

M a n u f a c t u r i n g , W h o l e s a l e a n d R e t a i l I n d u s t r i e s

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MANUFACTURING

Manufacturing, as specified in Division C of the Australian Standard Industrial Classification (ASIC), broadly relates to the physical or chemical transformation of materials or components into new products whether the work is performed by power-driven machines or by hand.

Despite a significant increase in the level of manufacturing gross product over the last 20 years, the manufacturing sector's contribution to the gross product of all industry fell considerably over the period. From 21.0 per cent in 1972-73, manufacturing industry (\$59,771 million) only accounted for 14.7 per cent of all industry gross product in 1992-93.

Employment in the manufacturing sector has also fallen markedly over the last 20 years. In 1972-73 more than 1.3 million persons were employed in manufacturing, 23.9 per cent of employment in all industries. In 1992-93

manufacturing employment was only 14.6 per cent of all industries.

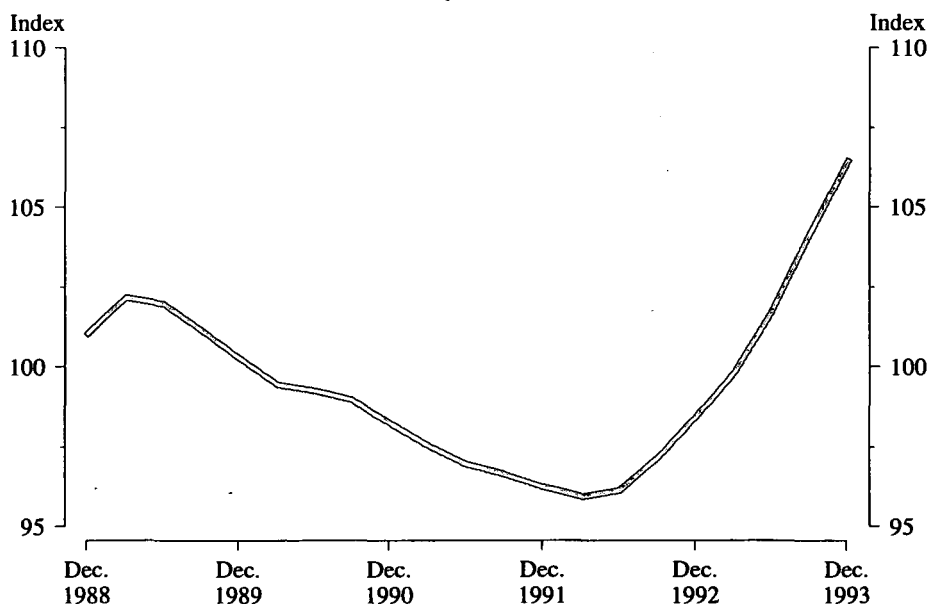
Manufacturing trends

In the December quarter 1993, the trend for the index of manufacturing production continued to grow, with a rise of 2.2 per cent following rises in the six previous quarters (graph 18.1).

Over the period 1983-84 to 1992-93 the index of manufacturing production increased by 18 per cent. After consecutive increases between 1983-84 and 1988-89, the index recorded successive falls in 1989-90, 1990-91 and 1991-92, then an increase in 1992-93 (table 18.2).

The largest increases over the period 1983-84 to 1992-93 occurred in Other machinery and equipment (up 42%) and Basic metal products (up 40%). Clothing and footwear (down 13%) and Wood, wood products and furniture (down 7%), were the only industries to record falls over the period.

18.1 INDEX OF TOTAL MANUFACTURING GROSS PRODUCT AT AVERAGE 1989-90 PRICES
TREND ESTIMATE
(Reference base year 1989-90 = 100)



Source: Quarterly Indexes of Industrial Production, Australia (8125.0).

Structure of the manufacturing industry

There were 41,480 manufacturing establishments operating in Australia at 30 June 1992 at which time they employed 906,900 persons. During 1991-92, manufacturing establishments paid \$27,068 million in wages and salaries and recorded \$168,019 million in turnover (table 18.3).

The industries with the most persons employed at 30 June 1992 were Food, beverages and

tobacco (166,000), Other machinery and equipment (114,200) and Paper, paper products, printing and publishing (100,000). Textiles (26,200) was the smallest employer, accounting for only three per cent of manufacturing employment. Food, beverages and tobacco was also the largest contributor to total manufacturing turnover, accounting for 21 per cent, followed by Chemical, petroleum and coal products (14%) and Basic metal products (12%).

18.2 INDEXES OF MANUFACTURING INDUSTRY GROSS PRODUCT AT AVERAGE 1989-90 PRICES (Reference base year 1989-90 = 100.0)

<i>Industry subdivision</i>	<i>1983 -84</i>	<i>1984 -85</i>	<i>1985 -86</i>	<i>1986 -87</i>	<i>1987 -88</i>	<i>1988 -89</i>	<i>1989 -90</i>	<i>1990 -91</i>	<i>1991 -92</i>	<i>1992 -93</i>
Food, beverages and tobacco	89.1	90.2	90.1	92.9	97.2	99.6	100.0	101.6	104.4	112.3
Textiles	90.5	99.7	99.0	102.8	102.1	103.9	100.0	100.9	103.7	92.1
Clothing and footwear	101.1	104.6	116.7	108.3	109.0	112.3	100.0	92.3	86.9	88.2
Wood, wood products and furniture	89.1	93.5	105.4	95.6	107.0	111.7	100.0	90.8	88.5	82.9
Paper, paper products, printing and publishing	81.1	88.3	89.7	93.1	99.4	106.3	100.0	97.1	92.8	88.1
Chemical, petroleum and coal products	87.7	89.9	87.7	92.0	99.0	100.9	100.0	104.3	104.3	104.6
Non-metallic mineral products	76.5	82.6	94.4	86.8	91.3	102.4	100.0	89.5	85.4	93.1
Basic metal products	74.7	81.5	82.1	82.7	85.8	90.0	100.0	102.6	103.9	104.4
Fabricated metal products	81.6	81.7	88.5	87.1	99.3	108.2	100.0	91.2	85.6	82.1
Transport equipment	82.7	90.2	89.4	84.3	87.6	93.0	100.0	92.4	84.5	88.2
Other machinery and equipment	82.0	86.4	86.3	93.7	98.6	106.9	100.0	100.8	99.0	116.4
Miscellaneous manufacturing	85.9	91.0	82.9	95.2	102.3	106.2	100.0	100.3	98.2	97.5
Total manufacturing	84.2	88.5	90.1	91.1	96.5	101.5	100.0	98.1	96.4	99.5

Source: *Quarterly Indexes of Industrial Production, Australia* (8125.0).

