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Introduction

Manufacturing 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.

The manufacturing industry is an important sector of the Australian economy, contributing about 15% of Australia's gross domestic product (GDP) and about 13% of employment. However, despite significant increases in the value of the manufacturing industry's gross product (increasing more than 20% over the past 10 years), the industry's share of GDP has fallen over the past 20 years from around 20% to its current 15%.

Similarly, employment in the manufacturing industry has fallen from around 1.25 million persons 20 years ago to 932,000 at June 1995.

This chapter presents a range of data about the manufacturing sector as a whole, and about broad categories of manufacturing industry. These categories are referred to as 'subdivisions'.

Some data are provided from the annual manufacturing survey, for which the latest results relate to 1994–95, while others are derived from various monthly and quarterly surveys for which the latest annualised results relate to 1995–96.

Manufacturing trends

Movements in the level of manufacturing activity at constant prices described below are based on the quarterly index of industrial production.

Manufacturing production in 1995–96 was 11% higher than five years earlier, 26% higher than 10 years earlier and 37% higher than 15 years earlier.

Over the period from 1990–91 to 1995–96, the index of manufacturing production fell initially but then increased steadily (table 18.1).

Generally, production for the individual subdivisions of the manufacturing industry has also grown over the five years to 1995–96. Large growth over the period was recorded for Wood and paper product manufacturing (14%), Petroleum, coal, chemical and associated product manufacturing (18%), Metal product manufacturing (14%), Machinery and equipment manufacturing (15%) and Other manufacturing (21%).

The only subdivision which did not grow over the five years to 1995–96 was the Textiles, clothing, footwear and leather manufacturing industry. Production in this industry has fallen steadily since 1988–89, and in 1995–96 is almost 18% below the level of 1990–91.

18.1 MANUFACTURING INDUSTRY GROSS PRODUCT, Indexes(a)

Industry subdivision	1990–91	1991–92	1992–93	1993–94	1994–95	1995–96
Food, beverages and tobacco manufacturing	102.2	102.1	103.9	106.7	109.9	111.7
Textiles, clothing, footwear and leather manufacturing	96.5	91.4	87.6	89.0	86.1	79.5
Wood and paper product manufacturing	95.5	94.6	100.0	103.6	111.7	109.2
Printing, publishing and recorded media	97.1	90.1	95.7	100.0	100.1	99.7
Petroleum, coal, chemical and associated product manufacturing	104.3	102.4	104.0	114.5	122.6	123.3
Non-metallic mineral product manufacturing	89.2	86.8	94.6	96.8	106.1	96.9
Metal product manufacturing	98.6	97.7	96.6	100.1	107.4	112.2
Machinery and equipment manufacturing	96.3	91.4	91.7	100.0	107.3	110.6
Other manufacturing	83.4	80.2	79.6	85.2	101.6	100.8
Total manufacturing	97.7	95.0	96.3	101.5	107.4	108.3

(a) Average 1989–90 prices. Reference base year 1989–90 = 100.0.

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

Structure of the manufacturing industry

At 30 June 1995 manufacturing establishments in Australia employed 932,100 persons. During 1994-95 those establishments paid \$29,851m in wages and salaries and recorded \$193,823m in turnover (table 18.2).

The manufacturing subdivisions with the most persons employed at 30 June 1995 were Machinery and equipment manufacturing (202,800), Food, beverages and tobacco manufacturing (163,100) and Metal product manufacturing (147,400). Of the manufacturing subdivisions, Non-metallic mineral product manufacturing (39,000) was the smallest employer, accounting for only 4.2% of manufacturing employment. Further

information on manufacturing employment is contained in table 18.4.

Food, beverages and tobacco was the largest contributor to total manufacturing turnover. Its turnover of \$41,010m was 21% of the total for manufacturing. Other subdivisions making major contributions were Machinery and equipment manufacturing (20%), Metal product manufacturing (18%) and Petroleum, coal, chemical and associated product manufacturing (16%). Further information on manufacturing turnover is contained in table 18.3. Further information on sales of goods produced (the major component of turnover for manufacturers) is shown in table 18.11.

