8.00 \times \frac{\$15.00}{\$12.50} \\ &= \$9.60 \end{aligned}$$

Using this nominal base period price, the price relative for B in period 2 becomes:

$$\frac{\$16.00}{\$9.60} \times 100 = 166.67, \text{ as calculated earlier.}$$

13.11 Sometimes the overlap period between old and new specifications reflects unusual price conditions, for example the old specification being sold at clearance prices. In these circumstances adjustments are made to the reported prices to remove the impact of the unusual conditions. At other times it may not be possible to obtain overlap prices, in which case an assessment of the extent of any quality change between the old and new specifications is made and the prices adjusted accordingly.

Calculating Fine Level Component Index Numbers

13.12 The price relatives calculated for each specification in the samples that comprise a fine level component are combined using the base period sample weights for that component. The resulting figure is the index number for the component. In accordance with the Laspeyres formula the weights used to combine the price relatives are value weights, i.e. the relative proportion of the total value of expenditure for the sample contributed by expenditure on each specification.

13.13 This procedure is illustrated in the following example:

Specification	Base Period	
	Weight	Price Relative
A	0.40	126.83
B	0.42	150.21
C	0.10	98.36
D	0.08	130.20
	1.00	134.07

The component index number is 134.07, which is the weighted average of the specification price relatives that comprise the sample for that component (i.e. $(0.40 \times 126.83) + (0.42 \times 150.21) + (0.10 \times 98.36) + (0.08 \times 130.20)$).

13.14 If any prices are missing in a compiling period a price is imputed using the price movements of similar specifications for which prices have been reported. Alternatively, the missing price is imputed using other data sources (for example, exchange rate movements may be used in the foreign trade price indexes).

13.15 Similar procedures to those described in paragraphs 13.7 and 13.8 are used whenever sample weights (i.e. weighting of specifications to a component) are changed, to ensure that the change in weights does not affect the movement in the index. This is illustrated in the following example of an across the board price increase of 10 per cent between periods 1 and 2, and further price increases in period 3:

Specs.	Weights		Price Relatives		
	Period 1	Period 2	Period 1	Period 2	Period 3
A	0.40	0.30	120	132	134
B	0.42	0.45	150	165	173
C	0.10	0.05	100	110	110
D	0.08	0.20	130	143	150
	1.00	1.00			

The index number for period 1, derived using the base period weights, would be 131.40. If the period 2 weights were to be applied directly to the period 2 price relatives the index number would be 147.95, which implies a price increase of 12.6 per cent not the 10 per cent that actually occurred. This is because part of the implied increase is due to the change in weighting pattern and because the reference period for the weights (period 2) and the relatives (base period) are no longer consistent.

13.16 There are two methods for overcoming this problem. In the first, period 2 is established as the new base period and the resulting index numbers are converted to the original reference base using a conversion factor:

Period 2 Index number (old weights)

100

In subsequent periods, the price relatives are derived using period 2 prices as the base and combined using the period 2 weights and the conversion factor (see period 3 below). That is:

Specs.	Weights	Price Relatives on				
		Base Period		Period 2 Base		
		Period 2	Period 1	Period 2	Period 2	Period 3
A	0.40	0.30	120	132	100	101.4
B	0.42	0.45	150	165	100	104.8
C	0.10	0.05	100	110	100	100.0
D	0.08	0.20	130	143	100	104.9
Index Numbers (period 2 weights)					100.00	103.56
Conversion factor					1.4454	1.4454
Index Numbers						
(original base)		131.40	144.54	144.54	149.69	

13.17 The second method involves revaluing the new weights to reflect the prices of the base period. That is:

Specification	Period 2 Weights (1)	Period 2 Relatives (2)	Revalued Weights(a) (3)	New Weights(b) (4)
A	0.30	132	0.23	0.33
B	0.45	165	0.27	0.39
C	0.05	110	0.05	0.08(c)
D	0.20	143	0.14	0.20
			0.69	1.00

(a) Column 1 x 100 / column 2. (b) Column 3 x 1.00 / 0.69. (c) Rounded up

Weights		Price Relatives			
Specs.	Base Per.	Period 2	Period 1	Period 2	Period 3
A	0.40	0.33	120	132	134
B	0.42	0.39	150	165	173
C	0.10	0.08	100	110	110
D	0.08	0.20	130	143	150
Index Numbers (period 2 weights)			145.31	150.49	
Conversion factor			0.9947	0.9947	
Index numbers			131.40	144.54	149.69

13.18 While both methods yield the same result the second method has the advantage that it maintains continuous price series for each specification and ensures that all price relatives remain on the same base. This enables meaningful comparisons over time and across specifications, thus facilitating the editing of

index calculations. As a consequence, this second method is generally followed in calculating producer price indexes.