18.3 SUMMARY OF OPERATIONS OF THE MANUFACTURING INDUSTRY, 1991-92

<i>Industry subdivision</i>	<i>Estab- lishments operating at 30 June (no.)</i>	<i>Employ- ment at 30 June(a) (‘000)</i>	<i>Wages and salaries (b) (\$m)</i>	<i>Turnover (\$m)</i>	<i>Persons employed per estab- lishment (no.)</i>	<i>Turnover per person employed (\$’000)</i>
Food, beverages and tobacco	4,228	166.0	4,608	35,768	39	216
Textiles	936	26.2	742	4,121	28	157
Clothing and footwear	2,574	49.8	1,128	4,847	19	97
Wood, wood products and furniture	6,590	71.7	1,686	7,638	11	107
Paper, paper products, printing and publishing	4,913	100.0	3,217	14,332	20	143
Chemical, petroleum and coal products	1,213	50.5	1,937	23,462	42	465
Non-metallic mineral products	1,757	37.6	1,224	7,319	21	195
Basic metal products	889	62.1	2,508	20,521	70	330
Fabricated metal products	6,528	88.8	2,415	11,555	14	130
Transport equipment	2,099	81.6	2,550	14,153	39	173
Other machinery and equipment	5,910	114.2	3,432	15,902	19	139
Miscellaneous manufacturing	3,843	58.2	1,620	8,402	15	144
Total manufacturing	41,480	906.9	27,068	168,019	22	185

(a) Includes working proprietors. (b) Excludes the drawings of working proprietors.

Source: *Manufacturing Industry, Australia (8221.0)*.

Turnover

Turnover figures include sales of goods whether produced by the establishment or not; transfers out of goods to other establishments of the same enterprise; bounties and subsidies on production; plus all other operating revenue from outside the enterprise (such as commission, repair and service revenue and rent, leasing and hiring revenue), plus capital work for own use, or for rental or lease. Receipts from interest, royalties, dividends, and sales of fixed tangible assets are excluded.

New South Wales (34%) and Victoria (32%) combined comprised two-thirds of manufacturing turnover in 1991-92. New South Wales contributed about a third of the turnover in most industries, with Other machinery and equipment (43% of Australian total) and Transport equipment (16% of

Australian total) being the most notable exceptions. Victoria dominated in Clothing and footwear (48%), Textiles (47%) and Transport equipment (45%) but contributed only 19 per cent of Australian turnover for Basic metal products. Although Queensland accounted for only 14 per cent of manufacturing turnover, it contributed 22 per cent of Australian turnover in the Non-metallic mineral products industry. Similarly, South Australia accounted for 28 per cent of Australian turnover for Transport equipment compared with only 9 per cent of total manufacturing turnover for Australia.

18.4 TURNOVER BY MANUFACTURING INDUSTRY, 1991-92

(\$ million)

Industry subdivision	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Food, beverages and tobacco	11,413	10,670	6,945	2,806	2,573	1,182	104	75	35,768
Textiles	1,271	1,950	169	436	151	140	n.p.	n.p.	4,121
Clothing and footwear	1,793	2,323	306	319	68	30	n.p.	n.p.	4,847
Wood, wood products and furniture	2,521	1,788	1,409	679	723	440	25	54	7,638
Paper, paper products, printing and publishing	5,618	4,693	1,535	930	716	696	27	119	14,332
Chemical, petroleum and coal products	8,763	7,843	2,886	1,261	2,538	n.p.	n.p.	n.p.	23,462
Non-metallic mineral products	2,521	1,679	1,582	508	767	160	48	54	7,319
Basic metal products	8,008	3,949	3,109	1,486	2,901	n.p.	n.p.	n.p.	20,521
Fabricated metal products	4,136	3,570	1,821	830	916	147	n.p.	n.p.	11,555
Transport equipment	2,196	6,374	1,091	3,918	406	150	13	7	14,153
Other machinery and equipment	6,803	5,420	1,171	1,581	785	74	16	51	15,902
Miscellaneous manufacturing	2,768	3,597	812	795	361	55	9	5	8,402
Total manufacturing	57,809	53,856	22,837	15,548	12,903	3,924	673	469	168,019

Source: *Manufacturing Industry, Australia* (8221.0).

Employment

New South Wales (34%) and Victoria (33%) dominate manufacturing in Australia, comprising two-thirds of employment in 1991-92. However, different industries dominate, in terms of employment, in different States (table 18.5).

New South Wales dominates in Basic metal products (45% of the Australian total) and Chemical, petroleum and coal products (43% of the Australian total); Victoria has a significant proportion of industry employment in Textiles (51%), Transport equipment (48%), and Clothing and footwear (47%); Queensland contributes significantly to Food, beverages and tobacco (20%) and Wood, wood products and furniture (20%) while South Australia contributes significantly to the Transport equipment work force (18%).

The quarterly Survey of Employment and Earnings is the ABS' major source of statistics on employed wage and salary earners. For further information refer to the chapter, Labour.

Manufacturing employment/turnover ratios

The average employment size of manufacturing establishments declined slightly between

1987-88 and 1991-92, with most industries displaying a similar trend. However, Basic metal products and Transport equipment both recorded significant falls in average employment size over the period (table 18.6).

Average turnover per person employed in the manufacturing sector during 1991-92 was \$185,000. This represented an increase of 49 per cent over 1987-88 (in current price terms). Chemical, petroleum and coal products (\$465,000) and Basic metal products (\$330,000) showed the highest ratios of turnover to employment in 1991-92, while Clothing and footwear (\$97,000) showed the lowest.

Chemical, petroleum and coal products showed the greatest increase in turnover per person employed between 1987-88 and 1991-92 (99%). However this movement was significantly affected by a change in accounting practices by a number of businesses involved in the petroleum refinery industry (prior to 1989-90, manufacturing turnover for these businesses only reflected the value of commission earned by the manufacturing establishments involved). Clothing and footwear (up 56%) recorded the next largest increase in the ratio of turnover to employment.