18.2 SUMMARY OF OPERATIONS OF THE MANUFACTURING INDUSTRY(a) — 1994-95

Industry subdivision	Employment at 30 June(b) '000	Wages and salaries(c) \$m	Turnover \$m	Turnover per person employed \$'000
Food, beverages and tobacco manufacturing	163.1	5 015	41 010	251
Textiles, clothing, footwear and leather manufacturing	76.6	1 913	9 786	128
Wood and paper product manufacturing	63.8	1 952	11 360	178
Printing, publishing and recorded media	94.2	3 157	13 621	145
Petroleum, coal, chemical and associated product manufacturing	91.1	3 431	30 462	334
Non-metallic mineral product manufacturing	39.0	1 312	8 951	230
Metal product manufacturing	147.4	5 129	34 691	235
Machinery and equipment manufacturing	202.8	6 681	38 189	188
Other manufacturing	54.0	1 261	5 754	107
Total manufacturing	932.1	29 851	193 823	208

(a) Division C of the Australian and New Zealand Standard Industrial Classification (ANZSIC). (b) Includes working proprietors.

(c) Excludes the drawings of working proprietors.

Source: *Manufacturing Industry, Australia, Preliminary (8201.0)*.

Turnover

Turnover figures include sales of goods whether produced by the establishment or not, together with: transfers out of goods to other establishments of the same business; bounties and subsidies on production; all other operating revenue from outside the enterprise (such as commission, repair and service revenue and rent, leasing and hiring revenue); and capital work done 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%) together accounted for almost two-thirds of

national manufacturing turnover in 1994-95. New South Wales contributed 46% of the national turnover of the Printing, publishing and recorded media industry, and 25% to 40% of the national turnover of the remaining manufacturing industries. Victoria contributed 46% of the national turnover of the Textiles, clothing, footwear and leather manufacturing industry, 40% of the national turnover of the Machinery and equipment manufacturing industry and 20% to 35% of the national turnover of the remaining manufacturing industries. Although Queensland accounted for only 14% of national manufacturing turnover, it contributed 22% of national turnover for

Non-metallic mineral product manufacturing and 21% for Food, beverages and tobacco manufacturing. Similarly South Australia, which

accounted for 9% of national manufacturing turnover, contributed 19% of national turnover for Machinery and equipment manufacturing.

18.3 MANUFACTURING INDUSTRY TURNOVER — 1994-95

Industry subdivision	NSW \$m	Vic. \$m	Qld \$m	SA \$m	WA \$m	Tas. \$m	NT \$m	ACT \$m	Aust. \$m
Food, beverages and tobacco manufacturing	12 050	12 791	8 620	3 270	2 812	1 284	111	73	41 010
Textiles, clothing, footwear and leather manufacturing	3 284	4 478	638	819	345	210	4	7	9 786
Wood and paper product manufacturing	3 596	3 169	1 735	975	709	1 097	19	60	11 360
Printing, publishing and recorded media	6 324	4 054	1 413	650	752	166	36	225	13 621
Petroleum, coal, chemical and associated product manufacturing	12 073	10 562	3 545	1 310	2 717	235	16	3	30 462
Non-metallic mineral product manufacturing	2 992	1 970	1 980	529	1 108	249	68	55	8 951
Metal product manufacturing	13 135	7 784	5 932	2 641	3 908	816	458	18	34 691
Machinery and equipment manufacturing	10 494	15 462	3 070	7 173	1 637	252	35	66	38 189
Other manufacturing	1 824	1 732	1 048	420	606	63	13	48	5 754
Total manufacturing	65 772	62 002	27 982	17 787	14 595	4 372	760	554	193 823

Source: Manufacturing Industry, Australia, Preliminary (8201.0).

Employment

New South Wales (33%) and Victoria (32%) dominate manufacturing employment in Australia, accounting for almost two-thirds of national manufacturing employment as at 30 June 1995. In all industries, New South Wales and Victoria are the two largest employing States. However, different industries predominate, in terms of employment, in different States (table 18.4).

New South Wales manufacturing establishments employ 40% of persons in Printing, publishing and recorded media, and 37% of those in the Metal product manufacturing industry. Some

46% of all persons employed by Textiles, clothing, footwear and leather manufacturers are located in Victoria.