Calculating Published Index Series

13.19 The various published index series are derived from the fine level component series using the combining weights that are published at the time of the latest index rebase and reweight. Again, the weights used are value weights.

13.20 The procedure is identical to that used to calculate the fine level component series from specifications except that the weights used are fixed between index rebases and reweights. The problems of missing prices and changing weights referred to above do not apply here.

13.21 The particular weighting patterns used for each index are described in earlier chapters.

Calculation of Other Measures

13.22 A number of other measures are also calculated for each price index series, viz percentage changes, index points contributions and index points changes.

13.23 *Percentage changes* summarise the magnitude of the price movement in the index numbers between specified periods. They are calculated directly from the index numbers in the manner discussed in Chapter 16.

13.24 *Index Points Contributions and Changes* provide the most convenient method of analysing the contribution made by individual index series to the movement for the total index. The methodology used to calculate index points contributions is explained in Chapter 16.

Chapter 14

Treatment of quality change

Introduction

14.1 The objective of ABS price indexes is to measure pure price change over time, i.e. to measure the extent to which the cost of an identical basket of goods changes over time, not affected by changes in *quality or quantity* or the *terms of sale*. This is often referred to as pricing to constant quality and is not a simple objective to achieve because the characteristics of goods being sold in the market place, and their terms of sale, change over time. Frequently the precise commodity priced in one period is no longer available in the next period because either there has been some change in the characteristics of the commodity or else something new has taken its place. For price index purposes it is necessary to devise techniques to identify quality differences and eliminate their effect on prices from the calculations of price change for inclusion in the index.

The Concept of Quality

14.2 The main factors considered in making assessments of quality change in ABS price indexes are how changes in a commodity specification effect purchasers' utility and the cost of actually producing the item in question. The latter is often used as a guide to the former where purchasers' utility is difficult to assess directly.

14.3 For goods where quality is closely associated with the quantitative characteristics

of the product, an assessment of quality change is relatively straightforward as these characteristics can usually be measured objectively. For example, if a \$4.00 box of chocolates increases in price by \$1.00 and the quantity of chocolates also increases by 25 per cent it is easy to see that no price change has occurred from a user value point of view. Quality change becomes much more difficult to assess where it is not purely quantitative or involves a number of quantitative variables which may conflict in terms of their effect on quality. For example, it would be difficult to determine whether there is a net increase or decrease in value to the purchaser in the case of an increase in the power of a car engine which may improve performance but also increase fuel consumption.

Styling and Packaging Changes

14.4 Product changes that are regarded purely as styling changes are not generally considered to be quality changes. For example, the current year's range of bricks is regarded as being equivalent to last year's if the general quality of workmanship and function is similar, regardless of the actual colour, texture, etc. Similarly, styling changes of a non-functional nature in other products, such as changes in the external trim on an escalator, are not regarded as quality changes. This approach is adopted because it is not considered possible to estimate an objective value for something as subjective as a change in styling.

14.5 Changes in packaging that do not affect the quality of the contents of the package are regarded as having no effect on quality. However, a different type of packaging for building materials, for example, which results in the product incurring less damage while being transported would be taken into account as a quality change.

Identifying Changes in Quality

14.6 In order to identify changes in quality it is necessary to collect a considerable amount of detailed information about the goods being priced. Some of this information is obtained in the course of collecting and checking prices data during compilation of the price indexes. Instances of unexplained price change are

checked to determine whether they represent a genuine price change or a change in quality.

14.7 The most important source of information on quality changes, and the one which produces the information earliest, is interviews with manufacturers, importers or wholesalers of goods included in the indexes. Throughout the year information about forthcoming changes in products is obtained during personal interviews with the businesses. Likely quality changes are also detected from a careful study of articles and advertisements in trade publications, industry newsletters, etc.