18.5 EMPLOYMENT IN MANUFACTURING AT 30 JUNE 1992 (^{'000})

<i>Industry subdivision</i>	<i>NSW</i>	<i>Vic.</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas.</i>	<i>NT</i>	<i>ACT</i>	<i>Aust.</i>
Food, beverages and tobacco	50.4	47.8	33.1	15.4	11.7	6.1	0.6	0.7	166.0
Textiles	6.4	13.3	1.3	2.2	1.6	1.4	n.p.	n.p.	26.2
Clothing and footwear	17.2	23.4	4.2	3.4	1.1	0.4	n.p.	n.p.	49.8
Wood, wood products and furniture	22.5	17.6	14.5	6.8	6.7	2.8	0.1	0.5	71.7
Paper, paper products, printing and publishing	37.8	31.5	11.9	6.8	6.3	4.4	0.3	1.3	100.3
Chemical, petroleum and coal products	21.8	17.3	4.5	2.6	3.7	0.5	n.p.	n.p.	50.5
Non-metallic mineral products	11.8	9.7	7.3	2.9	4.6	0.9	0.1	0.2	37.6
Basic metal products	27.8	10.7	7.7	6.1	6.1	3.0	n.p.	n.p.	62.1
Fabricated metal products	31.8	25.7	14.8	6.8	7.6	1.5	0.3	0.4	88.8
Transport equipment	16.6	39.2	6.6	14.4	3.4	1.2	0.2	0.1	81.6
Other machinery and equipment	46.6	36.5	10.2	13.0	6.7	0.8	0.1	0.3	114.2
Miscellaneous manufacturing	18.4	23.4	6.3	6.5	2.9	0.6	0.1	0.1	58.2
Total manufacturing	309.1	296.1	122.4	86.8	62.5	23.5	2.8	3.7	906.9

Source: *Manufacturing Industry, Australia* (8221.0).

18.6 MANUFACTURING EMPLOYMENT/TURNOVER RATIOS

<i>Industry subdivision</i>	<i>Persons employed per establishment (no.)</i>					<i>Turnover per person employed (\$'000)</i>				
	<i>1987 -88</i>	<i>1988 -89</i>	<i>1989 -90</i>	<i>1990 -91</i>	<i>1991 -92</i>	<i>1987 -88</i>	<i>1988 -89</i>	<i>1989 -90</i>	<i>1990 -91</i>	<i>1991 -92</i>
Food, beverages and tobacco	38	41	41	43	39	158	173	190	205	216
Textiles	36	35	33	29	28	109	126	133	143	157
Clothing and footwear	26	26	24	22	19	62	70	80	90	97
Wood, wood products and furniture	11	13	12	11	11	82	91	99	103	107
Paper, paper products, printing and publishing	24	25	23	22	20	108	118	128	140	143
Chemical, petroleum and coal products	46	47	46	46	42	234	258	393	452	465
Non-metallic mineral products	17	22	22	23	21	146	169	187	189	195
Basic metal products	105	96	83	82	70	219	274	313	319	330
Fabricated metal products	15	17	16	15	14	95	109	121	127	130
Transport equipment	50	54	50	45	39	115	126	157	171	173
Other machinery and equipment	23	25	23	21	19	96	109	120	134	139
Miscellaneous manufacturing	16	17	16	16	15	107	120	131	141	144
Total manufacturing	24	26	25	24	22	124	140	163	178	185

Source: *Manufacturing Industry, Australia* (8221.0).

Labour costs

Major labour costs in the manufacturing industry fell marginally during 1991-92 following a marginal rise in the previous year. For each year

in the period 1989-90 to 1991-92, earnings comprised around 88 to 89 per cent of total costs. This ratio is about the average for all industries.

18.7 MAJOR LABOUR COSTS OF MANUFACTURING INDUSTRY

Type of labour cost	1989-90	1990-91	1991-92	1991-92	
				Percentage distribution of labour costs by type	
				Manufacturing	All industries
	\$m	\$m	\$m	%	%
Earnings	28,032	27,880	27,740	88.1	89.0
Other labour costs	3,596	3,769	3,732	11.9	11.0
Payroll tax	1,342	1,377	1,405	4.5	3.5
Superannuation	1,086	1,167	1,208	3.8	4.9
Workers' compensation	1,009	1,043	923	2.9	1.9
Fringe benefits tax	159	181	195	0.6	0.7
Total major labour costs	31,628	31,648	31,472	100.0	100.0

Source: *Labour Costs, Australia* (6348.0).

Average total labour costs per employee in 1991-92 of \$35,038 represented an increase of 6 per cent over 1990-91 costs and was 14 per cent above 1989-90 costs. For

1991-92, the average labour costs in the manufacturing industry were significantly higher than the average of \$30,995 per employee for all industries.

18.8 AVERAGE LABOUR COST PER EMPLOYEE IN MANUFACTURING INDUSTRY (\$)

Type of labour cost	1989-90	1990-91	1991-92	
			Manufacturing	All industries
Earnings	27,306	28,985	30,883	27,581
Other labour costs	3,503	3,918	4,155	3,413
Payroll tax	1,307	1,432	1,565	1,086
Superannuation	1,058	1,213	1,345	1,516
Workers' compensation	983	1,085	1,028	586
Fringe benefits tax	155	188	217	225
Total major labour costs	30,809	32,903	35,038	30,995

Source: *Labour Costs, Australia* (6348.0).

Training expenditure

In the three month period July 1993 to September 1993, average training expenditure per employee in the manufacturing industry was \$204.00, with an average of 6.5 paid training hours per employee being recorded (table 18.9). Average training expenditure of \$502.00 per employee in Basic metal products was more than double the manufacturing average, with the figure for Chemical, petroleum and coal products also being relatively high. Wood, wood products and

furniture recorded the lowest value for average training expenditure per employee (\$106.00). The average of 16.0 paid training hours per employee recorded in Basic metal products was two and a half times the manufacturing industry average of 6.5 hours per employee.

The manufacturing industry spent more on training per employee than the average for all industries, and had a higher average of paid training hours per employee.

Comparative figures for 1990 are shown in table 18.9.

18.9 MANUFACTURING INDUSTRY: AVERAGE TRAINING EXPENDITURE AND PAID TRAINING HOURS PER EMPLOYEE, JULY TO SEPTEMBER

Industry subdivision	Average training expenditure per employee(a)		Average paid training hours per employee(b)	
	1990	1993	1990	1993
	\$	\$	no.	no.
Food, beverages and tobacco	89	169	3.5	4.7
Textiles; Clothing and footwear	95	150	4.1	4.6
Wood, wood products and furniture	77	106	4.9	6.1
Paper, paper products, printing and publishing	171	234	8.4	6.6
Chemical, petroleum and coal products	310	344	8.3	6.6
Non-metallic mineral products	104	175	4.3	4.8
Basic metal products	289	502	10.9	16.0
Fabricated metal machinery and equipment(c)	118	140	5.0	5.0
Transport equipment	276	282	16.8	11.5
Miscellaneous manufacturing	100	170	3.3	5.4
Total manufacturing	149	204	6.7	6.5
All industries	163	192	5.9	5.6

(a) Estimated training expenditure divided by estimated total number of employees. (b) The total time receiving formal training averaged over the total number of employees. (c) Includes Fabricated metal products and Other machinery and equipment.

