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Australian Bureau of Statistics

MANUFACTURING AUSTRALIA

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CONTENTS

■ For further information about these and related statistics, contact Harvey Bissett on Canberra 02 6252 5639, or Clients Services in any ABS office as shown on the back cover of this publication.

NOTES

PURPOSE OF THIS PUBLICATION

This publication presents a picture of Australian manufacturing in the late 1990s with emphasis on most recent data and comparisons with the recent past. The main focus is on economic performance by Australian manufacturing as a whole and by the major industries within Australian manufacturing. Information is also provided on related aspects of manufacturing such as composition of the workforce, expenditure on research and development, energy usage and costs incurred for environmental protection activities. Material has been gathered from a range of ABS and non-ABS sources.

In addition, it provides information on the classifications used and the variables presented. Comments on the content and usefulness of this publication, and suggestions for improvements are welcome.

CHANGES IN THIS ISSUE

This issue incorporates the effects of revised international standards for compiling economic variables which the Australian Bureau of Statistics (ABS) has implemented in its manufacturing statistics in the period since the last issue of this publication. The most notable effect has been the adoption of a new measure of production (value added). The new measure, known as Industry Value Added (IVA), replaces the variable Industry Gross Product (IGP). Also, the method of compiling constant price estimates. These estimates are now known as 'Chain volume measures'.

Detailed explanation of the new variables such as IVA and of chain volume measures are contained in the Explanatory Notes. Related definitions are contained in the Glossary.

FURTHER DETAILS MAY BE AVAILABLE FROM THE ABS

The data in this publication mostly relate to broad industries such as Food, beverage and tobacco manufacturing. Data for finer level industries (e.g. Wine manufacturing) may be available from the ABS on request, especially for much of the data in chapters 1 and 2. A full list of manufacturing industries appears in the Appendix.

Similarly, while most of the data in this publication relate to Australia as a whole, a range of data about manufacturing in individual States is also available in either published or unpublished form. For further information see the 'Unpublished data' section of the Explanatory Notes.

Much of the data in chapter 3 is based on quarterly surveys. A list of relevant publications appears in the list of references at the back of this publication. In general, sample sizes in these surveys are not large enough to allow reliable estimates for levels of industry finer than those shown in this publication.

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Australian Statistician

CHAPTER CONTENTS

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LIST OF ABBREVIATIONS AND OTHER USAGES

ABBREVIATIONS

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification
ASIC	Australian Standard Industry Classification
DFAT	Department of Foreign Affairs and Trade
EBIT	Earnings before interest and tax.
GDP	Gross domestic product.
GOS	Gross operating surplus.
IGP	Industry gross product
IVA	Industry value added
OECD	Organisation for Economic Co-operation and Development.
R&D	Research and development

SYMBOLS AND OTHER USAGES

Standard notations are used throughout this publication, with meanings as follows:

'000	thousands
b	billion (i.e. one thousand millions)
kWh	kilowatt hours
m3	cubic metres
n.a.	not available
n.e.c.	not elsewhere classified
n.e.s.	not elsewhere specified
no.	number
n.p.	not available for publication but included in totals where applicable
Pj	petajoule
Tj	terajoule
t	tonne
$m	millions of dollars
*	data subject to sampling variability of between 25% and 50%
. .	not applicable
—	nil or rounded to zero

CHAPTER 1 A PROFILE OF THE AUSTRALIAN MANUFACTURING INDUSTRY

WHAT IS THE MANUFACTURING INDUSTRY?

The range of activities

Manufacturing is defined as the physical or chemical transformation of materials or components into new products, whether the work is performed by machinery or by hand (*Australian and New Zealand Standard Industrial Classification, 1993* (Cat. no. 1292.0, p 47)) along with related service activities such as delivery, installation and repair and servicing of goods produced. In addition, a number of other services are classified to manufacturing, for example, galvanising, annealing and plating of metals, elevator installation, spectacle lens grinding and tyre retreading.

Degree of transformation

The manufacturing industry embraces production of thousands of different types of goods. These range from ships to sugar to sheep shearing equipment, and from micro circuits to motor vehicles to medicines. One view of manufacturing activity focuses on the extent of transformation involved from raw material to finished product. Some products are simple primary product manufactures such as flour, cheese, tanned hides and skins and pig iron. Some are simply transformed manufactures such as basic metal shapes (billets, coils, ingots), portland cement, basic organic and inorganic chemicals (such as caustic soda). Others are moderately transformed manufactures such as wire rods, metal pipes and tubes, basic glass, soap and detergents, textile fabrics and tissue paper, while others are elaborately transformed manufactures such as prefabricated metal buildings, wire products, glassware, ceramic products, paints, medicines and perfumes.

Capital intensity

Another view of the breadth of manufacturing activity concerns the degree of mechanisation involved in production. Manufacturing in Australia covers a wide range of situations from highly mechanised production lines using robotics to simple mechanical activities such as soft drink bottling or concrete mixing through to production of fine jewellery by hand.

In short, manufacturing covers a myriad of inputs, processes and products.

Industry classification: The ANZSIC

Perhaps the most common way of viewing manufacturing statistics is through an industry classification. This publication extensively uses the Australian and New Zealand Standard Industrial Classification (ANZSIC) as the key framework for categorising and presenting information about the manufacturing industry.

The manufacturing industry is made up of those business units which earn the majority of their income from activities classified to Division C of the ANZSIC.

Industry classification: The ANZSIC *continued*

The ANZSIC distinguishes four levels of industry classification to accommodate both broad analysis and fine dissection of statistical data about the Australian economy. The four levels constitute a hierarchy, with Division the broadest classification level, followed by Subdivision, Group and Class as increasingly finer dissections. A manufacturing example of the hierarchy is:

Division	Manufacturing
Subdivision	Metal product manufacturing
Group	Iron and steel manufacturing
Class	Steel pipe and tube manufacturing

Details of the structure of the ANZSIC and in particular the way in which it defines manufacturing industries are included in the 'Background to this publication'. A list of all manufacturing subdivisions, groups and classes is contained in an Appendix to this publication.

THE CHANGING FACE OF AUSTRALIAN MANUFACTURING—A HISTORICAL PERSPECTIVE

The historical aspects of this article have been largely based on the analysis presented in the Productivity Commission report *The Changing of Australian Manufacturing—December 1996*, (Authors: Colin Clark, Timothy Geer and Barry Underhill). The material has been included in *Manufacturing, Australia* with the permission of the Productivity Commission.

Broad influences—Second World War to date

The Second World War provided great stimulus to Australian manufacturing, which was still recovering from the great depression of the 1930s. The interruption to imports during the war meant a switch in demand to domestically produced goods. Rising expenditure associated with the war increased real income and demand and Australia became an important source of supply for a number of countries in the region. Through a combination of existing industries expanding, and diversifying, and the rapid development of new industries, Australia was able to produce a huge range of products including many types of munitions, ball bearings, machine tools, ships, aircraft, chemicals, textiles and optics.

After 1945, Australian manufacturing continued to grow steadily, boosted by the needs of postwar reconstruction in the northern hemisphere. The re-emergence of competition from manufactured imports in the late 1940s was effectively eliminated through increased protection. Manufacturing production grew strongly throughout the 1950s, especially in the automotive, household appliances and plastic products industries.

Broad influences—Second World War to date *continued*

As Australia's trade links with Britain weakened during the 1950s and 1960s, Australian producers looked to Asia for new markets. Trade growth with Japan increased steadily and, by the mid 1960s, Japan was Australia's biggest customer for a wide range of primary products. Japan experienced a substantial trade deficit with Australia which it sought to redress by exporting more manufactured goods to Australia. Other developing Asian countries followed Japan's lead. Initially, the Asian economies exported labour intensive products such as clothing and footwear, but as their economies developed, they started to produce and export more technically advanced goods.

The 1970s was a turbulent decade for Australian manufacturing. This was due to several factors, such as strengthening import competition across a range of industries, upward pressure being exerted on exchange rates by the mining boom and by the inflow of foreign capital, and upward pressure on wages (including campaigns for equal pay for women). All this occurred against a background of high rates of inflation.

Manufacturing in the 1980s was characterised by declining production in the earlier years, especially 1982–83 and 1983–84, followed by steady growth through to the end of the decade and another decline in the early 1990s. In the past six years to 1997–98, manufacturing production has continued to grow steadily.

The 'openness' of the Australian economy to world markets accelerated through the 1980s and 1990s. Following its float in 1983, the Australian dollar depreciated by over 30% during 1985 and 1986, strengthening the international competitiveness of Australian manufactures. Australian manufacturing became increasingly export oriented through the 1980s and 1990s. In 1984–85, approximately 16% of the sales from Australia's manufacturing firms were to overseas markets. By 1997–98, this ratio had risen to 26%. Import penetration of Australian markets for manufactured goods rose more slowly over the same period, from 26% in 1984–85 to 36% by 1997–98.

Manufacturing's share of the Australian economy

As a proportion of the whole economy, employment in manufacturing industries peaked at roughly 27% around 1950, remaining high throughout the 1950s and 1960s. It fell to 20% in 1979 and thence to its present share of 13%. Production data tell a similar story. The share of Australian GDP accounted for by manufacturing rose steadily until around 1960, then fell steadily from a peak of 26% in 1962–63 to 14% in 1997–98.

This relative decline did not mean that manufacturing production fell over that period in absolute terms. On the contrary, in real terms manufacturing production in 1998–99 was more than double the level of 1962–63. However, other industries such as mining and the services sector grew even faster, expanding their share of total production at the expense of manufacturing. Production by the Australian services sector was over three times greater in 1998–99 than it had been in 1962–63.

Manufacturing's share of the Australian economy *continued*

There has also been a noticeable shift in the way that Australian manufacturers organise their production. In the first half of this century, manufacturing absorbed a greater proportion of the Australian workforce than the proportion of GDP that it produced. In 1921 for example, the share of total employment accounted for by manufacturing exceeded its GDP share by slightly more than 50%.

Since then, Australian manufacturing has become progressively less labour-intensive with its labour share of GDP moving towards the average for the economy as a whole around 1960. This trend has continued over the past few decades. At present manufacturers use slightly fewer employees on average to produce a particular volume of goods or services than is the case for the economy as a whole. The above references to productivity are based on a crude measure only (one that does not distinguish between average working hours in different industries).

Structural change within manufacturing

The industry structure of Australian manufacturing reflects Australia's strengths as a resource based economy. In 1998–99, almost half of the total production of Australian manufactures (in terms of constant price value added) was produced by the resource-based industries of Food, beverage and tobacco manufacturing, Metal product manufacturing and Petroleum, coal, chemical and associated product manufacturing. These industries also contributed a high proportion of manufacturing employment (43% in June 1999). However, individually the largest of the broad manufacturing industries was Machinery and equipment manufacturing which accounted for 20% of manufacturing production and slightly more than 22% of the manufacturing workforce.

The industries with the fastest growing production between 1991–92 and 1998–99 were Machinery and equipment manufacturing (up 27%) and Wood and paper product manufacturing (up 18%). The only industry to reduce in size between 1991–92 and 1998–99 was Textile, clothing, footwear and leather manufacturing (down almost 8%).

More information on the growth rates of manufacturing industries is contained in the articles under the heading 'Recent growth in Australian manufacturing industry'.

MANUFACTURING'S CONTRIBUTION TO TOTAL AUSTRALIAN PRODUCTION

This article presents information on the contribution to the Australian economy by the manufacturing industry. The measure used to represent production is the national accounting variable 'Gross factor incomes'. Shares are given for Australia and for States and Territories as are estimates for rates of real growth in manufacturing production. Readers should regard these latter measures as indicative only because growth rates depend heavily on whether the start and end points for comparison are at the same stage of the business cycle or not and on the availability of appropriate price deflators.

Manufacturing contributed more to Australian production in 1997–98 than any other industry. However, the combined contribution of manufacturing and the other goods producing industries was substantially less than the combined contribution of the services industries—see table 1.1 below.

Over the five-year period to 1997–98, manufacturing's share of national production fell from 13.6% to 13.2%. However, this does not mean that production fell in absolute terms. In fact manufacturing production grew between 1992–93 and 1997–98 by 27.1% (see the article on Production levels which follows this article). Rather, the fall in share does mean though that manufacturing production did not grow as quickly as production for some other industries, in particular some service industries. Cultural and recreational services experienced the highest growth in production (up 55.7%), followed by Accommodation, cafes and restaurants which grew by 49.1%.

During this period the overall proportion of national output accounted for by the goods producing industries fell, while the overall contribution of the services industries grew. The fastest growing industry was Property and business services (which increased its contribution from 10.1% to 10.7%).

Table 1.1 shows industry percentage shares of gross factor income for Australia and the States and Territories for 1997–98.

1.1 INDUSTRY SHARES OF TOTAL PRODUCTION—1997–98

	NSW	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
Industry	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*
Agriculture, forestry and fishing	2.5	3.1	3.6	6.1	4.9	5.7	3.2	0.2	3.4
Mining and services to mining	2.0	2.6	6.1	2.7	19.9	2.4	16.8	0.0	5.0
Manufacturing	**13.4**	**16.9**	**10.7**	**16.0**	**8.8**	**14.2**	**4.4**	**2.0**	**13.2**
Electricity, gas and water supply	2.5	2.8	3.0	3.2	3.1	5.1	1.9	2.2	2.8
Construction	5.7	4.9	6.8	5.2	7.0	5.8	5.7	5.6	5.8
Wholesale trade	5.9	6.1	5.4	4.9	4.8	3.9	3.4	2.0	5.5
Retail trade	5.5	5.4	7.0	6.3	5.2	7.1	5.9	4.6	5.8
Accommodation, cafes and restaurants	2.6	1.7	3.1	2.1	1.6	2.9	3.4	2.0	2.3
Transport and storage	5.8	5.2	7.3	5.8	5.3	4.8	6.7	3.4	5.8
Communication services	3.2	3.5	3.0	2.8	2.5	2.5	3.0	2.6	3.1
Finance and insurance	7.1	6.8	4.1	4.5	3.4	5.0	2.6	4.2	5.8
Property and business services	12.7	11.3	8.4	8.6	9.2	5.4	7.8	11.8	10.7
Government administration and defence	3.5	3.2	4.5	3.5	2.7	5.3	9.1	30.2	4.2
Education	4.3	4.9	4.9	5.3	3.6	5.2	5.5	6.0	4.6
Health and community services	5.6	6.6	6.4	7.5	5.6	8.5	6.3	5.3	6.2
Cultural and recreational services	2.1	2.0	1.7	1.6	1.4	1.5	3.2	3.0	1.9
Personal and other services	2.1	2.2	2.5	2.8	2.1	2.4	3.0	3.4	2.3
Ownership of dwellings	11.3	8.9	9.0	8.7	6.8	9.1	6.1	8.1	9.5
General government	2.1	2.0	2.4	2.4	2.0	3.1	2.2	3.3	2.2

Source: ABS, Australian National Accounts: State Accounts, 1997–98 (Cat. no. 5222.0).

States and Territories

Of the industries listed in table 1.1, manufacturing was the largest contributor to total 1997–98 production in all States except Western Australia. In Victoria, South Australia and Tasmania, manufacturing contributed substantially more than the next largest industry—Property and business services in both Victoria and South Australia and Health and community services in Tasmania. New South Wales and Queensland showed smaller differences between the contribution by manufacturing and the contribution by the next largest industry—Property and business services.

In Western Australia, the mining industry was the largest contributor to total 1997–98 production, with the next biggest contribution being Property and business services, followed closely by the manufacturing industry. Manufacturing remains a relatively small industry in the two Territories.

The absolute size of the manufacturing industry grew in all States and Territories over the five years to 1997–98. On a constant price basis, Queensland manufacturing experienced the fastest growth rate of any State, growing at an average annual rate of 4.8% compared with national manufacturing growth which averaged 3.3% per annum over the same period. Average growth rates for other States were around 4.4% for Western Australia, 3.3% for New South Wales, 3.0% for Victoria, 2.2% for South Australia, and 2.1% for Tasmania. Manufacturing in the Territories also grew in absolute terms during this period, at around 2.9% per annum in the Northern Territory and 0.6% in the Australian Capital Territory.

Despite growth in absolute terms, the manufacturing industry share of total production over the five years fell in New South Wales, South Australia, Western Australia and Tasmania and remained the same in Victoria and Queensland. However, manufacturing has maintained its relative importance in all States and Territories with its share of total production decreasing only marginally (by less than 1.0%).

Decreasing shares of production were experienced to varying degrees by other goods producing industries over the period, with the greatest decrease in the mining industry in the Northern Territory (down 8.5%). The most notable increase within the goods producing industries was also in the mining industry, but in Western Australia (up from 17.7% to 19.9%). In general, the services industries grew the fastest over the period and increased their shares of total production at the expense of the goods producing industries.

RECENT TRENDS IN AUSTRALIAN MANUFACTURING

This next section covers recent trends in the Australian manufacturing industry in three parts. The first presents information on production in real terms since 1991–92, the second part presents ABS management unit statistics on changes in sales of goods and services while the third covers management units (businesses) classified by size of business. Information on year to year changes in various aspects of the manufacturing industry also appears in various other sections of this publication.

PRODUCTION

This article presents information on volumes of production in Australia for manufacturing and other industries. The variable used to measure production is gross value added at basic prices (similar to but not identical to industry value added) which measures the value that industries add to their intermediate inputs through their economic activities. Data in this article represent volumes of production.

Manufacturing compared to other industries

Table 1.2 shows that in terms of production volumes, manufacturing was the largest industry in the Australian economy in 1998–99 but was one of the slowest growing. In terms of rate of growth from 1997–98 to 1998–99, manufacturing ranked thirteenth of the seventeen industries listed. Over the period 1991–92 to 1998–99, it ranked even lower at fifteenth with only Electricity, gas and water supply and Government administration and defence growing at a slower rate.

1.2 PRODUCTION VOLUMES(a)

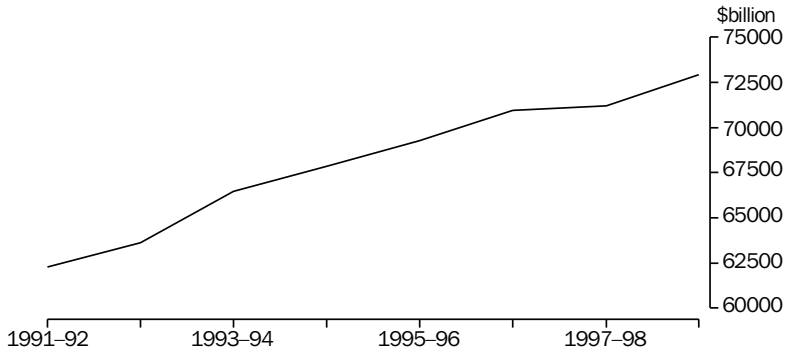
Industry	*1997–98* *$ billion*	*1998–99* *$ billion*	*Change from 1997–98 to 1998–99* *%*	*Average annual change from 1991–92 to 1998–99* *%*
Agriculture, forestry and fishing	17 507	18 816	7.5	3.5
Mining and services to mining	26 068	25 245	–3.2	3.7
Manufacturing	**71 215**	**72 926**	**2.4**	**2.3**
Electricity, gas and water supply	13 563	13 750	1.4	1.4
Construction	32 819	34 416	4.9	6.2
Wholesale trade	28 996	31 185	7.5	6.1
Retail trade	29 992	30 865	2.9	3.9
Accommodation, cafes and restaurants	12 234	13 290	8.6	4.3
Transport and storage	30 609	31 501	2.9	4.1
Communication services	17 239	18 899	9.6	10.1
Finance and insurance	35 096	37 637	7.2	5.5
Property and business services	55 041	59 874	8.8	6.4
Government administration and defence	23 460	22 936	–2.2	1.9
Education	25 874	26 534	2.6	2.7
Health and community services	32 529	32 989	1.4	2.8
Cultural and recreational services	9 702	10 081	3.9	2.8
Personal and other services	12 425	12 846	3.4	3.0
All industries	474 369	493 790	4.1	4.1

(a) At 1997–98 prices.

Source: ABS, Australian National Accounts: National Income, Expenditure and Product, June Quarter 1999 (Cat. no. 5206.0).

A longer term view has manufacturing ranked sixteenth of the 17 industries with average annual growth of 1.8% over the 20 years to 1998–99. Only Agriculture, forestry and fishing (average of 1.3% per annum) has grown more slowly over the 20 years. The fastest growing industries over that 20 year period were Communication services (average of 8.6% per annum), Property and business services (5.7%), Finance and insurance (5.3%) and Mining (4.6%).

1.3 MANUFACTURING PRODUCTION



Source: ABS, National Income, Expenditure and Product, June Quarter 1999 (Cat. no. 5206.0).

Manufacturing production growth

As shown by graph 1.3, manufacturing production has grown steadily since 1991–92. Production in 1998–99 was 17% higher than it had been seven years earlier in 1991–92. On a per capita basis (i.e. per head of resident population) manufacturing production increased by around 8% over the same period.

Production by manufacturing subdivisions

Table 1.4 shows that manufacturing subdivisions experienced a range of growth rates from 1997–98 to 1998–99 from the substantial increase in production for Non-metallic mineral product manufacturing (up 16.3%) to the fall in production experienced by the Printing, publishing and recorded media industry. By way of contrast, average rate of growth from 1991–92 to 1998–99 were quite similar for most manufacturing subdivisions. Apart from the decrease experienced by the Textile, clothing, footwear and leather manufacturing industry and the relatively small increase for the Other manufacturing industry, growth rates for manufacturing subdivisions fell between the high value of 3.5% for Machinery and equipment manufacturing and a low value of 1.9% for Metal product manufacturing.

1.4 PRODUCTION VOLUMES(a)

Industry	*1997–98* *$ billion*	*1998–99* *$ billion*	*Change from 1997–98 to 1998–99* *%*	*Average annual change from 1991–92 to 1998–99* *%*
Food, beverage and tobacco mfg	13 134	13 197	0.5	2.1
Textile, clothing, footwear and leather mfg	3 417	3 576	4.7	–0.8
Wood and paper product mfg	5 213	5 082	–2.5	2.4
Printing, publishing and recorded media	6 952	6 659	–4.2	2.2
Petroleum, coal, chemical and associated product mfg	9 394	9 502	1.1	2.7
Non-metallic mineral product mfg	3 482	4 048	16.3	3.1
Metal product mfg	12 881	13 422	4.2	1.9
Machinery and equipment mfg	14 247	14 948	4.9	3.5
Other mfg	2 495	2 492	9.8	1.3

(a) At 1997–98 prices.

Source: ABS, Australian National Accounts: National Income, Expenditure and Product, June Quarter 1999 (Cat. no. 5206.0).

Production by manufacturing subdivisions *continued*

A longer term view also shows Textile, clothing, footwear and leather manufacturing as the only manufacturing subdivision to decrease in size over the 20 years to 1998–99. Highest average annual growth rates among other manufacturing subdivisions over that period was 2.9% for Printing, publishing and recorded media. The remainder all fell into a narrow band from 2.2% for Petroleum, coal, chemical and associated product manufacturing down to 1.6% for Food, beverage and tobacco manufacturing.

SALES OF GOODS AND SERVICES

This section presents statistics for sales of goods and services by manufacturing businesses. Commencing with estimates for 1997–98, introduction of new international standards has slightly altered the composition of the variable 'sales of goods and services' by including royalties income from intellectual property which had been previously excluded. This change carries only a minimal effect on comparability of 1997–98 estimates with those for earlier years. For manufacturing as a whole inclusion of royalties income from intellectual property has increased the 1997–98 estimate by $206 million (0.1%). The industry most affected is Petroleum, coal, chemical and associated product manufacturing (0.3%) with the other industries being affected by 0.1% or less.

1.5 SALES OF GOODS AND SERVICES(a)

Industry	*1994–95* $ *million*	*1995–96* $ *million*	*1996–97* $ *million*	*1997–98* $ *million*
Food, beverage and tobacco mfg	42 757	44 378	45 775	49 031
Textile, clothing, footwear and leather mfg	10 175	9 987	10 396	10 642
Wood and paper product mfg	12 099	11 892	11 948	12 821
Printing, publishing and recorded media	13 040	13 724	14 956	15 469
Petroleum, coal, chemical and associated product mfg	33 249	35 470	37 541	38 997
Non-metallic mineral product mfg	9 789	9 532	9 853	10 419
Metal product mfg	32 780	35 394	34 689	34 884
Machinery and equipment mfg	40 575	41 618	42 520	43 632
Other mfg	6 053	5 734	6 355	6 671
Total mfg	200 519	207 729	214 033	222 566

(a) From 1997–98, includes income from royalties from intellectual property. The effect of this change is minimal (0.3% or less).

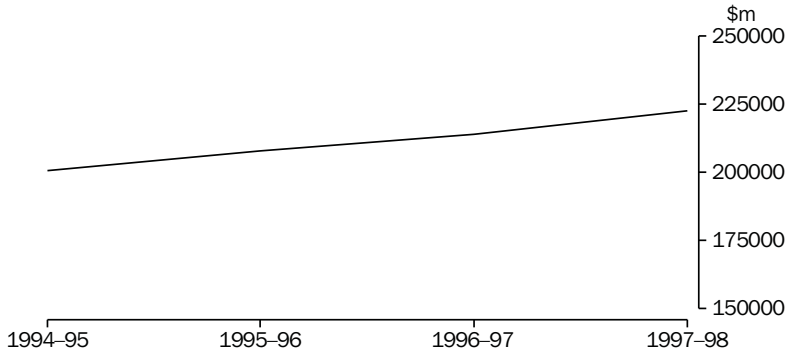
Source: ABS, Manufacturing Survey.

Growth by industries 1994–95 to 1997–98

Table 1.5 shows that between 1994–95 and 1997–98, sales of goods and services by manufacturing businesses grew from $200,519 million to $222,566 million (up 11%). Over the same period, prices for Australian manufactured goods increased by approximately 4.5% which implies that the volume of goods and services produced by manufacturing businesses increased by around 7% over that period.

Between 1994–95 and 1997–98, all manufacturing subdivisions increased their sales of goods and services. The largest percentage growth rates were recorded by Printing, publishing and recorded media (up 18.6%) and Petroleum, coal chemical and associated product manufacturing (up 17.3%). The least growth over the same period was by Textiles, clothing, footwear and leather manufacturing (up 4.6%).

1.6 SALES OF GOODS AND SERVICES



Source: ABS, Manufacturing Survey.

Change from 1996–97 to 1997–98

For the period 1996–97 to 1997–98, sales of goods and services by the manufacturing industry also grew (by 4.0%) while average prices increased by 1.3%, implying growth in the volume of goods and services produced of a little under 3%. All manufacturing subdivisions increased their sales of goods and services over this period. Wood and paper product manufacturing experienced the largest percentage growth (up 7.3%), followed by Food, beverage and tobacco manufacturing (up 7.1%). Metal product manufacturing grew the least over this period (up 0.6%).

ANALYSIS BY SIZE OF BUSINESS

This article presents management unit statistics about business growth or decline. The estimates have been compiled from the Growth and Performance Surveys conducted by the ABS. These surveys adopt a longitudinal study approach (i.e. the same businesses reporting in a series of annual surveys) to measure changes in growth and performance over time. It had been intended that the Growth and Performance Survey be conducted for one further year beyond the 1997–98 Survey. However, the strategy has since changed, and 1997–98 (which the data in this article refers to) is the final year of the longitudinal study.

Manufacturing businesses

Table 1.7 shows the proportion of manufacturing businesses which experienced changes in employment levels and/or changes in income levels between 1996–97 and 1997–98. Because there are many more small businesses in the manufacturing industry than large and medium sized businesses, proportions for total businesses will more closely resemble the results experienced by small businesses. However, while few in number, large businesses account for 48% of total employment in manufacturing and 62% of manufacturing income. Thus, changes by large business will have more influence on manufacturing activity than would similar changes by small business.

1.7 EMPLOYMENT AND INCOME CHANGE(a), BY BUSINESS SIZE(b)

	Employment(c)			Income		
	Higher in 1997–98	*Static*	*Lower in 1997–98*	*Higher in 1997–98*	*Static*	*Lower in 1997–98*
Business	*%*	*%*	*%*	*%*	*%*	*%*
Micro businesses	18	71	12	35	49	16
Other small businesses	23	51	25	37	42	22
Total small businesses	*20*	*63*	*17*	*36*	*46*	*18*
Medium-sized businesses	26	48	26	35	46	19
Large businesses	11	62	27	32	58	11
All businesses	**21**	**61**	**19**	**36**	**46**	**18**

(a) Change in employment or income means that current year levels are more than 10% different to previous year levels.

(b) For definitions of the various business sizes see 'Business size' or the individual entries in the Glossary.

(c) Employment is measured at the end of the reference year.

Source: ABS, Small and Medium Enterprises, Business Growth and Performance Survey, Australia 1997–98 (Cat. no. 8141.0).

Employment

More than half of the manufacturing businesses surveyed showed static employment levels from mid–1997 to mid–1998 (static levels means no more than 10% change in either direction). Of those businesses which did experience change, between mid–1997 and mid–1998, most large businesses lowered their employment levels, while the opposite was the case for small businesses. The proportion of medium sized businesses that experienced rises in employment levels equalled the proportion that experienced falls.

Income

Income was more volatile than employment with only 46% of manufacturing businesses reporting static income levels between 1996–97 and 1997–98 (static levels means no more than 10% change in either direction). Of the 54% of manufacturing businesses which did experience changed income levels, two thirds had rises and one third had falls.

All size categories recorded a higher proportion of businesses experiencing a rise in income, rather than a fall, between 1996–97 and 1997–98. For all sizes of manufacturing business, a higher proportion experienced income rises than experienced employment rises.

DEGREE OF COMPETITION

Table 1.8 presents industry concentration statistics which indicate the degree of competition occurring within industries. Data are presented for the subdivisions of the manufacturing industry. As could be expected for such broad industries, there is no evidence of market domination by small numbers of enterprise groups. However, in Australian manufacturing, such market domination does occur for some finer level industries and in particular, for capital intensive industries.

1.8 CONTRIBUTION BY SIZE OF ENTERPRISE GROUP(a)—1996–97

	Employment			Turnover		
	Largest 4 enterprise groups	*Largest 8 enterprise groups*	*Largest 20 enterprise groups*	*Largest 4 enterprise groups*	*Largest 8 enterprise groups*	*Largest 20 enterprise groups*
Industry	%	%	%	%	%	%
Food, beverage and tobacco mfg	12	18	32	14	23	44
Textile, clothing, footwear and leather mfg	8	12	19	13	19	29
Wood and paper product mfg	21	29	37	36	46	58
Printing, publishing and recorded media	19	27	35	27	37	49
Petroleum, coal, chemical and associated product mfg	8	15	25	32	39	50
Non-metallic mineral product mfg	34	43	55	46	58	72
Metal product mfg	17	21	29	35	44	59
Machinery and equipment mfg	8	16	24	21	27	41
Other mfg	3	5	9	7	10	16
Total mfg	**5**	**7**	**13**	**9**	**14**	**25**

(a) Enterprise groups ranked according to their contribution to the turnover of the industry. See 'Industry concentration statistics' in the Glossary for further detail.

Source: ABS, Manufacturing Survey.

Concentration ratios tend to change only very slowly in Australian manufacturing. For example, comparison of 1996–97 ratios with the corresponding 1992–93 ratios reveals that differences were insignificant in all but one industry. The exception was Non-metallic mineral product manufacturing where the contribution of the largest four enterprise groups has grown from 46% to 53% and of the largest eight from 58% to 66%.

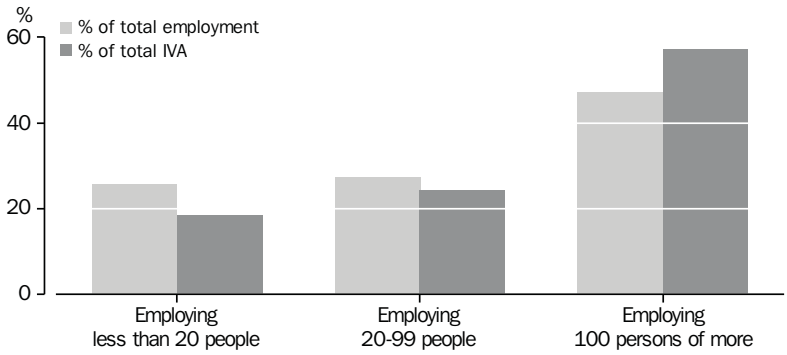
ACTIVITY BY SIZE OF ESTABLISHMENT

Statistics in this section are based on data for manufacturing establishments. It shows the extent to which large manufacturing establishments (those employing 100 or more people) dominate their industries. The economic variables used to illustrate the contributions by establishment size are employment (at 30 June 1998), and 1997–98 industry value added (IVA) which is a measure of production by an industry. Definitions are contained in the Glossary.

Dominance by large establishments

The general pattern in Australian manufacturing industries is for a small number of large manufacturing establishments to dominate the activity levels of their industries. Though relatively few in number, large manufacturing establishments employ 47.1% of the manufacturing workforce and generate 57.3% of manufacturing IVA. Establishments employing 20–99 people account for 27.3% of the manufacturing workforce and generate 24.2% of manufacturing IVA. The remaining 25.6% of the manufacturing workforce and 18.5% of IVA are contributed by a large number of small establishments. Overall value added per person employed is greater in large establishments than in smaller establishments.