Queensland establishments employ 21% of persons in Food, beverages and tobacco manufacturing and 19% of those in Non-metallic mineral product manufacturing. South Australia accounts for 15% of employment in the Machinery and equipment manufacturing industry.

For further information on employed wage and salary earners and the characteristics of the manufacturing labour force, refer to *Chapter 6, Labour*.

18.4 MANUFACTURING INDUSTRY EMPLOYMENT — June 1995

Industry subdivision	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	ACT '000	Aust. '000
Food, beverages and tobacco manufacturing	47.0	46.7	34.2	15.8	12.4	5.9	0.5	0.5	163.1
Textiles, clothing, footwear and leather manufacturing	24.5	35.5	5.7	5.1	3.7	1.9	0.1	0.1	76.6
Wood and paper product manufacturing	20.5	16.5	11.5	6.2	4.6	3.9	0.1	0.4	63.8
Printing, publishing and recorded media	38.0	28.6	12.1	5.0	6.3	1.9	0.5	1.9	94.2
Petroleum, coal, chemical and associated product manufacturing	33.6	35.5	8.9	6.3	5.8	0.9	0.1	0.0	91.1
Non-metallic mineral product manufacturing	12.2	9.6	7.6	2.8	5.5	1.0	0.3	0.2	39.0
Metal product manufacturing	54.2	36.4	25.6	11.8	14.7	3.4	1.2	0.2	147.4
Machinery and equipment manufacturing	63.7	70.9	22.8	29.6	12.3	2.6	0.3	0.6	202.8
Other manufacturing	15.6	16.2	10.9	4.3	5.7	0.8	0.1	0.4	54.0
Total manufacturing	309.3	295.8	139.3	86.9	71.1	22.2	3.2	4.2	932.1

Source: Manufacturing Industry, Australia, Preliminary (8201.0).

Labour costs

Major labour costs in the manufacturing industry increased by 6.5% between 1991–92 and 1993–94. In both years, earnings comprised

around 88% of total labour costs for the manufacturing industry, which is comparable with the proportion for all industries.

18.5 MAJOR LABOUR COSTS OF MANUFACTURING INDUSTRY

Type of labour cost	1991–92 \$m	1993–94 \$m	1993–94 Distribution of labour costs	
			Manufacturing %	All industries %
Earnings	26 907	28 468	87.7	88.4
Other labour costs				
Payroll tax	1 367	1 441	4.4	3.5
Superannuation	1 142	1 432	4.4	5.6
Workers' compensation	893	948	2.9	1.8
Fringe benefits tax	183	184	0.6	0.7
Total other labour costs	3 585	4 005	12.3	11.6
Total major labour costs	30 492	32 473	100.0	100.0

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

Total labour costs per employee in 1993–94 of \$36,570 represented an increase of 4.0% over 1991–92 costs per employee. For 1993–94, the total labour costs per employee in the

manufacturing industry were substantially higher than the average of \$32,755 per employee for all industries.

18.6 AVERAGE LABOUR COST PER EMPLOYEE IN MANUFACTURING INDUSTRY

Type of labour cost	1991–92 \$	1993–94	
		Manufacturing \$	All industries \$
Earnings	31 036	32 058	28 957
Other labour costs			
Payroll tax	1 576	1 623	1 131
Superannuation	1 318	1 613	1 829
Workers' compensation	1 030	1 068	598
Fringe benefits tax	211	208	240
Total other labour costs	4 135	4 512	3 798
Total major labour costs	35 171	36 570	32 755

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

Industrial disputes

There were 156 industrial disputes in the manufacturing industry during the calendar year 1995. These disputes involved over 86,000 employees and resulted in the loss of almost 160,000 working days (table 18.7). Compared to experience in 1994, this represented a small fall (5%) in the number of disputes, but increases of 72% in employees involved and 30% in working days lost. However, the number of disputes, employees involved and working days lost in 1995 were all

substantially below the 1993 experience (down 8%, 51% and 33% respectively).

Manufacturing industry accounted for 24% of all disputes during 1995 compared to 29% in 1994. Manufacturing industry employees involved in disputes were 25% of all employees involved in disputes during 1995, a marked increase on the 19% recorded in 1994. Manufacturing industry disputes were responsible for 29% of working days lost during 1995, which was also higher than in 1994 (25% of working days lost).