Source: *Employer Training Expenditure, Australia* (6353.0).

Industrial disputes

One hundred and seventy industrial disputes occurred in the manufacturing industry during 1993. These disputes involved over 175,000 employees and resulted in a loss of more than 238,000 working days (table 18.10). The Basic metal products, Fabricated metal products, Transport equipment, and Other machinery and equipment industries combined accounted for 63 per cent of the disputes, comprising nearly 85 per cent of employees involved and 67 per cent of working days lost.

Although disputes in the manufacturing industry only represented 28 per cent of all disputes, 36 per cent of employees involved and 37 per cent of working days lost were attributable to this sector.

Table 18.10 shows the overall fall in the level of industrial disputes between 1992 and 1993.

Trade union membership

Between 1982 and 1986, a fall in the proportion of manufacturing employees with trade union membership coupled with a

contraction in manufacturing industry employment resulted in a decrease in union membership of nearly 90,000 persons (14%) in this industry. The number of manufacturing employees with union membership fell a further 90,100 persons (17%) between 1986 and 1992, resulting in an overall fall of approximately 180,000 persons (28%) between 1982 and 1992. Despite this large fall in membership numbers, manufacturing industry continues to have a higher rate of union membership than the average for all industries (table 18.11).

The number of trade union members in all industries decreased between 1982 and 1992 and in percentage terms membership followed a downward trend similar to manufacturing.

Although nearly a half of permanent manufacturing employees belonged to a trade union in 1992, less than a fifth of casual employees were members. Female employees (both permanent and casual) displayed lower membership rates than males of the same employment status. The membership rate for casual manufacturing employees was higher than the all industries average (table 18.12).

18.10 MANUFACTURING INDUSTRY: INDUSTRIAL DISPUTES WHICH OCCURRED DURING 1992 AND 1993

Industry subdivision	Total industrial disputes in progress(a)		Employees involved (directly & indirectly)		Working days lost	
	1992	1993	1992	1993	1992	1993
	no.	no.	'000	'000	'000	'000
Food, beverages and tobacco	29	34	33.2	13.6	42.3	55.5
Textiles; Clothing and footwear	6	3	11.5	0.7	11.1	1.6
Wood, wood products and furniture	4	8	7.1	2.8	7.7	6.1
Paper, paper products, printing and publishing	11	6	18.2	6.9	52.2	9.3
Chemical, petroleum and coal products	15	9	10.3	1.5	14.0	4.5
Metal products, machinery and equipment(b)	108	107	122.6	149.3	121.4	160.4
Other manufacturing(c)	11	6	22.9	0.2	27.3	0.6
Total manufacturing	171	170	225.9	175.4	276.1	238.1
All industries	728	610	871.3	489.6	941.2	635.8

(a) Disputes affecting more than one industry have been counted as a separate dispute in each industry. (b) Includes Basic metal products; Fabricated metal products; Transport equipment; and Other machinery and equipment. (c) Includes Non-metallic mineral products; and Miscellaneous manufacturing.

Source: *Industrial Disputes, Australia* (6322.0).

18.11 EMPLOYEES WITH TRADE UNION MEMBERSHIP: MANUFACTURING AND ALL INDUSTRIES

	Manufacturing		All industries	
	Number ('000)	Percentage of total employment	Number ('000)	Percentage of total employment
March-May 1982	635.0	53.9	2,567.6	49.5
August 1986	545.4	51.2	2,593.9	45.6
August 1988	546.7	48.5	2,535.9	41.6
August 1990(a)	520.9	46.1	2,659.6	40.5
August 1992	455.3	44.4	2,508.8	39.6

(a) The August 1990 survey included persons aged 70 years and over.

Source: *Trade Union Members, Australia* (6325.0).

18.12 MANUFACTURING INDUSTRY: PROPORTION OF EMPLOYEES WITH TRADE UNION MEMBERSHIP BY SEX AND EMPLOYEE STATUS, AUGUST 1992 (per cent)

Employees	Manufacturing	All industries
Males		
Permanent	50.5	48.1
Casual	21.6	18.4
Total	48.2	43.4
Females		
Permanent	38.6	42.9
Casual	16.7	16.5
Total	33.6	34.8
Persons		
Permanent	47.8	46.0
Casual	19.1	17.2
Total	44.4	39.6

Source: *Trade Union Members, Australia* (6325.0).

Capital expenditure

New capital expenditure in the manufacturing industry rose by 3 per cent between 1991-92 and 1992-93, with Paper, paper products, printing and publishing (up 33%), Transport equipment (up 22%) and Food, beverages and tobacco (up 22%) registering increases over the period. Basic metal products (down 34%) experienced the largest fall in new capital expenditure in 1992-93. Textiles, clothing and footwear, and Paper, paper products, printing and publishing showed consecutive increases in the latest three years, while a decrease was recorded for Chemical, petroleum and coal products.

18.13 PRIVATE NEW CAPITAL EXPENDITURE IN MANUFACTURING INDUSTRY
(\$ million)

<i>Industry subdivision</i>	<i>1990-91</i>	<i>1991-92</i>	<i>1992-93</i>
Food, beverages and tobacco	1,379	1,178	1,433
Textiles; Clothing and footwear	192	195	209
Paper, paper products, printing and publishing	546	688	912
Chemical, petroleum and coal products	1,184	919	900
Basic metal products	1,321	1,643	1,084
Transport equipment	716	554	675
Fabricated metal products and Other machinery and equipment	846	667	727
Other manufacturing(a)	1,286	1,014	1,127
Total manufacturing	7,471	6,858	7,068

(a) Includes Wood, wood products and furniture; Non-metallic mineral products; and Miscellaneous manufacturing.

Source: *Private New Capital Expenditure, Australia, Actual and Expected Expenditure (5626.0)*.

Stocks

In average 1989-90 price terms, the value of stocks at the end of June 1993 was one per cent higher than in June 1992, following a fall of three per cent between June 1991 and June 1992. Paper, paper

products, printing and publishing (up 18%) and Clothing and footwear (up 12%) recorded stock increases between June 1991 and June 1993. Transport equipment (down 20%) and Miscellaneous manufacturing (down 11%) showed the largest percentage stock run-downs between June 1991 and June 1993.