1.9 PRODUCTION AND EMPLOYMENT—1997–98



Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

All manufacturing subdivisions (except Other manufacturing where small businesses are more dominant) tend to follow this pattern. The highest degree of industry dominance of IVA (value added) by large establishments is 76% for Food, beverage and tobacco manufacturing. Six of the subdivisions have more than 50% of IVA contributed by large establishments. Large establishments typically contribute more to IVA than to employment levels.

Note: Table 1.10 indicates that Metal product manufacturing is an exception to the pattern of large establishments generating more IVA per person employed than smaller establishments. However, this result is influenced by the way in which unincorporated joint venture operations are included in the statistics (each venturer is included as a separate business unit, each reflecting its individual share of the operation). If each of these joint venture operations were treated as a single business unit in the statistics, it is highly probable that the Metal product manufacturing industry would reflect a similar dominance pattern to the other manufacturing industries and that the large establishment dominance would be more pronounced for manufacturing as a whole.

1.10 INDUSTRY CONTRIBUTION, BY SIZE OF ESTABLISHMENT—1997–98

	Employing less than 20 people		*Employing 20–99 people*		*Employing 100 or more persons*	
	Proportion of total employment	*Proportion of total IVA*	*Proportion of total employment*	*Proportion of total IVA*	*Proportion of total employment*	*Proportion of total IVA*
Industry	%	%	%	%	%	%
Food, beverage and tobacco mfg	10.2	5.1	22.3	18.9	67.6	75.9
Textile, clothing, footwear and leather mfg	39.3	27.6	28.2	30.8	32.6	41.7
Wood and paper product mfg	34.4	17.8	28.8	26.8	36.8	55.5
Printing, publishing and recorded media	30.0	17.9	26.8	25.3	43.1	56.8
Petroleum, coal, chemical and associated product mfg	17.1	10.0	33.5	29.8	49.3	60.2
Non-metallic mineral product mfg	24.0	11.9	28.2	29.0	47.8	59.1
Metal product mfg	28.9	41.0	30.0	23.8	41.0	35.3
Machinery and equipment mfg	21.8	13.1	23.6	19.4	54.5	67.5
Other mfg	54.1	47.4	34.9	38.1	11.0	14.5
Total mfg	**25.6**	**18.5**	**27.3**	**24.2**	**47.1**	**57.3**

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

GEOGRAPHIC DISTRIBUTION

DISTRIBUTION ACROSS STATES AND TERRITORIES

This article is based on manufacturing establishment statistics. It shows how manufacturing activity is spread across Australia's States and Territories and indicates which broad manufacturing industries are of most importance to the various States and Territories. In this article, production is measured in terms the variable 'industry value added' (see Glossary for definition). The next article discusses distribution of manufacturing within States and some further State and regional analysis is also provided in the relevant industry based articles in chapter 2.

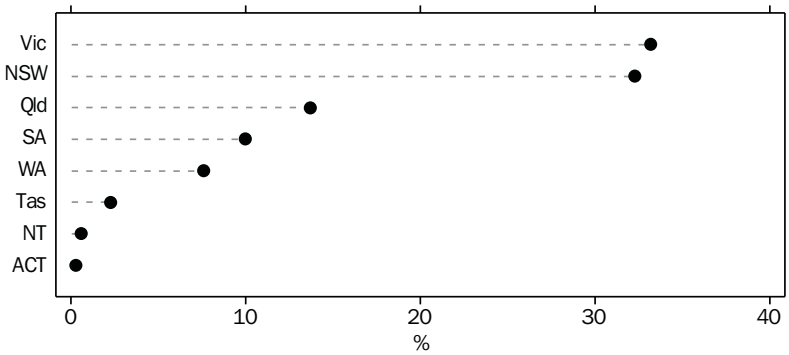
AUSTRALIA—STATES AND TERRITORIES

Production and employment

For some years, New South Wales and Victoria have contributed approximately two thirds of Australian manufacturing activity between them. Although these two States have been of reasonably similar size in terms of manufacturing activity, New South Wales has consistently been the larger contributor. However in 1996–97, Victoria became the larger contributor to manufacturing turnover and manufacturing value added and in 1997–98, Victoria also overtook New South Wales as the larger employer in the manufacturing industry.

As graph 1.11 shows, Victoria had the largest share of Australian manufacturing production (industry value added) in 1997–98 closely followed by New South Wales and followed then, at a lower level of activity, by the other States and by the Territories.

1.11 PRODUCTION—1997–98



Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

The State/Territory distribution exhibited by 1997–98 production was broadly similar for persons employed in manufacturing in June 1998 although differences were sufficient to generate wide variation in production per person employed as shown by table 1.12. The main causes of difference in the State/Territory relativities in manufacturing overall is the industry mix within the State/Territory. Some industries such as Textile, clothing, footwear and leather manufacturing have relatively low production per person employed while metal manufacturing (which dominates Northern Territory manufacturing) generally have relatively high production per person employed.

1.12 MANUFACTURING ACTIVITY

State and Territory	*Employment at 30 June 1998* '000	*1997–98 turnover* $ billion	*1997–98 Industry value added* $ billion	*1998–98 Industry value added per person employed* $ '000
New South Wales	304	68.3	22.2	73.1
Victoria	315	69.5	22.8	72.4
Queensland	144	31.4	9.4	65.3
South Australia	87	19.6	6.9	79.5
Western Australia	76	17.5	5.2	69.0
Tasmania	21	5.0	1.6	75.7
Northern Territory	4	1.0	0.4	105.1
Australian Capital Territory	4	0.6	0.2	55.5
Australia	**954**	**213.0**	**68.7**	**72.1**

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

New South Wales

In 1997–98, New South Wales had marginally lower manufacturing employment (303,600 people) and manufacturing production ($22.2 billion) than Victoria but nevertheless substantially more than any other State or Territory. The largest manufacturing industries within New South Wales are Metal product manufacturing with 51,900 employed and $4.4 billion of production, Food, beverage and tobacco manufacturing (49,000 and $3.9 billion), Machinery and equipment manufacturing (61,000 and $3.8 billion), Petroleum, coal, chemical and associated product manufacturing (31,800 and $3.4 billion) and Printing, publishing and recorded media (41,100 and $2.9 billion).

Victoria

In 1997–98, Victoria had the highest manufacturing employment (314,800 people) and the largest manufacturing production ($22.8 billion) of all the States and Territories. The largest manufacturing industries in Victoria were Machinery and equipment manufacturing with 74,200 people employed and $5.7 billion of production, Food, beverage and tobacco manufacturing (48,500 and $4.2 billion), Petroleum, coal, chemical and associated product manufacturing (36,800 and $3.8 billion) and Metal product manufacturing (40,500 and $2.9 billion). Though not a major industry in terms of value of production, the Textile, clothing, footwear and leather manufacturing industry is a significant employer in Victoria with 38,400 people employed.

Queensland

Queensland is the third largest of the States and Territories in terms of both manufacturing employment (144,300 people) and manufacturing production ($9.4 billion). The largest manufacturing industries within Queensland are Food, beverage and tobacco manufacturing with 35,200 employed and $2.5 billion of production, Metal product manufacturing (25,100 and $2.0 billion), Machinery and equipment manufacturing (25,100 and $1.2 billion) and Petroleum, coal, chemical and associated product manufacturing (10,500 and $1.2 billion).

South Australia

South Australia is the fourth largest of the States and Territories in terms of both manufacturing employment (86,600 people) and manufacturing production ($6.9 billion). The largest manufacturing industries within South Australia are Machinery and equipment manufacturing with 28,300 employed and $2.5 billion of production, Food, beverage and tobacco manufacturing (16,000 and $1.5 billion) and Metal product manufacturing (11,500 and $0.9 billion).

Western Australia

Western Australia is the smallest of the mainland States in terms of both manufacturing employment (76,000 people) and manufacturing production ($5.2 billion) but nevertheless is much larger than Tasmania and the Territories. The largest manufacturing industries within Western Australia are Metal product manufacturing with 16,500 employed and $1.4 billion of production, Food, beverage and tobacco manufacturing (13,800 and $0.9 billion), Petroleum, coal, chemical and associated product manufacturing (6,500 and $0.9 billion) and Machinery and equipment manufacturing (13,600 and $0.7 billion).

Tasmania

While having a substantially larger manufacturing industry than the two Territories, Tasmania is the smallest of the States in terms of both manufacturing employment (20,900 people) and manufacturing production ($1.6 billion). The largest manufacturing industries within Tasmania are Wood and paper product manufacturing with 3,800 employed and $0.4 billion of production and Food, beverage and tobacco manufacturing (5,600 and $0.4 billion).

Northern Territory

Manufacturing is not a large industry in the Northern Territory. The industry employed 3,700 people in June 1998 and generated around $390 million of production in 1997–98. Metal product manufacturing was by far the largest industry in the Northern Territory contributing around 40% of manufacturing employment and almost two thirds of manufacturing production.

Australian Capital Territory

Manufacturing is not a large industry in the Australian Capital Territory. The industry employed 3,900 people in June 1998 and generated around $215 million of production in 1997–98. Printing, publishing and recorded media contributed around 40% of the manufacturing employment and production.

DISTRIBUTION WITHIN STATES

This article is based on manufacturing establishment statistics for 1996–97 that being the most recent period for which a census of manufacturing establishments was conducted. It shows how manufacturing activity is distributed within each of Australia's six States, highlighting the dominance of the capital city statistical divisions in all States except Tasmania. It also indicates which are the most important manufacturing industries in the various regions.

STATISTICAL DIVISION—NEW SOUTH WALES

New South Wales

Table 1.13 shows that 70% of New South Wales manufacturing turnover in 1996–97 was generated within the Sydney Statistical Division. Outside Sydney, the Hunter and Illawarra Statistical Divisions were the only statistical divisions contributing more than 5% to New South Wales manufacturing turnover. Also, these three statistical divisions between them accounted for over 85% of manufacturing employment in New South Wales.

Sydney Statistical Division was the largest statistical division in each of the nine broad industries. In Printing, publishing and recorded media and in Petroleum, coal, chemical and associated product manufacturing, Sydney was responsible for over 90% of New South Wales turnover. It contributed more than 60% in all broad industries except for metal product manufacturing where Sydney contributed 38%, Illawarra Statistical Division contributed 30% and Hunter Statistical Division contributed 27%.

The largest manufacturing industries in Sydney Statistical Division in terms of persons employed were Machinery and equipment manufacturing (50,100 persons), Printing, publishing and recorded media (34,100 persons) and Petroleum, coal, chemical and associated product manufacturing (28,800 persons). In the Hunter and Illawarra Statistical Divisions, by far the largest manufacturing industry is Metal product manufacturing. This industry employs around 10,000 persons in each of these two statistical divisions. For the remaining statistical divisions within New South Wales, Food, beverage and tobacco manufacturing is the largest industry accounting for around half of the manufacturing turnover.

1.13 MANUFACTURING ACTIVITY—NEW SOUTH WALES

Statistical division	*Manufacturing locations at 30 June 1997* *no.*	*Employment at 30 June 1997* *'000*	*1996–97 turnover* *$ million*
Sydney	13 624	219.3	47 689
Hunter	1 254	25.0	6 408
Illawarra	816	17.7	5 489
Richmond–Tweed	563	4.8	613
Mid North Coast	672	7.3	1 244
Northern	379	4.5	745
North Western	224	3.1	449
Central West	348	7.8	1 656
South Eastern(a)	447	4.3	681
Murrumbidgee	335	7.1	1 674
Murray	280	4.9	1 149
Far West(b)	30	0.3	29
Total New South Wales	18 972	306.1	67 826

(a) Excludes Australian Capital Territory.

(b) Manufacturing in the far west of NSW amounts to less than 0.5% of the NSW total.

Source: ABS, Manufacturing Industry, New South Wales, 1996–97 (Cat. no. 8221.1).

STATISTICAL DIVISION—VICTORIA

Victoria

As table 1.14 shows, 77% of Victorian manufacturing turnover in 1996–97 was generated within the Melbourne Statistical Division and over 80% of Victoria's factories were located in Melbourne. Barwon Statistical Division was the only other statistical division contributing more than 5% of Victorian manufacturing turnover.

Melbourne Statistical Division was the largest contributor to turnover in each of the nine broad manufacturing industries. Its share of Victorian manufacturing turnover ranged from 57% for Food, beverage and tobacco manufacturing to over 90% for Printing, publishing and recorded media and Other manufacturing.

The largest manufacturing industries in Melbourne Statistical Division in terms of persons employed were Machinery and equipment manufacturing (62,500 persons), Petroleum, coal, chemical and associated product manufacturing (32,400 persons), Metal product manufacturing (30,000 persons) and Textile, clothing, footwear and leather manufacturing (29,900 persons). In Barwon Statistical Division, the largest industry is Petroleum, coal, chemical and associated product manufacturing. The largest industries in Western District Statistical Division were Metal product manufacturing and Food, beverage and tobacco manufacturing. For the remaining statistical divisions within Victoria, Food, beverage and tobacco manufacturing was generally the largest manufacturing industry.

1.14 MANUFACTURING ACTIVITY—VICTORIA

Statistical division	Manufacturing locations at 30 June 1997 (no.)	Employment at 30 June 1997 ('000)	1996–97 turnover ($ million)
Melbourne	14 406	242.0	52 296
Barwon	609	13.8	4 742
Western District	216	4.4	1 451
Central Highlands	375	7.6	1 454
Wimmera	138	1.5	180
Mallee	187	2.3	640
Loddon	374	7.4	1 134
Goulburn	504	9.3	2 456
Ovens–Murray	223	6.1	2 015
East Gippsland	197	2.0	404
Gippsland	336	4.7	1 146
Total Victoria	17 565	301.2	67 918

Source: ABS, Manufacturing Industry, Victoria, 1996–97 (Cat. no. 8221.2).

STATISTICAL DIVISION—QUEENSLAND

Queensland

Manufacturing activity is generally more dispersed in Queensland than in other mainland States but less so than in Tasmania. Table 1.15 shows that only a little more than half of Queensland manufacturing turnover in 1996–97 was generated in the Brisbane Statistical Division. Contributions varied by industry ranging from 81% for Petroleum, coal, chemical and associated product manufacturing to 43% for Food, beverage and tobacco manufacturing with shares for most other industries falling between 55% and 70%. Outside Brisbane, there were four Statistical Divisions contributing more than 5% to Queensland manufacturing turnover—Fitzroy ($2.5 billion), Moreton ($2.3 billion), Darling Downs ($1.9 billion) and Northern Statistical Division ($1.8 billion).

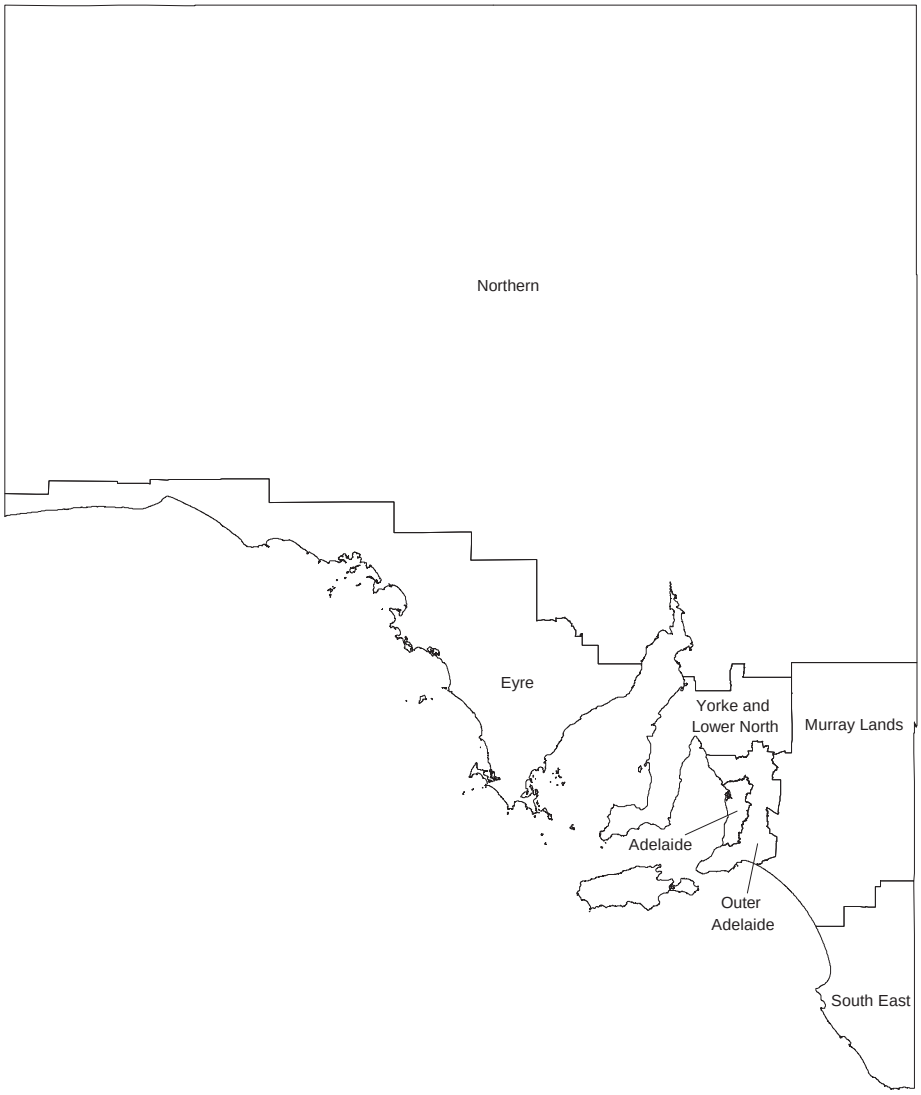
The largest manufacturing industries in Brisbane Statistical Division in terms of persons employed were Food, beverage and tobacco manufacturing (15,400 persons), Machinery and equipment manufacturing (14,700 persons) and Metal product manufacturing (14,100 persons). In Fitzroy Statistical Division, Metal product manufacturing accounts for 43% of manufacturing employment and 57% of manufacturing turnover. Moreton Statistical Division has no dominant industry. Metal Product manufacturing is the largest manufacturing industry in the North West Statistical Division. For the remaining statistical divisions within Queensland, Food, beverage and tobacco manufacturing is generally the largest manufacturing industry.

1.15 MANUFACTURING ACTIVITY—QUEENSLAND

Statistical division	*Manufacturing locations at 30 June 1997* *no.*	*Employment at 30 June 1997* *'000*	*1996–97 turnover* *$ million*
Brisbane	4 857	79.3	17 111
Moreton	2 164	16.7	2 277
Wide Bay–Burnett	548	8.4	1 470
Darling Downs	552	9.5	1 924
South West	64	0.4	n.p.
Fitzroy	352	7.2	2 479
Central West	20	0.1	0 013
Mackay	289	5.1	1 237
Northern	459	6.0	1 792
Far North	521	5.6	1 024
North West	63	1.1	n.p.
Total Queensland	9 889	139.4	30 155

Source: ABS, Manufacturing Industry, Queensland, 1996–97 (Cat. no. 8221.3).

STATISTICAL DIVISION—SOUTH AUSTRALIA



South Australia

Table 1.16 shows that 77% of South Australian manufacturing turnover in 1996–97 was generated in the Adelaide Statistical Division. Contributions varied by industry ranging from 98% for Machinery and equipment manufacturing to 44% for Metal product manufacturing with shares for most other industries exceeding 80%. Outside Adelaide, three Statistical Divisions contributed more than 5% to South Australian manufacturing turnover—Northern ($1.4 billion), Outer Adelaide ($1.1 billion) and South East ($0.9 billion).

The largest manufacturing industries in Adelaide Statistical Division in terms of persons employed were Machinery and equipment manufacturing (26,700 persons), Food, beverage and tobacco manufacturing (7,900 persons) and Metal product manufacturing (7,100 persons). In South East Statistical Division, Wood and paper product manufacturing accounts for 50% of manufacturing employment and of manufacturing turnover. Metal Product manufacturing is by far the largest manufacturing industry in the Northern Statistical Division. For the remaining statistical divisions within South Australia, Food, beverage and tobacco manufacturing is generally the largest manufacturing industry.

1.16 MANUFACTURING ACTIVITY—SOUTH AUSTRALIA

Statistical division	*Manufacturing locations at 30 June 1997* *no.*	*Employment at 30 June 1997* *'000*	*1996–97 turnover* *$ million*
Adelaide	3 115	66.6	14 122
Outer Adelaide	314	4.9	1 112
Yorke and Lower North	97	0.8	120
Murray Lands	152	2.7	671
South East	169	4.9	928
Eyre	72	0.6	84
Northern	133	4.1	1 413
Total South Australia	4 052	84.5	18 450

Source: ABS, Manufacturing Industry, South Australia, 1996–97 (Cat. no. 8221.4).

STATISTICAL DIVISION—WESTERN AUSTRALIA

Western Australia

Table 1.17 shows that 73% of Western Australian manufacturing turnover in 1996–97 was generated within the Perth Statistical Division. Contributions varied by industry ranging from 94% for Textile, clothing, footwear and leather manufacturing to 46% for Metal product manufacturing with shares for most other industries exceeding 75%. Outside Perth, only the South West Statistical Division has significant manufacturing activity with 10,100 employed and almost $3.0 billion in turnover of which around 46% of employment and around 64% of turnover are contributed by the Metal product manufacturing industry. Perth and South West Statistical Divisions combined contribute 90% of Western Australian manufacturing turnover. Among the remaining Statistical Divisions, South Eastern Statistical Division with 1,500 people employed and $800 million of turnover is by far the largest. In South Eastern Statistical Division, Metal product manufacturing industry is by far the largest industry. For the balance of statistical divisions within Western Australia, Food, beverage and tobacco manufacturing is the largest manufacturing industry.

1.17 MANUFACTURING ACTIVITY—WESTERN AUSTRALIA

Statistical division	Manufacturing locations at 30 June 1997 (no.)	Employment at 30 June 1997 ('000)	1996–97 turnover ($ million)
Perth	4 435	56.4	12 198
South West	465	10.1	2 950
Lower Great Southern	146	1.3	184
Upper Great Southern	44	0.3	42
Midlands	109	0.7	188
South Eastern	146	1.5	822
Central	129	1.3	318
Pilbara	66	0.4	54
Kimberley	37	0.2	42
Total Western Australia	5 577	72.2	16 796

Source: ABS, Manufacturing Industry, Western Australia, 1996–97 (Cat. no. 8221.5).

STATISTICAL DIVISION—TASMANIA

Tasmania

Table 1.18 shows that in 1996–97 Tasmania had the most dispersed manufacturing industry with only 36% of Tasmanian manufacturing turnover being generated in the Greater Hobart Statistical Division. In terms of persons employed, Greater Hobart was the largest manufacturing Statistical Division in Tasmania but was only slightly larger than Northern and Mersey–Lyell Statistical Divisions. The largest industries in Greater Hobart were Food, beverage and tobacco manufacturing and Metal product manufacturing. In Northern Statistical Division, the largest industries were Metal product manufacturing and Wood and paper product manufacturing. In Mersey–Lyell Statistical Division, largest industries were Food, beverage and tobacco manufacturing and Wood and paper product manufacturing.

1.18 MANUFACTURING ACTIVITY—TASMANIA

Statistical division	*Manufacturing locations at 30 June 1997* *no.*	*Employment at 30 June 1997* *'000*	*1996–97 turnover* *$ million*
Greater Hobart	400	7.9	1 711
Southern	74	0.7	169
Northern	354	7.0	1 424
Mersey–Lyell	256	5.6	1 421
Total Tasmania	1 084	21.2	4 725

Source: ABS, Manufacturing Industry, Tasmania, 1996–97 (Cat. no. 8221.6).

MANUFACTURING WORKFORCE

The next series of articles present information about people employed in the manufacturing industry or who have recently left the manufacturing industry. The estimates include working proprietors as well as employees. It also includes information on rates of industrial disputation, industrial accidents and trade union membership for persons employed in the manufacturing industry.

PERSONS EMPLOYED

Persons employed in the manufacturing industry

In August 1999, the manufacturing industry employed 12.2% of all persons employed in Australia. Males outnumbered females by a ratio of almost 3:1 (73% males and 27% females).

Full-time versus part-time jobs

In August 1999, the vast majority of males employed in the manufacturing industry (96%) were employed full-time. The corresponding proportion for females was considerably lower (74%). The proportion of people with full-time jobs in manufacturing has fallen slightly over the past 10 years, from 97% for males and 77% for females.

Full-time versus part-time jobs *continued*

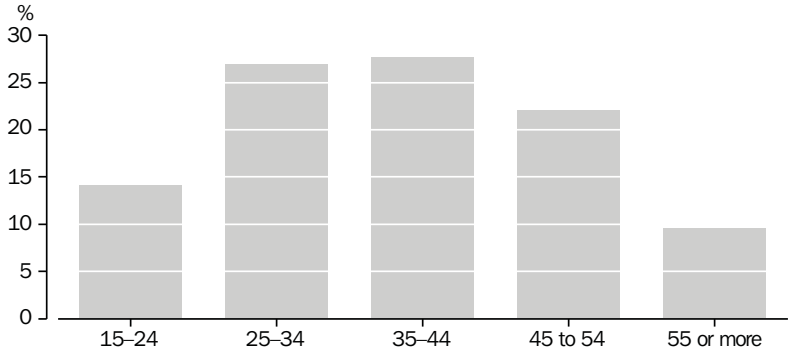
After adjusting for people working zero hours in the survey week (e.g. people on leave for the whole week), average hours worked in the manufacturing industry was much the same in August 1999 (40.6 hours) as they had been in August 1989 (40.4 hours). However, some compositional changes have occurred over the 10 year period. The largest change has been to the proportion of people working from 40 to 48 hours per week, falling from 42% in 1989 to just over 37% in 1999. Rises occurred in both the proportion of people working more than 49 hours per week (up from 17% to 21%) and the proportion of people working less than 30 hours (10% up to 12%). The proportion working 30 to 39 hours remained the same at 30%.

In August 1999, the length of the working week in manufacturing was:

- up to 30 hours for 7% of males and 26% of females;
- 30 but less than 40 hours for 29% of males and 35% of females;
- 40 but less than 49 hours for 40% of males and 30% of females;
- 49 or more hours for 24% of males and 10% of females.

Age profile

1.19 AGE PROFILE—AUGUST 1999



Source: ABS, Labour Force, Australia, August 1999 (Cat. no. 6203.0).

Manufacturing industry subdivisions

At August 1999, the largest manufacturing subdivisions in terms of employment were Machinery and equipment manufacturing (21% of people employed in manufacturing), Food, beverage and tobacco manufacturing (17%) and Metal product manufacturing (16%). The largest employers of males were Machinery and equipment manufacturing (23%), Metal product manufacturing (19%) and Food, beverage and tobacco manufacturing (16%). The largest employers of females were Food, beverage and tobacco manufacturing (19%), Printing, publishing and recorded media (17%) and Textile, clothing, footwear and leather manufacturing (16%).

Manufacturing industry subdivisions *continued*

Comparisons with earlier periods are necessarily approximate due to changes in industry classifications used. However, in August 1989, relative industry sizes appear to have been very similar to the current profile (August 1999). Machinery and equipment manufacturing was the largest employer in 1989 (23%) followed by Metal product manufacturing (17%) and Food, beverage and tobacco manufacturing (16%). The most substantial change is that in 1989, Textile, clothing, footwear and leather manufacturing was relatively, an even larger employer of females (22%).

Further information on employment and other aspects of manufacturing industry subdivisions is included in chapter 2.

1.20 EMPLOYED PERSONS—AUGUST 1999

Industry	%
Food, beverage and tobacco mfg	16.7
Textile, clothing, footwear and leather mfg	7.1
Wood and paper product mfg	6.0
Printing, publishing and recorded media	10.7
Petroleum, coal, chemical and associated product mfg	10.1
Non-metallic mineral product mfg	4.5
Metal product mfg	15.9
Machinery and equipment mfg	20.9
Other mfg	8.0
Total mfg	**100.0**

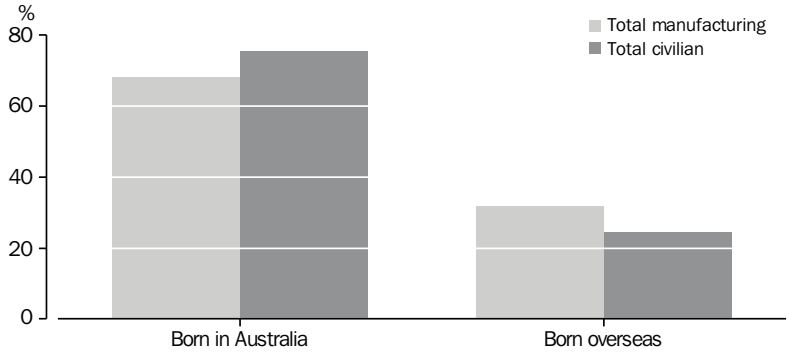
Source: ABS, Labour Force, Australia, August 1999 (Cat. no. 6203.0).

Australian versus Overseas born

As graph 1.21 shows, 68% of people employed in the Australian manufacturing industry in August 1999 were Australian born. The corresponding figure for all civilian industries was 76%. Figures for August 1989 were 62% and 74% respectively. Of all males employed in the Australian manufacturing industry in August 1999, 69% were Australian born. For females, the corresponding proportion was 66%.

Table 1.22 provides a breakdown of the manufacturing industry. It shows that in August 1999, just under half of the people employed in the Textile, clothing, footwear and leather manufacturing industry were born outside Australia (50% of males in the industry and 49% of females). This industry recorded the highest proportion of employees born outside of Australia. Proportions for the other subdivisions were substantially lower, ranging from 26% to 36%.

1.21 EMPLOYED PERSONS, BIRTHPLACE—AUGUST 1999



Source: ABS, Labour Force, Australia, August 1999 (Cat. no. 6203.0).

1.22 EMPLOYED PERSONS, BY BIRTHPLACE—AUGUST 1999

	Proportion of total persons employed					
	Born in Australia			*Born outside Australia*		
Industry	Males %	Females %	Persons %	Males %	Females %	Persons %
Food, beverage and tobacco mfg	53.1	21.0	74.2	16.6	9.3	25.8
Textile, clothing, footwear and leather mfg	20.6	30.0	50.6	20.5	28.9	49.4
Wood and paper product mfg	60.8	11.6	72.4	23.3	4.2	27.6
Printing, publishing and recorded media	42.1	31.2	73.4	14.8	11.8	26.6
Petroleum, coal, chemical and associated product mfg	45.8	22.9	68.8	21.4	9.8	31.2
Non-metallic mineral product mfg	61.0	11.1	72.1	19.1	8.7	27.9
Metal product mfg	59.8	11.0	70.7	25.5	3.7	29.3
Machinery and equipment mfg	52.0	11.6	63.6	29.3	7.1	36.4
Other mfg	54.8	10.9	65.7	27.3	7.0	34.3
Total mfg	**50.7**	**17.6**	**68.2**	**22.6**	**9.2**	**31.8**
Total civilian	42.3	33.3	75.6	14.4	10.0	24.4

Source: ABS, Labour Force Survey, August 1999; and unpublished data.

PERSONS PREVIOUSLY EMPLOYED

Unemployed persons previously employed full time

Of the estimated 278,500 people who were unemployed in the survey week in August 1999 but who had been employed full time at some time during the previous two years, 50,100 (18%) had been last employed full time in the manufacturing industry. This was the largest single industry of last employment, followed by retail trade (14%) and construction (13%).

Of the estimated 50,100 people who had been last employed full time in the manufacturing industry, 24,800 (50%) were laid off or retrenched, 11,900 (24%) left involuntarily for other reasons (such as poor health) and 13,400 (27%) left voluntarily.

1.23 UNEMPLOYED PERSONS(a), PREVIOUS INDUSTRY(b)— AUGUST 1999

	Duration of unemployment				
	Under 1 year	*Over 1 year*	*Males*	*Females*	*Persons*
Industry of last full-time job	*'000*	*'000*	*'000*	*'000*	*'000*
Agriculture, forestry and fishing	19.0	*2.5	16.0	5.4	21.4
Manufacturing	**39.3**	**10.9**	**41.8**	**8.3**	**50.1**
Construction	30.9	*4.1	33.2	*1.8	35.0
Retail trade	33.0	6.1	19.8	19.3	39.1
Accommodation, cafes and restaurants	18.1	*3.6	11.6	9.9	21.6
Property and business services	23.5	*3.2	17.4	9.3	26.8
Other industries	74.3	10.3	51.8	32.7	84.5

(a) Persons aged 15 and over who were in the workforce in August 1998 but not employed during the survey week.

(b) Industry of last full time job.

Source: ABS, Labour Force, Australia, August 1999 (Cat. no. 6203.0).

1.24 UNEMPLOYED PERSONS(a), REASONS FOR LEAVING FULL-TIME JOB—AUGUST 1999

	Job loser									
	Laid-off, retrenched			*Total(b)*			*Job leaver*			*Total*
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Persons
Industry	'000	'000	'000	'000	'000	'000	'000	'000	'000	'000
Manufacturing	**20.4**	**4.3**	**24.8**	**30.9**	**5.8**	**36.7**	**10.9**	**2.5**	**13.4**	**50.1**
Other	64.4	21.6	85.9	102.3	40.9	143.1	47.7	37.5	85.1	228.4
Total	*84.8*	*25.9*	*110.7*	*133.2*	*46.7*	*179.8*	*58.6*	*40.0*	*98.5*	*278.5*

(a) Persons unemployed in August 1999 but who had worked full-time for at least two weeks in the previous two years.