Taking Account of Quality Changes

14.8 Whenever it is determined that a change in quality has occurred in a product being priced, the aim is to eliminate the effect that the quality change has on the price, without interfering with the measurement of any true price movement that might have occurred over the same period. The way in which this is done depends on the circumstances in which the quality change occurs. Essentially there are three different situations:

- where one product is replaced by another of different quality, but both have been sold during an overlapping period;
- where one product is replaced by another of different quality, but the two have not been available at the same time; or
- where there are some changes in the composition of a particular product.

Overlapping sales

14.9 The first situation typically arises where the particular brand, model, etc., being priced ceases to be available but there is another similar item which has been, and continues to be, available in the same market as the first one and is expected to be a substitute for the first one. In this situation, provided the two items have sold side by side for sometime in the same market and both have sold in reasonable quantities, the approach is to collect prices for both items at the one date and to assume that the difference in prices represents the difference in quality between the two. The implicit assumption is that the market has adequate knowledge of the qualities and prices of each product and that the difference in price is

regarded by them as a reasonable measure of the difference in quality.

The second item is then substituted for the first using the technique of splicing price series, as illustrated below:

	Period 1	Period 2	Period 3
Price of:			
Harvester A	\$80000	\$85000	
Harvester B		\$95000	\$98000
Price relative for harvesters	100.0	$100.0 \times \frac{85000}{80000}$	$106.3 \times \frac{98000}{95000}$
		106.3	109.7

Thus, the price movement reflected in the index from period 1 to period 2 is the movement in the price of Harvester A. The price movement from period 2 to period 3 is based on Harvester B, which will be priced in subsequent periods to replace Harvester A. The difference in price between Harvester A and Harvester B has been eliminated through the process of splicing the new price series to the old price series.

14.10 In some cases, even with overlapping sales, simple splicing of the price of the new specification to the existing price series is not a satisfactory way of eliminating changes in quality. This situation occurs, for example, when the price of a new model reflects not only the extent of modifications but also a degree of price change, upwards or downwards, for reasons quite distinct from these modifications. In these circumstances, a simple splicing of the old and new prices would eliminate the elements of pure price change as well as the elements of change in quality. In such cases, it is necessary to assess the degree of pure price change involved and to ensure that this is reflected in the price series after splicing. The techniques for doing this are described in paragraphs 14.13 and 14.14.

Not sold at same time

14.11 In the second situation, where one product replaces another but the two products have not sold side by side in the market place, it

is necessary to identify any quality differences between the old and new products and to estimate the value of these differences. A simple example of this sort of quality change would be the replacement of a 50 litre drum of industrial solvent by a 45 litre drum. In such cases, where the proportionate change in quantity is relatively small, it is reasonable to assume that the value of the change is directly proportional to the change in quantity; that is, the price of the 45 litre drum can be made comparable with the previous price for the 50 litre drum by applying a factor 50/45. Thus a price relative for industrial solvent would be calculated as follows:

	Period 1	Period 2	Period 3
Price of:			
50 litre drum	\$40		
45 litre drum		\$40	\$42
Price relative for solvent	100.0	$100.0 \times (40 \div 50)$	111.1×42
		45	40
		40	
		$= 100.0 \times 50$	
		45	
		$= 111.1$	$= 116.7$

In cases where the proportionate change in the unit of quantity is large, this technique cannot reasonably be used. For example, the unit price of a kilogram of cement when purchased in a 25 kilogram bag could not be directly compared with the unit price of a kilogram of cement when purchased as part of a truck load. The two products are different in the sense that they would usually sell in different markets and to different kinds of users. In these circumstances the other techniques for assessing quality change have to be applied, e.g. overlapping prices.

Change in composition

14.12 In the third situation, where there are changes in the composition of a product, the technique used is to identify the quality

differences and place a value on them. Frequently the composition of a particular commodity changes as a result of the use of different materials, or the addition or deletion of particular features. An example would be a change in the wool/synthetic mix of a yarn. In such cases, the technique used to estimate the value to the user of the quality change involves ascertaining the additional cost (or saving) to the manufacturer and examining the prices of broadly comparable items (e.g. yarns containing various proportions of pure wool and synthetic fibres).