18.14 BOOK VALUE OF STOCKS OWNED BY PRIVATE MANUFACTURING BUSINESSES
AT AVERAGE 1989-90 PRICES
(\$ million)

<i>Industry subdivision</i>	<i>1991</i>	<i>1992</i>	<i>June 1993</i>
Food, beverages and tobacco	4,227	4,031	4,285
Textiles	956	1,109	878
Clothing and footwear	741	767	829
Wood, wood products and furniture	1,113	1,147	1,012
Paper, paper products, printing and publishing	1,030	1,100	1,216
Chemical, petroleum and coal products	2,791	2,973	2,932
Non-metallic mineral products	1,014	1,015	991
Basic metal products	2,715	2,733	2,754
Fabricated metal products	1,412	1,284	1,294
Transport equipment	2,082	1,671	1,670
Other machinery and equipment	3,062	2,724	3,070
Miscellaneous manufacturing	1,206	1,132	1,072
Total manufacturing	22,349	21,686	22,003

Source: *Stocks, Manufacturers' Sales and Expected Sales, Australia (5629.0)*.

Price indexes of articles produced

From 1988-89 to 1992-93, the price index of articles produced by the manufacturing industry rose by 14.3 per cent (over the same period, the Consumer Price Index rose by 17.1%).

Much of these price rises occurred between 1989-90 and 1990-91 (11.2%). Since then, prices have risen much more gradually, and have been spread fairly evenly across all industry subdivisions.

18.15 PRICE INDEXES OF ARTICLES PRODUCED BY MANUFACTURING INDUSTRY(a)
(Reference base year 1988-89 = 100.0)

<i>Industry subdivision</i>	<i>1990-91</i>	<i>1991-92</i>	<i>1992-93</i>
Food, beverages and tobacco	109.5	112.3	116.2
Textiles	103.4	102.9	101.8
Clothing and footwear	112.0	114.9	116.1
Wood, wood products and furniture	112.7	114.2	116.5
Paper, paper products, printing and publishing	111.0	117.3	119.9
Chemicals and chemical products	109.3	109.9	111.1
Petroleum products	150.1	134.3	143.9
Non-metallic mineral products	117.2	119.3	119.3
Basic metal products	106.2	99.9	100.6
Fabricated metal products	113.7	114.3	114.7
Transport equipment	109.9	112.7	116.0
Other machinery and equipment	107.0	107.0	109.3
Miscellaneous manufacturing	106.4	107.8	109.6
All manufacturing industry	111.2	111.6	114.3

(a) These indexes relate only to articles produced in the industry for sale or transfer outside the industry.

Source: *Price Indexes of Articles Produced by Manufacturing Industry, Australia* (6412.0).

Company profits

Profits before income tax earned by manufacturing companies increased by 38 per cent between 1991-92 and 1992-93, following a rise of 17 per cent from 1990-91. Only Basic metal products recorded lower profits in 1992-93 than in 1990-91. Food, beverages and tobacco was the most significant contributor to manufacturing profits in 1992-93 (27%). Transport equipment recorded a net operating

loss in 1990-91 but a subsequent turnaround resulted in this industry accounting for seven per cent of manufacturing profits in 1992-93.

The increase in manufacturing profit of 38 per cent between 1991-92 and 1992-93 compared favourably with the selected main industries (principally mining, manufacturing, retail, wholesale and construction) increase of 33 per cent.

18.16 MANUFACTURING COMPANIES: PROFIT BEFORE INCOME TAX BY INDUSTRY
(\$ million)

<i>Industry subdivision</i>	<i>1990-91</i>	<i>1991-92</i>	<i>1992-93</i>
Food, beverages and tobacco	1,543	1,706	2,159
Textiles; Clothing and footwear	176	268	259
Paper, paper products, printing and publishing	263	756	1,026
Chemical, petroleum and coal products	711	686	1,011
Basic metal products	705	140	513
Transport equipment	- 209	58	541
Fabricated metal products and			
Other machinery and equipment	603	1,016	1,024
Other manufacturing(a)	1,164	1,157	1,437
Total manufacturing	4,956	5,788	7,970

(a) Includes Wood, wood products and furniture; Non-metallic mineral products; and Miscellaneous manufacturing.

Source: *Company Profits, Australia* (5651.0).

Foreign investment

The level of foreign investment in manufacturing industry in Australia was \$51,574 million at 30 June 1992. The industries with the highest levels of foreign investment were Food, beverages and tobacco (\$13,688 million) and Basic metal products

(\$12,587 million). Between 30 June 1990 and 30 June 1992 the level of foreign investment in manufacturing industry increased by six per cent (in current price terms). Wood, wood products and furniture (up 36%) and Transport equipment (up 19%) showed the largest percentage increases. Six industry subdivisions recorded falls over the period,

with Clothing and footwear (down 29%) recording the largest percentage fall.

18.17 FOREIGN INVESTMENT IN MANUFACTURING INDUSTRY(a) AT 30 JUNE
(\$ million)

<i>Industry subdivision</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>
Food, beverages and tobacco	12,779	14,435	13,688
Textiles	432	365	404
Clothing and footwear	112	135	80
Wood, wood products and furniture	73	61	99
Paper, paper products, printing and publishing	4,156	3,765	4,042
Chemical, petroleum and coal products	5,374	5,332	5,612
Non-metallic mineral products	959	1,035	909
Basic metal products	10,625	11,263	12,587
Fabricated metal products	1,180	1,317	1,254
Transport equipment	2,406	2,533	2,861
Other machinery and equipment	2,632	2,726	2,543
Miscellaneous manufacturing	7,749	7,270	7,496
Total manufacturing	48,477	50,238	51,574

(a) The industry categories shown relate to the predominant activity of the enterprise group receiving the investment funds. This is not necessarily the industry of end use of the funds.

Source: *International Investment Position, Australia* (5305.0).

Principal manufacturing commodities

Table 18.18 shows the total recorded production of some selected articles manufactured in Australia.

Of the 26 selected articles produced by manufacturing establishments, six had lower levels of production in 1992-93 than in 1991-92. Twelve commodities had higher levels of production in 1992-93 than in 1989-90.

Concentration of enterprises in the manufacturing industry

Concentration statistics provide information on the extent to which a few enterprise groups predominate in individual industries. They are a useful aid in assessing the degree of competition existing among enterprise groups engaged in an industry.

In 1991-92, the most concentrated industries, in terms of the share of employment accounted for by the largest four enterprise groups, were Basic metal products (45%) and Non-metallic mineral products (41%). The

industries with the lowest levels of concentration were Fabricated metal products (7%), Wood, wood products and furniture (9%) and Other machinery and equipment (9%) (table 18.19).