(b) The difference between job losers laid-off or retrenched and total job losers were those persons who involuntarily left their job because of ill-health or injury; or because the job was seasonal or temporary.

Source: ABS, Labour Force, Australia, August 1999 (Cat. no. 6203.0).

INDUSTRIAL DISPUTES

Manufacturing compared with other industries

During 1998 in Australia, of the 519 industrial disputes that occurred, 125 involved the manufacturing industry. Manufacturers lost approximately 93 working days per thousand employees, compared to the 72 working days lost per thousand employees for the total of all industries.

While the manufacturing industry employed 14% of the Australian workforce (on average over the year), manufacturing contributed 12% of all employees involved in disputes, the third highest rate after Construction (31%) and Education, health and community services (30%). Manufacturing had the second highest percentage of working days lost (18%), behind Construction (40%).

Manufacturing compared with other industries *continued*

For Manufacturing, the average number of working days lost per employee involved was 2.3, placing Manufacturing third in this regard after Wholesale trade, Retail trade, accommodation, cafes and restaurants (28.7 days), and Finance and insurance, and Property and business services (2.9 days).

Comparing 1998 with 10 years earlier shows 66% fewer disputes in 1998 in all industries with disputes in the manufacturing industry decreasing by relatively even more (71% fewer disputes in 1998). Over the same period, the proportion of total disputes, involving manufacturers has fallen from 28% to 24%. Other changes over this period were that the number of manufacturing employees involved has fallen by 85% and the number of working days lost by manufacturing employees has fallen by 78%. The number of manufacturing employees involved has fallen from 31% of the total to 12% over this same period, while the number of working days lost has fallen from 26% of the total to 18%.

1.25 INDUSTRIAL DISPUTES—1998

Industry	*Disputes*	*Employees involved*	*Working days lost*	*Working days lost per employee involved*	*Working days lost per thousand employees*
	no.	*'000*	*'000*	*no.*	*no.*
Mining and services to mining	111	35.28	61.80	1.75	753.29
Manufacturing	**125**	**41.20**	**95.28**	**2.31**	**92.96**
Electricity, gas and water supply	13	3.03	3.98	1.32	61.31
Construction	140	106.97	210.87	1.97	524.28
Wholesale trade; retail trade; accommodation, cafes and restaurants	5	0.40	11.35	28.66	5.98
Transport and storage	66	10.69	14.49	1.35	44.00
Communication services	3	32.22	38.30	1.19	283.77
Finance and insurance; property and business services	9	1.38	3.95	2.87	3.75
Government administration and defence	19	7.74	6.75	0.87	19.94
Education, health and community services	27	105.73	75.75	0.72	56.91
Other services	25	3.77	3.81	1.01	8.69
Total	**(a)519**	**348.41**	**526.33**	**1.51**	**72.23**

(a) The total number of disputes does not equal the sum of the disputes in each industry. If a dispute involves a number of industries it is counted separately for each industry but only once at the total level for Australia.

Source: ABS, Industrial Disputes, Australia, 1998 (Cat. no. 6322.0) and unpublished data.

Manufacturing subdivisions

Table 1.26 and graph 1.27 show that, of the disputes which occurred in the manufacturing industry in 1998, the majority involved Metal product manufacturing and Machinery and equipment manufacturing (76) and Food, beverage and tobacco manufacturing (26). These three subdivisions accounted for 75% of manufacturing employees involved in disputes and 64% of the working days lost. Food, beverage and tobacco manufacturing also recorded the highest working days lost per thousand employees in manufacturing (186), followed by Wood and paper product manufacturing (120).

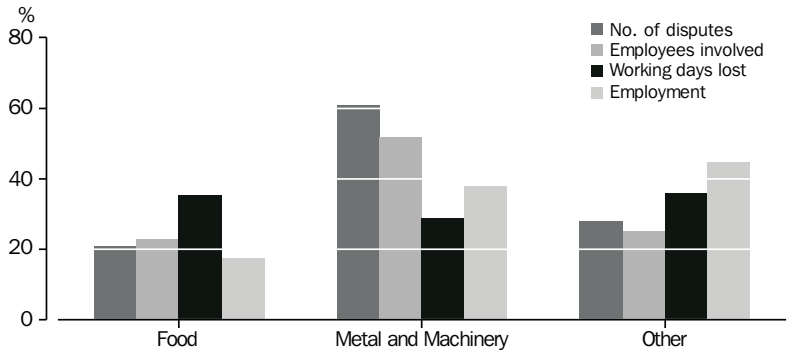
1.26 INDUSTRIAL DISPUTES—1998

Industry	Disputes	Employees involved	Working days lost	Working days lost per employee involved	Working days lost per thousand employees
	no.	'000	'000	no.	no.
Food, beverage and tobacco mfg	26	9.41	33.49	3.56	186.37
Textile, clothing, footwear and leather mfg	7	4.08	6.48	1.59	83.32
Wood and paper product mfg	5	2.19	7.13	3.25	119.55
Printing, publishing and recorded media	7	0.82	0.76	0.93	7.12
Petroleum, coal, chemical and associated product mfg	7	1.34	9.06	6.75	93.25
Metal product mfg; Machinery and equipment mfg	76	21.31	27.55	1.29	71.04
Non-metallic mineral product mfg; Other mfg	9	2.04	10.83	5.31	92.77
Total	**(a)125**	**41.20**	**95.28**	**2.31**	**92.96**

(a) The total number of disputes does not equal the sum of the disputes in each industry. If a dispute involves a number of industries it is counted separately for each industry but only once at the total level for Australia.

Source: ABS, Industrial Disputes, Australia, 1998 (Cat. no. 6322.0); and unpublished data.

1.27 DISTRIBUTION OF INDUSTRIAL DISPUTES—1998



Source: ABS, Industrial Disputes Australia, 1998 (Cat. no. 6322.0) and unpublished data.

The number of disputes involving manufacturers increased by 60% (78 up to 125) from 1997 to 1998, largely due to increases in the Food, beverage and tobacco manufacturing subdivision (up 73%) and the Metal product manufacturing and Machinery and equipment manufacturing subdivisions (up 38%), as most other subdivisions remained relatively unchanged. Despite the large increases in the number of disputes in these industries, falls occurred in both the number of employees involved (down 7,600 and 15,100 respectively) and the working days lost (down 4,300 and 49,400 respectively).

Of the other manufacturing subdivisions, three subdivisions recorded increases from 1997 to 1998 in the number of employees involved while two recorded decreases, with the most significant change occurring in the Printing, publishing and recorded media subdivision (down 70%). Substantial changes in the number of working days lost occurred in Wood and paper product manufacturing, Printing, publishing and recorded media, and Non-metallic mineral product manufacturing and Other manufacturing.

Cause of disputes

In the manufacturing industry, the two main causes of disputes ending in 1998, as measured by working days lost, were managerial policy (76,000 days lost) and 'other' causes (which include protests directed against persons or situations other than those relating to the employer/employee relationship) (65,000 days lost), accounting for 51% and 44% of the total, respectively. For all industries, managerial policy, (378,400 days lost) and 'other' causes (138,400 days lost), 62% and 23% of the total respectively, were also the two main causes of disputes.

INDUSTRIAL ACCIDENTS

This article is based on data published by the National Occupational Health and Safety Commission in *Compendium of Workers' Compensation Statistics, Australia, 1996–97*. The statistics are compiled from claims for workers' compensation made under Commonwealth, State and Territory workers' compensation Acts which resulted in a fatality, permanent disability or absence from work for five working days or more. Occupational injuries and diseases such as those suffered by self-employed persons or by military personnel within the armed forces, and those not claimed or acknowledged to be work-related are not included in the statistics. Also excluded are injuries suffered in journeys to and from work.

Due to compilation of their statistics on a different basis to other jurisdictions, comparable data for Victoria and the Australian Capital Territory are not available and are therefore excluded from the Australian totals shown below. Thus the data shown in this article will differ from true Australian totals to whatever extent that Victorian and the Australian Capital Territory patterns differ from those of the other jurisdictions.

Manufacturing compared with other industries

New workers' compensation cases reported for 1996–97 are summarised in table 1.28. The manufacturing industry accounted for just over 23% of the total for all industries, considerably more than any other industry division. Manufacturing ranks second behind Mining in the incidence of new cases per thousand employees (39.8 compared to 42.7 in Mining), but Manufacturing recorded the highest number of new cases per million hours worked (20.4). In both cases, these rates for manufacturing are significantly above the rates for all industries.

1.28 NEW WORKERS COMPENSATION CASES(a)—1996–97

Industry	New cases no.	Proportion of all industries total %	Incidence (per thousand employees) no. of cases	Frequency (per million hours worked) no. of cases
Agriculture, forestry and fishing	4 977	4.1	37.3	18.5
Mining	3 414	2.8	42.7	19.5
Manufacturing	**28 289**	**23.3**	**39.8**	**20.4**
Electricity, gas and water supply	1 349	1.1	25.9	14.1
Construction	10 789	8.9	37.4	18.5
Wholesale trade	6 002	4.9	18.4	9.4
Retail trade	10 607	8.7	14.2	9.7
Accommodation, cafes and restaurants	5 688	4.7	20.5	13.5
Transport and storage	9 499	7.8	37.6	18.7
Communication	3 275	2.7	22.5	12.0
Finance and insurance	1 040	0.9	4.4	2.4
Property and business services	6 332	5.2	12.9	6.9
Government administration and defence(b)	7 143	5.9	23.2	13.0
Education	3 666	3.0	8.7	5.0
Health and community services	11 943	9.8	22.1	14.4
Cultural and recreational services	2 241	1.8	18.8	11.4
Personal and other services	4 411	3.6	23.6	13.8
All Industries(b)	121 666	100.0	22.9	12.9

(a) Australia less Victoria and the Australian Capital Territory.

(b) Excluding the armed forces.

Source: National Occupational Health and Safety Commission, Compendium of Workers' Compensation Statistics, Australia, 1996–97.

Manufacturing industry subdivisions

Table 1.29 summarises new workers' compensation cases for manufacturing subdivisions in 1996–97. Of the manufacturing subdivisions, Food, beverage and tobacco manufacturing had the highest incidence of injury both on a per thousand employees basis and on a per million hours worked basis. In contrast, Printing, publishing and recorded media recorded rates about one quarter of those for Food, beverage and tobacco manufacturing with an incidence of 14.9 and a frequency of 8.2.

1.29 NEW WORKERS COMPENSATION CASES(a)—1996–97

Industry	New cases no.	Proportion of total manufacturing %	Incidence (per thousand employees) no. of cases	Frequency (per million hours worked) no. of cases
Food, beverage and tobacco mfg	7 658	27.1	59.9	31.8
Textile, clothing, footwear and leather mfg	998	3.5	21.5	11.8
Wood and paper product mfg	1 883	6.7	45.8	24.2
Printing, publishing and recorded media	1 124	4.0	14.9	8.2
Petroleum, coal, chemical and associated product mfg	1 799	6.4	28.3	14.0
Non-metallic mineral product mfg	1 379	4.9	44.9	21.6
Metal product mfg	6 055	21.4	45.6	22.4
Machinery and equipment mfg	5 836	20.6	38.9	19.3
Other mfg	1 558	5.5	36.6	18.3
Manufacturing	**28 292**	**100.0**	**39.8**	**20.4**

(a) Australia less Victoria and the Australian Capital Territory.

Source: National Occupational Health and Safety Commission, Compendium of Workers' Compensation Statistics, Australia, 1996–97.

Other characteristics of newly reported compensation cases, 1996–97

Manufacturing accounted for 23.3% of new workers' compensation cases in Australia in 1996–97. In terms of various (not mutually exclusive) categories of compensation cases, manufacturing industry's share of all industry totals were:

- Injury and poisoning 22.1%.
- Open wounds 32.8%.
- Contusions with intact skin surface 21.5%.
- Fractures 20.5%.
- Diseases 28.1%.
- Deafness 39.1%.

Within all manufacturing industry workers' compensation occurrences, Strains of joints or muscles accounted for 41.6% of newly reported cases. Other (not mutually exclusive) significant categories of cases, and their incidence in manufacturing were Diseases (22.0%) and Open Wounds (13.5%).

TRADE UNION MEMBERSHIP

Manufacturing compared to other industries

In August 1998, 354,400 employees in the manufacturing industry (35% of employees) were members of a trade union reflecting a higher proportion of members than for industry overall (28%). However, as table 1.30 shows, the manufacturing industry is not as unionised as a number of other industries including Electricity, gas and water supply (55%), Communication services (54%) and Education (48%).

Of manufacturing employees, 291,300 males (38%) and 63,100 females (25%, were union members. For males, this is a higher proportion than industry overall (30%), while it is a slightly lower proportion for females (26% overall) but the gap has narrowed substantially compared to 12 months earlier.

Over the five year period, 1993–98, in the manufacturing industry, the proportion of trade union members has fallen 10 percentage points, the same as for industry overall. The highest falls in trade union membership rates over this period were recorded in the mining industry and the communication services industry (down 22% and 20% respectively). The proportions of male and female manufacturing employees who were union members, over this period, both fell by 10 percentage points.

1.30 TRADE UNION MEMBERSHIP—AUGUST 1998

	Trade union members			Trade union members as a proportion of all employees		
	Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
Industry	*'000*	*'000*	*'000*	*%*	*%*	*%*
Agriculture, forestry and fishing	10.0	*3.0	13.0	8.6	*6.2	7.9
Mining	24.4	*0.8	25.2	36.4	*9.5	33.3
Manufacturing	**291.3**	**63.1**	**354.4**	**37.5**	**25.2**	**34.5**
Electricity, gas and water supply	35.5	*2.3	37.8	62.8	*19.3	55.3
Construction	98.4	*2.2	100.6	28.1	*4.5	25.2
Wholesale trade	46.4	11.8	58.2	14.5	8.3	12.6
Retail trade	89.3	132.3	221.6	18.2	23.9	21.3
Accommodation, cafes and restaurants	22.7	23.9	46.5	13.7	12.3	12.9
Transport and storage	116.0	23.8	139.8	49.5	29.4	44.3
Communication services	53.2	21.4	74.6	58.4	45.0	53.8
Finance and insurance	36.4	56.9	93.3	28.1	30.9	29.8
Property and business services	50.5	35.6	86.1	12.2	9.9	11.1
Government administration and defence	96.9	52.8	149.7	52.3	36.5	45.3
Education	93.9	187.0	280.9	50.4	47.1	48.2
Health and community services	56.9	195.7	252.6	34.3	32.2	32.7
Cultural and recreational services	18.0	16.8	34.8	24.0	19.3	21.5
Personal and other services	49.2	19.0	68.2	36.9	15.5	26.7
Total	**1 188.9**	**848.5**	**2 037.5**	**30.0**	**25.8**	**28.1**

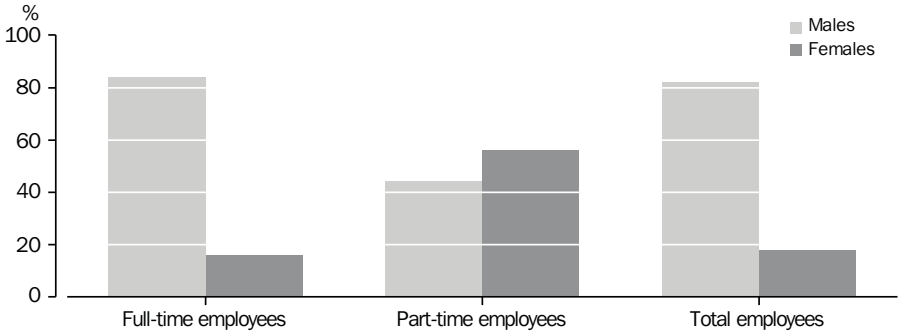
Source: ABS, Employee Earnings, Benefits and Trade Union Membership, Australia, August 1998, (Cat. no. 6310.0).

Manufacturing industry

In the manufacturing industry as a whole, 37% of full-time employees were trade union members in August 1998 but only 16% of part-time employees were members. The proportion of full-time male employees who were trade union members was substantially higher than that of full-time female employees (28%), whereas the membership rates for part-time employees were more in line with one another (18% for males and 16% for females). The female part-time membership rate increased substantially from 9% in August 1997 (males 19%).

Graph 1.31 shows the distribution of trade union members in the manufacturing industry in August 1998. At that time, 82% of trade union members were males. Of the males who were members, 97% were full-time employees. Of the 18% of union members who were female, 86% were full-time employees. Part-time employees made up less than 5% of union membership in the manufacturing industry.

1.31 TRADE UNION MEMBERS, MANUFACTURING INDUSTRY—AUGUST 1998



Source: ABS, Employee Earnings, Benefits and Trade Union Membership, Australia, August 1998 (Cat. no. 6310.0).

Manufacturing subdivisions

In August 1998, the manufacturing subdivision with the highest proportion of males as union members was Wood and paper product manufacturing (48%) and Food, beverage and tobacco manufacturing had the greatest female membership (37%).

1.32 TRADE UNION MEMBERSHIP—AUGUST 1998

	Trade union members			*Trade union members as a proportion of all employees*		
	Males	*Females*	*Persons*	*Males*	*Females*	*Persons*
Industry	*'000*	*'000*	*'000*	*%*	*%*	*%*
Food, beverage and tobacco mfg	62.7	18.1	80.8	45.7	37.2	43.5
Textile, clothing, footwear and leather mfg	10.8	15.3	26.1	33.3	34.5	34.0
Wood and paper product mfg	24.8	*2.9	27.7	48.1	*34.5	46.2
Printing, publishing and recorded media	18.6	7.7	26.3	29.9	18.2	25.1
Petroleum, coal, chemical and associated product mfg	21.9	7.1	29.0	33.4	22.1	29.7
Non-metallic mineral product mfg	17.7	*0.4	18.0	40.3	*5.9	35.5
Metal product mfg	55.8	*3.5	59.3	38.8	*14.0	35.1
Machinery and equipment mfg	67.5	6.7	74.2	38.9	22.3	36.4
Other mfg	11.5	*1.5	13.0	17.2	*11.9	16.4
Manufacturing	**291.3**	**63.1**	**354.4**	**37.5**	**25.2**	**34.5**

* This estimate has a relative standard error of greater than 25 per cent, care should be exercised when using it.

Source: ABS, Employee Earnings, Benefits and Trade Union Membership, Australia, August 1998 (Cat. no. 6310.0).

Over the five year period, 1993–98, all manufacturing subdivisions experienced decreases in the proportion of union members except Wood and paper product manufacturing (up 7.2 percentage points). This was the only subdivision which increased its membership proportions for males as well (up 4.7 percentage points), whereas for females both this subdivision and Non-metallic mineral product manufacturing experienced an increase (up 23.4 and 1.1 percentage points, respectively).
Non-metallic mineral product manufacturing experienced the greatest fall in membership for all employees (down 17.7 percentage points) followed by Textile, clothing, footwear and leather manufacturing (down 14.9 percentage points).

ENVIRONMENTAL ISSUES

This section contains two parts. The first part presents an analysis by the Australian Bureau of Agricultural and Resource Economics (ABARE) of fuels used by manufacturers. It includes information on past usage and ABARE's projections of use to the year 2014–15. The second part is based on an ABS survey of manufacturing management units. It shows costs incurred by manufacturers for environmental protection measures during 1995–96 and 1996–97.

ENERGY USE

This article is based on analysis by the Australian Bureau of Agricultural and Resource Economics (ABARE) of past energy use by manufacturers and their predicted future energy use. ABARE bases its analysis on the results of its biennial Fuel and Energy Survey and other sources. The various proportions and growth rates shown in the tables and highlighted in the commentary are based on physical energy measures i.e. petajoules.

A much more detailed analysis of past trends in and future projections of energy use by all sectors in Australia is contained in ABARE Research report 99.4, *Australian Energy, Market Developments and Projections to 2014–15* (Authors: Shane Bush, Andrew Dickson, Julie Harman and Jane Anderson).

Growth in energy usage by manufacturers

Net consumption of energy by the Australian manufacturing industry has grown by an average of 1.1% per year over the twenty four years from 1973–74 to 1997–98 (table 1.33) and is projected to continue to grow at around that same rate until 2014–15 (table 1.34). While energy use has grown in all sectors since 1973–74, the rate of growth experienced by the manufacturing industry has been considerably lower than the rate for other industries especially mining and electricity generation. Growing at a slower rate than other industries has reduced manufacturing's share of overall Australian energy consumption from 35.1% in 1973–74 to 24.9% in 1997–98—a share it is expected to maintain until 2014–15.

1.33 ENERGY CONSUMPTION—1973–74 TO 1997–98

	Sector share		*Annual growth in consumption*		
	1973–74	*1997–98*	*1973–74 to 1997–98*	*1993–94 to 1997–98*	*1996–97 to 1997–98*
	%	%	%	%	%
Agriculture	1.5	1.4	2.4	2.5	2.7
Mining	2.3	5.5	6.4	7.8	6.0
Manufacturing	**35.1**	**24.9**	**1.1**	**1.9**	**3.6**
Electricity generation	19.5	28.3	4.2	5.2	9.4
Construction	1.0	1.0	2.5	2.2	3.1
Transport	26.2	25.2	2.4	2.9	0.6
Commercial and services	3.2	4.3	3.7	5.2	5.1
Residential	8.8	8.0	2.1	2.7	1.7
Other	2.4	1.4	0.7	1.7	2.2
Total	100.0	100.0	2.6	3.6	4.3

Source: ABARE 1999, Page 26.

1.34 ENERGY CONSUMPTION PROJECTED TO 2014–15

	Sector share		Annual growth in consumption
	1997–98	*2014–15*	*1997–98 to 2014–15*
	%	%	%
Agriculture	1.4	1.5	1.5
Mining	5.5	7.5	3.3
Manufacturing	**24.9**	**25.0**	**1.1**
Electricity generation	28.3	24.8	0.6
Construction	1.0	0.9	1.1
Transport	25.2	26.2	2.4
Commercial and services	4.3	5.5	3.7
Residential	8.0	7.1	0.7
Other	1.4	1.5	2.1
Total	100.0	100.0	1.4

Source: ABARE 1999, Page 26.

Energy consumption by industry within manufacturing

In 1997–98, by far the largest energy consumer of the manufacturing subdivisions was Metal product manufacturing, with 46.2% of total manufacturing energy consumption. By 2014–15, this industry is expected to have an even greater share (49%). Within the Metal product manufacturing industry energy consumption in 1997–98 was distributed approximately 60% to non ferrous metals and 40% to ferrous metals. By 2014–15, these proportions are anticipated to be 65% and 35% respectively.

1.35 ENERGY CONSUMPTION WITHIN MANUFACTURING(a)

	Share of total manufacturing energy consumption		
	1980–81	*1997–98*	*Projected 2014–15*
Industry	%	%	%
Food, beverage and tobacco mfg	13.1	15.1	14.2
Textile, clothing, footwear and leather mfg	1.6	1.3	1.3
Wood, and paper product mfg; printing, publishing and recorded media	6.1	6.3	6.3
Petroleum, coal, chemical and associated product mfg	22.2	21.4	20.0
Non-metallic mineral product mfg	10.2	7.8	7.3
Metal product mfg	45.1	46.2	49.0
Machinery and equipment mfg	1.8	1.8	1.9
Other mfg	—	—	—
Total mfg	**100.0**	**100.0**	**100.0**

(a) Data for periods 1997–98 and earlier are survey estimates. Data for later periods have been projected on the basis of survey results and other information.

Source: ABARE 1997, Statistical table C1.

Net energy consumption—manufacturing industry by State

In 1997–98, New South Wales (including the ACT) was by far the largest energy consumer of the State manufacturing industries but its share had fallen markedly since 1980–81 and is projected to fall further by 2014–15. Both Queensland and Western Australia shares of Australian manufacturing energy consumption have grown since 1980–81 and projections indicate that they will be the largest State consumers in 2014–15.

Relative to the number of people employed in manufacturing, a per person employed basis, the Northern Territory manufacturing was the highest energy consumer, followed by Western Australia and Queensland. On this basis, Victoria was the lowest energy consumer.

1.36 ENERGY CONSUMPTION(a)

	Share of total Australian manufacturing's energy consumption		
	1980–81	*1997–98*	*Projected 2014–15*
State and Territory	*%*	*%*	*%*
New South Wales (including the Australian Capital Territory)	37.1	31.9	22.1
Victoria	20.5	20.1	18.7
Queensland	19.2	23.0	25.7
Western Australia	10.4	13.3	23.8
South Australia	7.3	6.7	5.6
Tasmania	3.7	3.3	2.8
Northern Territory	1.8	1.7	1.4
Australia	**100.0**	**100.0**	**100.0**

(a) Data for periods 1980–81 and 1997–98 are survey estimates. Data for 2014–15 have been projected by ABARE on the basis of survey results and other information.

Source: ABARE 1999, Statistical tables B2 to B8.

WASTE MANAGEMENT AND PROTECTING THE ENVIRONMENT

This section presents results from the 1995–96 and 1996–97 Waste Management and Environmental Protection Expenditure Surveys. These surveys measure both current expenditure and capital expenditure on waste management and environmental protection. The next ABS survey designed to update this information is planned for the reference year 1999–2000. The results of the 1999–2000 survey are expected to be published by the ABS in the second half of 2001, including in the 2001 issue of this publication.

Definitions of the various concepts associated with this survey are included in the Glossary.

Current expenditure on waste management and other environmental protection

Table 1.37 shows that current expenditure by manufacturers on waste management and other environmental protection services provided by government and private industry increased by $36.3 million (8%) between 1995–96 and 1996–97. This overall increase was despite only four of the nine broad manufacturing industries increasing their expenditure. The largest increases were by:

- Food, beverage and tobacco manufacturers—current expenditure up by $32.9 million (35%); and
- Petroleum, coal, chemical and associated product manufacturers—current expenditure up by $22.8 million (39%).

Of the industries which experienced reduced costs in 1996–97 compared with 1995–96, the reductions were generally small. The largest falls were by:

- Other manufacturing—current expenditure down by $17.8 million (59%); and
- Non-metallic mineral product manufacturers—current expenditure down by $9.5 million (25%).

Capital expenditure on environmental protection

Table 1.37 shows that during 1996–97, manufacturers acquired $415.8 million worth of assets primarily for the purpose of environmental protection. This represented a decrease of almost 9% compared with capital expenditure in the previous year. This overall decrease was despite seven of the nine broad manufacturing industries increasing their expenditure. The two industries which decreased expenditure did so by large amounts, viz:

- Machinery and equipment manufacturers—capital expenditure down by $88.8 million (75%); and
- Wood and paper product manufacturers—capital expenditure down by $38.8 million (55%).

Of the industries which increased their expenditure on assets acquired primarily for the purpose of environmental protection, largest increases were by:

- Metal product manufacturers—capital expenditure up by $27.2 million (23%); and
- Food, beverage and tobacco manufacturers—capital expenditure up by $23.5 million (43%).

1.37 ENVIRONMENTAL PROTECTION EXPENDITURE

	1995–96		1996–97	
	Current expenditure	*Capital expenditure*	*Current expenditure*	*Capital expenditure*
Industry	*$ million*	*$ million*	*$ million*	*$ million*
Food, beverage and tobacco mfg	94.1	54.3	127.0	77.8
Textile, clothing, footwear and leather mfg	23.8	9.5	32.4	21.8
Wood and paper product mfg	46.6	70.3	45.6	31.5
Printing, publishing and recorded media	21.4	3.0	15.3	3.8
Petroleum, coal, chemical and associated product mfg	58.3	54.0	81.1	70.1
Non-metallic mineral product mfg	38.1	22.4	28.6	29.4
Metal product mfg	89.9	119.5	97.3	146.7
Machinery and equipment mfg	42.0	119.1	41.1	30.3
Other mfg	30.3	3.6	12.5	4.5
Total mfg	**444.5**	**455.7**	**480.8**	**415.8**

Source: ABS, Waste Management and Environmental Protection Expenditure Survey.

Table 1.38 shows that of the $415.8 million spent on assets, manufacturers spent over 60% on filters and other end of line environmental protection equipment. The remainder (almost 40%) was spent on new technologies with environmental protection as an integral feature. Within the expenditure on end of line equipment, almost 80% was devoted to protection of air (46%) and waste water management (33%). Of the expenditure devoted to change in production processes, three categories had similar levels of expenditure i.e. protecting air (30%), managing hazardous solid waste (27%) and waste water management (also 27%).

1.38 WASTE MANAGEMENT AND ENVIRONMENTAL PROTECTION EXPENDITURE—1996–97

Capital expenditure to protect environment	*$ million*
End-of-line techniques	
Protect air	119.1
Waste water management	86.2
Managing non hazardous solid waste	27.5
Managing hazardous solid waste	6.2
Noise and vibration abatement	10.4
Other environmental protection	11.1
Total	*260.5*
Change in production methods	
Protect air	47.6
Waste water management	40.1
Managing non hazardous solid waste	9.7
Managing hazardous solid waste	42.8
Noise and vibration abatement	4.2
Other environmental protection	10.7
Total	*155.1*
Total	**415.8**

Source: ABS, Waste Management and Environmental Protection Expenditure Survey, 1996–97.

This article presents statistics for manufactured goods classified by degree of transformation. Table 1.39 shows the value of goods produced by manufacturers during 1997–98 and either sold or transferred within the business. It should be noted that the effect on table 1.39 of duplication resulting from counting both sales and transfers is very small. Transfers for further processing amount to less than 2% of the value of goods for total manufacturing and the highest proportion for any subdivision is 3.6% for metal product manufacturing.

The basic premise of the classification of goods by degree of transformation is that each manufactured product reaching the point of sale (or transfer) will have been subjected to one or more processes beginning at a raw material state and passing through a range of manufacturing processes and intermediate products to become a final end use product. The number and complexity of such processes determine the degree of transformation category to which that product is classified. Readers should note that the statistics presented are experimental in nature as the classification used to categorise goods by degree of transformation is still under development by the ABS. Statistics in table 1.39 are indicative rather than precisely classified estimates.

The concept of degree of transformation is also related to the concept of value adding. The amount and complexity of transformation strongly influence the amount of value added by manufacturing processes. However, in making the connection between degree of transformation and value adding, it should be remembered that these are not the only influences which determine the amount of value added. Furthermore, for a given Australian produced final product, not all of the transformations required to produce the product have necessarily been carried out in Australia.

The classification has five broad categories. These are:

- Primary products
  (such as butter, pasteurised milk, red meat, hides and skins); and
- Primary product manufactures
  (such as beer, flour, refined sugar, wood pulp); and
- Simply transformed manufactures
  (such as clay bricks, paper, pig iron, plaster); and
- Moderately transformed manufactures
  (such as broadwoven fabrics, soaps and detergents, steel wire); and
- Elaborately transformed manufactures
  (such as clothing, motor vehicles, machinery, paint).

However, the first three of these have been combined together in the table below because the boundaries between the categories have not been finally established.

1.39 DEGREE OF TRANSFORMATION—1997–98

Industry	Simply transformed manufactures(a) $ billion	Moderately transformed manufactures $ billion	Elaborately transformed manufactures $ billion	Manufactures not yet classified $ billion
Food, beverage and tobacco mfg	46.1	0.0	0.0	0.0
Textile, clothing, footwear and leather mfg	1.3	2.8	5.0	0.0
Wood and paper product mfg	4.5	4.1	2.7	0.0
Printing, publishing and recorded media	0.0	0.0	10.5	0.3
Petroleum, coal, chemical and associated product mfg	14.2	5.9	11.6	0.3
Non-metallic mineral product mfg	7.3	0.8	0.6	0.0
Metal product mfg	14.8	8.3	13.4	0.0
Machinery and equipment mfg	0.2	0.2	36.7	0.0
Other mfg	0.0	0.0	6.4	0.0
Total mfg	**88.4**	**22.0**	**86.7**	**0.6**

(a) Also includes products classified to the 'Primary Products' and 'Primary Product Manufactures' categories.

Source: ABS, Manufacturing Survey.

Exports

Data in this section about exports by degree of transformation have been taken from *Exports of primary and manufactured products, Australia, 1998* a publication by the Department of Foreign Affairs and Trade (DFAT). Readers should note that DFAT does not classify goods in exactly the same way as the ABS has in table 1.39 although the elaborately transformed manufactures category is very similar.