18.7 INDUSTRIAL DISPUTES

Year	Unit	Manufacturing	All industries
TOTAL INDUSTRIAL DISPUTES			
1993	no.	170	610
1994	no.	164	560
1995	no.	156	643
EMPLOYEES INVOLVED DIRECTLY AND INDIRECTLY			
1993	'000	175.4	489.2
1994	'000	50.2	265.1
1995	'000	86.1	344.3
WORKING DAYS LOST			
1993	'000	238.1	635.8
1994	'000	123.2	501.0
1995	'000	159.9	547.6

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

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 in this industry. The number of

manufacturing employees with union membership fell a further 123,800 persons (23%) between 1986 and 1994, resulting in an overall fall of 213,400 persons (34%) between 1982 and 1994. 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 18.8).

The number of trade union members in all industries decreased between 1982 and 1994. In percentage terms membership followed a downward trend similar to that in manufacturing.

Although 45% of permanent manufacturing employees belonged to a trade union in 1994, only 16% of casual employees were members. Membership rates for permanent female employees were significantly lower than for permanent male employees. The membership rate for casual manufacturing employees was higher than the all industries average (table 18.9).

18.8 EMPLOYEES WITH TRADE UNION MEMBERSHIP

Period	Manufacturing		All industries	
	Employees '000	Proportion of total employment %	Employees '000	Proportion 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
August 1994	421.6	40.8	2 283.4	35.0

(a) Includes persons aged 70 years and over.

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

18.9 TRADE UNION MEMBERS — August 1994

Employees	Manufacturing %	All industries %
MALES		
Permanent	47.3	43.0
Casual	15.8	14.8
Total	44.3	37.9
FEMALES		
Permanent	35.6	38.8
Casual	16.0	14.5
Total	30.7	31.3
PERSONS		
Permanent	44.6	41.3
Casual	15.9	14.7
Total	40.8	35.0

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

Capital expenditure

New capital expenditure in the manufacturing industry rose by 29% between 1993–94 and 1995–96. Increases were recorded for all subdivisions although some were very small. Industries with the greatest increases were Metal product manufacturing (83%) and Wood and paper product manufacturing (80%).

The level of private new capital expenditure in 1995–96 was lower than in 1994–95 in six of the nine manufacturing subdivisions, with strong increases in the other three. Largest falls were in Printing, publishing and recorded media (40%) and Textiles, clothing, footwear and leather manufacturing (35%). Both of these decreases

followed strong rises in 1993–94. Largest increases were in Metal product manufacturing

(51%) and Wood and paper product manufacturing (40%).

18.10 PRIVATE NEW CAPITAL EXPENDITURE IN MANUFACTURING INDUSTRY

Industry subdivision	1993–94 \$m	1994–95 \$m	1995–96 \$m
Food, beverages and tobacco manufacturing	1 973	2 046	2 014
Textiles, clothing, footwear and leather manufacturing	238	367	240
Wood and paper product manufacturing	592	764	1 068
Printing, publishing and recorded media	567	1 126	670
Petroleum, coal, chemical and associated product manufacturing	1 202	1 757	1 502
Non-metallic mineral product manufacturing	587	877	697
Metal product manufacturing	1 159	1 402	2 116
Machinery and equipment manufacturing	1 308	1 326	1 566
Other manufacturing	187	191	188
Total manufacturing	7 815	9 856	10 061

Source: Private New Capital Expenditure, Australia, Actual and Expected Expenditure (5626 0).

Sales and output

At average 1989–90 prices, output (sales adjusted for changes in the level of stocks) by private manufacturing businesses increased by just under 1% between 1994–95 and 1995–96. Five manufacturing subdivisions rose slightly, with Metal product manufacturing and Machinery and equipment manufacturing showing the largest rises (each 4%). The remaining four subdivisions recorded falls between 1994–95 and 1995–96, two of these substantial, namely Textiles, clothing, footwear and leather manufacturing (10%) and Non-metallic mineral product manufacturing (8%).