Manufacturing technology

The proportion of manufacturing establishments (employing 10 or more people) using advanced manufacturing technologies increased by about one-quarter to 41 per cent in the three-year period to December 1991 (tables 18.20 and 18.21). Over the same period, the proportion of manufacturing establishments using the advanced management technique, Total Quality Control/Management (TQC/TQM), increased by more than half to 24 per cent. By 1996, a further nine per cent of manufacturers intended introducing advanced manufacturing technologies and 25 per cent intended introducing TQC/TQM. As at December 1991, the most widely used advanced manufacturing technology was computer aided design and/or engineering.

18.18 QUANTITIES OF SELECTED ARTICLES PRODUCED BY MANUFACTURING ESTABLISHMENTS

Article	Unit of quantity	1989-90	1990-91	1991-92	1992-93
Basic iron, spiegeleisen and sponge iron	'000 tonnes	6,188	5,600	6,394	6,445
Blooms and slabs from continuous casting	'000 tonnes	5,136	4,620	5,205	6,218
Gas(a)	terajoules	591,210	536,193	553,438	567,647
Electricity	mill.kWh	151,907	153,822	156,413	159,872
Bricks, clay(b)	million	2,034	1,762	1,632	1,722
Cement, portland	'000 tonnes	7,075	6,110	5,731	6,225
Particle boards and similar boards(c)	'000 cu m	n.a.	625	643	660
Plastics in primary forms(d)	'000 tonnes	987	949	1,002	1,023
Sulphuric acid, oleum	'000 tonnes	1,464	986	816	868
Refrigerators, domestic	'000	346	363	372	393
Clothes washing machines, domestic	'000	330	326	296	308
Colour television sets(e)	'000	158	167	177	154
Electric motors	'000	2,528	2,480	2,421	2,796
Lawn mowers, rotary petrol type	'000	263	224	216	274
Motor vehicles					
Cars and station wagons	'000	386	311	269	275
Vehicles for goods and materials(f)	'000	26	18	15	15
Yarn(g)					
Cotton	tonnes	20,603	23,785	25,069	26,344
Wool	tonnes	19,758	18,809	18,551	18,167
Woven fabric(g)					
Cotton (incl. towelling)	'000 sq. m	40,452	35,766	38,907	41,410
Wool (incl. blanketing)	'000 sq. m	8,459	7,641	8,132	8,343
Man-made fibre	'000 sq. m	179,051	184,502	185,528	185,060
Textile floor coverings	'000 sq. m	43,804	41,648	41,265	41,030
Confectionery					
Chocolate base	tonnes	94,717	96,872	97,867	105,429
Other	tonnes	64,208	64,908	65,418	68,782
Beer(h)	million litres	1,939	1,915	1,862	1,805
Tobacco & cigarettes(i)	tonnes	27,318	26,833	24,538	24,001

(a) Available for issue through mains. Includes natural gas. (b) For structural purposes. (c) Not laminated. Includes board for subsequent conversion to other purposes. (d) Includes liquid, paste, powder, granules, flakes, blocks, irregular shapes, lumps and similar forms. (e) Excludes combination with radio etc. (f) Includes utilities, panel vans and prime movers for semi-trailers. Excludes off-highway trucks (for example, dump wagons), materials handling trucks (for example, fork-lift trucks) and semi-trailers. (g) Includes mixtures predominantly of the fibre named. (h) Includes ale and stout. Excludes extra light beer containing less than 1.15 per cent but more than 0.5 per cent by volume of alcohol. (i) Source: Australian Tobacco Marketing Advisory Committee.

NOTE: Data in this table exclude operations by single establishment enterprises employing fewer than four persons.

Source: ABS manufacturing production publications (8357.0 to 8363.0 and 8367.0 to 8369.0).

**18.19 CONCENTRATION OF ENTERPRISES IN MANUFACTURING IN TERMS OF
EMPLOYMENT(a) BY INDUSTRY, 1991-92**

Industry subdivision	Enterprise groups ranked by turnover									
	Largest 4		5-8		9-12		13-16		Remainder	
	'000	Ratio	'000	Ratio	'000	Ratio	'000	Ratio	'000	Ratio
Food, beverages and tobacco	19.4	0.12	16.9	0.10	10.8	0.07	10.3	0.06	108.6	0.65
Textiles	3.9	0.15	1.8	0.07	1.9	0.07	1.4	0.06	17.2	0.66
Clothing and footwear	8.1	0.16	1.7	0.03	2.6	0.05	0.8	0.02	36.6	0.73
Wood, wood products and furniture	6.6	0.09	2.2	0.03	2.1	0.03	1.2	0.02	59.5	0.83
Paper, paper products, printing and publishing	22.7	0.23	6.9	0.07	4.9	0.05	3.7	0.04	62.0	0.62
Chemical, petroleum and coal products	7.7	0.15	2.9	0.06	3.4	0.07	3.5	0.07	33.0	0.65
Non-metallic mineral products	15.2	0.41	4.7	0.12	1.6	0.04	1.8	0.05	14.2	0.38
Basic metal products	28.2	0.45	8.6	0.14	5.9	0.10	2.7	0.04	16.7	0.27
Fabricated metal products	6.4	0.07	6.1	0.07	3.0	0.03	2.3	0.03	71.0	0.80
Transport equipment	20.4	0.25	11.4	0.14	6.9	0.08	5.5	0.07	37.3	0.46
Other machinery and equipment	9.8	0.09	8.5	0.07	4.0	0.03	3.2	0.03	88.8	0.78
Miscellaneous manufacturing	8.1	0.14	4.6	0.08	1.4	0.02	1.3	0.02	42.8	0.74
Total manufacturing	45.7	0.05	33.4	0.04	30.9	0.03	20.8	0.02	776.3	0.86

(a) Employment at end of June. Includes working proprietors.

NOTE: Data in this table exclude operations by single establishment enterprises employing fewer than four persons.

Source: *Manufacturing Industry, Concentration Statistics, Australia (8207.0)* and *Manufacturing Industry, Australia (8221.0)*.

**18.20 PROPORTION OF MANUFACTURING ESTABLISHMENTS(a) WITH ADVANCED
TECHNOLOGY
(per cent)**

ASIC code	Industry subdivision	Proportion of manufacturing establishments having one or more technologies	
		1988	1991
21	Food, beverages and tobacco	28	32
23	Textiles	34	34
24	Clothing and footwear	15	29
25	Wood, wood products and furniture	23	30
26	Paper, paper products, printing and publishing	21	27
27	Chemical, petroleum and coal products	43	44
28	Non-metallic mineral products	41	47
29	Basic metal products	50	62
31	Fabricated metal products	31	46
32	Transport equipment	47	54
33	Other machinery and equipment	56	64
34	Miscellaneous manufacturing	34	44
21-34 Total manufacturing		33	41

(a) Establishments with employment of 10 or more.