14.13 Sometimes the modified product differs markedly from the previously priced product – as occurs with a change in models for a particular make of motor vehicle. This type of quality change requires the collection of a considerable amount of information and, in some cases, subjective judgement is required to estimate a monetary value by which to adjust the price. The first step is to obtain a full picture of the differences between the old and new models. This is done by:

- obtaining detailed information from the manufacturer, such as design and engineering reports;
- examining published tests and other comments on the new model in trade publications, motoring magazines, etc.; and
- physically examining the new model and questioning motor dealers about the nature of the changes.

Having identified the precise differences between the models, the next step is to determine which of these differences represent changes in quality and to estimate the monetary value of each change. Some changes are relatively simple to quantify, such as changing the type of tyres on the new model when both types of tyres are sold separately in the market – the value of the quality change can be assessed as the difference in the selling prices of the tyres. Other changes require more detailed examination; for example, if a new model car has cloth covered seats while the old model has vinyl covered seats, the factors that would be considered are:

- (a) the unit cost to the manufacturer of the change;
- (b) whether the cloth covered seats have been previously available as an option; if so, what was the price and did a significant number of buyers purchase the option at that time; and
- (c) the change in comfort and durability of the seats.

14.14 While there is some subjectivity involved in making a final assessment of the dollar value

of the changes in a product, it is believed that the quality adjustment procedures result in no significant long-term bias in the price series. The alternative of ignoring quality changes altogether could result in much more significant biases in the price measures. For example, in the case of motor cars, if quality changes had been ignored, we would probably be treating the basic version of the Holden Commodore as an equivalent product to the original 1948 Holden; that is, the whole difference in price between the two would be treated as pure price change.

Chapter 15

Rebasing and reweighting of indexes

Introduction

15.1 Each of the producer and foreign trade price indexes is rebased and reweighted periodically on a rolling cycle. The rebases and reweights are conducted to ensure that:

- (a) the scope and coverage of the indexes continue to meet the needs of users;
- (b) the structure of the indexes reflect the up-to-date activities of the sector concerned;
- (c) the burden on respondents is minimised; and
- (d) the weights being used continue to be representative of the sector concerned.

Weighting Patterns

15.2 Between index rebases and reweights the weighting for the index remains fixed at the regimen level (i.e. the level of detail for which weights have been published). Below the regimen level, the weights used to combine items or specifications are subject to change as the items and specifications being priced are changed to reflect current market experience. This is the process of on-going sample review and maintenance previously described in paragraph 12.10. It could be argued that, in order to compile a pure fixed-weight Laspeyres index, the weights should remain fixed at all

levels. In practice, this is not feasible because of the constant changes in the range of specific goods that have to be priced in order to reflect current market behaviour.

15.3 It is, of course, a matter of judgement as to the precise level at which the weights should be fixed. In general, the objective is to fix the weights at a level which represents clear distinctions between individual goods that are not readily substitutable but that are still significant to the sector. Flexibility to change weights is retained at a lower level to reflect changes in proportions of sales/purchases of those goods that are readily substitutable for one another.

15.4 In selecting the weighting base period for a price index series there is normally an underlying assumption that the sales/purchases patterns in that period will remain broadly representative for at least a substantial part of the intended life of the series. Sometimes it is necessary, therefore, to use sales/purchases data for two or three years to derive an average (representative) pattern for an index. This approach removes any anomalies that arise because of unusual activity in any particular year.

15.5 In other cases, it may be recognised that the sales/purchases pattern is changing for a significant item (e.g. a substantial increase or decrease in the quantum being transacted is occurring). In such cases, it is desirable to reflect the change in the index and to depart from a strict adherence to the normal data source for the weighting base period. For example, in the recent review of the Articles Produced by Manufacturing Industries index the main weighting data used was the 1986-87 Manufacturing Census. However, this data did not reflect the large increase in gold refining that had subsequently taken place. As a result, export data from a more recent period was used to adjust the weights.

15.6 The fixed weighting patterns currently being used for each index are provided in Chapters 4 to 11. These chapters also discuss the data sources used to calculate these weights.

Other Rebasing and Reweighting Activities

15.7 Apart from revising the weighting pattern for an index, the process also provides the opportunity for reassessing all other aspects of the index involved.