The largest contributors to manufacturing output were Food, beverages and tobacco manufacturing (23%), Machinery and equipment manufacturing (19%), Metal product manufacturing (19%) and Petroleum, coal, chemical and associated product manufacturing (16%).

At average 1989–90 prices, the value of sales by private manufacturing businesses in 1995–96 was 0.3% higher than for 1994–95. In general, changes in sales from 1994–95 to 1995–96 and industry contributions to total manufacturing sales were the same as described for output. However, falls in sales for Non-metallic mineral product manufacturing (8%) and Textiles, clothing, footwear and leather manufacturing (7%) were less pronounced than falls in output.

At average 1989–90 prices, the value of stocks held by private manufacturing businesses at June 1996 was 5.8% higher than at June 1995. Stocks held rose in all manufacturing subdivisions except Textiles, clothing, footwear and leather manufacturing where they fell by 15%. Largest rises in stocks were for Printing, publishing and recorded media (13%) and Other manufacturing (15%). All other subdivisions rose by between 5% and 10%.

18.11 SALES AND OUTPUT(a), Private Manufacturing Businesses

Industry subdivision	1994-95	1995-96	1994-95	1995-96
	Sales of goods produced \$m	Sales of goods produced \$m	Output of goods \$m	Output of goods \$m
Food, beverages and tobacco manufacturing	35 770	35 822	35 710	36 228
Textiles, clothing, footwear and leather manufacturing	7 488	6 979	7 509	6 754
Wood and paper product manufacturing	9 724	9 423	9 678	9 542
Printing, publishing and recorded media	6 793	6 801	6 818	6 889
Petroleum, coal, chemical and associated product manufacturing	24 287	24 335	24 695	24 579
Non-metallic mineral product manufacturing	9 221	8 466	9 264	8 528
Metal product manufacturing	28 387	29 510	28 603	29 760
Machinery and equipment manufacturing	28 712	29 651	28 813	29 901
Other manufacturing	4 580	4 508	4 542	4 577
Total manufacturing	154 962	155 495	155 632	156 758

(a) Average 1989-90 Prices. Output is calculated as sales of goods produced minus opening stocks plus closing stocks.

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

Company profits

Profits before income tax earned by manufacturing companies fell by 19% between 1994-95 and 1995-96, following a rise of 18% from 1993-94. Profits fell between 1994-95 and 1995-96 in all but two manufacturing subdivisions and these two, namely Food, beverages and tobacco manufacturing and Petroleum, coal, chemical and associated product manufacturing, each grew by only 1%. The largest fall was for Textile, clothing, footwear and leather manufacturing (51%),

five other subdivisions recording falls in excess of 20%.

Industry subdivisions contributing most to manufacturing industry profits for 1995-96 were Food, beverages and tobacco manufacturing (22%), Petroleum, coal, chemical and associated product manufacturing (18%), Machinery and equipment manufacturing (17%) and Metal product manufacturing (16%).

18.12 PROFITS BEFORE INCOME TAX, Manufacturing Companies

Industry subdivision	1993-94	1994-95	1995-96
	\$m	\$m	\$m
Food, beverages and tobacco manufacturing	2 130	2 236	2 258
Textiles, clothing, footwear and leather manufacturing	380	470	230
Wood and paper product manufacturing	913	983	740
Printing, publishing and recorded manufacturing	1 134	1 411	1 083
Petroleum, coal, chemical and associated product manufacturing	1 633	1 781	1 798
Non-metallic mineral product manufacturing	1 047	1 134	731
Metal product manufacturing	1 895	2 363	1 616
Machinery and equipment manufacturing	1 402	2 169	1 750
Other manufacturing	122	64	42
Total manufacturing	10 655	12 611	10 247

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

Principal manufactured commodities

Table 18.13 shows the total production of selected manufactured commodities.