Exports of Australian produce in 1998 comprised:

- Unprocessed primary products and minerals 38.7%
- Processed primary products and minerals 19.5%
- Simply transformed manufactures 9.8%
- Elaborately transformed manufactures 18.6%
- Other (mainly non monetary gold) 13.3%

Average annual growth 1988 to 1998 was:

- Unprocessed primary products and minerals 5.0%
- Processed primary products and minerals 6.8%
- Simply transformed manufactures 6.0%
- Elaborately transformed manufactures 14.8%
- Other (mainly non monetary gold) 8.6%

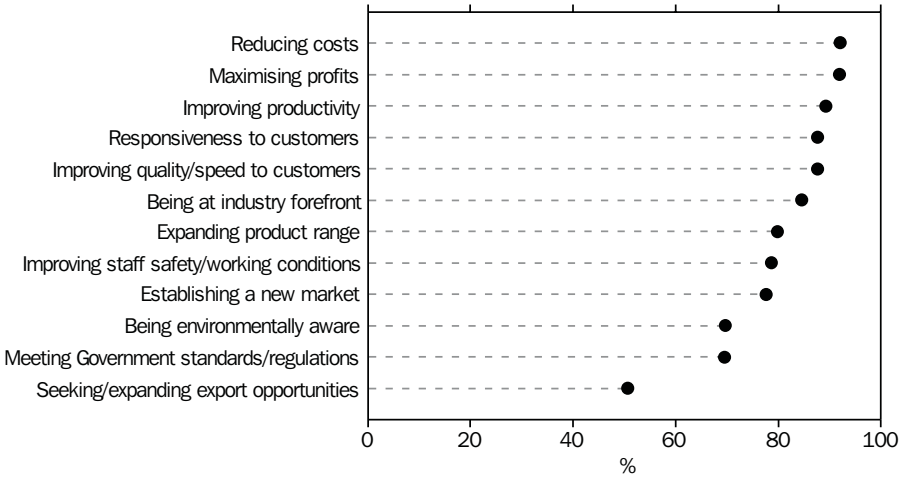
This article contains information on technological innovation by manufacturers. Manufacturers involved in technological innovation are those which have implemented technologically new products or processes, and/or significant technological improvements in products or processes. For the purposes of the statistics, an innovation is regarded as having been implemented when it has been introduced onto the market (product innovation) or used within a production process (process innovation). Innovations therefore involve a series of scientific, technological, organisational, financial and commercial activities. Other types of innovation such as innovation in management practices, work practices and marketing techniques are excluded from the statistics.

In 1996–97, manufacturers expended just under $4 billion on innovation as defined above. This represented approximately 2% of total expenses incurred by manufacturers. Most of the $4 billion innovation expenditure was on research and development (50%) followed by tooling up costs (29%).

Objectives of technological innovation

Manufacturers were asked to indicate whether they regarded certain objectives or results of innovation to be important, not important or not applicable. Reducing costs and maximising profits were the most frequently indicated as being important (by 92% of innovating manufacturers) closely followed by improving productivity (90%). Seeking/expanding export opportunities was least frequently indicated as being important (51%) along with meeting government standards/regulations and being environmentally aware (each at 70%).

1.40 OBJECTIVES OF ENGAGING IN INNOVATION, PERCENTAGE OF MANUFACTURER INDICATING IMPORTANCE—1997



Source: ABS, Innovation in Manufacturing, Australia, 1996–97 (Cat. no. 8116.0).

Innovation by Industry Subdivisions

Table 1.41 shows the proportion of manufacturers which undertook some form of technological innovation during two periods, the three years ended 30 June 1994 and the three years ended 30 June 1997. Of the industry subdivisions within manufacturing, Petroleum, coal, chemical and associated product manufacturers had the highest level of innovation with just over 42% of businesses undertaking some technological innovation activity in the period 1994–97. Food, beverages & tobacco and Non-metallic mineral product manufacturers both recorded 36%. The industry with the lowest proportion of businesses undertaking technological innovation was the Textile, clothing, footwear and leather manufacturing industry (15%) only slightly below the Wood and paper product manufacturing industry at 16%.

Comparing the three years to 30 June 1997 to the three years to 30 June 1994 shows that the proportion of manufacturing businesses undertaking technological innovation fell from 34% to 26%. The proportion of Textile, clothing, footwear and leather manufacturers undertaking innovation halved from 30% to 15%. Most of the remaining industry subdivisions also exhibited a decline in the proportion undertaking innovation. The exceptions were Food, beverages and tobacco manufacturing (up 2%) and Wood and paper product manufacturing (up 4%).

The proportion undertaking product innovation was higher than the proportion undertaking process innovation for the total manufacturing industry and for all industry subdivisions within manufacturing except for Printing, publishing and recorded media. In the three years ended 30 June 1997, 23% of manufacturing businesses undertook product innovation compared with 18% of businesses who undertook process innovation.

1.41 PROPORTION OF BUSINESSES UNDERTAKING TECHNOLOGICAL INNOVATION

	Type of technological innovation					
	Product		*Process*		*Total(a)*	
	%		%		%	
Industry	1991–94(b)	1994–97(c)	1991–94(b)	1994–97(c)	1991–94(b)	1994–97(c)
Food, beverage and tobacco mfg	29	33	25	29	36	36
Textile, clothing, footwear and leather mfg	28	15	21	14*	30	15
Wood and paper product mfg	13	12	11	12	15	16
Printing, publishing and recorded media	22	18	30	21*	34	26
Petroleum, coal, chemical and associated product mfg	46	35	30	29	46	42
Non-metallic mineral product mfg	35	33	25	21	37	36
Metal product mfg	29	20	22	13	32	21
Machinery and equipment mfg	39	33	25	20	42	35
Other manufacturing	27	19	21	15	31	21
Manufacturing	**30**	**23**	**23**	**18**	**34**	**26**

(a) Some manufacturers undertake both product and process innovation. Hence, the respective proportions will not sum to the total.

(b) Three years ended 30 June 1994.

(c) Three years ended 30 June 1997.

Source: ABS, Innovation in Manufacturing, Australia, 1996–97 (Cat. no. 8116.0).

Innovation by size of business

The proportion of businesses undertaking technological innovation during the three years ended 30 June 1997 was strongly correlated with the employment size of the businesses involved. Slightly less than 19% of manufacturers employing fewer than 10 people undertook any technological innovation. However for manufacturers employing more than 500 people, frequency of innovation was over four times as great at 89%.

1.42 MANUFACTURING BUSINESSES UNDERTAKING TECHNOLOGICAL INNOVATION(a)

	Type of technological innovation three years ended June 1997		
	Product	*Process*	*Total*
Employment size	*%*	*%*	*%*
Less than 10 persons	16.0	12.5	18.7
10–49 persons	39.1	28.0	42.6
50–99 persons	47.3	45.7	53.6
100–499 persons	63.9	56.6	70.6
500 or more persons	83.3	80.6	89.2
Total Manufacturing	22.9	17.8	26.0

(a) Some manufacturers undertake both product and process innovation. Hence, the respective proportions will not necessarily sum to the total.

Source: ABS, Innovation in Manufacturing, Australia, 1996–97 (Cat. no. 8116.0).

Innovation by State

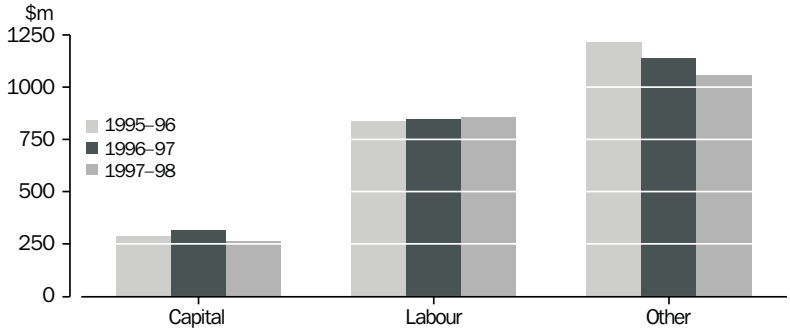
The proportion of manufacturers undertaking technological innovation during the three years ended 30 June 1997 was highest in Victoria (29%) followed by South Australia (28%) and Tasmania (26%). Northern Territory (16%) recorded the lowest proportion.

RESEARCH AND DEVELOPMENT EXPENDITURE

In 1997–98 total expenditure by all businesses in the Australian economy on research and experimental development (R&D) was $4.0 billion, around 4% lower than 1996–97 expenditure. The 1996–97 estimate was the only other decrease since this series began, in 1976–77. The manufacturing industry experienced a 5% decrease with expenditure falling to just under $2.2 billion in 1997–98. Manufacturing's share of total R&D expenditure also fell from 1996–97 to 1997–98 but only marginally to 54%.

Within the manufacturing industry R&D expenditure consisted of 88% current expenditure and 12% capital expenditure, which was very similar to the proportions recorded for the total of all industries. Of the total current expenditure for the manufacturing industry, 45% related to labour costs. The overall decrease in R&D expenditure for manufacturing was reflected in the falls in capital expenditure and other current expenditure (down 17% and 7% respectively). Labour costs increased marginally (up 0.7%).

1.43 MANUFACTURING R&D EXPENDITURE



Source: ABS, Research and Experimental Development Expenditure, Business Enterprises, Australia, 1997–98 (Cat. no. 8104.0).

Manufacturing subdivisions

In 1997–98 expenditure on R&D decreased, from the previous year, in five of the manufacturing subdivisions. Wood and paper product manufacturing experienced the most significant decrease (down 39.1%), followed by Food, beverage and tobacco manufacturing (down 23.0%) and Other manufacturing (down 21.6%). Of the four subdivisions that experienced an increase in R&D expenditure from 1996–97, the greatest increase occurred in the Printing, publishing and recorded media industry (up 15.8%).

With $1.1 billion of R&D expenditure in 1997–98, Machinery and equipment manufacturing was by far the largest manufacturing subdivision. This industry contributed 50% of the total spent by manufacturers and 27% of expenditure by all businesses in the economy. Expenditure was principally current expenditure (92%) which was split 44% to labour costs and 56% to other costs with capital expenditure accounting for the (8%) remainder. Within the Machinery and equipment manufacturing industry, Electronic and Electrical equipment and appliance manufacturers and Motor vehicle and other transport equipment manufacturers contributed an equal share (40%) to total expenditure. The remainder of the expenditure was made by manufacturers of Photographic and scientific equipment and Industrial machinery and equipment.

Other industries with more than 10% of total manufacturing R&D expenditure in 1997–98 were Metal product manufacturing (15%) and Petroleum, coal, chemical and associated product manufacturing (14%).

1.44 EXPENDITURE ON RESEARCH AND DEVELOPMENT

	1995–96	1996–97				1997–98
	Total expenditure	Total expenditure	Capital expenditure	Labour costs	Other current expenditure	Total expenditure
Industry	$ million	$ million	$ million	$ million	$ million	$ million
Food, beverage and tobacco mfg	291.5	231.9	22.5	69.9	86.1	178.5
Textile, clothing, footwear and leather mfg	25.7	21.4	2.1	10.0	10.0	22.1
Wood and paper product mfg	184.3	191.4	30.0	28.9	57.7	116.6
Printing, publishing and recorded media	22.7	16.5	n.p.	11.7	n.p.	19.1
Petroleum, coal, chemical and associated product mfg	327.4	309.1	25.9	138.6	143.4	307.9
Non-metallic mineral product mfg	81.9	65.5	10.1	25.9	36.4	72.4
Metal product mfg	325.7	365.2	70.8	114.2	149.4	334.4
Machinery and equipment mfg	1 063.6	1 058.6	83.0	446.4	565.2	1 094.6
Other mfg	16.5	45.8	n.p.	11.2	n.p.	35.9
Total mfg	2 339.4	2 305.5	264.2	856.8	1 060.5	2181.6

Source: ABS, Research & Experimental Development, Business Enterprises, Australia, 1997–98 (Cat. no. 8104.0).

Expenditure by State

Less than 1% of R&D expenditure by Australian manufacturers was spent overseas. Of the expenditure which took place in Australia, State shares were Victoria (37%), New South Wales (34%), Queensland (10%), Western Australia (9%), South Australia (6%) and Tasmania and the Territories (2% in combination). The Victorian share fell from 42% of manufacturing R&D expenditure, one year earlier.

In 1997–98, Machinery and equipment manufacturing was by far the largest manufacturing subdivision in terms of R&D expenditure, in New South Wales (50% of total manufacturing), Victoria (50%, not counting the contribution of Photographic and scientific equipment), South Australia (75%) and Western Australia (23%, not counting the contribution of Motor vehicle and part and other transport equipment). The second largest contributing industry in all of these States was Petroleum, coal, chemical and associated product manufacturing.

In Queensland, Metal product manufacturing had the largest share of expenditure (37%), with Machinery and equipment manufacturing ranked next at 34%.

Expenditure by size of business

Large businesses (businesses employing 100 people or more) were responsible for 74% of 1997–98 R&D expenditure by manufacturers, medium sized businesses (employment of 20–99 people) were responsible for 15% and small businesses (employing fewer than 20 people) accounted for the remaining 11%.

CHAPTER 2 PERFORMANCE OF THE MANUFACTURING INDUSTRY

INTRODUCTION

Chapter 2 of this publication presents information from the annual manufacturing survey about the structure and performance of the manufacturing industry as a whole and of each of the broad industries Australian and New Zealand Standard Industrial Classification (ANZSIC) Subdivisions within manufacturing. Similar performance information is provided for other ANZSIC Divisions such as Wholesale trade, Construction and Mining. The source of the non manufacturing data is the Economic Activity Survey which is also conducted annually by the ABS.

From survey data about management units (businesses), income statement and balance sheet information is presented along with some industry performance measures such as the profit margin, the ratio of long term debt to equity and the current ratio. Definitions of the various economic variables and performance measures are included in the Glossary. Performance measures are compiled and presented uniformly to facilitate direct comparison of the relative performances of industries.

Corresponding information may also be available for finer levels of manufacturing industry than those shown in this publication. Readers who are interested in obtaining data about the performance of finer industries within manufacturing should consult the New South Wales Office of the ABS—see the Explanatory Notes section 'Unpublished data'. To assist readers to identify the finer level industries, a full list of manufacturing industries is contained in the Appendix—List of Manufacturing Industries.

From statistics about manufacturing establishments (factories), information is presented on which are the industry classes within the subdivision with the greatest production and how that production is distributed across States and Territories. From 1997–98, the measure generally used to represent production in manufacturing statistics is 'Industry value added'.

New international standards for compiling economic statistics have brought changes to the definitions of some variables and also the replacement of the variable Industry Gross Product with the variable Industry Value Added. All data presented in this chapter have been compiled on the basis of these new definitions. Information on the changes and their effect on the estimates is contained in the Explanatory Notes section 'Revised international standards for measuring activity'.

Data presented in this chapter exclude operations of non employing businesses. Such businesses, typically with one or two working proprietors or partners but no other staff, are numerous, especially in industries such as Retail trade, Construction and Transport. However, the omission of the operations of these businesses from the statistics is believed to have no serious effect on the reliability of the industry performance measures presented because such businesses account for only a small proportion of total production.

For manufacturing industry, it is estimated that in 1997–98 there were about 78,000 of these non employing businesses which were not accounted for by the Manufacturing Survey. However, in total these businesses are estimated to account for only about 1.5% of manufacturing activity. Estimates of the numbers and activity levels of these businesses have been derived from business income tax data compiled by the Australian Taxation Office.

TOTAL MANUFACTURING

Performance of manufacturing relative to other industries

This article presents information about operations by private sector businesses and by public trading enterprises. Other activities of Federal, State and Local Governments are excluded.

Table 2.1 shows that of the major industries, manufacturing ranked fourteenth of seventeen industries in terms of profit margins (operating profit before tax as a percentage of operating income). The manufacturing profit margin was around one–fifth of the highest margin (27.8% for Finance and insurance) and was well below the all industries level of 8.9%. In terms of return on assets (pre-tax profits as a percentage of the total value of assets) manufacturing ranked only eleventh of the seventeen industries but at a rate which was above that of the total of all industries. In terms of a longer term industry health indicator (long term debt to equity), manufacturing lies eighth of the sixteen industries for which data are available.

2.1 PERFORMANCE RATIOS—1997–98

Industry	Profit margin %	Return on assets %	Long-term debt to equity times	Interest coverage times
Agriculture, forestry and fishing	13.4	2.9	0.1	3.5
Mining	13.7	6.7	1.0	4.1
Manufacturing	**5.4**	**6.3**	**0.6**	**4.4**
Electricity, gas and water supply	14.8	4.2	0.7	1.7
Construction	4.1	8.6	0.8	4.6
Wholesale trade	2.9	6.6	0.5	4.5
Retail trade	3.4	12.1	0.9	3.8
Accommodation, cafes and restaurants	7.2	7.3	0.7	3.5
Transport and storage	8.2	6.9	1.0	3.5
Communication services	15.9	10.6	0.8	5.3
Finance and insurance	27.8	3.0	n.a.	1.9
Property and business services	11.6	5.8	0.5	3.8
Education(a)	5.8	5.6	0.3	5.4
Health and community services(b)	13.2	13.9	0.7	8.5
Cultural and recreational services	11.2	6.4	0.5	5.3
Personal and other services	10.8	8.2	0.2	6.8
All industries	8.9	4.7	0.6	2.7

(a) Includes private education services businesses but excludes those in the public sector.

(b) Includes private health and community services businesses but excludes those in the public sector.

Source: ABS, Business Operations and Industry Performance, Australia Preliminary, 1997–98 (Cat. no. 8142.0).

Changes in performance by the manufacturing industry

Excluding very small businesses (see the Introduction to this chapter), it is estimated that approximately 56,000 manufacturing businesses were in operation at 30 June 1998 and that they employed slightly more than one million people, marginally fewer than the previous year (down 0.6%). During 1997–98 these manufacturing businesses generated sales of over $223 billion, an increase of 4% on 1996–97 sales. Sales continue to grow at a slightly faster rate than the general level of prices for manufactured goods and as a result, the volume of goods and services provided by manufacturing businesses is estimated to have grown by between 2% and 3% from 1996–97 to 1997–98.

Operating profit before tax for the manufacturing industry fell between 1996–97 and 1997–98 despite a small increase in trading profits. The main contributors to the profit fall were increases in labour costs although interest expenses, depreciation and other operating expenses all rose.

Changes in performance by the manufacturing industry *continued*

The balance sheet for the manufacturing industry shows an increase in net worth of almost $1.3 billion (up 1.6%). Both the value of assets and the value of liabilities increased during 1997–98. Increases for trading inventories (up 5.8%), other current assets (up 4.1%) and non current assets (up 6.4%) together led to an overall increase in the value of assets of over $10.5 billion (5.7%). Capital expenditure on tangible assets increased substantially (up 28.5%) from 1996–97 to 1997–98 following a decrease the previous year. Expenditure on plant, machinery and equipment (including motor vehicles) accounted for over $10.5 billion of the total capital expenditure on tangible assets by manufacturing businesses.

2.2 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	214 551	223 190	4.0
Less cost of sales	151 592	158 208	4.4
Trading profit	**62 959**	**64 982**	3.2
Plus other operating income	2 124	1 772	**–16.6**
Less labour costs	38 313	40 187	4.9
Less depreciation	7 223	7 495	3.8
Less other operating expenses	2 866	3 052	6.5
Earnings before interest and tax	**16 473**	**15 865**	**–3.7**
Less interest expenses	3 353	3 611	7.7
Operating profit before tax	**13 120**	**12 254**	**–6.6**
Balance sheet			
Current assets	73 210	76 673	4.7
Non-current assets	111 048	118 161	6.4
Total assets	*184 258*	*194 833*	*5.7*
Current liabilities	55 341	59 030	6.7
Non-current liabilities	46 106	51 695	12.1
Total liabilities	*101 447*	*110 725*	*9.1*
Net worth	**82 811**	**84 109**	**1.6**
Capital outlays			
Total net fixed capital expenditure	9 347	12 013	28.5

Source: ABS, Manufacturing Survey.

Performance indicators

The 1997–98 industry profit margin of 5.4% (i.e. $5.40 of operating profit before tax per $100 of operating income) was a 10% fall from the 1996–97 result. Nevertheless, 78% of manufacturers recorded an operating profit before tax for 1997–98 with 33% of manufacturers recording a profit margin greater than 10%. Results by business size showed that 78% of large manufacturers made a profit (average profit margin 5.8%), 79% of medium sized manufacturers made a profit (average profit margin 4.9%) and 78% of small manufacturers made a profit (average profit margin 5.8%).

Performance indicators *continued*

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in the manufacturing industry.

- First quartile 13.8%
- Median 4.9%
- Third quartile 0.3%

In 1997–98, all of the other performance measures shown in table 2.3 also reflected a worse position than for the previous year. The most notable of the 1997–98 industry performance trends was the continued tendency for the long-term debt to equity ratio to rise (up 10.4%). The rise caused an increase in the industry debt position to about 61% of net worth. The current ratio fell slightly (down 1.8%) from 1996–97 to 1997–98 and the interest coverage ratio also fell (down 10.6%).

2.3 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1996–97*	*1997–98*	*%*
Selected performance measures			
Profit margin	6.1	5.4	–10.0
Return on assets	7.1	6.3	–11.7
Long term debt to equity	0.6	0.6	10.4
Current ratio	1.3	1.3	–1.8
Interest coverage	4.9	4.4	–10.6

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

RELATIVE PERFORMANCE BY MANUFACTURING SUBDIVISIONS

This article presents a comparison of some key elements of the recent performance of the nine industry (ANZSIC) subdivisions within manufacturing. Comparisons are made in terms of performance by manufacturing management units (businesses). Further information appears in the remainder of this chapter where performance by individual industry subdivisions is examined. The Glossary contains definitions of the various performance measures presented.

Sales of goods and services

In 1997–98, manufacturing businesses generated around $222 billion of sales of goods and services, an increase of 4.0% compared with the previous year. These sales represented an average of around $221,000 per person employed in manufacturing. All manufacturing subdivisions increased their sales between 1996–97 and 1997–98. The largest percentage increases in sales were recorded by Wood and paper product manufacturers (up 7.3%), Food, beverage and tobacco manufacturers (up 7.1%) and Non-metallic mineral product manufacturers (up 5.7%).

Sales of goods and services *continued*

Sales per person employed increased between 1996–97 and 1997–98 for all manufacturing subdivisions except Printing, publishing and recorded media (down 4.1%). The largest increases were by Non-metallic mineral product manufacturers (up 12.3%) and Textile, clothing, footwear and leather Manufacturers (up 8.9%).

Trading profits

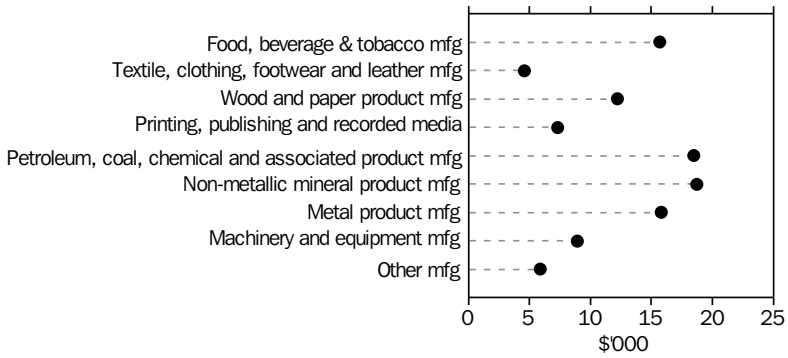
In 1997–98, manufacturing businesses generated a little over $64 billion in trading profits (sales of goods and services less cost of sales), an increase of 3.2% over the previous year. All manufacturing subdivisions increased their trading profits between 1996–97 and 1997–98 except Printing, publishing and recorded media (down 2.9%), Textile, clothing, footwear and leather product manufacturers (down 2.1%) and Machinery and equipment manufacturers (down 1.2%). Largest relative increases in trading profits were recorded by Food, beverage and tobacco manufacturers (up 8.7%) and Metal product manufacturers (up 8.1%).

Operating profits before tax (OPBT)

In 1997–98, manufacturing businesses generated around $12.3 billion of operating profits before tax. This represented, on average, around $12,200 per person employed in manufacturing and $54 for every thousand dollars of operating income generated by manufacturers. For manufacturers overall, both OPBT per person employed and OPBT per thousand dollars of operating income were lower in 1997–98 than they had been in 1996–97.

Performance varied widely within the manufacturing industry. As shown by graph 2.4, Non-metallic mineral product manufacturers generated OPBT of around $18,700 per person employed while Textile, clothing, footwear and leather manufacturers generated around $4,600 per person employed.

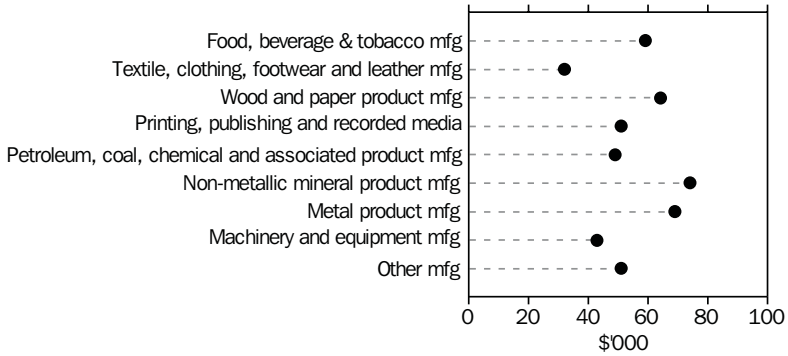
2.4 OPBT PER PERSON EMPLOYED—1997–98



Source: ABS, Manufacturing Survey.

Similarly a variety of results were recorded for 1997–98 for OPBT generated per thousand dollars of operating income (graph 2.4). Results ranged from about $74 of OPBT per thousand dollars of operating income estimated for Non-metallic mineral product manufacturers down to about $32 of OPBT per thousand dollars of operating income estimated for Textile, clothing, footwear and leather manufacturers.

2.5 OPBT PER $'000 OF INCOME—1997–98



Source: ABS, Manufacturing Survey.

Manufacturing subdivisions which increased their OPBT per thousand dollars of operating income between 1996–97 and 1997–98 were:

- Metal product manufacturing (from $66 to $69); and
- Food, beverage and tobacco manufacturing (from $53 to $59); and
- Other manufacturing (from $45 to $51).

In all other manufacturing subdivisions, OPBT per thousand dollars of operating income fell between 1996–97 and 1997–98. The largest relative falls were:

- Printing, publishing and recorded media (from $77 to $51); and
- Machinery and equipment manufacturing (from $58 to $43); and
- Textile, clothing, footwear and leather manufacturing (from $41 to $32).

Assets and liabilities

At the end of 1997–98, manufacturers held almost $195 billion in assets of which, 60% were non current assets, 15% were trading inventories and 25% were other current assets. For manufacturers as a whole, the value of assets at the end of 1997–98 was 5.7% higher than a year earlier. All industry subdivisions experienced a rise in the value of assets during 1997–98 except Printing, publishing and recorded media (down 7.4%) and the relatively small Other manufacturing industry (down 10.2%). The largest relative increase was for Food, beverage and tobacco manufacturers (up 17.8%).

At the end of 1997–98 total liabilities for manufacturers were almost $111 billion of which 53% were current liabilities. During 1997–98, the value of liabilities for manufacturers as a whole rose relatively more than the value of assets (but by a smaller absolute amount). Non current liabilities rose by 12.1% and as net worth grew by only 1.6% over the same period, a worsening (by 10.4%) in the long term debt to equity position resulted.

Assets and liabilities *continued*

The value of liabilities increased during 1997–98 for all industry subdivisions within manufacturing except Printing, publishing and recorded media (down 17.3%) and the relatively small Other manufacturing industry (down 13.8%). The largest increases in the value of liabilities were for Food, beverage and tobacco manufacturers (up 20.7%) and Metal product manufacturers (up 15.7%). Five of the industry subdivisions within manufacturing experienced a worsening of their long term debt to equity positions while the remaining four experienced an improvement.

Capital expenditure

In 1997–98, manufacturers undertook capital expenditure on tangible assets of almost $12 billion, a substantial increase on the previous year's expenditure (up almost 30%). Of the expenditure undertaken by manufacturers, over $10.5 billion was on plant, machinery and equipment (including motor vehicles). The main contributors to the increase in capital expenditure were Metal product manufacturers (up 78%), Machinery and equipment manufacturers (up 59%) and Food, beverage and tobacco manufacturers (up 54%). Capital expenditure decreased in three manufacturing subdivisions, Wood and paper product manufacturing (down 36%), Petroleum, coal, chemical and associated product manufacturers (down 15%) and Other manufacturing (down 4%).

FOOD, BEVERAGE AND TOBACCO MANUFACTURING

In 1997–98, Food, beverage and tobacco manufacturers employed about 188,000 people, an increase of 2.4% over the previous year. These manufacturers generated just over $49 billion in sales and almost $3 billion in pre-tax profits. In terms of ANZSIC Subdivisions within manufacturing this industry is one of the largest.

Between 1996–97 and 1997–98, sales of goods and services increased by 7.1%. Cost of sales increased at a slightly slower rate resulting in an increase in trading profits of 8.6%. Despite operating expenses rising by 10%, operating profit before tax increased by $471 million (19.0%).

The industry balance sheet shows that the net worth of the industry increased by over $3.6 billion (14.1%). Increases of 11.3% in trading inventories and 12.1% in other current assets combined to increase current assets by 11.8%. Over the period, total assets increased by 17.8% and total liabilities by 26.5%. Capital expenditure on tangible assets recorded the greatest value of any manufacturing subdivision at over $3.3 billion (up 53% from the previous year). The largest component of capital expenditure was outlays on plant machinery and equipment (including motor vehicles) which amounted to over $2.8 billion.

2.6 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	45 834	49 083	7.1
Less cost of sales	34 264	36 520	6.6
Trading profit	**11 570**	**12 563**	**8.6**
Plus other operating income	576	1 020	77.0
Less labour costs	6 980	7 499	7.4
Less depreciation	1 444	1 477	2.3
Less other operating expenses	352	373	5.9
Earnings before interest and tax	**3 342**	**4 201**	**25.7**
Less interest expenses	859	1 246	45.1
Operating profit before tax	**2 483**	**2 954**	**19.0**
Balance sheet			
Current assets	15 110	16 895	11.8
Non-current assets	27 839	33 710	21.1
Total assets	*42 949*	*50 605*	*17.8*
Current liabilities	13 314	13 496	1.4
Non-current liabilities	10 823	15 642	44.5
Total liabilities	*24 136*	*29 138*	*20.7*
Net worth	**18 813**	**21 467**	**14.1**
Capital outlays			
Total net fixed capital expenditure	**2 192**	**3 360**	**53.3**

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 5.9% (i.e. $5.90 of pre-tax profits per $100 of operating income) a substantial improvement on the 1996–97 result. Pre-tax profits were recorded for 73% of Food, beverage and tobacco manufacturers for 1997–98. Results by business size showed that 77% of large businesses made a profit (average profit margin 6.0%) and 87% of medium sized businesses made a profit (average profit margin 6.4%) but only 70% of small businesses made a profit (average profit margin 3.4%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 12.0%
- Median 3.5%
- Third quartile (–) 0.7%

As table 2.7 shows, the current ratio for the industry improved (by 10.2%) between 1996–97 and 1997–98. However, there was a substantial deterioration in the long-term debt to equity position and the interest coverage ratio also worsened.

2.7 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	5.3	5.9	10.2
Return on assets	5.8	5.8	1.0
Long term debt to equity	0.6	0.7	26.7
Current ratio	1.1	1.3	10.3
Interest coverage	3.9	3.4	–13.4

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.8 presents establishment data for the 10 largest of the 23 industry classes within the Food, beverage and tobacco manufacturing industry. These industries accounted for 60% of the people employed in the Food, beverage and tobacco manufacturing industry at 30 June 1998 and for two-thirds of 1997–98 turnover and production (industry value added). Meat processing was by far the largest industry class. It had the greatest production ($1.5 billion) and turnover ($6.4 billion) and with almost 31,500 people employed, accounted for over 18% of all people employed by the Food, beverage and tobacco manufacturing industry.

2.8 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a) no.	Turnover $ million	Industry Value added (production) $ million
Meat processing	31 488	6 450	1 532
Food mfg n.e.c.	17 145	3 499	1 213
Wine mfg	7 788	2 595	1 084
Beer and malt mfg	2 855	2 496	886
Fruit and vegetable processing	10 281	3 202	834
Dairy product mfg n.e.c.	7 638	3 697	715
Milk and cream processing	6 851	3 010	661
Soft drink, cordial and syrup mfg	6 081	2 443	644
Sugar mfg	6 306	2 551	612
Cereal food and baking mix mfg	4 996	2 099	607
Balance of food, beverage and tobacco mfg	67 608	15 578	4 602
Total food, beverage and tobacco mfg	**169 037**	**47 620**	**13 390**

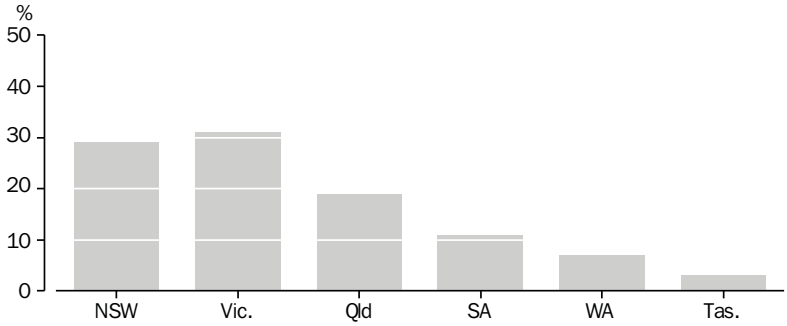
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.9 shows how production by Food, beverage and tobacco manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.9 PRODUCTION(a)—1997–98



(a) NT and ACT each contrbuted less than 0.5% of production for this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

TEXTILE, CLOTHING, FOOTWEAR AND LEATHER MANUFACTURING

In June 1998 Textile, clothing, footwear and leather manufacturers employed almost 75,000 people but this represented a decrease of 6% from the previous year. During 1997–98, these manufacturers generated over $10.6 billion in sales of goods and services and over $300 million in operating profit before tax. Among the manufacturing subdivisions, Textile, clothing, footwear and leather manufacturing is one of the smaller industries.