15.8 In particular, consultations are held with a sample of users of the indexes, including Federal Government, State Government, industry associations and other interested parties, to identify any changes that may be required. For example, during the latest review, the Materials Used In Manufacturing index was expanded to include separate indexes for each

manufacturing subdivision of the ASIC, and the Articles Produced by Manufacturing index for subdivision 27 'Chemical, petroleum and coal products' was split to provide separate indexes for 'Chemicals and chemical products' and 'Petroleum products'.

15.9 Detailed consideration is given to the scope, coverage and structure of each index to ensure that they continue to appropriately reflect the sector concerned. Attention is also given to minimising the burden on respondents to the index while maintaining data quality.

Chapter 16

Dissemination and use

Introduction

16.1 This chapter outlines the kinds of price index data available from the ABS and gives some guidance to users who wish to interpret or further manipulate the data.

Publication of statistics

16.2 Producer and foreign trade price indexes are all compiled and published monthly. No advance figures are available. In order to ensure that users of these price indexes are treated in a completely even-handed manner, strict security is maintained on the figures before their official publication, and no information about the figures, of any kind, is released before the official embargo time of 11.30 a.m. on the day of publication.

16.3 A large range of data is available via on-line services, diskette, magnetic tape, tape cartridge and CD-ROM. For more details about our electronic data services, contact any ABS Office.

16.4 Price index figures are published for financial years as well as for months. The index number for a financial year is the simple arithmetic average (mean) of the index numbers for the 12 months of that year. Index numbers for calendar years are not calculated by the

ABS but can be derived by calculating the simple arithmetic average of the index numbers for the period concerned.

16.5 All producer and foreign trade price index figures are released as preliminary figures at the time they are first published. Since most of the required basic prices are collected before compilation, the index numbers are not usually subject to revision. However, occasionally revisions may be necessary, as a result of undetected errors in the raw price data, retrospective price changes, or errors in compilation.

16.6 In order to determine actual transaction prices, it is necessary to seek measures of 'special' discounts when they occur, in addition to normal trade discounts. The measurement of special discounts requires continued attention because of the different forms they can take and the variety of ways in which they can be applied. Sometimes these discounts need to be partly estimated and may necessitate revisions to published series.

16.7 As well as various series of index numbers, the ABS also publishes a selection of other figures – percentage changes, index points contributions and index points changes. Each of these measures has already been explained in Chapter 13. Some further explanations to assist users to interpret these figures, or to calculate others for themselves, are given below.

Percentage Changes

16.8 The percentage changes published by the ABS are calculated from the published index numbers. This is because the percentage change is intended merely to summarise the changes in the published index numbers and not as a separate expression of the degree of price change between periods. Thus users who wish to calculate percentage changes for periods not shown in the ABS publications can calculate figures exactly comparable with the ABS figures by deriving them from the published index numbers.

16.9 The percentage change in any price index series for a month is calculated as follows:

$$\% \text{ change} = \frac{\text{index (curr. mth)} - \text{index (prev. mth)}}{\text{index no. (previous month)}} \times 100$$

Similarly, percentage changes between any other pair of periods can be calculated by substituting the periods concerned in the equation.

16.10 Percentage changes for a period of more than one month cannot be calculated by summing the percentage changes for individual months because this ignores compounding effects. For example:

Month	Index Number	Change from preceding month
1	110.0	
2	132.0	+ 20 per cent
3	158.4	+ 20 per cent

Here the percentage change between month 1 and month 3 is not 40 per cent (20 + 20) but:

$$\frac{158.4 - 110.0}{110.0} \times 100.0 = 44 \text{ per cent}$$

16.11 Similarly, annual percentage changes cannot be obtained by summing percentage changes for 12 consecutive months. Nor can they be obtained by multiplying a single month's change by 12. Depending on the precise comparison a user wishes to make, annual changes can be obtained by making either of the following comparisons:

- by calculating the percentage change between the index number for one year (which can be any period of 12 consecutive months) and the index number for the preceding year (preceding 12 month period); or
- by calculating the percentage change between the index number for a particular month and the index number for the corresponding month of the previous year.

These two calculations, of course, produce different results because they measure different things. The ABS publishes both measures of annual percentage change, i.e. for financial years, and the change from the corresponding month of the previous year.