Of the 25 commodities shown, production of 16 commodities was lower in 1995-96 than in

1994-95, including six commodities for which production was more than 10% lower. The largest falls in production were for clay building bricks (22%), woollen woven fabrics (20%) and

18.13 SELECTED COMMODITIES PRODUCED BY MANUFACTURING ESTABLISHMENTS (a)

Commodity	Unit of quantity	1992-93	1993-94	1994-95	1995-96
Confectionery					
Chocolate based	t	105 681	110 910	110 398	114 211
Other	t	68 671	68 324	71 974	72 830
Beer(b)	mill. L	1 805	1 752	1 788	1 742
Tobacco and cigarettes(c)	t	24 001	23 273	23 083	20 390
Woven fabric(d)					
Man-made fibre	'000 m ²	185 060	184 885	185 171	149 066
Cotton (including towelling)	'000 m ²	41 410	49 864	51 938	63 886
Wool (including blanketing)	'000 m ²	8 343	7 893	8 189	6 523
Yarn(d)					
Cotton	t	27 436	33 780	37 643	36 955
Wool	t	18 167	21 016	23 093	20 063
Textile floor coverings	'000 m ²	42 106	46 910	47 258	42 683
Newsprint	'000 t	433	411	423	445
Non-laminated particle board(e)	'000 m ³	660	752	846	804
Plastics in primary form(f)	'000 t	1 065	1 147	1 240	1 222
Portland cement	'000 t	6 225	6 733	7 124	6 397
Clay bricks for structural purposes	mill.	1 722	1 814	1 860	1 458
Ready mixed concrete	'000 m ³	14 548	15 267	15 892	14 556
Basic iron, spiegeliesen and sponge iron (g)	'000 t	6 445	7 209	7 449	7 553
Blooms and slabs of iron or steel(g)	'000 t	6 218	7 627	7 807	7 950
Motor vehicles					
Cars and station wagons	'000	275	298	301	303
Vehicles for goods and materials(h)	'000	15	23	27	25
Domestic refrigerators	'000	393	460	408	414
Domestic clothes washing machines(i)	'000	308	326	305	297
Electric motors	'000	2 847	2 990	3 099	2 850
Electricity	mill. kWh	159 872	161 813	165 063	167 543
Gas(j)	TJ	568 820	587 013	629 406	620 889

(a) Data in this table exclude operations by single establishment enterprises employing fewer than four persons. (b) Includes ale, stout and porter. Excludes extra light beer containing less than 1.15% but more than 0.5% by volume of alcohol. (c) Source: Australian Tobacco Marketing Advisory Committee, until April 1995. (d) Includes mixtures predominantly of the fibre named. (e) Includes board for subsequent conversion to other purposes. Excludes fibreboard and fibre paperboard. (f) Includes liquid, paste, powder, granules, flakes, blocks, irregular shapes, lumps and similar forms. (g) Comprises production of BHP Steel only. (h) Includes utilities, panel vans and prime movers for semi-trailers. Excludes off-highway trucks (for example, dump wagons), materials handling trucks (for example, forklift trucks) and semi-trailers. (i) Household or laundry-type, each of a dry linen capacity not exceeding 10kg. (j) Available for issue through mains. Includes natural gas.

Source: ABS manufacturing production publications (8301.0, 8357.0 to 8363.0 and 8367.0 to 8369.0).

woven fabrics of man-made fibres (almost 20%). The largest increases in production in 1995-96 over 1994-95 were for cotton woven fabrics (23%) and newsprint (5%).

However, comparison of production in 1995-96 with production three years earlier shows that production for 16 commodities was higher in 1995-96. The largest increase was for cotton woven fabrics (54%). The largest fall was for woven fabrics of man-made fibres (19%).

Price indexes

The ABS compiles two price indexes relating to the manufacturing sector: the Price Indexes of Materials Used in Manufacturing Industries; and the Price Indexes of Articles Produced by Manufacturing Industries (see *Chapter 27, Prices* for more details). Tables 18.14 and 18.15 set out index numbers for selected components of those indexes.