Between 1996–97 and 1997–98 sales of goods and services grew by 2.3%. The cost of sales increased faster than sales (up 4.5%) leading to a fall in trading profit trading profit (down 2.1%). This decrease, along with the fall in other operating income were the main contributing factors in a fall of just over 20% in operating profit before tax.

The industry balance sheet shows an increase in net worth of over $300 million (13.7%) from 1996–97 to 1997–98. While the value of trading inventories remained virtually unchanged, the value of other current assets increased by 13.1% leading to an overall increase of 7.9% in current assets. Virtually all of the 4.0% growth in total liabilities resulted from an 11.8% growth in non current liabilities. Capital expenditure on tangible assets by Textile, clothing, footwear and leather manufacturers increased by almost 12% between 1996–97 to 1997–98 to $472 million. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $354 million during the year.

2.10 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	10 419	10 655	2.3
Less cost of sales	7 211	7 534	4.5
Trading profit	**3 208**	**3 121**	**–2.7**
Plus other operating income	111	104	–6.7
Less labour costs	2 334	2 356	0.9
Less depreciation	261	274	5.3
Less other operating expenses	120	100	–17.2
Earnings before interest and tax	**591**	**492**	**–16.8**
Less interest expenses	159	148	–6.7
Operating profit before tax	**432**	**343**	**–20.5**
Balance sheet			
Current assets	4 105	4 428	7.9
Non-current assets	2 557	2 731	6.8
Total assets	*6 662*	*7 159*	*7.5*
Current liabilities	2 940	2 953	0.4
Non-current liabilities	1 354	1 514	11.8
Total liabilities	*4 295*	*4 467*	*4.0*
Net worth	**2 367**	**2 692**	**13.7**
Capital outlays			
Total net fixed capital expenditure	**422**	**472**	**11.8**

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 3.2% (i.e. $3.20 of pre-tax profits per $100 of operating income) a substantial fall from the 1996–97 result. Nevertheless, pre-tax profits were recorded for 79% of Textile, clothing, footwear and leather manufacturers for 1997–98. Results by business size showed that 74% of large businesses made a profit (average profit margin 1.9%), 71% of medium sized businesses made a profit (average profit margin 3.3%) and 80% of small businesses made a profit (average profit margin 5.8%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 14.4%
- Median 4.8%
- Third quartile 0.6%

While there was a very slight improvement in the long term debt to equity ratio and an improvement in the current ratio, the return on assets and the interest coverage ratio worsened between 1996–97 and 1997–98.

2.11 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	4.1	3.2	–22.2
Return on assets	6.5	4.8	–26.0
Long term debt to equity	0.6	0.6	–1.7
Current ratio	1.4	1.5	7.4
Interest coverage	3.7	3.3	–10.8

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.12 presents establishment data for the 10 largest of the 19 industry classes within the Textile, clothing, footwear and leather manufacturing industry. These 10industry classes accounted for around 75% of people employed at 30 June 1998 and a similar proportion of 1997–98 turnover and value added for the Textile, clothing, footwear and leather manufacturing industry. The three largest of these industry classes (in terms of production) all involved the manufacturing of clothing. Between them, Women's and girls' clothing manufacturing, Men's and boys' wear manufacturing and Clothing manufacturing n.e.c. accounted for over 40% of employment and a third of the production in the Textile, clothing, footwear and leather manufacturing industry.

2.12 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a) no.	Turnover $ million	Industry Value Added (production) $ million
Women's and girls' wear mfg	11 292	1 401	464
Clothing mfg n.e.c.	12 710	831	345
Men's and boys' wear mfg	8 491	790	270
Made-up textile product mfg	6 545	744	237
Synthetic fibre textile mfg	3 520	671	219
Footwear mfg	5 798	583	211
Textile floor covering mfg	2 925	622	190
Cotton textile mfg	2 961	536	189
Wool scouring	1 767	512	180
Knitting mill products n.e.c.	2 783	541	147
Balance of textile, clothing, footwear and leather mfg	18 610	2 633	807
Total textile, clothing, footwear and leather mfg	**77 402**	**9 864**	**3 259**

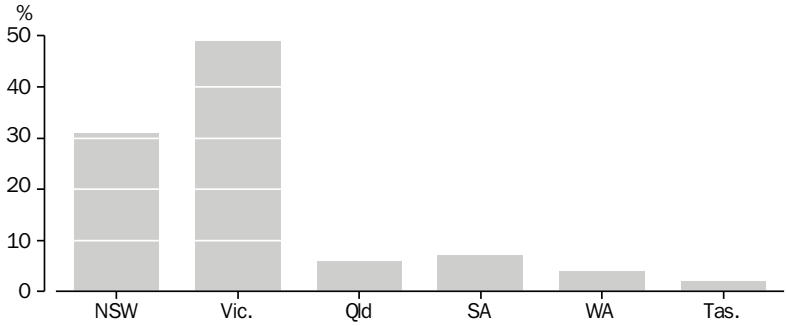
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.13 shows how production by Textile, clothing, footwear and leather manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.13 PRODUCTION(a)—1997–98



(a) The NT and ACT each contrbuted less than 0.5% of production for this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

WOOD AND PAPER PRODUCT MANUFACTURING

In June 1998, Wood and paper product manufacturing businesses employed almost 68,000 people, an increase of 1.2% over the previous year. During 1997–98, these businesses generated almost $13 billion in sales of goods and services and over $800 million in pre-tax profits. Among the manufacturing subdivisions, Wood and paper product manufacturing is one of the smaller industries.

Between 1996–97 and 1997–98 sales of goods and services rose by 7.3% leading to an increase in trading profit of 6.0%. Relatively larger rises in both depreciation and other operating costs meant that operating profits before tax rose by only 2.5%.

The industry balance sheet shows a fall of $250 million (4.5%) in the net worth of the industry. Over the period, the value of trading inventories increased by 7.6% and the value of other current assets increased by 20.1% resulting in an increase in total current assets of 14.5%. In contrast, the value of non current assets fell marginally (down 0.3%). Similarly, the value of current liabilities increased substantially (up 34.5%) while the value of non current liabilities fell slightly (by 1.1%).

Capital expenditure on tangible assets by Wood and paper product manufacturers fell substantially to $629 million in 1997–98 following a substantial increase in the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to over $600 million in 1997–98.

2.14 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	11 955	12 827	7.3
Less cost of sales	7 690	8 314	8.1
Trading profit	**4 266**	**4 513**	**5.8**
Plus other operating income	157	114	–27.3
Less labour costs	2 506	2 583	3.1
Less depreciation	445	488	9.9
Less other operating expenses	363	427	17.8
Earnings before interest and tax	**1 097**	**1 122**	**2.3**
Less interest expenses	290	294	1.7
Operating profit before tax	**807**	**827**	**2.5**
Balance sheet			
Current assets	3 808	4 362	14.5
Non-current assets	8 424	8 397	–0.3
Total assets	*12 232*	*12 759*	*4.3*
Current liabilities	2 394	3 220	34.5
Non-current liabilities	4 240	4 194	–1.1
Total liabilities	*6 633*	*7 414*	*11.8*
Net worth	**5 599**	**5 345**	**–4.5**
Capital outlays			
Total net fixed capital expenditure	**973**	**629**	**–35.4**

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 6.4% (i.e. $6.40 of pre-tax profits per $100 of operating income) a small improvement on the 1996–97 result. Pre-tax profits were recorded for 80% of Wood and paper product manufacturers for 1997–98. Results by business size showed that 81% of large businesses made a profit (average profit margin 7.1%), 71% of medium sized businesses made a profit (average profit margin 4.3%) and 80% of small businesses made a profit (average profit margin 5.4%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 8.6%
- Median 3.8%
- Third quartile 0.7%

Of the other performance measures for the industry, the interest coverage ratio reflected a marginal improvement between 1996–97 and 1997–98 while the remaining performance measures indicated a worse position for 1997–98 than for the previous year, in particular the current ratio.

2.15 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	6.7	6.4	–4.1
Return on assets	6.6	6.5	–1.8
Long term debt to equity	0.8	0.8	3.6
Current ratio	1.6	1.4	–14.8
Interest coverage	3.8	3.8	0.6

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.16 presents establishment data for the six largest of the 12 industry classes within the Wood and paper product manufacturing industry. These six classes together accounted for almost three quarters of people employed in June 1998 and of 1997–98 turnover and production for the Wood and paper product manufacturing industry as a whole.

2.16 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$ million
Wooden structural component mfg	18 737	2 184	678
Pulp, paper and paperboard mfg	4 800	1 961	613
Corrugated paperboard container mfg	5 369	1 440	577
Timber resawing and dressing	7 361	1 215	426
Log sawmilling	7 007	771	318
Paper product n.e.c mfg	3 470	993	314
Balance of wood and paper product mfg	15 520	2 934	1 027
Total wood and paper product mfg	**62 624**	**11 498**	**3 953**

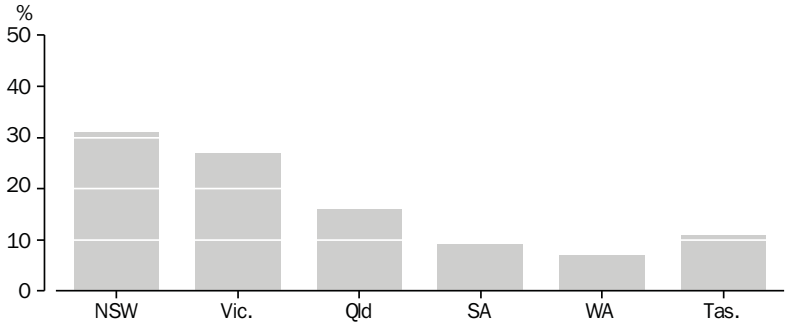
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.17 shows how production by Wood and paper product manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.17 PRODUCTION(a)—1997–98



(a) NT and ACT each contrbuted less than 0.5% of production by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

PRINTING, PUBLISHING AND RECORDED MEDIA

In June 1998, Printing, publishing and recorded media businesses employed almost 110,000 people a 7.8% increase over the level of the previous year. During 1997–98, these businesses generated almost $15.5 billion in sales of goods and services and almost $800 million in operating profit before tax. Among the manufacturing subdivisions, Printing, publishing and recorded media is a medium sized industry.

Between 1996–97 and 1997–98 sales of goods and services increased by 3.5%. However, the cost of sales increased relatively more (by 8.3%) resulting in a decrease in trading profit (down 2.9%). As well as the decrease in trading profit the industry experienced a 7.9% increase in labour costs which outweighed decreases in depreciation expenses and other operating expenses resulting in a substantial decrease in operating profits before tax (down 31.5%).

The industry balance sheet shows an increase of $169 million in the net worth of the industry between 1996–97 and 1997–98. Trading inventories fell by 9.6% and other current assets by 1.5% resulting in an overall decrease in current assets of 2.6%. Non current assets decreased by 9.3%. Similarly, falls occurred for both current liabilities (down 0.9%) and non current liabilities (down 27.8%). Capital expenditure on tangible assets showed a substantial rise in 1997–98 reaching $693 million. The increase in 1997–98 more than offset the fall which the industry had experienced in the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $658 million.

2.18 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	14 978	15 505	3.5
Less cost of sales	8 524	9 235	8.3
Trading profit	**6 454**	**6 270**	**–2.9**
Plus other operating income	181	126	–30.7
Less labour costs	3 683	3 973	7.9
Less depreciation	584	529	–9.4
Less other operating expenses	817	808	–1.2
Earnings before interest and tax	**1 532**	**1 077**	**–29.7**
Less interest expenses	368	279	–24.1
Operating profit before tax	**1 165**	**798**	**–31.5**
Balance sheet			
Current assets	6 192	6 031	–2.6
Non-current assets	15 929	14 450	–9.3
Total assets	*22 121*	*20 481*	*–7.4*
Current liabilities	4 057	4 021	–0.9
Non-current liabilities	6 388	4 614	–27.8
Total liabilities	*10 445*	*8 635*	*–17.3*
Net worth	**11 677**	**11 846**	**1.4**
Capital outlays			
Total net fixed capital expenditure	**477**	**693**	**45.1**

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 5.1% (i.e. $5.10 of pre-tax profits per $100 of operating income). Pre-tax profit was recorded for 79% of Printers, publishers and recorded media manufacturers for 1997–98. Results by business size showed that 80% of large businesses made a profit (average profit margin 4.7%), 79% of medium sized businesses made a profit (average profit margin 5.5%) and 77% of small businesses made a profit (average profit margin 6.0%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 18.8%
- Median 6.4%
- Third quartile 0.3%

The large decrease in non current liabilities during 1997–98 led to a substantial improvement in the long term debt to equity ratio. However, all of the other performance measures shown reflected a worse industry position.

2.19 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	7.7	5.1	–33.6
Return on assets	5.3	3.9	–26.0
Long term debt to equity	0.5	0.4	–28.8
Current ratio	1.5	1.5	–1.7
Interest coverage	4.2	3.9	–7.4

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.20 presents establishment data for all seven industry classes within the Printing, publishing and recorded media industry for 1997–98. Industry classes have been ranked according to their industry value added (production) levels. The two largest classes by far are the Newspaper printing or publishing industry and the (general) Printing industry which between them account for around 70% of the people employed and of the production of the total Printing, publishing and recorded media industry.

2.20 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$million
Newspaper printing or publishing	29 762	4 754	2 410
Printing	40 592	5 383	2 216
Paper stationery manufacturing	8 485	1 208	453
Other periodical publishing	6 753	1 124	387
Recorded media manufacturing and publishing	2 457	674	383
Services to printing	7 458	697	372
Book and other publishing	5 406	1 283	329
Total printing, publishing and recorded media	**100 913**	**15 123**	**6 551**

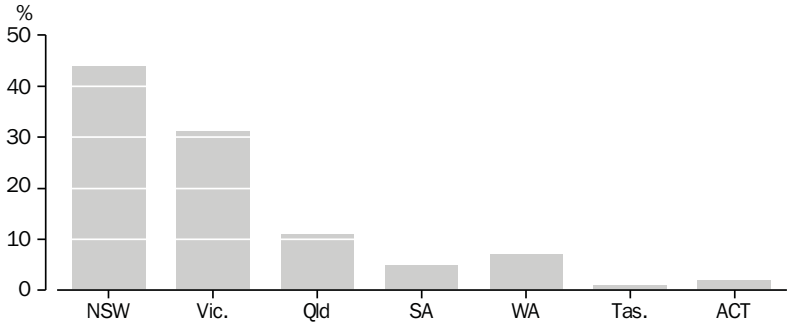
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.21 shows how production by Printing, publishing and recorded media establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.21 PRODUCTION(a)—1997–98



(a) NT contributed less than 0.5% by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

PETROLEUM, COAL, CHEMICAL AND ASSOCIATED PRODUCT MANUFACTURING

In June 1998, Petroleum, coal, chemical and associated product manufacturers employed slightly over 105,000 people, virtually unchanged from the previous year. These manufacturers generated over $39 billion in sales of goods and services and almost $2 billion in operating profit before tax. Among the manufacturing subdivisions, Petroleum, coal, chemical and associated product manufacturing is one of the larger industries.

Between 1997–98 and 1997–98, sales of goods and services increased by 4.1%. The cost of sales rose a little more however and as a result, trading profit rose only slightly (by 1.9%). However, despite this increase in trading profits, operating profits before tax decreased markedly (down 17.1%) principally as a result of an increase in labour costs.

The industry balance sheet shows an increase of $151 million (1.2%) in the net worth of the industry between 1996–97 and 1997–98. While trading inventories rose by 7.7%, other current assets fell by 10.8%. The overall effect was a 3.6% fall in the value of current assets. Non current assets rose by 9.1%. Inconsistent change was also recorded for liabilities with current liabilities remaining unchanged but non current liabilities increasing substantially (by 16.3%). Capital expenditure on tangible assets by Petroleum, coal, chemical and associated product manufacturers fell by 14.4% to $1,656 million during 1997–98. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to just over $1.2 billion.

2.22 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	37 652	39 179	4.1
Less cost of sales	28 665	29 953	4.5
Trading profit	**8 987**	**9 226**	**2.7**
Plus other operating income	370	200	–45.9
Less labour costs	4 708	5 155	9.5
Less depreciation	1 310	1 371	4.7
Less other operating expenses	448	420	–6.2
Earnings before interest and tax	**2 865**	**2 452**	**–14.4**
Less interest expenses	518	505	–2.4
Operating profit before tax	**2 347**	**1 947**	**–17.1**
Balance sheet			
Current assets	12 508	12 062	–3.6
Non-current assets	15 046	16 415	9.1
Total assets	*27 554*	*28 477*	*3.3*
Current liabilities	9 721	9 720	0.0
Non-current liabilities	4 752	5 525	16.3
Total liabilities	*14 473*	*15 245*	*5.3*
Net worth	**13 081**	**13 232**	**1.2**
Capital outlays			
Total net fixed capital expenditure	**1 934**	**1 656**	**–14.4**

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 4.9% (i.e. $4.90 of pre-tax profits per $100 of operating income). Pre-tax profits were recorded by 79% of Petroleum, coal, chemical and associated product manufacturers for 1997–98.

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 14.8%
- Median 4.5%
- Third quartile 0.1%

All of the other performance measures shown in table 2.25 also indicated a worse industry position in 1997–98 compared to the previous year. However, even though the long term debt to equity position for this industry increased by almost 15% it remained the lowest for any manufacturing subdivision.

2.23 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	6.2	4.9	–19.9
Return on assets	8.5	6.8	–19.8
Long term debt to equity	0.4	0.4	14.9
Current ratio	1.3	1.2	–3.6
Interest coverage	5.5	4.9	–12.3

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.24 presents establishment data for the seven largest of the 23 industry classes within the Petroleum, coal, chemical and associated product manufacturing industry. In combination, these seven classes accounted for over 55% of people employed in the Petroleum, coal, chemical and associated product manufacturing industries as a whole and for over 60% of turnover and industry value added (production).

2.24 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$ million
Medicinal and pharmaceutical product mfg	12 500	4 594	1 521
Petroleum refining	3 518	8 117	1 505
Plastic injection moulded product mfg	16 197	2 281	931
Paint mfg	5 377	1 633	610
Inorganic industrial chemical mfg n.e.c.	3 151	1 437	517
Synthetic resin mfg	4 356	1 938	510
Plastic bag and film mfg	6 137	1 358	483
Balance of petroleum, coal, chemical and associated product mfg	41 403	12 006	3 904
Total petroleum, coal, chemical and associated product mfg	**92 639**	**33 364**	**9 981**

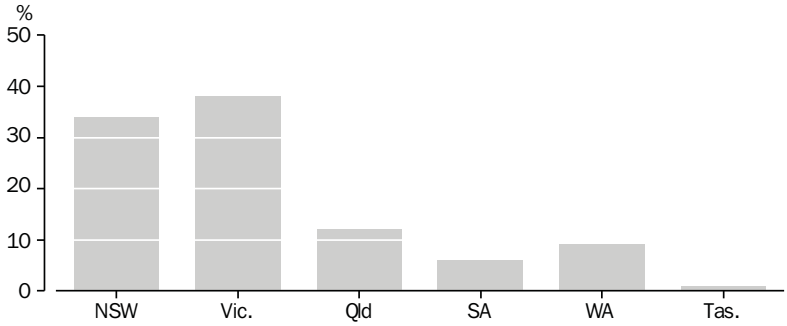
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.25 shows how production by Petroleum, coal, chemical and associated product manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.25 PRODUCTION(a)—1997–98



(a) NT and ACT each contrbuted less than 0.5% of production by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

NON-METALLIC MINERAL PRODUCT MANUFACTURING

In June 1998, Non-metallic mineral product manufacturers employed around 42,000 people, a fall of 5.8% from the previous year. These manufacturers generated over $10 billion in sales of goods and services and almost $800 million in operating profit before tax during 1997–98. Among the manufacturing subdivisions, Non-metallic mineral product manufacturing is one of the smaller industries.

Between 1996–97 and 1997–98 sales of goods and services increased by 5.9%. The cost of sales rose even more however, the end result being that trading profit rose by a little under 1%. Despite the marginal increase in trading profits, an increase in other operating income and a small decrease in labour costs, the industry experienced a small decrease in operating profit before tax (down 2.5%).

The industry balance sheet shows that the net worth of the industry rose by $281 million (6.8%) from 1996–97 to 1997–98. However, the component asset and liability items reflected a variety of changes between 1996–97 and 1997–98. Trading inventories fell by 3.9% while other current assets rose by 17.6% leading to a 10.2% increase in total current assets. Non current assets rose by 4.1%. Even more variation occurred in changes to the value of liabilities with current liabilities increasing by 48.2% but non current liabilities falling by 26.5%. Capital expenditure on tangible assets rose a little over 20% to $586 million. The largest component of capital expenditure was outlays on plant machinery and equipment (including motor vehicles) which amounted to $574 million in 1997–98.

2.26 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	9 899	10 487	5.9
Less cost of sales	6 401	6 957	8.7
Trading profit	**3 498**	**3 530**	**0.9**
Plus other operating income	81	107	31.1
Less labour costs	1 943	1 914	–1.5
Less depreciation	537	593	10.4
Less other operating expenses	95	139	46.2
Earnings before interest and tax	**995**	**979**	**–1.6**
Less interest expenses	190	194	2.2
Operating profit before tax	**805**	**785**	**–2.5**
Balance sheet			
Current assets	3 579	3 944	10.2
Non-current assets	7 286	7 583	4.1
Total assets	*10 866*	*11 527*	*6.1*
Current liabilities	2 884	4 275	48.2
Non-current liabilities	3 811	2 800	–26.5
Total liabilities	*6 695*	*7 075*	*5.7*
Net worth	**4 171**	**4 452**	**6.8**
Capital outlays			
Total net fixed capital expenditure	**487**	**586**	**20.2**

Source: ABS, Manufacturing Survey.

Performance indicators

The 1997–98 industry profit margin of 7.4% (i.e. $7.40 of pre-tax profits per $100 of operating income) was a decrease of 8.1% compared to the 1996–97 result. However, this was the highest profit margin recorded by any of the manufacturing subdivisions, well above the overall manufacturing profit margin (5.4%). Pre-tax profits were recorded for 77% of Non-metallic mineral product manufacturers for 1997–98. Results by business size showed that 76% of large businesses made a profit (average profit margin 8.4%), 73% of medium sized businesses made a profit (average profit margin 2.1%) and 77% of small businesses made a profit (average profit margin 6.0%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 17.7%
- Median 6.7%
- Third quartile 0.7%

The most notable change in the other performance indicators was the substantial deterioration in the current ratio such that the balance sheet for 1997–98 has current liabilities exceeding current assets. In strong contrast to this was the substantial improvement in the long term debt to equity ratio.

2.27 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	8.1	7.4	–8.1
Return on assets	7.4	6.8	–8.1
Long term debt to equity	0.9	0.6	–31.2
Current ratio	1.2	0.9	–26.7
Interest coverage	5.2	5.0	–3.7

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.28 presents establishment data for the five largest of the 11 industry classes within the Non-metallic mineral product manufacturing industry. These five classes accounted for almost 70% of people employed in the Non-metallic mineral product manufacturing industries as a whole in June 1998 and a similar proportion of the 1997–98 industry value added (production).

2.28 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$ million
Cement and lime mfg	2 350	1 279	469
Concrete slurry mfg	5 861	2 320	420
Non-metallic mineral product mfg n.e.c.	6 112	1 083	395
Glass and glass product mfg	4 552	1 009	388
Concrete product mfg n.e.c.	6 117	1 105	387
Balance of non-metallic mineral product mfg	10 992	2 132	906
Total non-metallic mineral product mfg	**35 984**	**8 928**	**2 965**

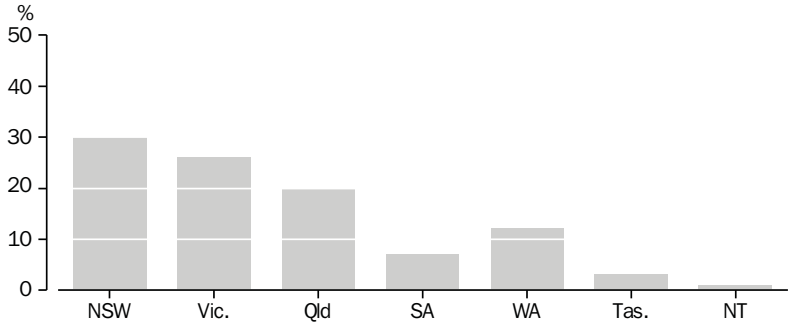
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.29 shows how production by Non-metallic mineral product manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.29 PRODUCTION(a)—1997–98



(a) The ACT contributed less than 0.5% of the Australian production for this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

METAL PRODUCT MANUFACTURING

In 1997–98, Metal product manufacturers employed almost 150,000 people (about 4.0% less than the previous year). These manufacturers generated almost $35 billion in sales of goods and services and almost $2.4 billion in operating profit before tax. Among the manufacturing subdivisions, Metal product manufacturing is one of the larger industries.

Between 1996–97 and 1997–98 sales of goods and services by Metal product manufacturing businesses rose marginally (by 0.6%). However, the cost of sales fell by 2.6% leading to a 7.9% increase in trading profit. Despite falls in other types of income and increases in all of the major expenses categories, operating profit before tax rose by 3.4%.

The industry balance sheet shows a decrease of $2,157 million (14.4%) in the net worth of the industry from 1996–97 to 1997–98. The component asset items reflected a variety of changes between 1996–97 and 1997–98. The value of trading inventories fell (down 0.6%) while other current assets rose 6.8% in value and as a result, the total value of current assets rose by 3.9%. Non current assets remained virtually unchanged (up 0.1%). However, liabilities grew substantially, current liabilities by 10.5% and non current liabilities by 20.6%. Capital expenditure by Metal product manufacturers rose substantially to $2,746 billion in 1997–98. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to over $2.6 billion.

2.30 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	34 742	34 947	0.6
Less cost of sales	24 311	23 688	–2.6
Trading profit	**10 431**	**11 259**	**7.9**
Plus other operating income(a)	202	–339	–268.2
Less labour costs	6 275	6 408	2.1
Less depreciation	1 309	1 376	5.1
Less other operating expenses	237	245	3.3
Earnings before interest and tax	**2 779**	**2 879**	**3.6**
Less interest expenses	486	508	4.4
Operating profit before tax	**2 292**	**2 371**	**3.4**
Balance sheet			
Current assets	10 722	11 143	3.9
Non-current assets	20 802	20 828	0.1
Total assets	*31 524*	*31 971*	*1.4*
Current liabilities	8 070	8 921	10.5
Non-current liabilities	8 492	10 244	20.6
Total liabilities	*16 562*	*19 166*	*15.7*
Net worth	**14 962**	**12 805**	**–14.4**
Capital outlays			
Total net fixed capital expenditure	1 566	2 746	75.4

(a) Included in the item 'Other operating income' are asset writedowns and losses on certain types of transactions which are offset against gains from the same types of transaction (see Glossary). Where losses exceed gains, negative income results.

Source: ABS, Manufacturing Survey.

Performance indicators

For 1997–98, the industry profit margin was 6.9% (i.e. $6.90 of pre-tax profits per $100 of operating income). About 82% of Metal product manufacturers made an operating profit before tax for 1997–98. The industry profit margin remained well above the overall manufacturing profit margin (5.4%). Results by business size showed that 83% of large businesses made a profit (average profit margin 6.6%), 84% of medium sized businesses made a profit (average profit margin 7.3%) and 82% of small businesses made a profit (average profit margin 6.4%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 12.2%
- Median 5.0%
- Third quartile 1.2%

Even though the profit margin for the industry rose between 1996–97 and 1997–98, the relationship between assets and liabilities shifted markedly over the year in both current and non current types. Most significant change was the substantial increase (up 41%) in the long term debt to equity ratio.

2.31 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	6.6	6.9	4.4
Return on assets	7.3	7.4	2.0
Long term debt to equity	0.6	0.8	41.0
Current ratio	1.3	1.2	–6.0
Interest coverage	5.7	5.7	–0.8

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.30 presents establishment data for the eight largest of the 21 industry classes within the Metal product manufacturing industry. These eight classes accounted for almost 70% of people employed and over three quarters of the industry value added (production) of the Metal product manufacturing industries as a whole.

2.32 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$ million
Basic iron and steel mfg	19 760	8 414	2 848
Alumina production	5 650	3 236	1 315
Structural steel fabricating	19 911	3 608	1 152
Fabricated metal product mfg n.e.c.	21 910	2 594	982
Aluminium smelting	5 462	3 636	873
Sheet metal product mfg n.e.c.	14 953	2 114	787
Architectural aluminium product mfg	14 304	2 035	649
Copper, silver, lead and zinc smelting, refining	2 943	2 362	588
Balance of metal product mfg	45 762	10 331	2 996
Total metal product mfg	**150 655**	**38 330**	**12 190**

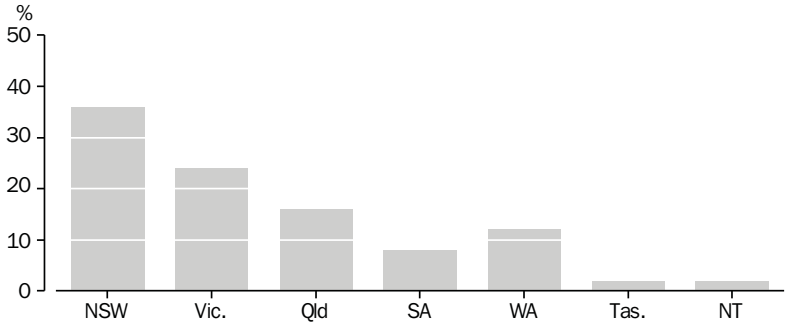
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.33 shows how production by Metal product manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.33 PRODUCTION(a)—1997–98



(a) The ACT contrbuted less than 0.5% of production by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

MACHINERY AND EQUIPMENT MANUFACTURING

In June 1998, Machinery and equipment manufacturers employed over 212,000 people (about 3.4% less than the previous year). During 1997–98, these manufacturers generated over $43 billion in sales of goods and services and almost $1.9 billion in operating profits before tax. Among the manufacturing subdivisions, Machinery and equipment manufacturing is one of the largest industries.

Between 1996–97 and 1997–98 sales of goods and services by Machinery and equipment manufacturing businesses rose by 2.6%. However, the cost of sales rose by more and as a result, trading profit fell by 1.1%. Compounding the decrease in trading profits were increases in labour costs, depreciation and in particular, other operating expenses. The overall result was a fall in operating profits before tax of over $600 million (24.4%).

The industry balance sheet shows an increase of $173 million (1.6%) in the net worth of the industry during 1997–98. All component asset items rose in value, trading inventories by 11.8% and other current assets by 0.1% resulting in the total value of current assets rising by 4.6%. Non current assets rose in value by 9.7%. Similarly, the industry experienced both increases in current liabilities (up 6.3%) and non current liabilities (up 18.1%). Capital expenditure on tangible assets by Machinery and equipment manufacturers rose substantially from 1996–97 to 1997–98 to reach $1,666 million (up 58.5%). This increase in 1997–98 followed a large fall in the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to over $1.5 billion.

2.34 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	42 675	43 788	2.6
Less cost of sales	30 297	31 543	4.1
Trading profit	**12 378**	**12 244**	**–1.1**
Plus other operating income	468	451	–3.6
Less labour costs	8 323	8 655	4.0
Less depreciation	1 216	1 271	4.5
Less other operating expenses	366	468	28.0
Earnings before interest and tax	**2 907**	**2 255**	**–22.4**
Less interest expenses	407	366	–10.0
Operating profit before tax	**2 500**	**1 889**	**–24.4**
Balance sheet			
Current assets	15 355	16 062	4.6
Non-current assets	11 683	12 820	9.7
Total assets	*27 038*	*28 882*	*6.8*
Current liabilities	10 566	11 237	6.3
Non-current liabilities	5 517	6 517	18.1
Total liabilities	*16 084*	*17 755*	*10.4*
Net worth	**10 954**	**11 127**	**1.6**
Capital outlays			
Total net fixed capital expenditure	**1 051**	**1 666**	**58.5**

Source: ABS, Manufacturing Survey.

Performance indicators

The 1997–98 industry profit margin of 4.3% (i.e. $4.30 of pre-tax profits per $100 of operating income) represented a substantial decrease on the 1996–97 margin (down 26.3%). As a result, this industry has a profit margin well below the overall manufacturing profit margin (5.4%). Nevertheless, 78% of Machinery and equipment manufacturers made an operating profit before tax for 1997–98. Results by business size showed that 73% of large businesses made a profit (average profit margin 4.6%), 75% of medium sized businesses made a profit (average profit margin 3.5%) and 79% of small businesses made a profit (average profit margin 5.2%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 5.8%
- Median 5.9%
- Third quartile 0.2%

All other industry performance measures also showed a worse position for 1997–98 than for 1996–97, in particular, the 16.3% rise in the long term debt to equity position.