Index Points Contributions

16.12 Any detailed analyses of the structure and composition of a price index, or of changes in composition over time, are best done using percentage contributions to the All Groups series, as given in Chapters 4 to 11. However, a common way of looking at changes in composition in the short term, for instance in examining the effects of disparate price movements in different parts of the index, is to look at index points contributions and changes in these contributions, which are produced in the course of compiling the price indexes.

16.13 The index points contribution for any component, in any series, is simply a quantitative expression of how much that component contributes to the magnitude of the index number for the series concerned. For example, when the index number for a particular series stands at 112.5, the size of the contribution of each of its components can be expressed in terms of how many of the 112.5 index points each contributes.

16.14 Most commonly, index points contributions and movements are analysed in terms of the total price index (i.e. in terms of the number of all groups index points contributed by each component to the total index). Index points data are intended to show:

- the relative importance of particular components, classes, groups etc. in the total index at a particular time; and
- the relative contribution of each component, class, group etc. to that period's movement in the total index.

16.15 The contribution of a particular series in a particular period is derived as:

Weight to total index * index number for the series

Changes in index points contributions are then simply the arithmetic difference between the

corresponding contributions in the periods being looked at. For example:

		Index Numbers		Points Contribution		
Series	Weight	Period 1	Period 2	Period 1	Period 2	Period Change
X	0.3	200	210	60	63	+3
Y	0.2	400	390	80	78	-2
Z	0.5	300	340	150	170	+20
All Groups	1.0	290	311	290	311	+21

That is, between periods 1 and 2, the All Groups series increased by 21 index points. Of this movement component Z contributed 20 index points.

Unpublished Series

16.16 In addition to the figures contained in the various ABS publications (Catalogue Nos. 6405.0 to 6415.0), a large volume of unpublished figures is available on request. Most of the series included in the weighting pattern for an index are available, subject to confidentiality.

16.17 Special index series that better meet the needs of particular users can also be constructed by the ABS from the detailed unpublished series.

Reference Base

16.18 The reference base of each price index is published along with the index series. For example, the reference base for the *Materials Used in Manufacturing Industries* index is 1984-85 = 100.0, while for the *Import Price Index* it is 1989-90 = 100.0. The reference base for an index is changed as part of the rolling cycle of index rebasing and reweighting.

16.19 For periods following a change in reference base, index numbers on the former basis can still be derived from index numbers on the new basis using arithmetic conversion factors derived from the relationships between the old and new series at the time of the change. For example, from the October 1986 issue onwards, the House Building index was converted to a reference base of 1985-86 =

100.0 from the previous reference base of 1966-67 = 100.0. The factor for Sydney to be used to convert from the new basis to the old was derived as:

$$\frac{\text{Index for September 1986 (on 1966-67 = 100.0)} \quad 527.4}{\text{Index for September 1986 (on 1985-86 = 100.0)} \quad 104.8} = \frac{527.4}{104.8} = 5.0324$$

16.20 This factor of 5.0324 may be applied to any Sydney House Building index number on the present (1985-86 = 100.0) reference base to give a corresponding index number on the previous (1966-67 = 100.0) reference base. The reverse conversion, i.e. from the previous basis to the present basis, can also be made - in this example using the conversion factor:

$$\frac{104.8}{527.4} = 0.1987$$

Use of Price Index Data In Contracts

16.21 Sometimes users encounter problems because of the manner in which provisions relating to the use of price indexes are incorporated in contracts or other legal documents, for example, provisions relating to escalation of costs or charges to compensate for price variations. While it is a matter for the parties to decide how such provisions should be worded, and the ABS does not become involved in such decisions, problems could often be avoided if care is taken with respect to a number of specific issues at the time the contract is written. In particular, the following points should be specifically addressed:

- the particular price index series should be clearly specified (i.e. whether it is the series for a particular city, or the weighted average of the six State capital cities, and so on, and whether for the All Groups or a component);
- the index number for the period to be used as the base, or reference point, for the calculation of future changes should be clearly identified; and
- reference should be made to the procedure to be followed in the event of:

- (i) the relevant price index figure being revised by the ABS after it has been used in accordance with the contract provision; or
- (ii) the reference base of the published series being changed by the ABS; or
- (iii) the specified price index series being discontinued by the ABS.