18.14 PRICE INDEXES, Materials Used in Manufacturing Industries(a)(b)

	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
Food, beverages and tobacco	97.9	100.0	104.3	107.7	111.0	111.7
Textiles and textile products	90.2	87.0	88.1	89.9	103.0	100.9
Knitting mills and clothing	101.6	104.5	108.1	107.7	109.2	111.4
Footwear	101.6	99.8	99.4	102.4	109.5	111.7
Leather and leather products	88.1	85.3	93.2	99.6	101.9	95.1
Sawmilling and timber products	104.7	104.5	109.2	115.3	111.3	114.0
Paper and paper products	101.5	96.3	95.6	89.7	95.8	108.3
Printing and publishing	101.7	102.5	103.3	102.7	101.1	114.1
Petroleum and coal products	130.9	112.6	121.7	101.9	100.2	103.5
Chemicals	103.2	106.2	105.7	103.5	107.8	113.8
Rubber and plastics	100.3	100.3	104.5	106.9	118.8	122.0
Non-metallic mineral products	110.3	115.2	116.6	109.8	114.3	113.6
Basic metal products	99.3	95.4	94.7	87.6	94.0	99.4
Fabricated metal products	102.3	101.3	100.9	100.8	104.4	108.7
Transport equipment and parts	102.4	101.9	108.0	115.0	116.2	115.1
Electronic equipment and other machinery	102.4	99.8	101.8	102.7	106.4	107.8
Other manufacturing	103.2	103.4	106.3	111.5	112.3	112.9
All materials	104.0	101.4	106.4	104.7	107.6	110.0

(a) Reference base year 1989-90 = 100.0. (b) The index is on a net basis and relates in concept only to materials that enter Australian manufacturing industry from other sectors of the Australian economy or from overseas.

Source: *Price Indexes of Materials Used in Manufacturing Industries, Australia (6411.0)*.

18.15 PRICE INDEXES, Articles Produced by Manufacturing Industries(a)(b)

Industry	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96
Food, beverages and tobacco	109.5	112.3	116.2	120.5	123.0	125.9
Textiles	103.4	102.9	101.8	102.2	105.6	106.3
Clothing and footwear	112.0	114.9	116.1	117.1	118.3	121.4
Wood, wood products and furniture	112.7	114.2	116.5	122.5	126.1	127.1
Paper, paper products and printing	111.0	117.3	119.9	122.0	125.2	132.9
Chemicals and chemical products	109.3	109.9	111.1	110.3	113.6	117.0
Petroleum products	150.1	134.3	143.9	127.2	120.9	125.0
Non-metallic mineral products	117.2	119.3	119.3	120.8	124.2	124.6
Basic metal products	106.2	99.9	100.6	99.8	107.2	109.9
Fabricated metal products	113.7	114.3	114.7	114.8	116.2	119.2
Transport equipment	109.9	112.7	116.0	119.1	120.7	122.3
Other machinery and equipment	107.0	107.0	109.3	109.9	111.2	112.4
Miscellaneous manufacturing products	106.4	107.8	109.6	112.4	116.1	119.7
All Manufacturing Industry Index	111.2	111.6	114.3	115.5	118.1	121.1

(a) Reference base year 1988-89 = 100.0. (b) For a full description of Division C, Manufacturing and the subdivisions within the Manufacturing Division, see Australian Standard Industrial Classification (ASIC) (1201.0), 1983 edition.

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

Concentration within the manufacturing industry

Concentration statistics provide information on the extent to which particular groups of related enterprises contribute to economic activity in individual industries. They are an indicator of the degree of competition existing between enterprise groups engaged in an industry.

In 1993-94, the most concentrated manufacturing industries, in terms of the share

of employment accounted for by the largest four groups of related enterprises, were Non-metallic mineral product manufacturing (40%) and Wood and paper product manufacturing (21%). The industries with the lowest levels of concentration were Petroleum, coal, chemical and associated product manufacturing (9%) and Other manufacturing (5%).

18.16 CONCENTRATION OF EMPLOYMENT, Manufacturing Establishments — June 1994

Industry subdivision	Enterprise groups ranked by turnover							
	Largest 4		5-8		9-12		Remainder	
	'000	%	'000	%	'000	%	'000	%
Food, beverages and tobacco manufacturing	18.3	11	11.7	7	10.3	6	123.9	76
Textiles, clothing, footwear and leather manufacturing	7.5	10	4.3	6	1.9	3	62.0	82
Wood and paper product manufacturing	12.7	21	4.8	8	2.9	5	41.2	67
Printing, publishing and recorded media	16.2	18	7.2	8	3.6	4	61.0	69
Petroleum, coal, chemical and associated product manufacturing	7.6	9	5.8	7	3.1	4	71.8	81
Non-metallic mineral product manufacturing	15.2	40	4.1	11	1.8	5	17.1	45
Metal product manufacturing	28.0	19	7.3	5	6.8	5	103.5	71
Machinery and equipment manufacturing	22.7	12	13.1	7	6.5	3	153.2	78
Other manufacturing	2.8	5	1.3	2	1.0	2	48.9	91
Total manufacturing	43.3	5	35.4	4	35.4	4	797.0	86

Source: Manufacturing Industry, Australia (8221.0).