Source: *Manufacturing Technology Statistics, Australia, 31 December 1991 (8123.0)*.

18.21 PROPORTION OF MANUFACTURING ESTABLISHMENTS(a) WITH ADVANCED TECHNOLOGY, BY BROAD TECHNOLOGY CATEGORY, 31 DECEMBER 1991
(per cent)

ASIC code	Industry subdivision	Broad technology category				
		Design and engineering	Fabrication, machining and assembly	Automated material handling	Automated inspection and/or testing equipment	Communi- cations and control
21	Food, beverages and tobacco	8	13	9	7	29
23	Textiles	12	15	4	7	26
24	Clothing and footwear	15	17	3	1	8
25	Wood, wood products and furniture	17	18	3	3	13
26	Paper, paper products, printing and publishing	16	8	2	2	15
27	Chemical, petroleum and coal products	19	14	8	8	43
28	Non-metallic mineral products	12	20	15	7	36
29	Basic metal products	28	45	12	8	44
31	Fabricated metal products	23	34	2	1	21
32	Transport equipment	28	44	3	7	34
33	Other machinery and equipment	44	43	3	5	34
34	Miscellaneous manufacturing	23	25	5	7	24
21-34 Total manufacturing		21	24	5	4	24

(a) Establishments with employment of 10 or more.

Source: *Manufacturing Technology Statistics, Australia, 31 December 1991* (8123.0).

Research and experimental development

Research and experimental development (R&D) activity in the business context is systematic investigation or experimentation involving innovation or technical risk, the outcome of which is *new knowledge*, with or without a specific practical application or *new or improved* products, processes, materials, devices or services. R&D activity extends to modifications to existing products/processes.

Business enterprises classified to the Other machinery and equipment industry (see footnote (b) to table 18.22) accounted for nearly 36 per cent of all manufacturing research and development expenditure in 1990-91. Chemical, petroleum and coal products (17%) and Transport equipment (15%) were also major contributors to R&D expenditure.

Expenditure on R&D by manufacturing business enterprises increased by more than 50 per cent between 1986-87 and 1990-91. Paper, paper products, printing and publishing (up 254%) had the largest percentage increase over the period, while Textiles, Clothing and footwear (down 42%) was the only industry to experience a fall in R&D expenditure.

Between 1988-89 and 1990-91 Paper, paper products, printing and publishing (up 47%) and Basic metal products (up 43%) exhibited the largest percentage increases over the period. Falls in R&D expenditure were recorded by Wood, wood products and furniture (down 30%); Non-metallic mineral products (down 21%); Textiles, Clothing and footwear (down 18%); Transport equipment (down 4%) and Food, beverages and tobacco (down 2%).

**18.22 EXPENDITURE ON RESEARCH AND EXPERIMENTAL DEVELOPMENT
BY MANUFACTURING ENTERPRISES**
(\$ million)

1990-91						
Type of expenditure						
Industry subdivision	1986-87	1988-89	Capital expenditure	Labour costs(a)	Other current expenditure	Total
Food, beverages and tobacco	58.8	87.4	11.9	42.5	30.9	85.3
Textiles; Clothing and footwear	12.9	9.1	1.1	3.3	3.1	7.5
Wood, wood products and furniture	6.4	10.4	0.5	4.4	2.4	7.3
Paper, paper products, printing and publishing	10.0	24.1	6.3	10.8	18.4	35.4
Chemical, petroleum and coal products	120.1	147.1	17.7	84.1	76.9	178.7
Non-metallic mineral products	15.3	22.2	2.9	7.4	7.3	17.5
Basic metal products	63.2	91.4	23.3	49.6	57.6	130.5
Fabricated metal products	23.0	26.1	7.8	15.0	9.9	32.6
Transport equipment	127.9	162.3	14.5	81.9	58.7	155.0
Photographic, professional and scientific equipment(b)	25.7	35.7	3.8	23.0	15.1	41.9
Appliances and electrical equipment(b)	174.5	236.4	25.0	155.4	94.8	275.1
Industrial machinery and equipment(b)	43.3	56.1	3.6	27.6	29.1	60.3
Miscellaneous manufacturing	21.6	27.1	3.8	16.3	12.8	32.9
Total manufacturing	702.7	937.2	122.0	521.2	416.9	1,060.0

(a) Includes wages and salaries, payroll tax, payments to contract staff on the payroll, fringe benefits tax and workers compensation, holiday pay, long service leave payments, sick pay, employer contributions to superannuation and pension schemes. (b) Photographic, professional and scientific equipment; Appliances and electrical equipment; and Industrial machinery and equipment comprise subdivision 33 (Other machinery and equipment) of ASIC.

Source: *Research and Experimental Development, Business Enterprises, Australia (8104.0)*.

Commonwealth government authorities

Year Book Australia 1994 contained an outline of the role and responsibilities of the Industry Commission, the Bureau of Industry Economics, and the Department of Industry, Technology and Regional Development, since changed to the Department of Industry, Science and Technology.

WHOLESALE

The wholesale industry comprises businesses primarily engaged in the resale (as agents or principals) of goods to businesses or to institutional (including government) users. These businesses are wholesale merchants who take title to the goods they sell; separate sales branches (not being retail businesses) operated by manufacturing businesses; commission agents, import and export agents and purchasing agents; petroleum products

distributors; and cooperatives and marketing boards engaged in marketing farm products.

Comprehensive statistics on the wholesale industry are only collected periodically. The most recent wholesale industry survey was in respect of 1991-92, following a previous survey for 1981-82. Only broad comparisons can be made between these two series.

Since 1981-82, the wholesale industry has seen a four per cent increase in the number of businesses operating, while the number of persons employed has decreased by five per cent. Turnover, at constant prices, increased by 19 per cent since 1981-82, from \$105,219 million to \$125,367 million.

The following results from the 1991-92 survey have been produced on the basis of the new Australian and New Zealand Standard Industrial Classification (ANZSIC).

Results from the 1991-92 Wholesale Industry Survey showed the Machinery and equipment group employing the highest number of persons at 102,677, representing 29 per cent of the total persons employed in the wholesale

sector, with a turnover of \$26,014 million. Computer wholesaling, which is a subset of this group, was a significant contributor to the wholesale industry with 22,619 persons employed, and a turnover figure of \$7,419 million.