2.35 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	5.8	4.3	–26.3
Return on assets	9.2	6.5	–29.3
Long term debt to equity(b)	0.5	0.6	16.3
Current ratio	1.5	1.4	–1.6
Interest coverage	7.1	6.2	–13.8

(a) Relative changes are calculated using unrounded data.

(b) Interpretation of this ratio differs from the other performance measures shown in that for long term debt to equity the larger the value shown, the worse the industry position is. For the other measures, the larger the value show, the better the industry position is.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.36 presents establishment data for the 10 largest of the 27 industry classes within the Machinery and equipment manufacturing industry. These 10 classes accounted for over 60% of people employed and for over 70% of 1997–98 industry value added (production) by the Machinery and equipment manufacturing industries as a whole.

2.36 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a) no.	Turnover $ million	Industry Value Added (production) $ million
Motor vehicle mfg	19 896	10 085	3 128
Automotive component mfg n.e.c.	22 357	3 385	1 355
Electrical equipment mfg n.e.c.	14 761	2 506	929
Telecommunication, broadcasting and transceiving equipment mfg	6 583	1 962	757
Industrial machinery and equipment mfg n.e.c.	13 490	1 670	725
Aircraft mfg	12 569	1 552	718
Electronic equipment mfg n.e.c.	11 024	1 946	690
Household appliance mfg	12 544	2 137	639
Shipbuilding	6 979	1 662	571
Mining and construction machinery mfg	8 906	1 726	501
Balance of machinery and equipment mfg	77 239	12 937	4 171
Total machinery and equipment mfg	**206 348**	**41 568**	**14 184**

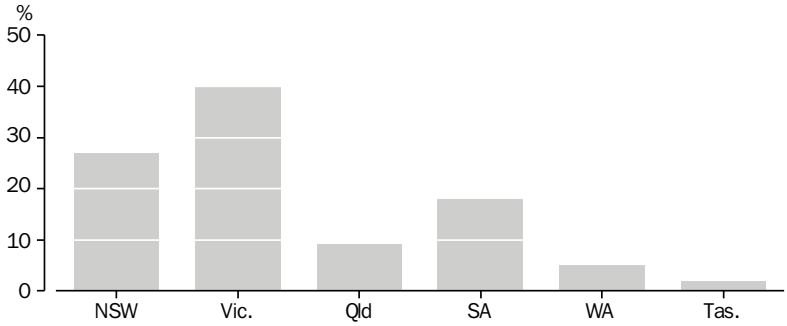
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.37 shows how production by Machinery and equipment manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.37 PRODUCTION(a)—1997–98



(a) NT and ACT each contrbuted less than 0.5% of production by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

OTHER MANUFACTURING

In 1997–98, Other manufacturing businesses employed over 57,000 people which represented a 2.9% increase over the level of the previous year. These businesses generated just over $6.7 billion in sales of goods and services and $340 million in operating profits before tax. In terms of the subdivisions within the manufacturing industry, Other manufacturing is a small industry.

Between 1996–97 and 1997–98, sales of goods and services by Other manufacturing businesses rose by 5.0% and trading profit rose by 4.0%. The increase in trading profits was accompanied by a fall in depreciation costs and a 5.1% increase in labour costs. As a result, operating profits before tax rose substantially (up 17.7%).

The industry balance sheet shows a $45 million (3.8%) reduction in the net worth of the industry from 1996–97 to 1997–98. The composition of the fall in asset values was mixed with trading inventories falling by 19.5% but other current assets rising by 4.9% giving an overall fall of 4.6% for total current assets. Non current assets fell substantially (by 17.2%). The value of liabilities also increased substantially, current liabilities by 14.9% and non current liabilities by 11.7%. Between 1996–97 and 1997–98, capital expenditure on tangible assets by Other manufacturers fell to $197 million (down 15.2%) following a rise the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $150 million.

2.38 INCOME STATEMENT AND BALANCE SHEET

	1996–97	*1997–98*	*Relative change*
	$ million	*$ million*	*%*
Income statement			
Sales of goods and services	6 397	6 719	5.0
Less cost of sales	4 229	4 464	5.6
Trading profit	**2 167**	**2 255**	**4.0**
Plus other operating income(a)	–22	–11	–51.9
Less labour costs	1 563	1 643	5.1
Less depreciation	118	116	–2.4
Less other operating expenses	68	73	7.8
Earnings before interest and tax	**366**	**409**	**12.0**
Less interest expenses	77	69	–9.5
Operating profit before tax	**289**	**340**	**17.7**
Balance sheet			
Current assets	1 830	1 745	–4.6
Non-current assets	1 481	1 227	–17.2
Total assets	*3 311*	*2 972*	*–10.2*
Current liabilities	1 394	1 187	–14.9
Non-current liabilities	730	644	–11.7
Total liabilities	*2 124*	*1 831*	*–13.8*
Net worth	**1 186**	**1 141**	**–3.8**
Capital outlays			
Total net fixed capital expenditure	233	197	–15.2

(a) Included in the item 'Other operating income' are asset writedowns and losses on certain types of transactions which are offset against gains from the same types of transaction (see glossary). Where losses exceed gains, negative income results.

Source: ABS, Manufacturing Survey.

Performance indicators

The 1997–98 industry profit margin of 5.1% (i.e. $5.10 of pre-tax profits per $100 of operating income) represented an increase of 11.8% on the 1996–97 result. However, the industry profit margin remained below the overall manufacturing profit margin (5.4%). Nevertheless, 75% of manufacturers in the industry made an operating profit before tax for 1997–98. Results by business size showed that 76% of large businesses made a profit (average profit margin 3.6%), 84% of medium sized businesses made a profit (average profit margin 3.0%) and 74% of small businesses made a profit (average profit margin 5.2%).

Quartiles (see Glossary) give an indication of the spread of 1997–98 profit margins in this industry.

- First quartile 12.4%
- Median 4.4%
- Third quartile 0.0%

The industry also experienced an improved position for all of the other performance measures shown in table 2.39.

2.39 INDUSTRY PERFORMANCE

Industry performance	1996–97	1997–98	Relative change(a) %
Selected performance measures			
Profit margin	4.5	5.1	11.8
Return on assets	8.7	11.4	31.1
Long term debt to equity	0.6	0.6	–8.3
Current ratio	1.3	1.5	12.1
Interest coverage	4.8	5.9	23.8

(a) Relative changes are calculated using unrounded data.

Source: ABS, Manufacturing Survey.

Largest industry classes (in terms of industry value added for 1997–98)

Table 2.40 presents establishment data for all nine industry classes within the Other manufacturing subdivision of the manufacturing industry. By far the largest of those classes is the Wooden furniture and upholstered seat manufacturing industry which accounts for half of the people employed and over 40% of industry value added (production) for the total Other manufacturing subdivision.

2.40 INDUSTRY COMPOSITION—1997–98

	Employment at end of June(a)	Turnover	Industry Value Added (production)
	no.	$ million	$ million
Wooden furniture and upholstered seat mfg	29 101	2 698	925
Furniture mfg n.e.c.	7 517	1 036	383
Manufacturing n.e.c.	6 304	804	268
Sheet metal furniture mfg	3 506	466	167
Mattress mfg (except rubber)	2 939	438	142
Prefabricated metal building mfg	2 346	525	134
Toy and sporting good mfg	2 764	321	105
Jewellery and silverware mfg	3 071	358	104
Prefabricated building mfg n.e.c.	575	59	16
Total other mfg	**58 122**	**6 706**	**2 244**

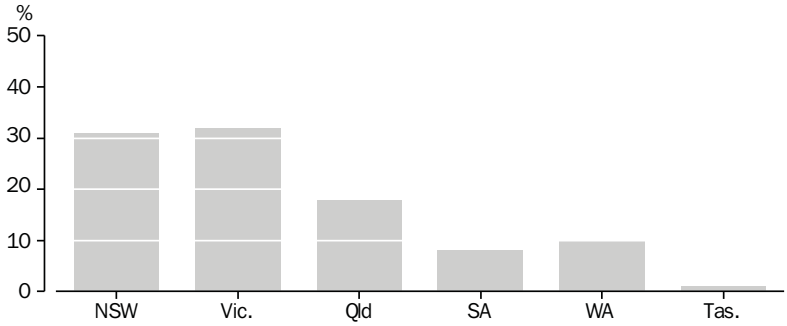
(a) Includes working proprietors.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

State and Territory distribution of 1997–98 production

Graph 2.29 shows how production by Non-metallic mineral product manufacturing establishments is distributed by State and Territory. Production is measured by the variable 'Industry value added'. Further information about the geographic distribution of Australian manufacturing is contained in chapter 1 under the heading 'Distribution of Australian manufacturing'.

2.41 PRODUCTION(a)—1997–98



(a) NT and ACT contrbuted less than 0.5% of production by this industry.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

CHAPTER 3 LATEST INDICATORS

INTRODUCTION

Chapter 3 provides indicative information about the manufacturing industry from a number of quarterly surveys. A general picture of the manufacturing industry can be built up from these surveys but readers should be aware that the results of these surveys, though generally consistent, are not always identical. Readers should also note that quarterly information provided by businesses is often preliminary in nature and when summed to represent financial years, may differ from data collected in the annual surveys for those years.

There are several reasons why these small differences arise including:

- *Sampling variability:* The surveys obtain information from samples of manufacturers and thus, the results are subject to sampling error (see the Glossary for explanation).
- *Scope differences:* While most surveys are set up to provide estimates for the whole manufacturing industry, some are constrained by practical considerations to estimate for a different population. For example, the quarterly Company Profits Survey estimates profits data only for incorporated businesses (companies) which employ more than 30 people.

Key features of the different surveys are mentioned in the relevant articles. However, no attempt has been made to provide exhaustive explanatory or definitional material. Readers wishing to pursue finer details of the various surveys should consult the Explanatory Notes to the relevant publications or contact the ABS.

SALES OF GOODS

This section presents summary information on manufacturer's sales of goods for the past two financial years. Estimates are given in current prices i.e. the amounts actually received by the manufacturers and in volume terms. The volume estimates of sales reflect the same transactions as the value estimates but values have been adjusted for changes in prices using a technique known as 'chain volume measures'. See the Explanatory Notes for a more detailed explanation of chain volume measures.

The total sales value of goods by manufacturers increased by 2.5% from 1997–98 to 1998–99 measured in current prices and by 2.6% in volume terms. As would be expected in periods of low price rises, changes from 1997–98 to 1998–99 tended to be in the same direction for both the value of sales and volume measures of sales. Six of the nine industry subdivisions increased sales in both current and volume terms. Non-metallic mineral product manufacturing recorded the largest percentage increases by far (up 15.2% and 14.5% respectively) with Machinery and equipment manufacturers also experiencing strong growth in sales (up 6.0% and 5.8% respectively). Falls in sales in both current and volume terms were recorded in Wood and paper product manufacturing (down 1.7% and 3.0% respectively) and Printing, publishing and recorded media (down 0.1% and 3.3% respectively). Petroleum, coal, chemical and associated product manufacturing also experienced a decrease in sales in current price terms (down 0.7%), but an increase in sales in volume terms (up 1.8%).

A guide to changes in price levels for the industries shown in table 3.1 can be derived by comparing changes to sales measured in current prices with changes to sales measured on a chain volume basis. Volume measures of sales by manufacturers increased by a slightly greater percentage (2.6%) between 1997–98 and 1998–99 than current price sales (2.5%), implying a marginal fall of 0.1% in average prices. Only three of the industry subdivisions recorded falls in average prices, namely Textile, clothing, footwear and leather manufacturing, Petroleum, coal, chemical and associated product manufacturing and Metal product manufacturing. All other industry subdivisions experienced rises in average prices, with Printing, publishing and recorded media recording the greatest increase (up 3.2%).

Readers should note that these implied price changes for manufacturing as a whole will not necessarily be identical to the price changes shown in table 3.9. The difference mainly arises from differences in what is being measured; i.e. table 3.1 covers sales of all goods produced by manufacturing businesses whereas the price changes in table 3.9 exclude sales to other businesses in the same industry. Also, for manufacturing as a whole, there are small classification differences between the Australian and New Zealand Standard Industrial Classification (ANZSIC) on which table 3.1 is based and the Australian Standard Industry Classification (ASIC) on which table 3.9 is based.

3.1 SALES OF GOODS

	Current prices			Chain volume measures(a)		
	1997–98	*1998–99*	*Change*	*1997–98*	*1998–99*	*Change*
Industry	*$ million*	*$ million*	*%*	*$ million*	*$ million*	*%*
Food, beverage and tobacco mfg	46 348	47 014	1.4	46 348	46 656	0.7
Textile, clothing, footwear and leather mfg	8 851	9 135	3.2	8 851	9 163	3.5
Wood and paper product mfg	13 711	13 481	–1.7	13 711	13 301	–3.0
Printing, publishing and recorded media	11 010	10 998	–0.1	11 010	10 645	–3.3
Petroleum, coal, chemical and associated product mfg	35 988	35 735	–0.7	35 988	36 621	1.8
Non-metallic mineral product mfg	9 425	10 858	15.2	9 425	10 796	14.5
Metal product mfg	29 658	30 148	1.7	29 658	30 658	3.4
Machinery and equipment mfg	38 832	41 181	6.0	38 832	41 080	5.8
Other mfg	6 753	7 049	4.4	6 753	6 948	2.9
Total mfg	200 575	205 599	2.5	200 575	205 866	2.6

(a) Reference year for chain volume measures is 1997–98.

Source: ABS, Inventories and Sales, Selected industries, Australia, June Quarter 1999 (Cat. no. 5629.0).

CAPITAL EXPENDITURE

The manufacturing industry was responsible for 21% of 1998–99 capital expenditure by private sector businesses in Australia, a fall from 24% the year before. Capital expenditure by the manufacturing industry decreased by almost $1.6 billion (down 14.5%) between 1997–98 and 1998–99. The decrease in expenditure on buildings and structures (down 45.1%) was relatively much greater than the decrease in expenditure on equipment, plant and machinery (down 7.6%).

The largest percentage decreases were recorded by Non-metallic mineral product manufacturing (down 42.1%), Machinery and equipment manufacturing (down 37.1%) and Other manufacturing (down 32.2%). Metal product manufacturing was the only industry subdivision to record an increase in capital expenditure (up 17.2%).

In 1998–99, the manufacturing subdivisions undertaking most capital expenditure were Food, beverage and tobacco manufacturing (22.2% of total manufacturing), Metal product manufacturing making up 20.8% of capital expenditure for manufacturing and Petroleum, coal, chemical and associated product manufacturing at 15.9%.

3.2 PRIVATE NEW CAPITAL EXPENDITURE

Industry	1997–98 $ million	1998–99 $ million	Change %
Food, beverage and tobacco mfg	2 443	2 092	–14.4
Textile, clothing, footwear and leather mfg	289	265	–8.3
Wood and paper product mfg	906	777	–14.2
Printing, publishing and recorded media	796	776	–2.5
Petroleum, coal, chemical and associated product mfg	1 595	1 498	–6.1
Non-metallic mineral product mfg	870	504	–42.1
Metal product mfg	1 666	1 952	17.2
Machinery and equipment mfg	2 130	1 339	–37.1
Other mfg	301	204	–32.2
Total mfg	**10 996**	**9 406**	**–14.5**
Of which			
Buildings and structures	2 022	1 111	–45.1
Equipment, plant and machinery	8 974	8 294	–7.6

Source: ABS, Private New Capital Expenditure and Expected Expenditure, Australia, June Quarter 1999 (Cat. no. 5625.0).

COMPANY PROFITS

This article presents data for company profits. The information has been compiled from the ABS quarterly Survey of Company Profits which covers only incorporated companies which employ more than 30 people (i.e. the survey does not measure profits for companies employing 30 or fewer people or for unincorporated businesses regardless of size). This article is primarily intended to provide indications of the direction and magnitude of changes to industry profits, though it also gives an approximate guide to profit levels. 1997–98 estimates of pre-tax profits covering a greater proportion of manufacturers are in chapter 2.

The survey shows that manufacturing industry profits fell by 5.9% between 1997–98 and 1998–99. Mining was the only other industry to record a fall in profits over the same period while most of the services industries recorded substantial increases in profits. Typical examples are retail trade which increased profits from $1.6 billion to $2.6 billion and Property and business services which improved from a loss of $40 million to a profit of $410 million.

Between 1997–98 and 1998–99 most manufacturing subdivisions experienced increases in pre-tax profits, the most notable increase being by Wood and paper product manufacturing which experienced a rise of almost 27%. By far the largest contributor to the fall in profits for the manufacturing industry as a whole was Metal product manufacturing which recorded a profits decrease of over $1 billion to a level of less than half that of the previous year.

3.3 MANUFACTURERS' PROFITS BEFORE INCOME TAX

Industry	1997–98 $ million	1998–99 $ million	Change %
Food, beverage and tobacco mfg	2 947	2 963	0.5
Textile, clothing, footwear and leather mfg	232	194	–16.4
Wood and paper product mfg	694	880	26.8
Printing, publishing and recorded media	1 185	1 358	14.6
Petroleum, coal, chemical and associated product mfg	2 246	2 287	1.8
Non-metallic mineral product mfg	723	836	15.6
Metal product mfg	1 989	924	–53.5
Machinery and equipment mfg	1 537	1 424	–7.4
Other mfg	73	73	0.0
Total mfg	**11 627**	**10 939**	**–5.9**

Source: ABS, Company Profits, Australia, June Quarter 1999 (Cat. no.5651.0).

EMPLOYEES AND THEIR EARNINGS

This article presents data for employees only i.e. estimates exclude working proprietors and partners of unincorporated manufacturing businesses. It also presents average weekly earnings for employees, covering wages and salaries, overtime and penalty pay. Chapter 2 presents labour costs in a wider context including not only the wages and salaries etc. covered in this section but also other labour costs such as redundancy payments, workers' compensation costs and superannuation contributions by employers.

Wage and salary earners

Table 3.4 presents estimates of the average number of wages and salary earners (paid employees) in Australian manufacturing during February 1998 and February 1999. Manufacturing experienced a decrease in numbers between the two periods (down 1.7%). The overall fall in the number of paid employees in manufacturing resulted from a 2.0% fall in full time employees which was partly offset by a marginal increase in part-time employee numbers (up 1.2%).

The decrease in manufacturing was in contrast to experience in the economy overall where the number of paid employees grew by 5.6%. Other industries which experienced falls in the number of paid employees between February 1999 and a year earlier were Mining (down 5.2%), Electricity, gas and water supply (down 4.4%) and Government administration and defence (down 4.1%). Alternatively, industries which experienced the most growth over the same period were Property and business services (up 17.9%), Wholesale trade (up 11.7%) and Personal and business services (up 11.3%).

Wage and salary earners *continued*

The proportion of manufacturing employees who were full time varied only marginally between February 1998 and February 1999 (from 89.5% to 89.2%). Similarly the proportion for most industries varied little with the proportion for Construction (up from 89.9% to 91.9%) showing the largest increase and the proportions for Accommodation, cafes and restaurants (down from 44.1% to 40.7%) and Personal and other services (down from 69.6% to 66.7%) showing the largest falls.

3.4 WAGE AND SALARY EARNERS

	Manufacturing	*Total of all industries(a)*
	'000	'000
February 1998		
Full-time	838.3	4 964.8
Part-time	98.5	2 095.4
Total	936.8	6 790.2
February 1999		
Full-time	821.2	4 915.3
Part-time	99.7	2 257.3
Total	920.9	7 172.6
	%	%
Change		
Full-time	–2.0	4.7
Part-time	1.2	7.7
Total	–1.7	5.6

(a) Excludes Agriculture, forestry and fishing.

Source: ABS, Wage and Salary Earners, Australia, March Quarter 1999 (Cat. no. 6248.0).

States and Territories

The States experienced a variety of change patterns in their average numbers of paid manufacturing employees from the year ended February 1998 to the year ended February 1999. However, the manufacturing industry share of total numbers of employees fell throughout Australia even in those States where actual numbers of employees rose.

3.5 WAGE AND SALARY EARNERS

	Manufacturing (average over year)			*Manufacturing share of all industries*	
	Year to February 1998	*Year to February 1999*	*Change*	*Year to February 1998*	*Year to February 1999*
	'000	*'000*	*%*	*'000*	*'000*
New South Wales	296.2	279.2	–5.7	12.4	11.4
Victoria	328.6	318.9	–3.0	18.9	17.9
Queensland	137.2	139.7	1.8	11.6	11.1
South Australia	86.0	83.9	–2.4	17.2	16.2
Western Australia	67.0	69.8	4.3	9.9	9.8
Tasmania	22.0	22.3	1.7	13.6	14.3
Northern Territory	3.3	2.7	–16.8	4.6	3.9
Australian Capital Territory	3.4	2.4	–29.2	2.5	1.7
Australia	**943.6**	**919.0**	**–2.6**	**13.8**	**13.0**

Source: ABS, Wage and Salary Earners, Australia, March 1999 (Cat. no. 6248.0).

Average weekly earnings of employees

Table 3.6 presents information on average total earnings (i.e. ordinary time earnings plus overtime earnings) at the mid-point of the March quarter 1999. At that time, average manufacturing earnings ($786.30) were slightly lower than the all industries average ($790.60) with nine of the 16 industries showing higher average earning rates than manufacturing.

3.6 AVERAGE FULL TIME EARNINGS, AUSTRALIA—MARCH QUARTER 1999

Industry	*Adult males* $	*Adult females* $	*Adult persons* $
Mining	1 348.70	919.80	1308.40
Manufacturing	**826.20**	**640.50**	**786.30**
Electricity, gas and water supply	989.50	792.20	962.70
Construction	864.90	599.50	830.50
Wholesale trade	792.10	629.10	751.60
Retail trade	638.60	525.50	596.40
Accommodation, cafes and restaurants	600.80	531.90	575.30
Transport and storage	881.40	692.10	832.70
Communication services	936.30	797.50	894.50
Finance and insurance	1 142.20	716.30	919.20
Property and business services	907.70	646.40	791.10
Government administration and defence	868.00	754.60	824.70
Education	927.90	820.50	864.20
Health and community services	945.60	734.20	800.70
Cultural and recreational services	775.10	689.40	735.80
Personal and other services	859.40	660.40	785.90
All industries(a)	853.40	683.50	790.60

(a) Excluding Agriculture, forestry and fishing.

Source: ABS, Average Weekly Earnings, States and Australia, March Quarter 1999 (Cat. no. 6302.0).

Table 3.7 shows that average weekly earnings in manufacturing grew more quickly (up 5.4%) than the all industries average (up 3.0%).

3.7 AVERAGE WEEKLY EARNINGS, BY FULL-TIME EMPLOYEES(a)

	Manufacturing		*All industries*	
	March quarter 1999	*Change from previous year*	*March quarter 1999*	*Change from previous year*
Earnings	$	%	$	%
Ordinary time				
Males	738.30	4.3	740.70	3.3
Females	610.00	6.8	620.30	3.5
Persons	710.70	4.7	696.60	3.3
Total				
Males	826.20	5.3	795.80	2.8
Females	640.50	6.0	634.80	3.5
Persons	786.30	5.4	736.80	3.0

(a) Includes overtime earnings.

Source: ABS, Average Weekly Earnings, States and Australia, March quarter 1999 (Cat. no. 6302.0).

Table 3.8 shows production of selected manufactured commodities for 1996–97, 1997–98 and 1998–99.

More of the selected commodities have increased production each year from 1996–97 to 1998–99 than have consistently decreased production. Amongst those recording increased production were Ready mixed concrete (with production in 1998–99 up 6.7% on 1997–98 levels and up 19.6% on 1996–97 levels), Chicken meat (up 4.2% and 15.5% respectively), Portland cement (up 6.5% and 15.0% respectively) and Paperboard containers (up 9.2% and 12.9% respectively). Those commodities recording decreases in production included Scoured and carbonised wool (down 21.4% and 21.5% respectively), Synthetic fibre yarn (down 20.2% and 17.8% respectively) and Footwear (excluding waterproof and sports) (down 9.1% and 14.6% respectively).

Other commodities (of those selected) which recorded significant increases in 1998–99 production over the levels recorded in 1996–97 were Red meat (up 9.2%) and Clay bricks (up 8.6%).

3.8 PRODUCTION OF SELECTED MANUFACTURED COMMODITIES

Commodity	*Unit of quantity(a)*	*1996–97*	*1997–98*	*1998–99*
Red meat	'000 t	2 729	2 927	2 979
Chicken meat	'000 t	496	550	573
Beer	million L	1 735	1 757	1 729
Tobacco and cigarettes	t	22 193	21 258	21 045
Scoured and carbonised wool	t	165 268	165 104	129 753
Wool and man-made fibre tops	t	57 645	60 084	53 162
Wool yarn	t	18 285	18 077	17 668
Cotton yarn	t	39 853	36 897	36 814
Synthetic fibre yarn	t	12 547	12 913	10 311
Wool broadwoven fabric	'000 m^2	6 300	6 636	6 254
Cotton broadwoven fabric	'000 m^2	60 617	62 088	55 824
Man-made fibre broadwoven fabric	'000 m^2	142 194	135 768	136 886
Knitted or crocheted fabrics	t	16 117	13 019	14 004
Textile floor coverings	'000 m^2	43 981	44 494	45 041
Footwear (excl waterproof and sports)	'000 pairs	13 156	12 367	11 238
Newsprint	'000 t	422	402	399
Wood pulp	'000 t	949	958	871
Hardwood woodchips	'000 t	4 779	5 665	4 856
Paperboard containers	'000 t	1 138	1 177	1 285
Superphosphates	'000 t	1 511	1 819	1 464
Cement, Portland	'000 t	6 701	7 235	7 705
Clay bricks	million	1 467	1 532	1 593
Ready mixed concrete	'000 m^3	15 545	17 412	18 587
Basic iron, spiegeleisen and sponge iron(b)	'000 t	7 346	7 928	7 453
Steel blooms and slabs(b)	'000 t	7 776	8 356	7 677
Electricity	million kWh	168 415	176 211	179 630
Gas	petajoules	637	650	675

(a) See 'Symbols and other usages' in the chapter entitled 'Background to this publication'.

(b) This data item comprises production of BHP Steel only.

Source: ABS, Manufacturing Production, Australia (Cat. no. 8301.0).

CHANGES IN THE PRICE OF ARTICLES PRODUCED AND MATERIALS USED

This section presents information on changes in price for articles produced by Australian manufacturers and changes in price of materials used in processing by Australian manufacturers. Information on price movements of articles produced by manufacturers are not yet available on an ANZSIC basis. As a result changes are presented in table 3.9 on an ASIC basis. The data presented in table 3.10, showing price changes of materials used, is however based on ANZSIC.

Price changes are net for the industry shown which means that changes shown in table 3.9 cover all goods produced by an industry except goods which are sold or transferred to establishments in the same industry. For example, the price changes shown in table 3.9 for the Textiles manufacturing industry cover all goods produced by establishments in the Textiles manufacturing industry except those goods which are sold or transferred to other establishments in the Textiles manufacturing industry. The same principle applies to other industries and to the Manufacturing industry as a whole. Price movements in table 3.10 are also on a net industry basis.

Changes in prices of articles produced

Between 1996–97 and 1997–98 the price of articles produced by the manufacturing industry increased by 1.3%. The largest price increases were recorded for Basic metal products (up 4.1%) and Food, beverages and tobacco (up 2.5%). Falls were recorded for Petroleum and coal products (down 7.5%) and Basic chemicals and other chemical products (down 0.5%).

Between 1997–98 and 1998–99 the price of articles produced by the manufacturing industry decreased by 0.2%. Four industries recorded decreases the largest decrease being for Petroleum and coal products (down 14.6%). Paper, paper products, printing and publishing recorded the largest increase (up 2.5%).

3.9 PRICE CHANGES OF ARTICLES PRODUCED

Industry	Change from 1996–97 to 1997–98 %	Change from 1997–98 to 1998–99 %
Food, beverages and tobacco	2.5	0.5
Textiles	1.2	–1.7
Clothing and footwear	1.7	1.2
Wood, wood products and furniture	1.0	1.4
Paper, paper products, printing and publishing	1.4	2.5
Basic chemicals and other chemical products	–0.5	0.1
Petroleum and coal products	–7.5	–14.6
Non-metallic mineral products	1.1	0.3
Basic metal products	4.1	–3.4
Fabricated metal products	1.1	0.5
Transport equipment	1.0	1.1
Other machinery and equipment	0.7	–0.5
Other mfg	0.2	0.5
Total mfg	**1.3**	**–0.2**

Source: ABS, Price Indexes of Articles Produced by Manufacturing Industry, Australia, June 1999 (Cat. no. 6412.0).

Changes in prices of materials used

Between 1996–97 and 1997–98, the manufacturing industry recorded a price increase for materials used (up 0.9%) as did the majority of industries within manufacturing. The largest increases were recorded for Sawmilling and timber products (up 5.4%), Food beverages and tobacco (up 3.6%) and Textiles and textile products (up 3.5%). Of the industries which recorded falls, the largest were recorded for Petroleum and coal products (down 7.5%), Leather and leather products (down 3.3%) and Footwear (down 1.2%).

However, between 1997–98 and 1998–99, the manufacturing industry recorded a price decrease for materials used (down 1.0%). Petroleum and coal products recorded the most significant decrease (down 12.9%), while the next highest decrease, recorded by Rubber and plastics, was substantially lower (down 2.9%). The largest increases were recorded by Transport equipment and parts (up 2.9%) and Printing and publishing (up 2.5%).

3.10 PRICE CHANGES OF MATERIALS USED

Industry	*Change from 1996–97 to 1997–98* %	*Change from 1997–98 to 1998–99* %
Food, beverages and tobacco	3.6	0.5
Textiles and textile products	3.5	–2.4
Knitting mills and clothing	1.1	–0.7
Footwear	–1.2	0.5
Leather and leather products	–3.3	1.7
Sawmilling and timber products	5.4	0.0
Paper and paper products	–0.6	1.2
Printing, publishing and recorded media	–0.3	2.5
Petroleum and coal products	–7.5	–12.9
Chemicals	1.1	–0.4
Rubber and plastics	0.0	–2.9
Non-metallic mineral products	–0.4	–1.2
Basic metal products	0.3	–1.8
Fabricated metal products	1.0	–1.0
Transport equipment and parts	3.1	2.9
Electronic equipment and other machinery	1.9	–0.9
Other mfg	2.6	1.3
Total mfg	**0.9**	**–1.0**

Source: ABS, Price Indexes of Materials Used by Manufacturing Industries, Australia, June Quarter 1999 (Cat. no. 6411.0).

CHAPTER 4 INTERNATIONAL TRADE

INTRODUCTION

This chapter deals with international trade aspects of the Australian manufacturing industry.

The first article in this chapter shows the extent of export activity and import competition for manufacturing industries. The second presents information on performance by businesses which undertake direct export compared to performance by businesses which don't export. The final article identifies the major manufactured commodities exported from and imported into Australia.

EXPORTS AND IMPORTS BY INDUSTRY

Table 4.1 provides an approximate measure of the size of Australian markets for manufactured goods and of import penetration of those markets. There are several classification, valuation and transaction timing differences affecting the various data sources for the table. As a result, the total market estimates and import penetration estimates should be regarded as only approximate and the generally small movements in penetration rates as indicative rather than conclusive. Also, exports data shown in table 4.1 exclude a small proportion of exports which cannot be allocated to industry because of ABS confidentiality provisions.

The imports and exports data in this article are classified to 'Industry of origin'. This concept allocates internationally traded commodities back to the industry of original manufacture rather than to the industries of the businesses actually undertaking the imports or exports. However, because it is not always known which manufacturing industry actually produced a particular set of traded commodities, all commodities are allocated to the industry which produces most of that type of commodity i.e. the industry most likely to have been the source.

4.1 AUSTRALIAN MARKET FOR MANUFACTURED GOODS

Industry/period	Manufacturers' sales(a) $ billion	Exports by industry of origin(b) $ billion	Imports by industry of origin(b) $ billion	Total Australian market(c) $ billion	Estimated import penetration(d) %
Food, beverage and tobacco mfg					
1997–98	46.3	12.2	3.8	37.9	10
1998–99	47.0	11.7	4.2	39.5	11
Textile, clothing, footwear and leather mfg					
1997–98	8.9	3.0	6.0	11.9	50
1998–99	9.1	2.5	6.4	13.0	49
Wood and paper product mfg					
1997–98	13.7	1.2	2.8	15.3	18
1998–99	13.5	1.2	3.0	15.3	20
Printing, publishing and recorded media					
1997–98	11.0	0.5	1.9	12.4	15
1998–99	11.0	0.5	2.1	12.6	17
Petroleum, coal, chemical and associated product mfg					
1997–98	36.0	5.6	13.8	44.2	31
1998–99	35.7	5.6	15.0	45.1	33
Non-metallic mineral product mfg					
1997–98	9.4	0.4	1.2	10.2	12
1998–99	10.9	0.3	1.3	11.9	11
Metal product mfg					
1997–98	29.7	16.9	7.3	20.1	36
1998–99	30.1	17.2	7.7	20.6	37
Machinery and equipment mfg					
1997–98	38.8	12.7	46.1	72.2	64
1998–99	41.2	12.2	50.0	79.0	63
Other mfg					
1997–98	6.8	0.7	2.8	8.9	31
1998–99	7.0	0.7	2.8	9.1	31
Total mfg					
1997–98	**200.6**	**53.3**	**85.7**	**233.1**	**37**
1998–99	**205.6**	**51.9**	**92.5**	**246.2**	**38**

(a) Includes exports by manufacturers.