Chapter 17

Other issues

17.1 Apart from information on the variety of component series of index numbers, there is a potential demand for two other kinds of statistics relating to prices. These are:

- (a) average prices of individual goods; and
- (b) indexes showing relative price levels between different cities or other localities (sometimes referred to as spatial price indexes).

Average Prices

17.2 For a large proportion of the items priced for the producer and foreign trade price indexes, it is not possible to calculate meaningful average prices. The reasons for this are:

- (a) the nature of the sampling procedures; and
- (b) the difficulty of defining a meaningful average price for many items.

17.3 As explained in Chapter 12, the ABS price indexes are designed to measure price change over time. To do this, samples of products are selected to provide representative indicators of *price movement* over time and not to measure the actual average price at any date. Thus the average price of the sample for instant coffee is simply the average of the prices of a number of the biggest selling brands and sizes, selected to measure price change for instant coffee. This average could, in no way, purport to be the overall average price for all sales of instant coffee. To calculate an actual average price would require prices to be collected for a

much larger range of the brands and sizes of instant coffees produced.

17.4 Similarly, the samples of respondents from whom prices are collected are selected to provide representative measures of price change over time and not necessarily to provide accurate measures of the actual average price level for the item concerned. As a general rule, the sample required to provide a reliable measure of *price change* is smaller than that required to measure accurately *price levels* at a date. This reflects the fact that, in determining the size of the respective samples, two different sets of assumptions apply:

- (a) in the case of a sample to measure price change over time, the assumption is that the prices of suppliers, etc., not in the sample *move similarly* (on average) to the prices of those in the sample, or are not significant in terms of value of transactions; or
- (b) in the case of a sample selected to measure price levels, the assumption is that those not in the sample either charge (on average) the same prices as those in the sample, or are not significant in terms of value of transactions.

17.5 In general, the first set of assumptions can be met with a smaller size sample than the second.

17.6 There are also many items where it would not be practicable to calculate an average price for any recognisable thing which could be usefully composed. This may be because:

- the variety of different items purchased and sold is so diverse; and/or
- the methods of pricing are so complex and diverse.

17.7 Example of such items include clothing, appliances, machinery and equipment, furniture and floor coverings.

17.8 Because of these considerations, the ABS does not calculate average prices from the producer and foreign trade price indexes. A

limited number of average prices is available from the *Consumer Price Index*.

Spatial Price Indexes

17.9 The term *spatial price indexes* is used to describe indexes which measure the difference in prices between localities (i.e. differences across space) at a particular date – in contrast with the more common *temporal price indexes* which measure differences in prices over time in a particular locality. Although both the *Materials Used in House Building* and the *Materials Used in Building Other than House Building* indexes provide indexes for each capital city, they are temporal and not spatial. That is, they provide price movements over time for each city, not price movements between the cities.

17.10 Compilation of spatial price indexes is more difficult than is generally realised and encounters both theoretical and practical problems. No generally accepted statistical methodology has yet been developed for compiling indexes of this kind. In theory, satisfactory spatial price indexes could be compiled if average price levels could be calculated accurately for an identical range of goods and services in all of the centres to be compared, and if a satisfactory basis could be found for combining these prices (i.e. for weighting). However, in practice these conditions are not likely to be realised.

17.11 Where two localities have different patterns of sales or purchases (which is the common situation) it is not possible to determine an appropriate single regimen for measuring prices or an appropriate single weighting pattern for combining the prices in each of the two localities. Differences in sales/purchases patterns do not involve merely different proportions of sales/purchases of different items. It commonly happens that some items important in the sales/purchase pattern of some localities do not exist at all in others.

17.12 In attempting to construct an index of relative prices between two localities ('A' and 'B') the regimen and weighting pattern could conceivably be based on:

- (a) the sales/purchases pattern in locality A (i.e. the basket of goods purchased in A would be priced in both localities and the relative costs compared); or
- (b) the sales/purchases pattern in locality B (i.e. the basket of goods purchased in locality B would be priced in both localities and their relative costs compared); or
- (c) some kind of *average* of the regimen and sales/purchases patterns of the two localities.

17.13 In general, neither alternative (a) nor (b) could be regarded as providing a satisfactory basis (especially from the point of view of the locality whose sales/purchasing pattern was not taken into account). Alternative (c) would be regarded, at best, as a compromise which reduces, but does not eliminate, the shortcomings of (a) and (b). Extending the index to more than two localities compounds the difficulties.