Manufacturing technology

The proportion of manufacturing establishments employing 10 or more people which use advanced manufacturing technologies increased by about one-quarter to 41% in the three-year period to December 1991. Over the same period, the proportion of manufacturing establishments using Total Quality Control/Management (TQC/TQM), increased by more than half to 24%. By 1996, a further 9% of manufacturers intended introducing advanced manufacturing technologies and 25% intended introducing TQC/TQM. In December 1991, the most widely used advanced manufacturing technology was computer-aided design and/or engineering.

Tables containing relevant data appear in *Year Book Australia, 1995*.

Research and experimental development

Research and experimental development (R&D) activity in the business context is defined as 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 also extends to modifications to existing products/processes.

Total expenditure on R&D by manufacturing enterprises in 1994-95 increased by 13.5% over 1993-94. With the exception of Wood and paper product manufacturing, all manufacturing industries recorded increases, most notably Motor vehicle and part and other transport equipment manufacturing (25%) and Electronic and electrical equipment and appliance manufacturing (21%). R&D expenditure for Wood and paper product manufacturing fell by 26%, but this followed an increase of 132% from 1992-93 to 1993-94.

Enterprises in the Electronic and electrical equipment and appliance industry accounted for 23% of all manufacturing research and development expenditure in 1994-95. Motor vehicle and part and other transport equipment manufacturing (18%), Petroleum, coal, chemical and associated product manufacturing (16%) and Metal product manufacturing (16%) were also major contributors to R&D expenditure.

18.17 EXPENDITURE ON RESEARCH AND DEVELOPMENT, Manufacturing Enterprises

Industry subdivision	1993-94 \$m	1994-95 Type of expenditure			
		Capital expenditure \$m	Labour costs(a) \$m	Other current expenditure \$m	Total \$m
Food, beverages and tobacco manufacturing	140.2	16.3	65.5	59.7	141.6
Textile, clothing, footwear and leather manufacturing	17.0	4.6	8.9	13.5	26.9
Wood and paper product manufacturing	103.0	9.0	15.0	52.5	76.5
Printing, publishing and recorded media manufacturing	10.8	2.3	8.7	4.1	15.1
Petroleum, coal, chemical and associated product manufacturing	272.2	39.0	127.5	143.3	309.8
Non-metallic mineral product manufacturing	31.3	7.6	18.2	19.4	45.3
Metal product manufacturing	294.2	26.1	105.9	177.6	309.5
Motor vehicle and part and other transport equipment manufacturing	269.8	16.6	123.5	198.0	338.1
Photographic and scientific equipment manufacturing	102.6	9.3	59.1	54.6	123.0
Electronic and electrical equipment and appliance manufacturing	371.5	40.6	222.0	188.4	451.0
Industrial machinery and equipment manufacturing	72.2	4.7	38.7	30.0	73.5
Other manufacturing	14.6	1.4	9.6	7.3	18.3
Total manufacturing	1 699.5	177.6	802.6	948.4	1 928.6

(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.

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

Commonwealth government authorities

Year Book Australia, 1994 contains 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, the industry-related responsibilities of which are now the responsibility of the Department of Industry, Science and Tourism.

The Productivity Commission is in the process of being formed by merging functions of the Bureau of Industry Economics, the Economic Planning and Advisory Commission and the Industry Commission. The main activities of the Productivity Commission are likely to fall into five broad categories:

- major projects linked to public enquiries, task forces and program evaluations commissioned by government;

- performance monitoring of economic infrastructure and government service provision related to the Council of Australian Governments agenda;
- domestic and international benchmarking of economic infrastructure and government provided services;
- review of regulation through the Office of Regulation Review and related research; and
- a complementary program of research encompassing projects of varying duration, form and subject matter.

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