(b) Commodity exports and imports are classified to the industry of origin i.e. the industry most likely to have manufactured the commodity.

(c) Manufacturers sales minus exports plus imports.

(d) Imports as a percentage of the estimated total Australian market.

Source: ABS, International Merchandise Trade data; ABS Stocks and Sales, Selected Industries, Australia (Cat. no. 5629.0)

Exports by industry of origin

Total exports for the Australian manufacturing industry of origin in 1998–99 were estimated to be $51.9 billion for 1997–98 which was around twice the value of 10 years earlier. The 1998–99 value represented a 2.4% fall from the 1997–98 level. Only goods classified to Metal product manufacturing showed an increase in exports between the two years. Decreases in the value of exports were generally small except in respect of goods classified to Textile, clothing, footwear and leather manufacturing.

Exports by industry of origin *continued*

The Metal product manufacturing industry continued to have the highest value of exports with $17.2 billion worth of goods being sold overseas, accounting for around one third of all manufacturing exports. Other manufacturing industries to have exports valued at over $10 billion were Machinery and equipment manufacturing ($12.2 billion) and Food, beverage and tobacco manufacturing ($11.7 billion).

Imports by industry of origin

Imports increased by around 8% between 1997–98 and 1998–99, a smaller increase than the 17% between 1996–97 and 1997–98. This resulted in Australian manufacturing experiencing a trade deficit in manufactured goods of $40.6 billion against the rest of the world in 1998–99, an increase of 25% over the trade deficit of $32.4 billion experienced in 1997–98.

At $50 billion in value, goods classified to the Machinery and equipment manufacturing industry accounted for around 54% of manufacturing imports. Petroleum, coal, chemical and associated product manufacturing was the next largest with its $15 billion accounting for just over 16% of manufacturing imports. All manufacturing subdivisions experienced an increase in their level of imports although none of them experienced increases of much over 10%.

Market size by industry of origin

By adding imports to the sales of domestic manufacturers and then subtracting exports, an estimate of the size of the Australian market for manufactured goods can be calculated. Table 4.1 contains such estimates for the years 1997–98 and 1998–99. Under this method the estimate for the Australian domestic market for manufactured goods in 1997–98 was $246.2 billion, an increase of $13.1 billion (5.3%) on the previous year.

The industry (of origin) with the largest Australian market for its products was the Machinery and equipment manufacturing industry with an estimated 1998–99 market size of $79.0 billion. This was followed by Petroleum, coal, chemical and associated product manufacturing ($45.1 billion) and Food beverage and tobacco manufacturing ($39.5 billion).

The market for goods grew in all nine manufacturing subdivisions between 1997–98 and 1998–99. The largest growth occurred in Non-metallic mineral products manufacturing (up 16.7%), Machinery and equipment manufacturing (up 9.4%) and Textile, clothing, footwear and leather manufacturing (up 9.2%).

Import penetration

Import penetration estimates provide an insight into the level of imported goods which make their way into the Australian market. In 1998–99 imports were estimated to satisfy 38% of the Australian market for all manufactured goods.

Import penetration *continued*

The greatest level of import penetration for an industry (of origin) in 1998–99 was for Machinery and equipment manufacturing where an estimated 63% of the Australian market was satisfied by imports. The Textile, clothing, footwear and leather manufacturing industry also recorded a high level of import penetration, with 49% of the Australian market being satisfied by overseas products.

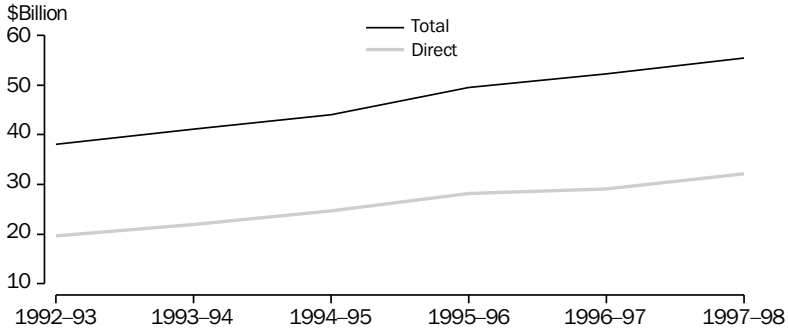
Industries dominated by domestic goods in 1998–99 were the Food, beverage and tobacco manufacturing and Non-metallic mineral product manufacturing industries where import penetration of only 11% is estimated for each.

PERFORMANCE OF DIRECT EXPORTERS

This article presents a range of statistics about manufacturing establishments which provide information on the performance of exporters relative to non exporters. Direct exporters are those manufacturers who are involved in export of goods which they have produced. Readers should note that direct exports make up only part of the exports of goods manufactured in Australia. Substantial export of Australian manufactured goods is undertaken by non-manufacturers, principally wholesalers. Information on total exports of manufactured goods is contained in the previous article 'Exports and imports by industry'.

Graph 4.2 shows that the value of direct exports by manufacturers has grown more quickly than the value of total exports of manufactured goods except during 1996–97 where the opposite occurred.

4.2 EXPORTS OF MANUFACTURED GOODS



Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

Exports as a proportion of goods manufactured

Direct exports by manufacturers as a proportion of goods manufactured continues to increase, reaching 16.3% of sales in 1997–98. The industries which directly export the highest proportion of their manufactured goods are Metal product manufacturing (26.9%), Food, beverage and tobacco manufacturing (22.0%) and Machinery and equipment manufacturing (18.0%). The proportion of goods directly exported by manufacturers has increased between 1996–97 and 1997–98 for all manufacturing subdivisions except Non-metallic mineral product manufacturing (proportion unchanged).

4.3 EXPORT PERCENTAGE(a)—1997–98

Industry	Employment under 100 %	Employment of 100 or more %	Total %
Food, beverage and tobacco mfg	13.2	22.0	19.7
Textile, clothing, footwear and leather mfg	9.7	24.8	16.3
Wood and paper product mfg	9.9	5.7	7.6
Printing, publishing and recorded media	6.1	2.8	4.6
Petroleum, coal, chemical and associated product mfg	7.9	11.1	10.0
Non-metallic mineral product mfg	2.8	4.1	3.5
Metal product mfg(b)	25.4	28.2	26.9
Machinery and equipment mfg	11.6	20.7	18.0
Other mfg	2.9	4.9	3.2
Total mfg	**12.6**	**18.5**	**16.3**

(a) The value of direct exports as a percentage of the value of goods manufactured for sale.

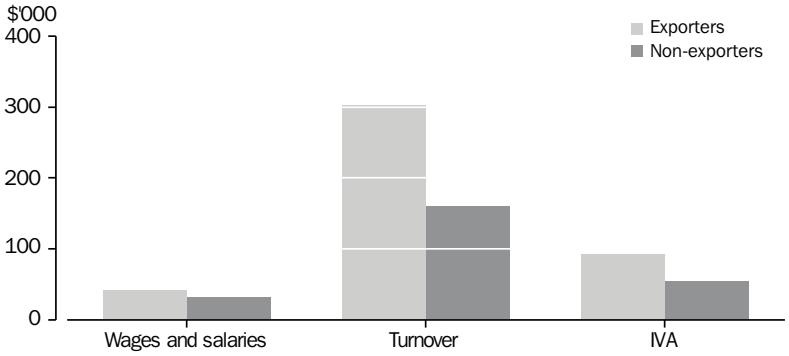
(b) Statistics classified by employment size category for this industry are influenced by operations of unincorporated joint business ventures. For further information, refer to the note immediately preceding table 1.9.

Source: ABS, Manufacturing Industry, Australia, 1997–98 (Cat. no. 8221.0).

Performance measures

Graph 4.4 shows that for manufacturing establishments as a whole, those which undertook some export activity in 1997–98 averaged much higher turnover and production (industry value added) per person employed than those which undertook none. Wages and salaries per person were also higher for exporters.

4.4 PERFORMANCE PER PERSON EMPLOYED—1997–98



Source: ABS Manufacturing Survey.

Table 4.5 shows that in 1997–98, for Australian manufacturing as a whole, turnover per person employed for exporters was almost double that of non-exporters and that exporters also recorded much higher values for the other performance measures as well. In 1997–98, all industry subdivisions recorded higher averages per person employed for all of the performance measures shown in table 4.5 with the lone exception being turnover per person employed in Non-metallic mineral product manufacturing.

Performance measures *continued*

Taking IVA minus wages and salaries to be a rough guide to profits indicates that exporters in each of the subdivisions are more profitable on a per person employed basis than non exporters.

4.5 PERFORMANCE OF EXPORTING MANUFACTURERS(a)—1997–98

	Wages and salaries per person employed		*Turnover per person employed*		*IVA per person employed*	
	Direct exporters	*Non-exporters*	*Direct exporters*	*Non-exporters*	*Direct exporters*	*Non-exporters*
Industry	*$'000*	*$'000*	*$'000*	*$'000*	*$'000*	*$'000*
Food, beverage and tobacco mfg	37.8	32.4	324	232	90	62
Textile, clothing, footwear and leather mfg	32.8	20.9	181	92	54	32
Wood and paper product mfg	41.2	30.2	269	149	85	51
Printing, publishing and recorded media	38.4	34.2	207	136	84	63
Petroleum, coal, chemical and associated product mfg	45.2	37.6	439	236	120	81
Non-metallic mineral product mfg	41.2	37.2	225	260	84	77
Metal product mfg	47.3	30.4	377	159	115	50
Machinery and equipment mfg	40.4	34.9	254	134	82	47
Other mfg	29.8	23.7	148	107	46	35
Total mfg	**40.7**	**31.4**	**302**	**160**	**91.2**	**53.6**

Source: ABS, Manufacturing Survey.

EXPORTS AND IMPORTS OF MANUFACTURED GOODS

Exports of manufactured goods

This section shows 1998–99 levels of imports and exports for major manufactured commodity items. Table 4.6 shows 1998–99 exports of manufactured products with exports valued at $500 million or more.

Comparisons of 1998–99 value of exports for manufactured goods with data from 10 years earlier shows that the overall value of exports of manufactured goods has slightly more than doubled over the 10 years. While all of the commodities show increased value of exports compared with 10 years ago, relative increases have ranged widely from 23% for alumina to 398% for cars and other road vehicles. Other commodities with high export growth over the past 10 years are machinery specialised for particular industries (up 306%), Cheese and curd (up 270%), Milk, cream and milk products (except butter and cheese), (up 267%) and Office machines and automatic data processing machines (up 250%). Apart from Alumina, commodities for which exports grew less than 50% over the 10 years were Aluminium (up 25%) and wood in chips or particles (up 43%). Despite modest growth in overall woodchip exports, readers should note that while the value of exports of non-coniferous (hardwood) woodchips have increased by only 10%, the value of exports of coniferous woodchips have increased by 1,348% albeit from a very small value in 1988–89.

4.6 EXPORTS OF SELECTED MANUFACTURED COMMODITIES—1998–99

Commodity	1998–99 $ million
Gold, non-monetary (excl. gold ores and concentrates)	6 335
Aluminium	3 289
Meat of bovine animals, fresh, chilled or frozen	2 935
Alumina	2 843
Cars and other road vehicles (incl. air-cushion vehicles)	2 092
Iron and steel	1 542
Petroleum products	1 532
Office machines and automatic data processing machines	1 458
Machinery specialised for particular industries	1 380
Milk and cream and milk products other than butter or cheese	1 229
Crustaceans, molluscs and aquatic invertebrates (except canned or bottled)	836
Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles	762
Power generating machinery and equipment	714
Cheese and curd	696
Meat of sheep and goats, fresh, chilled or frozen	656
Wood in chips or particles	591
Fruit and nuts, fresh, dried or preserved and fruit preparations (incl. fruit juices)(a)	588

(a) Excludes commodities subject to a 'No Commodity Details' restriction.

Source: ABS, International Trade data.

Degree of transformation of exports

For information about exports of goods classified by degree of transformation see the section 'Degree of transformation by manufacturers in chapter 1.

Imports of manufactured goods

Table 4.7 shows 1998–99 imports of manufactured products with imports valued at $1 billion or more in that year.

4.7 IMPORTS OF MAJOR MANUFACTURED COMMODITIES(a)—1998–99

	1998–99
	$ million
Passenger motor vehicles (other than public transport type vehicles), station wagons and racing cars	6 482
Automatic data processing machines and units thereof	4 497
Telecommunication equipment n.e.s. and parts n.e.s. and accessories	3 584
Medical and pharmaceutical products	3 041
Articles of apparel and clothing accessories	2 459
Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles	2 451
Organic chemicals	2 388
Parts and accessories of motor vehicles and tractors, track-laying and wheeled	2 227
Parts and accessories for office and automatic data processing machines	2 210
Motor vehicles for the transport of goods including off highway dumpers	2 202
Paper and paperboard and articles of paper pulp, or paper or of paperboard	2 081
Plastics in primary and non-primary form	1 887
Measuring, checking, analysing and controlling instruments and apparatus n.e.s.	1 666
Iron and steel	1 472
Electrical machinery and apparatus n.e.s.	1 467
Chemical materials and products n.e.s.	1 248
Civil engineering and contractors' plant and equipment	1 178
Pumps, centrifuges, filtering or purifying apparatus and parts thereof	1 158
Baby carriages, toys, games and sporting goods	1 096
Internal combustion piston engines, and parts thereof n.e.s.	1 087

(a) Excludes commodities subject to a 'No Commodity Details' restriction.

Source: ABS, International Trade data.

EXPLANATORY NOTES

MAIN CONCEPTS

1 This publication brings together information from a variety of ABS and non-ABS sources. Though considerable explanatory material has been provided below, it has not been feasible to explain every concept for every ABS series included. Readers who are interested in more comprehensive explanatory material than is provided here are encouraged to consult the relevant ABS publication or to contact the ABS (contact information appears on the back page).

Statistical business units

2 Data in this publication relate to either manufacturing management units or to manufacturing establishments. Technical definitions of 'Management unit' and 'establishment' appear in the Glossary.

3 Management unit statistics focus on businesses and business operations, particularly the financial aspects. The focus of these statistics is on profit levels, the main income and expense items which make up those profits, and on capital formation. Management unit statistics also include information on the value of assets and liabilities.

4 While management unit statistics focus on business operations, establishment statistics focus more on the production and distribution processes. They address topics such as goods produced, exports, value added and prices of materials and goods.

5 A rule of thumb which can be applied to statistics about manufacturing is that management unit statistics are about the operations of manufacturing businesses (with the focus on the business as a whole); establishment statistics are about the operations of factories (with the focus on activities at the factory location). Because of the differences in scope explained below, aggregate management unit data will not be identical to aggregate establishment data.

Scope of management unit statistics

6 Management unit statistics for a given industry include all operations by management units which are primarily engaged in activities covered by that industry. A management unit is classified to the manufacturing industry if manufacturing is its primary income earning activity. All operations (manufacturing and non manufacturing) of a mainly manufacturing business would be included in management unit statistics for the manufacturing industry. This principle also applies to finer levels of industry classification.

Scope of establishment statistics

7 Following the same principle, establishment statistics for a particular industry include all operations by establishments which are primarily engaged in activities covered by that industry. For example, establishment statistics for the manufacturing industry would include all operations by establishments which are mainly engaged in manufacturing activities i.e. manufacturing activities are their main source of income. However, the operations of establishments which are not 'mainly engaged in manufacturing activities' will be excluded even when the parent management unit belongs to the manufacturing industry.

Implications of unit scope differences

8 The choice of statistical unit can have subtle but important implications for interpreting the results from surveys.

9 For a large majority of manufacturers, it matters little whether the statistics are compiled for management units or for establishments. More than 90% of Australian manufacturers operate under a simple structure whereby a management unit (business) runs a single manufacturing establishment (factory). Operations by this type of business are relevant to both management unit statistics and establishment statistics and are therefore included in both.

10 The treatment of the operations of more complex businesses is not so straightforward. For example, a management unit which operates both a factory and a retail store, but which has manufacturing as its primary income source, will be classified as a manufacturing management unit. Operations of the management unit as a whole (employment, sales, profits and other data from both the factory and the store) will be included in manufacturing management unit statistics. For manufacturing establishment statistics, operations of the factory will be included but operations of the retail store will be excluded.

11 On the other hand, a management unit which operates both a factory and a retail store but which has retailing as its primary income source will be classified to retail trade. Operations of this business will not be included in manufacturing management unit statistics. However, the operations of the factory will be included in manufacturing establishment statistics.

Coverage of the statistics

12 The business surveys from which data for nearly all tables in this publication have been compiled are sourced from the ABS Business Register. The Business Register does not include all businesses operating in Australia. Excluded are those businesses which do not employ staff and have not registered with the Australian Taxation Office as group employers.

13 Though these very small businesses are fairly numerous, their exclusion has very little effect on the statistics compiled for the manufacturing industry as a whole. It is estimated that if these businesses were to be included, the effect on results for total manufacturing would be less than 2%.

14 For some industries, particularly those like the clothing industry where numbers of small home based businesses are involved, the underestimation from excluding non-employing businesses may be a little higher. However, no serious understatement of economic activity from this cause is likely for any manufacturing industry.

Sampling error

15 Most of the estimates in this publication are based on information gathered from sample surveys. Because the entire population of businesses was not approached to obtain these estimates, the estimates are subject to sampling error i.e. the imprecision which arises when a sample of businesses is not perfectly representative of the population of businesses from which the sample was drawn.

INDUSTRY CLASSIFICATION

Industry Classification: The ANZSIC

16 The framework used in this publication to present information about the manufacturing industry and other industries is provided by the Australian and New Zealand Standard Industrial Classification (ANZSIC). It also provides the structure for presenting breakdowns of the manufacturing industry.

17 The ANZSIC distinguishes four levels of industry classification to accommodate both broad analysis and fine dissection of statistical data about the Australian economy. The four levels constitute a hierarchy, with Division the broadest classification level, followed by Subdivision, Group and Class as increasingly finer dissections. To illustrate, a manufacturing example of the four levels is:

Division	Manufacturing
Subdivision	Metal product manufacturing
Group	Iron and steel manufacturing
Class	Steel pipe and tube manufacturing

18 A list of all manufacturing subdivisions, groups and classes is contained in the ANZSIC listing appendix of this publication.

ANZSIC Divisions

19 Manufacturing as a whole comprises one of the 17 ANZSIC Divisions covering the Australian economy. Examples of other ANZSIC Divisions are Agriculture, Mining, Retail trade, Health and community services and Construction.

ANZSIC Subdivisions

20 There are nine subdivisions within the Manufacturing Division. Each represents a grouping of broadly related outputs and activities. Where numerical codes are used to identify ANZSIC Subdivisions, such codes are comprised of two digits. In the case of manufacturing, the digits 21 to 29 are used. For example Subdivision 28—Machinery and equipment manufacturing and Subdivision 23—Wood and paper product manufacturing.

ANZSIC Groups

21 Each Manufacturing Subdivision is further divided into several groups of reasonably homogeneous industries. The ANZSIC Group level is distinguished by use of three digit numerical codes, the first two digits designating the ANZSIC Subdivision to which the Group belongs. For example, Group 212—Dairy product manufacturing belongs to ANZSIC Subdivision 21—Food, beverage and tobacco manufacturing.

ANZSIC Classes

22 The fourth and finest level of dissection is the ANZSIC class level. Each ANZSIC group is divided into one or more classes. The ANZSIC Class level is distinguished by use of four digit numerical codes, the first three digits designating the ANZSIC Group to which the class belongs. For example, Class 2122—Ice cream manufacturing belongs to Group 212—Dairy product manufacturing.

23 In the ANZSIC, industry classes are created if certain criteria are met. The most important of these are that classes

- represent recognisable segments of Australian industry;
- are consistent with the requirements of users of the statistics;
- are homogeneous in terms of activities i.e. that classes are made up of business units which undertake similar economic activities;
- are economically significant, and
- wherever possible align with the corresponding international classification.

24 The ABS has implemented new international standards for measuring economic variables. The changes which affect data presented in this publication are explained in the following paragraphs.

25 Some relevant national accounting concepts have changed. Under the previous standards, production was represented by the variable gross product. Under the new standards, the variables used are:

- Gross factor incomes (in the article 'Manufacturing's contribution to total Australian production'), and
- Industry gross value added (in the article 'Production levels').

26 These variables are similar though not identical to the variables they have replaced. Estimates of these new variables have been compiled for past periods so that longer term trends can be analysed. For a full explanation of how the revised standards have affected the Australian National Accounts, readers should refer to the *Information Paper Upgraded Australian National Accounts* (Cat. no. 5253.0) which can also be accessed via the ABS web site.

27 Commencing with estimates for 1997–98, contribution to gross domestic product (GDP) by manufacturing industries will be measured by the variable industry value added (IVA). Estimates for IVA measure the value added by an industry to the intermediate inputs used by that industry. Previously, the corresponding contribution to GDP was measured by the variable industry gross product (IGP).

28 Composition of IVA estimates and their relationship to IGP estimates are:

	Turnover (new standards—see below)
plus	Closing inventories
less	Opening inventories
less	Intermediate input expenses (defined in the Glossary)
equals	IVA

	IVA
plus	Intellectual property royalty expenses
less	Intellectual property royalty income
less	Computer software expenses not capitalised by the business
less	Selected indirect taxes (see below.)
equals	IGP

29 The composition of some variables presented in establishment statistics has changed under the new standards, the main changes being:

- Turnover now includes income from intellectual property royalties.
- *Intermediate input expenses* as defined for calculating IVA include intellectual property royalty expenses but exclude computer software expenses and selected indirect taxes (for manufacturing industries, the main types are fringe benefits tax, payroll tax, land rates and land taxes). The reverse situation applies to intermediate input expenses as defined for calculating IGP.

EFFECT OF CHANGES TO DEFINITIONS IN ESTABLISHMENT STATISTICS—1997–98

Industry	*Effect on estimates of turnover* %	*Difference between IVA estimates and IGP estimates* %
Food, beverage and tobacco mfg	0.0	2.6
Textile, clothing, footwear and leather mfg	0.0	3.2
Wood and paper product mfg	0.0	3.7
Printing, publishing and recorded media	0.1	–3.6
Petroleum, coal, chemical and associated product mfg	0.3	3.2
Non-metallic mineral product mfg	0.1	4.4
Metal product mfg	0.0	3.3
Machinery and equipment mfg	0.1	2.8
Other mfg	0.0	3.0
Total mfg	**0.1**	**2.4**

Source: ABS, Manufacturing Survey.

30 Similarly, the composition of some variables presented in establishment statistics has changed under the new standards, the main changes being:

- *Sales and service income* now includes rent, leasing and hiring income and income from intellectual property royalties.
- *Other operating income* now excludes rent, leasing and hiring income and income from intellectual property royalties.
- *Cost of sales* now excludes computer software purchased and not capitalised by the business.
- *Capital expenditure* now includes computer software purchased and not capitalised by the business.

EFFECT OF CHANGES TO DEFINITIONS FOR MANAGEMENT UNIT STATISTICS(a)

Industry	Effect on estimates of sales of goods and services %	Effect on estimates of cost of sales %	Effect on estimates of net fixed capital expenditure %
Food, beverage and tobacco mfg	0.1	–0.1	1.0
Textile, clothing, footwear and leather mfg	0.1	0.0	0.8
Wood and paper product mfg	0.0	–0.1	1.1
Printing, publishing and recorded media	0.2	–0.1	1.3
Petroleum, coal, chemical and associated product mfg	0.5	–0.1	1.8
Non-metallic mineral product mfg	0.7	–0.2	2.0
Metal product mfg	0.2	–0.1	0.5
Machinery and equipment mfg	0.4	–0.1	2.8
Other mfg	0.7	–0.1	1.4
Total mfg	**0.3**	**–0.1**	**1.3**

(a) Estimates of the effect of definitional change on the item 'Other operating revenue' have not been provided because it is a minor variable amounting to less than 1% of manufacturers' income.

Source: ABS, Manufacturing Survey, 1997–98.

31 Some further changes have also been made to the definitions of economic variables. However, due to the relative unimportance of these changes to manufacturing industries, no attempt has been made to measure the effect (if any). These changes mainly relate to mineral and petroleum exploration expenses and expenses of acquiring original literary and artistic works.

32 Readers requiring further detail about the revised international standards and their application to ABS statistics should consult the ABS publication *Revised International Standards in Australian National Accounts* (Cat. no. 5251.0).

CHAIN VOLUME MEASURES

33 Chain volume measures represent a replacement methodology for measuring changes in economic activities which are measured in dollar terms and then adjusted to remove the effects of price changes. These measures were previously known as constant price estimates. The 'volume measures' part of the term simply means that they measure changes in volume of activity not value of activity. The 'chain' part of the term means that the series is rebased every year as results of the annual manufacturing survey become available and data for all periods covered by the series are benchmarked to the rebased values. The previous method involved rebasing the series only every five or so years which meant that the quality of prices changes data tended to decay the more removed the current period became from the base year.

34 Chain volume measures have been introduced because they provide a better measure of growth in volume than the previously published constant price estimates. To understand this it is necessary to briefly explain how constant price estimates of manufacturing value added have been derived in the past.

35 There were two major steps involved in the calculation of constant price estimates of manufacturing value added. First, at the ANZSIC class level, turnover was deflated by a manufacturing output price index. This resulted in constant price series of turnover. Second, these estimates were then used to extrapolate base year current price estimates of value added. Third, the resulting constant price estimates of value added were summed to obtain estimates for total manufacturing. The assumption underlying this approach is that output and intermediate inputs grow at the same rate in constant price terms. It is because this assumption is most likely to hold at a detailed level that it was applied at the ANZSIC class level.

36 Constant price estimates of turnover eliminate the direct effect of price changes and therefore only reflect volume changes. In concept they are derived by replacing the unit price of each type of manufacturing article traded in the current period with the corresponding unit price in the chosen base year. The base year unit prices used to derive constant price estimates are effectively the weights used to combine quantities of different goods and services.

37 The unit prices of different goods and services tend to grow at different rates—some at dramatically different rates. For example, the prices of computer equipment are estimated to have declined by about 75% between 1989–90 and 1997–98, while the prices of most other goods and services have increased. Thus, over time, the price relativities of some goods and services change appreciably.

38 Changes in price relativities adversely affect the usefulness of constant price estimates, particularly for periods distant from the base year, and consequently the base year used to derive constant price estimates needs to be changed from time to time. It was ABS practice to change the base year every five years, but it was found that better estimates of growth in volume can be obtained by rebasing every year and linking the resulting indexes to form annually reweighted chain volume measures. The ABS therefore decided to replace constant price estimates with annually reweighted chain Laspeyres volume measures. They are formed in a multi-stage process of which the major steps are described in section 15 of the *Information Paper: Introduction of Chain Volume Measures in the Australian National Accounts* (Cat. no. 5248.0).

39 Part of the process of calculating chain volume measures of manufacturing value added has been to update the turnover-value added ratios annually.

40 The impact of the change from constant price estimates to chain volume measures of manufacturing value added largely depends on the extent of differences in growth rates between the prices and volumes of the components. In the case of manufacturing value added, the introduction of chain volume measures has not had a dramatic effect on growth rates from 1989–90 to the present.

41 Chain volume measures are not generally additive. In other words, in general, component chain volume measures do not sum to a total in the way current price components do, but by choosing the reference year to coincide with the latest base year additivity for the reference year and the following year is ensured. This implies advancing the reference year each year, while this changes the levels of the estimates it does not of itself change the growth rates.

RELATED STATISTICS

Related publications

42 A full list of the material used to compile this publication is contained in the list of references.

43 Current publications produced by the ABS are listed in the *Catalogue of Publications and Products, Australia* (Cat. no. 1101.0). The ABS also issues, on Tuesdays and Fridays, a *Release Advice* (Cat. no. 1105.0) which lists publications to be released in the next few days. The Catalogue and Release Advice are available from any ABS office.

Unpublished data

44 In addition to the data contained in this publication, more detailed industry information can often be made available on request. For example, data may be available at the ANZSIC group (3 digit level) or ANZSIC Class (4 digit level) for some of the annual data series. This is particularly true of data in chapter 2 of this publication.

45 For further information about unpublished data relating to the manufacturing industry or to manufacturing activities, readers should consult John Ridley in the ABS Sydney office on 02 9268 4541.

Referencing

46 Where ABS time series data have been presented in tables or graphs, only the most recent edition of the product or publication used as a source is listed. Earlier editions are available from ABS libraries and selected other libraries.

Reference periods

47 Yearly periods shown, for example, as 1997 refer to the year ended 31 December 1997. Those shown for example as 1997–98 refer to the year ended 30 June 1998.

Rounding

48 Where figures have been rounded, discrepancies may occur between sums of the component items and totals shown.

APPENDIX LIST OF MANUFACTURING INDUSTRIES

ANZSIC DIVISION, SUBDIVISION, GROUP AND CLASS TITLES AND CODES

C		Manufacturing
21		Food, Beverage and Tobacco Manufacturing
	211	Meat and Meat Product Manufacturing
	2111	Meat Processing
	2112	Poultry Processing
	2113	Bacon, Ham and Smallgood Manufacturing
	212	Dairy Product Manufacturing
	2121	Milk and Cream Processing
	2122	Ice Cream Manufacturing
	2129	Dairy Product Manufacturing n.e.c.
	213	Fruit and Vegetable Processing
	2130	Fruit and Vegetable Processing
	214	Oil and Fat Manufacturing
	2140	Oil and Fat Manufacturing
	215	Flour Mill and Cereal Food Manufacturing
	2151	Flour Mill Product Manufacturing
	2152	Cereal Food and Baking Mix Manufacturing
	216	Bakery Product Manufacturing
	2161	Bread Manufacturing
	2162	Cake and Pastry Manufacturing
	2163	Biscuit Manufacturing
	217	Other Food Manufacturing
	2171	Sugar Manufacturing
	2172	Confectionery Manufacturing
	2173	Seafood Processing
	2174	Prepared Animal and Bird Feed Manufacturing
	2179	Food Manufacturing n.e.c.
	218	Beverage and Malt Manufacturing
	2181	Soft Drink, Cordial and Syrup Manufacturing
	2182	Beer and Malt Manufacturing
	2183	Wine Manufacturing
	2184	Spirit Manufacturing
	219	Tobacco Product Manufacturing
	2190	Tobacco Product Manufacturing
22		Textile, Clothing, Footwear and Leather Manufacturing
	221	Textile Fibre, Yarn and Woven Fabric Manufacturing
	2211	Wool Scouring
	2212	Synthetic Fibre Textile Manufacturing
	2213	Cotton Textile Manufacturing
	2214	Wool Textile Manufacturing
	2215	Textile Finishing
	222	Textile Product Manufacturing
	2221	Made-Up Textile Product Manufacturing
	2222	Textile Floor Covering Manufacturing
	2223	Rope, Cordage and Twine Manufacturing
	2229	Textile Product Manufacturing n.e.c.

	223	Knitting Mills
	2231	Hosiery manufacturing
	2232	Cardigan and Pullover Manufacturing
	2239	Knitting Mill Product Manufacturing n.e.c.
	224	Clothing Manufacturing
	2241	Men's and Boy's Wear Manufacturing
	2242	Women's and Girl's Wear Manufacturing
	2243	Sleepwear, Underwear and Infant Clothing Manufacturing
	2249	Clothing Manufacturing n.e.c.
	225	Footwear Manufacturing
	2250	Footwear Manufacturing
	226	Leather and Leather Product Manufacturing
	2261	Leather Tanning and Fur Dressing
	2262	Leather and Leather Substitute Product Manufacturing
23		Wood and Paper Product Manufacturing
	231	Log Sawmilling and Timber Dressing
	2311	Log Sawmilling
	2312	Wood Chipping
	2313	Timber Resawing and Dressing
	232	Other Wood Product Manufacturing
	2321	Plywood and Veneer Manufacturing
	2322	Fabricated Wood Manufacturing
	2323	Wooden Structural Component Manufacturing
	2329	Wood Product Manufacturing n.e.c.
	233	Paper and Paper Product Manufacturing
	2331	Pulp, Paper and Paperboard Manufacturing
	2332	Solid Paperboard Container Manufacturing
	2333	Corrugated Paperboard Container Manufacturing
	2334	Paper Bag and Sack Manufacturing
	2339	Paper Product Manufacturing n.e.c.
24		Printing, Publishing and Recorded Media
	241	Printing and Services to Printing
	2411	Paper Stationery Manufacturing
	2412	Printing
	2413	Services to Printing
	242	Publishing
	2421	Newspaper Printing or Publishing
	2422	Other Periodical Publishing
	2423	Book and Other Publishing
	243	Recorded Media Manufacturing and Publishing
	2430	Recorded Media Manufacturing and Publishing
25		Petroleum, Coal, Chemical and Associated Product Manufacturing
	251	Petroleum Refining
	2510	Petroleum Refining
	252	Petroleum and Coat Product Manufacturing n.e.c.
	2520	Petroleum and Coal Product Manufacturing n.e.c.