17.14 Even if the problem of determining a regimen and weighting pattern for a set of spatial price indexes were to be resolved, there would still be a substantial practical problem in actually constructing such indexes because identical types of goods and services are not necessarily sold in each locality (i.e. the brands, styles, sizes, etc., differ from locality to locality). While this is not a problem in compiling temporal price indexes designed to measure price changes in each locality separately, it is a serious difficulty if the objective is to compare price levels between localities. Unless identical goods and services could be priced in each locality it would be necessary to assess the extent to which price differences reflect differences in quality or quantity and adjust prices accordingly before using them in the comparison.

17.15 Because of the difficulties mentioned above, the ABS has limited its involvement in spatial price indexes. The only such indexes the ABS produces are indexes of relative retail prices of food; generally the problems of obtaining prices for identical items in different localities are less serious in the case of food than in other areas of expenditure.

Glossary of terms

This glossary provides brief definitions or explanations of the main technical terms used in this publication. Where a more detailed explanation or illustration of the term is provided elsewhere in the publication, the location of this is shown in brackets.

All Groups Index

The index series showing price movement for the weighted combination of all items priced for a particular price index. This is the highest level of aggregation of an index.

Component

A level of aggregation of like items. It is either a series of specifications linked to a component or a series of components linked to higher level components. In an index there are usually five component levels in its construction.

Fixed Weight Index

A price index in which the weighting pattern is fixed for the life of each index series.

Index Points Change

The change in an index number series from one period to another expressed in terms of the difference in the number of index points in each index number. (16.11)

Index Points Contribution

A quantitative expression of how much each component contributes to the magnitude of the All Groups index number. (16.12)

Index Number Series

A series of numbers measuring movement over time from a base period value. The base value is normally represented by an index number of 100.0 (or 100).

Laspeyres Price Index

A price index in which the fixed weights used represent the relative importance of index items in the weighting base period. The Producer and Foreign Trade Price Indexes are Laspeyres Indexes. (3.2)

Linking

The technique used to join a new index series (e.g. one having a changed composition and weighting pattern) to an old index series to form a continuous series. The technique ensures that the resultant linked index reflects only price variations (e.g. the introduction of the new items and weights does not of itself affect the level of the index) (11.26, 16.18)

Percentage Change

The change in an index series from one period to another expressed as a percentage of its value in the first of the two periods. (16.7)

Price Relative

The ratio derived by dividing the price of an item in one period by its price in an earlier period. (13.6)

Pure Price Change

The change in the price of an item after removing any variation in price attributable to a change in quality or quantity. (14.1)

Quality Adjustment

The elimination of the effect that changes in the quality or composition of an item have on the price of the item in order to isolate the pure price change. (14.8)

Rebase	To change the reference base period of an index number series. (15.1)
Reference Base	The period for which an index series is given the value of 100.0 (or 100). (3.1)
Regimen	The selected items priced for the purpose of compiling a price index. This usually refers to the lowest level fixed weight component. Below the regimen item level the concept of chain linked Laspeyres applies. (3.1)
Respondents	Businesses, authorities, etc., from which prices data and associated information are collected regularly for use in compiling the Producer and Foreign Trade Price Indexes.
Sample	A representative selection of items to be priced.
Seasonal Items	Items which are only available, or are in very much greater supply and/or demand, at certain times of the year.
Spatial Price Indexes	Indexes which measure the difference in prices between localities at a particular point in time. (17.9)
Specification	Detailed description of the characteristics of the item to be priced.
Splicing	A technique for introducing new items or respondents into the index calculations so that the level of the index is not affected. (13.7)
Temporal Price Indexes	Indexes which measure differences in prices over time in a particular locality. (17.9)
Transaction Price	The actual price, at which an item is sold – as opposed to a list price. (12.8)
Weights	The measure of the relative importance of an item in the index regimen. Weights may be expressed in either quantity or value terms. Producer and Foreign Trade Price Indexes weights are expressed in the latter. (3.1)
Weighted Average	An average which is obtained by combining different numbers (e.g. prices or index numbers) according to the relative importance of each.
Weighting Base	The period to which the fixed weights relate.

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