The Minerals, metals and chemicals group had the highest level of turnover (\$36,088 million),

assets (\$17,504 million) and liabilities (\$11,941 million). This was mainly due to the petroleum product class which had assets and liabilities of \$13,166 million and \$8,918 million respectively.

The following table shows a summary of key data items for the wholesale industry.

18.23 WHOLESALE INDUSTRY: SUMMARY OF OPERATIONS BY ANZSIC GROUP, 1991-92

ANZSIC group	Description	Businesses	Persons employed	Wages & salaries	Turnover	Total assets	Total liabilities
		no.	'000	\$m	\$m	\$m	\$m
451	Farm produce	1,820	19,565	508	11,747	9,451	6,994
452	Minerals, metals and chemicals	1,522	31,012	1,201	36,088	17,504	11,941
453	Builders supplies	3,923	44,155	1,054	9,464	5,046	3,623
461	Machinery and equipment	8,188	102,677	3,344	26,014	14,094	11,197
462	Motor vehicles	4,084	42,149	1,004	16,254	5,993	4,384
471	Food, drink and tobacco	3,484	43,466	1,025	21,436	5,034	3,854
472	Textiles, clothing and footwear	1,892	14,875	395	4,543	3,343	2,146
473	Household goods	1,252	12,977	375	4,778	2,554	1,867
479	Other wholesaling	3,802	39,524	1,046	11,628	5,906	4,076
Total wholesale industry		29,967	350,401	9,952	141,951	69,193	50,082

Source: *Wholesale Industry, Australia, 1991-92* (8638.0).

The largest commodity sales expressed as a percentage of total wholesale sales were: crude oil and petroleum products (15.6%); cars and commercial vehicles (6.3%); wool, wheat and other cereal grains (4.3%); iron ore, metals and metallic ores (3.9%); and computers and related parts (3.5%).

RETAIL

The retail industry comprises businesses primarily engaged in the resale of new or used goods to final consumers for personal or household consumption, or in selected repair activities such as the repair of household equipment or motor vehicles.

The retail industry is a very important part of the Australian economy, as all Australians depend on shops to supply goods and services. In terms of sales of goods and services, the retail industry is the third largest of Australia's industries behind manufacturing and wholesale. In 1991-92 there were more than 83,000 retail

businesses in Australia which generated turnover of some \$114.3 billion and employed more than 831,000 people.

The retail industry is dominated by small business with 96 per cent of businesses employing less than 20 people. These small businesses also accounted for 44 per cent of the industry's turnover during 1991-92.

The largest industry group was Supermarkets and grocery stores which recorded turnover of \$25.3 billion during 1991-92 or 22 per cent of total retail industry turnover. At 30 June 1992, there were about 172,500 people employed in this industry group which was 21 per cent of total retail employment.

The Motor vehicle retailing and services groups were also significant contributors to retail industry turnover. Motor vehicle retailing recorded \$20.7 billion or 18 per cent of the total for the retail industry while the Motor vehicle services group generated an estimated \$16.7 billion which was about 15 per cent of the total.

In terms of numbers of businesses, the Specialised food retailing group (dominated by takeaway food retailers) was the largest with about 19,800 businesses recorded, closely followed by the Motor vehicle services group with about 19,300 businesses.

In 1991-92, assets exceeded liabilities in all industry groups. Department stores had assets worth almost \$7.0 billion which was the highest value estimated for any group.

18.24 RETAIL INDUSTRY: SUMMARY OF OPERATIONS BY ANZSIC CLASS, 1991-92

ANZSIC group	Description	Businesses no.	Persons employed '000	Wages & salaries \$m	Turnover \$m	Total assets \$m	Total liabilities \$m
5110	Supermarkets and grocery stores	5,602	172,482	2,362	25,280	5,517	4,338
512	Specialised food retailing	19,795	154,741	1,577	11,536	4,961	3,729
5210	Department stores	14	93,538	1,473	9,830	6,957	5,762
522	Clothing and soft good retailing	7,742	75,685	1,133	7,839	3,708	2,605
523	Furniture, houseware and appliance retailing	6,718	51,513	1,037	9,552	3,646	2,643
524	Recreational good retailing	6,648	40,033	537	5,070	2,505	1,711
525	Other personal and household good retailing	11,811	71,666	1,047	7,550	3,826	2,378
526	Household equipment repair services	1,220	5,154	89	306	128	100
531	Motor vehicle retailing	4,730	52,432	1,255	20,648	4,075	3,765
532	Motor vehicle services	19,318	114,072	1,974	16,696	3,954	3,001
Total retail		83,596	831,315	12,483	114,307	39,277	30,031

Source: Retail Industry, Australia, 1991-92 (8622.0).

The \$114.3 billion turnover recorded by retail outlets in Australia during 1991-92 can be divided into two broad categories — Retail sales of goods and Other income. Retail sales of goods (\$102 billion) accounted for 89.0 per cent of the total while the remainder was made up of Other income items, the main component being service income with \$7.4 billion (6% of total turnover) (table 18.25).

Sales of food and groceries was the largest of the commodity groups with over \$35.0 billion, or 31.0 per cent of the total followed by sales of motor vehicles and associated goods with \$26.0 billion (23% of total turnover).

Other than service income, the other major item in Other income was wholesale sales by retail businesses, almost \$5 billion or four per cent of total turnover.

18.25 RETAIL INDUSTRY: COMMODITY SALES AND OTHER INCOME, 1991-92

<i>Major commodity group</i>	<i>Sales</i>	<i>Total turnover</i>
	\$m	%
Food and groceries	34.7	30.4
Motor vehicles and associated goods	26.0	22.8
Personal and other goods	17.3	15.1
Clothing, footwear and fabrics	12.4	10.9
Household goods	10.9	9.5
<i>Total retail sales</i>	<i>101.3</i>	<i>88.6</i>
Other income		
Wholesale sales	4.9	4.3
Service income	7.4	6.5
Commission income	0.3	0.3
Rent, leasing and hiring income	0.4	0.3
<i>Total other income</i>	<i>13.0</i>	<i>11.4</i>
Total turnover	114.3	100.0

Source: Retail Industry: Commodity Sales, Australia, 1991-92 (8624.0).

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FOR MORE INFORMATION

The ABS has a far wider range of information on Australia than that contained in the *Year Book*. Information is available in the form of regular publications, electronic data services, special tables and from investigations of published and unpublished data.

For further information contact ABS Information Services at one of the addresses listed on the page facing the Introduction to the *Year Book*.