	253	Basic Chemical Manufacturing
	2531	Fertiliser Manufacturing
	2532	Industrial Gas Manufacturing
	2533	Synthetic Resin Manufacturing
	2534	Organic Industrial Chemical Manufacturing n.e.c.
	2535	Inorganic Industrial Chemical Manufacturing n.e.c
	254	Other Chemical Product Manufacturing
	2541	Explosive Manufacturing
	2542	Paint Manufacturing
	2543	Medicinal and Pharmaceutical Product Manufacturing
	2544	Pesticide Manufacturing
	2545	Soap and Other Detergent Manufacturing
	2546	Cosmetic and Toiletry Preparation Manufacturing
	2547	Ink manufacturing
	2549	Chemical Product Manufacturing n.e.c.
	255	Rubber Product Manufacturing
	2551	Rubber Tyre Manufacturing
	2559	Rubber Product Manufacturing n.e.c.
	256	Plastic Product Manufacturing
	2561	Plastic Blow Moulded Product Manufacturing
	2562	Plastic Extruded Product Manufacturing
	2563	Plastic Bag and Film Manufacturing
	2564	Plastic Product Rigid Fibre Reinforced Manufacturing
	2565	Plastic Foam product Manufacturing
	2566	Plastic Injection Moulded Product Manufacturing
26		Non-Metallic Mineral Product Manufacturing
	261	Glass and Glass Product Manufacturing
	2610	Glass and Glass Product Manufacturing
	2621	Clay Brick Manufacturing
	2622	Ceramic Product Manufacturing
	2623	Ceramic Tile and Pipe Manufacturing
	2629	Ceramic Product Manufacturing n.e.c.
	263	Cement, Lime, Plaster and Concrete Product Manufacturing
	2631	Cement and Lime Manufacturing
	2632	Plaster Product Manufacturing
	2633	Concrete Slurry Manufacturing
	2634	Concrete Pipe and Box Culvert Manufacturing
	2635	Concrete Product Manufacturing n.e.c.
	264	Non-Metallic Mineral Product Manufacturing n.e.c.
	2640	Non-Metallic Mineral Product Manufacturing n.e.c.
27		Metal Product Manufacturing
	271	Iron and Steel Manufacturing
	2711	Basic Iron and Steel Manufacturing
	2712	Iron and Steel Casting and Forging
	2713	Steel Pipe and Tube Manufacturing

	272	Basic Non-Ferrous Metal Manufacturing
	2721	Alumina Production
	2722	Aluminium Smelting
	2723	Copper, Silver, Lead and Zinc Smelting, Refining
	2729	Basic Non-Ferrous Metal Manufacturing n.e.c.
	273	Non-Ferrous Basic Metal Product Manufacturing
	2731	Aluminium Rolling, Drawing, Extruding
	2732	Non-Ferrous Metal Rolling, Drawing, Extruding n.e.c.
	2733	Non-Ferrous Metal Casting
	274	Structural Metal Product Manufacturing
	2741	Structural Steel Fabricating
	2742	Architectural Aluminium Product Manufacturing
	2749	Structural Metal Product Manufacturing n.e.c.
	275	Sheet Metal Product Manufacturing
	2751	Metal Container Manufacturing
	2759	Sheet Metal Product Manufacturing n.e.c.
	276	Fabricated Metal Product Manufacturing
	2761	Hand Tool and General Hardware Manufacturing
	2762	Spring and Wire Product Manufacturing
	2763	Nut, Bolt, Screw and Rivet Manufacturing
	2764	Metal Coating and Finishing
	2765	Non-Ferrous Pipe Fitting Manufacturing
	2769	Fabricated Metal Product Manufacturing n.e.c.
28		Machinery and Equipment Manufacturing
	281	Motor Vehicle and Part Manufacturing
	2811	Motor Vehicle Manufacturing
	2812	Motor Vehicle Body Manufacturing
	2813	Automotive Electrical and Instrument Manufacturing
	2819	Automotive Component Manufacturing n.e.c.
	282	Other Transport Equipment Manufacturing
	2821	Shipbuilding
	2822	Boatbuilding
	2823	Railway Equipment Manufacturing
	2824	Aircraft Manufacturing
	2829	Transport Equipment Manufacturing n.e.c.
	283	Photographic and Scientific Equipment Manufacturing
	2831	Photographic and Optical Good Manufacturing
	2832	Medical and Surgical Equipment Manufacturing
	2839	Professional and Scientific Equipment Manufacturing n.e.c.
	284	Electronic Equipment Manufacturing
	2841	Computer and Business Machine Manufacturing
	2842	Telecommunication, Broadcasting and Transceiving Equipment Manufacturing
	2849	Electronic Equipment Manufacturing n.e.c.

	285	Electrical Equipment and Appliance Manufacturing
	2851	Household Appliance Manufacturing
	2852	Electric Cable and Wire Manufacturing
	2853	Battery Manufacturing
	2854	Electric Light and Sign Manufacturing
	2859	Electrical Equipment Manufacturing n.e.c
	286	Industrial Machinery and Equipment Manufacturing
	2861	Agricultural Machinery Manufacturing
	2862	Mining and Construction Machinery Manufacturing
	2863	Food Processing Machinery Manufacturing
	2864	Machine Tool and Part Manufacturing
	2865	Lifting and Material Handling Equipment Manufacturing
	2866	Pump and Compressor Manufacturing
	2867	Commercial Space Heating and Cooling Equipment Manufacturing
	2869	Industrial Machinery and Equipment Manufacturing n.e.c.
29		Other Manufacturing
	291	Prefabricated Building Manufacturing
	2911	Prefabricated Metal Building Manufacturing
	2919	Prefabricated Building Manufacturing n.e.c.
	292	Furniture Manufacturing
	2921	Wooden Furniture and Upholstered Seat Manufacturing
	2922	Sheet Metal Furniture Manufacturing
	2923	Mattress Manufacturing (Except Rubber)
	2929	Furniture Manufacturing n.e.c.
	294	Other Manufacturing
	2941	Jewellery and Silverware Manufacturing
	2942	Toy and Sporting Good Manufacturing
	2949	Manufacturing n.e.c.

Source: Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 (Cat. no. 1292.0).

GLOSSARY

Average hours worked Aggregate hours worked by a group divided by the number of persons in that group.

Average weekly earnings Average weekly earnings statistics represent average gross (before tax) earnings of employees excluding retrospective pay, pay in advance, leave loadings and severance and redundancy payments. It is calculated by dividing estimates of gross earnings for a particular week in the middle of the quarter by estimates of the number of employees working full time in the same week. Estimates are produced for ordinary time earnings (excluding overtime earnings) and total earnings.

Business See 'Management unit'.

Business expenses See 'Operating expenses'.

Business size For the purposes of table 1.6, business size groups are defined as follows:

- Micro businesses are businesses which employ fewer than five people
- Other small businesses are businesses which employ 5–19 people
- Small businesses are businesses which employ fewer than 20 people
- Medium-sized businesses are businesses which employ 20–199 people
- Large businesses are businesses which employ 200 or more people.

For other tables which distinguish business or establishment size, the boundary which divides medium sized from large is set at 100 rather than 200.

Capital expenditure Acquisition of fixed tangible assets (e.g. plant and machinery), property and intangible assets (e.g. computer software, patents and licences) including those assets acquired under a finance lease. Also includes work done by own employees or proprietors of the business for use by the business or for rental or lease to others.

The term 'Net fixed capital expenditure' refers to outlays on fixed assets (i.e. excluding intangible assets) less amounts received from sales of fixed assets.

Capital expenditure on waste management and environmental protection Acquisition of assets designed specifically to assist with waste management or protection of air, water or climate or noise or vibration abatement. Two types of capital goods are recognised, those providing end of line protection and those involving change in production methods (see definitions for end of line and change in production).

Capital work done for own use or for rental or lease See 'Own account capital work'.

Chain volume measures

Chain volume measures represent a replacement methodology for measuring changes in economic activities which are measured in dollar terms and then adjusted to remove the effects of price changes. These measures were previously known as constant price estimates. The 'volume measures' part of the term simply means that they measure changes in volume of activity not value of activity. The 'chain' part of the term means that the series is rebased every year as results of the annual manufacturing survey become available and data for all periods covered by the series are benchmarked to the rebased values. The previous method involved rebasing the series only every five or so years which meant that the quality of prices changes data tended to decay the more removed the current period became from the base year.

Further explanation is provided in the Explanatory Notes.

Change in production

Includes purchases (primarily for waste management and environmental protection reasons) of new technologies in which waste management and environmental protection aspects are integrated within a changed production process.

Closing inventories (formerly called closing stocks)

The value of all inventories of finished goods, work-in-progress, raw materials, fuels, containers and packaging as at the end of the financial year. Businesses are asked to value their inventories for statistical purposes using the same method as used in their balance sheets.

Commission manufacturing

Significant amounts of manufacturing are undertaken on a commission basis by one manufacturer on behalf of another manufacturer or by a manufacturer on behalf of a non manufacturer. Typically, a commission manufacturing transaction will involve a client commissioning the production of goods by a producing establishment from materials provided by the client. Ownership of those materials remains with the client. Similarly, the goods made from those materials are owned by the client.

For the purposes of the estimates in this publication, the producing establishment reports the commission fee as service income along with wages and salaries and any other expenses incurred.

If the client is a manufacturing establishment, then in addition to data for their own manufacturing operations, the client reports the sales and stocks of the commissioned goods, the cost of the materials provided to the producing establishment, the commission fee paid and the value of any other intermediate inputs related to the commission transaction. If the client is not a manufacturing establishment, no data are reported by the client.

Competition

See 'Industry concentration statistics'.

Constant prices Data are presented in constant prices to represent the volume of goods and services produced. By analysing year to year movements in constant price terms, changes in manufacturing activity levels can be analysed in the absence of distortions caused by price changes. Recently, the ABS has changed its method of calculating estimates adjusted for price changes. Generally, constant price estimates are now referred to as either 'volume measures' or 'chain volume measures'. For further explanation see the entry for chain volume measures.

Cost of sales Cost of sales is calculated as opening inventories less closing inventories plus intermediate input expenses.

Current assets The book value of current assets as at the end of the financial year. This includes cash on hand, inventories, trade debtors and other accounts receivable.

Current expenditure on waste management and environmental protection Expenditure of a non capital nature on waste management or on goods or services acquired for the purpose of protecting the environment. Includes payments to government agencies or private businesses for waste removal services, for environmental audits, for site cleaning, for environmental impact assessments and for testing or monitoring emissions. Also includes Research and Development expenditure on waste management and environmental protection and the cost of environmental taxes, levies, fines and licences.

Current liabilities The book value of current liabilities as at the end of the financial year. This includes trade creditors, other accounts payable and bank overdrafts. Also includes provisions for short term liabilities such as provisions for taxation, provisions for employee entitlements, provisions for claims.

Current ratio The ratio of current assets to current liabilities, i.e. the value of current assets divided by the value of current liabilities. This liquidity measure indicates ability to meet immediate financial obligations from current assets. A ratio of less than one would indicate current liabilities in excess of current assets. An increase in the ratio indicates that liquidity is improving.

Debt to equity See 'Long-term debt to equity ratio'.

Degree of competition See 'Industry concentration statistics'.

Degree of transformation Degree of transformation is a classification variable within the Trade Export Classification (TREC). Degree of transformation categories and classification of commodities to those categories was initiated by the Department of Foreign Affairs and Trade (DFAT). The classification will be further developed over the next few years.

Depreciation Includes depreciation allowed on buildings and other fixed tangible assets.

Dividends received Payments received from related and unrelated businesses.

Employed Persons aged 15 and over who, during the reference week:

- worked for one hour or more for pay, profit, commission or payment in kind in a job or business, or on a farm (comprising employees, employers and own account workers); or
- worked for one hour or more without pay in a family business or on a farm (i.e. contributing family workers); or
- were employees who had a job but were not at work and were: on paid leave; on leave without pay for less than four weeks up to the end of the reference week; stood down without pay because of bad weather or plant breakdown at their place of employment for less than four weeks up to the end of the reference week; on strike or locked out; on workers' compensation and expected to be returning to their job; or receiving wages or salary while undertaking full-time study; or
- were employers, own account workers or contributing family workers who had a job, business or farm, but were not at work.

Employee A person who works for a public or private employer and receives remuneration in wages, salary, commission, tips, piece-rates or pay in kind, or in their own business, either with or without employees, if that business was an incorporated business.

Employment at end of June The number of working proprietors, working partners, permanent, part-time, temporary and casual employees, and managerial and executive employees working for an establishment during the last pay period ending in June. Employees absent on paid or prepaid leave are included, as are employees on workers' compensation who continue to be paid through the payroll system. Non-salaried directors, self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer, and volunteer workers are excluded.

End of line techniques Expenditure on filters and other 'add-on' equipment or modifications which are designed to reduce the level of emissions to the environment or to treat wastes prior to release but do not irreversibly affect the original production process. This category also includes capital works such as waste water dams, levees, holding tanks etc.

Enterprise group A unit covering all the operations in Australia of one or more legal entities under common ownership and/or control. It covers all the operations in Australia of legal entities which are related in terms of the current Corporations Law (as amended by the *Corporations Legislation Amendment Act 1991*). These may be legal entities such as trusts and partnerships as well as companies. Majority ownership is not required for control to be exercised.

Environmental taxes, levies, fines and licences Includes pollution control licence fees, waste disposal/landfill levies specified in government rates, environmental levies paid to water authorities and any penalties paid for emissions to air, water or soil.

Establishment The establishment is the smallest accounting unit of a business, within a State or Territory, controlling its productive activities and maintaining a specified range of detailed data i.e. the data needed to compile turnover. opening and closing inventories, purchases and transfers in, motor vehicle running expenses, freight and cartage expenses, commission expenses, rent, leasing and hiring expenses and repair and maintenance expenses. In general, an establishment covers all operations at a physical location, but may consist of groups of locations provided they are within the same State or Territory. The majority of establishments operate at one location only.

Establishment size See 'Business size'.

Frequency of new workers' compensation cases The frequency of new workers' compensation cases is the number of new workers' compensation cases resulting in absence from work of five working days or more expressed as a rate per 1,000 wage and salary earners employed.

Full-time employees Permanent, temporary and casual employees who normally work the agreed or award hours for a full-time employee in their occupation and who received pay for any part of the reference period. If agreed or award hours do not apply, employees are regarded as full time if they ordinarily work 35 hours or more per week.

Full-time workers Employed persons who usually worked 35 hours or more a week (in all jobs) and others who, although usually working less than 35 hours a week, worked 35 hours or more during the reference week.

Gross earnings Payments to employees before tax and other items (such as superannuation) are deducted. They comprise amounts paid from interstate or overseas; ordinary time and overtime earings; over award payments; penalty payments, shift and other remunerative allowances; commissions and retainers; bonuses and similar payments; payments under incentive or piecework; payments under profit-sharing schemes; leave loadings; annual and long service leave payments; sick leave payments; advance and retrospective payments; salaries and fees paid to company directors, members of boards, committees, commissions, councils, etc.; amounts paid to employees on workers' compensation who continue to be paid through the payroll; and severance, termination and redundancy payments.

Gross factor incomes Calculated by summing incomes for the factors of production. Equals compensation of employees plus gross operating surplus plus gross mixed income.

Gross mixed income The surplus accruing to owners of unincorporated enterprises from the processes of production.

Gross operating surplus Industry value added less labour costs.

Gross output Sales of goods and services plus government funding for operational costs plus capital work done for own use plus closing inventories minus opening inventories.

Incidence of new workers' compensation cases The incidence of new workers' compensation cases is the number of new workers' compensation cases resulting in absence from work of five working days or more expressed as a rate per million hours worked by wage and salary earners.

Industry class Within ANZSIC, there is a structure comprising four levels ranging from industry division (broadest level) to the industry class (finest level). At the industry class level, the activities are narrowly defined and recognised by a four digit code e.g. industry class 2331 for Pulp paper and paperboard manufacturing. Information on the structure of the ANZSIC is contained in the Explanatory Notes.

Industry concentration statistics Industry concentration statistics give a guide to the degree of competition which exists within an industry. They measure the proportion of industry employment, sales and turnover contributed by the largest groups of businesses which are under common ownership and control. These statistics are compiled by summing data for all of the establishments in each enterprise group to form enterprise group industry units, then ranking these units from largest to smallest (in terms of the value of turnover). The ranked enterprise group industry units are then formed into groups of four, to measure the contribution of the largest four groups, fifth to eighth ranked groups, ninth to twelfth ranked groups and so on.

Industry gross product (IGP) For periods prior to 1997–98, estimates of IGP represented the measure of the contribution by manufacturing industries to gross domestic product (GDP). However, commencing with estimates for 1997–98 following introduction of new international standards for measuring economic variables, IGP has been replaced by the variable industry value added (IVA) for the purpose of measuring industry contribution to GDP.

The relationship between IVA estimates and IGP estimates is:

	IVA
plus	Intellectual property royalty expenses
less	Intellectual property royalty income
less	Computer software expenses not capitalised by the business
less	Selected indirect taxes (For manufacturing industries, the main types are fringe benefits tax, payroll tax, land rates and land taxes.)
equals	IGP

Industry group This is the intermediate level within the manufacturing industry division of ANZSIC and is recognised by a three digit code e.g. industry group 233 for Paper and paper product manufacturing. It gives more detail than the industry subdivision and is created in a way that groups like industry classes together. Information on the structure of the ANZSIC is contained in the Explanatory Notes.

Industry of origin This concept allocates internationally traded commodities back to the industry of original manufacture rather than to the industries of the businesses actually undertaking the imports or exports. However, because it is not always known which manufacturing industry actually produced a particular set of traded commodities, all commodities are allocated to the industry which produces most of that type of commodity i.e. the industry most likely to have been the source.

Industry subdivision This is the broadest level category within the manufacturing industry division of ANZSIC and is recognised by a two digit code e.g. industry subdivision 23 for Wood and paper product manufacturing. Industry subdivisions are built up from industry groups which, in turn, are built up from industry classes. Information on the structure of the ANZSIC is contained in the Explanatory Notes.

The manufacturing industry subdivisions and their numeric codes are

21	Food, beverage and tobacco mfg
22	Textile, clothing, footwear and leather mfg
23	Wood and paper product mfg
24	Printing, publishing and recorded media
25	Petroleum coal, chemical and associated product mfg
26	Non-metallic mineral product mfg
27	Metal product mfg
28	Machinery and equipment mfg
29	Other manufacturing

Industry value added Industry value added (IVA) represents the value added by an industry to the intermediate inputs used by the industry. Commencing with estimates for 1997–98, IVA has replaced industry gross product (IGP) as the measure of the contribution by manufacturing industries to gross domestic product. See the entry for 'Industry gross product' for an explanation of the differences between IVA and IGP.

The derivation of IVA is as follows:

	Turnover
plus	Closing inventories
less	Opening inventories
less	Intermediate input expenses
equals	IVA

However, readers should note that IVA is not a measure of operating profits before tax. Wages, salaries and most other labour costs are not taken into account in its calculation and nor are most insurance premiums, interest expenses or depreciation and a number of lesser expenses (see the entry for 'Operating expenses' for further detail).

Insurance premiums Payments in respect of different types of insurance, excluding workers' compensation costs (included in labour costs) and compulsory third party motor vehicle insurance premiums (included in motor vehicle running expenses).

Interest coverage The number of times over that businesses can meet their interest expenses from their earnings before interest, i.e. the value of earnings before interest and tax divided by the value of interest expenses.

Interest expenses Interest paid on loans from banks and other financial institutions, interest paid in respect of finance leases, interest paid on loans from related businesses, interest equivalents such as hedging costs and expenses associated with discounted bills. Excludes bank service charges and fees.

Interest income Includes interest received from bank etc. accounts, loans, finance leases and earnings on discounted bills.

Intermediate input expenses Intermediate input expenses cover the major expenses incurred by manufacturers in producing and distributing goods and services produced (except labour costs) i.e. purchases of materials, components, containers and packaging materials, electricity, fuels and water, motor vehicle running expenses, freight and cartage expenses, repair and maintenance expenses, rent leasing and hiring expenses (except for finance lease payments) and contract, subcontract and commission expenses.

Intermediate input expenses also include advertising expenses, audit and other accounting expenses, bank fees and charges (except interest), cleaning expenses, environmental protection expenses, intellectual property royalty expenses, legal fees, management fees, paper, printing and stationery expenses, postal and telecommunication expenses, purchases of finished goods for resale, staff training expenses, and travel, accommodation and entertainment expenses.

In establishment statistics of intermediate input expenses, account is also taken of transfers of goods between establishments owned and operated by the same business. These are valued at their commercial value.

Intermediate inputs Intermediate inputs consist of materials and certain services which are used up in the production and distribution processes. Definitions of relevant component items are also included in this Glossary. It is calculated as:

	Intermediate input expenses
plus	Opening inventories
less	Closing inventories

Job leavers Unemployed persons who have worked full time for two weeks or more in the past two years and left that job voluntarily, that is because of unsatisfactory work arrangements/pay/hours; the job was seasonal, temporary or a holiday job and they left that job to return to studies; their last job was running their own business and they closed down or sold that business for reasons other than financial difficulties; or any other reason.

Job losers Unemployed persons who have worked full time for two weeks or more in the past two years and left that job involuntarily, that is, were laid off or retrenched from that job; left that job because of their own ill-health or injury; the job was seasonal, temporary or a holiday job and they did not leave that job to return to studies; or their last job was running their own business and the business closed down because of financial difficulties.

Labour costs For the purposes of this publication, labour costs include wages and salaries (including severance and termination pay), employers' contributions to superannuation funds, workers' compensation costs, payroll tax and fringe benefits tax.

Labour costs for research and development Wages and salaries, overtime allowances, penalty rates, leave loadings, bonuses, commission payments, all paid leave, employer contributions to superannuation and pension schemes, payroll tax, fringe benefits tax, payments to contract staff on the payroll, severance, termination and redundancy payments and workers' compensation insurance for staff engaged in research and experimental development activities.

Long-term debt to equity ratio The value of non-current liabilities divided by the value of net worth. An increase in this ratio signifies that an industry's debt position has worsened relative to its capacity to repay.

Management unit The management unit is the highest-level unit within a business, having regard to industry homogeneity, for which accounts are maintained. In nearly all cases, the management unit is simply the legal entity which owns the business (that is, company, partnership, trust, sole operator, etc.). In the case of large diversified businesses, however, there may be more than one management unit, each coinciding with a 'division' or 'line of business'. A division or line of business is recognised where separate and comprehensive accounts are compiled for it. For the purposes of interpreting the data in this publication, 'management unit' and 'business' can be regarded as being synonymous.

Manufacturing establishment An establishment predominantly engaged in manufacturing activities. The data collected for such establishments cover all activities of the establishment (including non-manufacturing activities). Conversely, there are some establishments predominantly engaged in non-manufacturing activities which also undertake limited manufacturing activities and which are excluded.

Manufacturing management unit A management unit predominantly engaged in manufacturing activities. The data collected for such management units cover all activities of the management unit (including in respect of non-manufacturing activities). Conversely, there are some management units predominantly engaged in non-manufacturing activities which have one or more establishments which engage in manufacturing activities and which are excluded.

Median value The median value in a set of observations is that observation for which there are as many observations with higher values as there are observations with lower values. For example if the set were made up of the integers 1 to 9, then the median value would be the number 5 because it has four values higher and four values lower.

Net worth Total assets minus total liabilities and is equal to the interests of shareholders or other owners in the assets of the business.

New capital expenditure Refers to the acquisition of new tangible assets either on own account or under a finance lease and includes major improvements, alterations and additions. In general, this is expenditure charged to fixed tangible assets accounts excluding expenditure on second hand assets unless these are imported for the first time.

Non-current assets The book value of non-current assets as at the end of the financial year. Includes plant and machinery needed for normal operations, capitalised interest, property and goodwill.

Non-current liabilities The book value of non-current liabilities as at the end of the financial year. Includes bank loans, debentures and unsecured notes.

Non employing businesses Unincorporated businesses which do not employ staff and which have not registered as group employers with the Australian Taxation Office. Typically, such businesses will have one or two working proprietors or partners but no other staff. Such businesses are not listed on the ABS Business Register and where surveys are based solely on that register (the annual manufacturing survey is one of these) then estimates will not take account of the operations of non employing businesses.

Number of employees All wage and salary earners who received pay for any part of the relevant pay period. All permanent, temporary, casual, managerial and executive employees are included. Part-time and casual employees who may have received pay for only a few hours during the reference period are included. Employees on paid leave and those employees on workers' compensation who continue to be paid through the employer's payroll are also included. Casual employees who work on an irregular basis and who were not paid for the relevant pay period, employees on leave without pay, on strike or stood down without pay for the whole of the pay period are excluded.

Opening inventories (formerly called opening stocks) The value of all inventories of finished goods, work-in-progress, raw materials, fuels, containers and packaging as at the start of the financial year. Businesses are asked to value their inventories for statistical purposes using the same method as used in their balance sheets.

Operating income The total income of a business net of discounts allowed and excluding extraordinary items and sales taxes and excise collected on behalf of governments.

Operating profit before tax (OPBT) Operating profit before tax: a measure of profit before extraordinary items are brought into account and prior to the deduction of income tax and appropriations to owners (e.g. dividends paid).

Other environmental protection activities Includes measures to protect the environment from radiation; protection of soil and groundwater and measures to protect native plants, animals and habitats.

Other operating expenses For the purposes of this publication, comprises bad and doubtful debts, computer software expenses not capitalised by businesses, insurance premiums (except workers' compensation and compulsory third party motor vehicle insurance premiums), land rates and taxes, mineral/petroleum exploration expenses not capitalised by businesses and natural resource royalties expenses.

Some expenses incurred by businesses are ignored for the purposes of calculating the economic and accounting variables presented in this publication. These excluded expenses are abnormal expenses, capitalised expenses, income tax and other direct taxes, sales taxes and excise payable to Governments, capital repayments or losses on asset sales, dividends, donations or foreign exchange losses.

Other operating income Includes government funding for operational costs, income from natural resource royalties, interest income and dividends received. It also includes asset revaluations and profits and losses on sales of fixed tangible assets and profits and losses from foreign exchange value fluctuations. As losses on certain types of transactions and asset writedowns are included, it is feasible for negative values to exceed positive values and thus for other operating income to be negative.

However, unrealised gains or losses and extraordinary profits or losses are not included. It would exclude for example profits or losses associated with the sale of a segment of the business or goodwill revaluations.

Own account capital work Capitalised work done by the employees or proprietors of an establishment for use by the business or for rental or lease to other businesses. The main types of work are manufacturing, constructing, installing or repairing assets and development of computer software. This work is valued at the capitalised costs of the materials and the wages and salaries involved.

Conceptually, this item should also include own account mineral exploration and own account production of literary, entertainment or artistic originals. However, these activities are relatively unimportant for manufacturers and have not been measured for manufacturing industries.

Part-time employees Permanent, temporary and casual employees who are not classified as full-time employees as defined.

Petajoule Physical measure of energy use. Equals 10^{15} joules.

Profit margin The percentage of operating income available as operating profit, i.e. the value of OPBT multiplied by 100 and the result divided by the value of operating income.

Purchases Purchases of materials, components, supplies, consumables, containers, packaging materials, electricity, fuels (except for motor vehicles) and water. It also includes purchases of goods for resale without processing.

Quartiles In identifying quartiles, observations are ranked from largest to smallest (or vice versa) and then divided into four equal sized groupings. The last observation in each grouping is the quartile observation. The second quartile is known as the median.

For example, if there were 1,000 manufacturers in a particular industry, the 1,000 individual observations would be ranked. The 250th observation would be the first quartile, the 500th observation would be the second quartile (median) and the 750th observation would be the third quartile.

Real terms The expression 'in real terms' is used to describe changes which have occurred in the volume of goods or services. It refers either to changes which have been measured in volume terms (e.g. tonnes of steel or dozens of shirts) or have been measured in value terms and then adjusted to remove the effects of price changes.

Research and development 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. Research and development (R&D) activity extends to modifications to existing products/processes. R&D activity ceases and pre-production begins when work is no longer experimental.

Research and development expenditure on waste management and environmental protection Includes wages and salaries of employees engaged in R&D as well as payments made to private businesses for R&D relating to the prevention, reduction or elimination of pollution or any other degradation of the environment.

Return on assets Operating profit before tax as a percentage of the total book value of assets, i.e. the value of OPBT multiplied by 100 and the result divided by the value of total assets.

Return on net worth Operating profit before tax as a percentage of the shareholders' funds, i.e. the value of OPBT multiplied by 100 and the result divided by the value of net worth.

Royalty expenses Payments made by a business for the use of rights owned by another business or person. Included in other operating expenses.

Sales of goods and services Includes sales of goods whether or not manufactured by the business and service income.

Sales and transfers out of goods Includes sales of goods whether or not produced by the business and sales of goods produced for the business on a commission basis (see 'Commission manufacturing'). Also includes transfers of goods to other establishments of the same business or to related businesses and installation and delivery charges not separately invoiced to customers. Sales are valued net of discounts given and exclusive of excise, sales tax and duties receivable on behalf of the Government. Exports are valued f.o.b. (export freight charges are excluded). Transfers to other establishments of the same business are valued at commercial value (i.e. the value which would have applied had the establishments concerned not been under common ownership).

Sampling error Most of the estimates in this publication are based on information gained from sample surveys. Because the entire population of businesses was not surveyed to obtain these estimates, they are subject to sampling error i.e. the imprecision which arises when a sample of businesses is not perfectly representative of the population of businesses from which the sample was drawn.

Selected expenses Includes payments made for services provided by other businesses (including self-employed persons) such as rent, leasing and hiring of plant, motor vehicles, land and buildings; freight and cartage expenses; office supplies and services; telephone and postage; advertising, accounting and legal services; repairs and maintenance; work performed on a contract, subcontract or commission basis; and charges by government such as rates and motor vehicle registration.

Service income Income received from service activities. Included are income from work done or sales made on a commission basis, agency commissions, income from repair, maintenance or servicing, installation and delivery charges separately invoiced to customers, advertising income and management fees/charges received from related or unrelated businesses. Service income is valued net of discounts given. For periods commencing with 1997–98, under new international standards, rent, leasing and hiring income (except from finance leases) and income from intellectual property royalties have also been classified as service income. Rent, leasing and hiring income is revenue derived from the ownership of land, buildings, vehicles, machinery or equipment, excluding any income from finance leases. For further explanation on the treatment of commission manufacturing activities see 'Commission manufacturing'.

Trading profit A measure of profit directly attributable to trading in goods and services. It is derived by deducting the cost of sales from sales of goods and services.

Transfers between establishments of the same business Transfers of goods between establishments owned and operated by the same business are valued, for statistical purposes, at prices commensurate with the prices which would have been received if the establishments concerned had been under separate ownership, that is, at commercial selling price.

Turnover Turnover comprises sales (exclusive of excise and sales tax) of goods whether or not produced by the establishment and transfers of goods to other establishments of the same business, service income, funding from governments for operational costs and own account capital work. Definitions of the various component items appear in this Glossary.

There are some conceptual differences between turnover as estimated in this publication and turnover as defined by the new international standards. These differences are explained as part of the definition of the component item 'Own account capital work'. Full compliance with the new standards would make virtually no difference to estimates of turnover.

Readers should note that the above definition of turnover is the definition used to calculate the variable 'Industry value added'. A slightly different definition of turnover was used prior to 1997–98 to calculate the now superseded variable 'Industry gross product'. This earlier definition excluded income from intellectual property royalties and the value of computer software developed in-house for use by the business or for rental or lease to other businesses.

A significant proportion of the commodities manufactured by some industries is manufactured on commission for non-manufacturing businesses from materials owned and supplied by those non-manufacturing businesses. In these circumstances, the manufacturing turnover figures do not reflect the gross value of those commodities but only the commission earned relating to them (see 'Commission manufacturing' for further details).

Unemployed Persons aged 15 and over who were not employed during the reference week, and:

- had actively looked for full-time or part-time work at any time in the four weeks up to the end of the reference week; and
- were available for work in the reference week, or would have been available except for temporary illness (i.e. lasting for less than four weeks to the end of the reference week); or
- were waiting to start a new job within four weeks from the end of the reference week and would have started in the reference week if the job had been available then; or
- were waiting to be called back to a full-time or part-time job from which they had been stood down without pay for less than four weeks up to the end of the reference week (including the whole of the reference week) for reasons other than bad weather or plant breakdown.

Unemployed persons classified by industry and occupation Unemployed persons who had worked full time for two weeks or more in the last two years are classified according to the industry and occupation of their most recent full-time job.

Volume measures See 'Chain volume measures'.

Wages and salaries The gross wages and salaries (including capitalised wages and salaries) of all employees of the establishment. The item includes severance, termination and redundancy payments, but excludes reimbursements or allowances to employees for travel, entertainment, etc. For the 1995–96 collection, provisions for employee entitlements (e.g. provisions for annual leave and leave bonus, long service leave, sick leave and severance, termination and redundancy payments) are excluded. The drawings of working proprietors are also excluded.

Wages and salaries to turnover ratio The wages and salaries paid by manufacturing establishments which operated during the year ended 30 June as a proportion of the turnover of manufacturing establishments which operated during the same year.

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Where ABS time series data has been presented in tables, only the latest edition of the product used to extract the data is listed as source material and in the references below. Earlier editions of the product are available from ABS libraries and selected other libraries. Only the last publication issued and used in this publication has been sourced. Time series information is available from previous issues.

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