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Australian Bureau of Statistics

MANUFACTURING

AUSTRALIA

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CONTENTS

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NOTES

PURPOSE OF THIS PUBLICATION

This publication presents a contemporary picture of Australian manufacturing with emphasis on the 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, international trade and energy use. 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 includes several new articles including an article which broadly describes the evolution of Australian manufacturing during the twentieth century and the general conditions which have influenced the manufacturing industry and a contemporary view of international trade in manufactured goods from the perspective of the Australian Trade Commission.

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Australia as a whole, a range of data about manufacturing in individual States is also available in either published or unpublished form. For further information see the "Unpublished data" section of the Explanatory notes.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.

For information about other ABS statistics and services, please refer to the back of this publication.

Dennis Trewin
Australian Statistician

CHAPTER CONTENTS

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
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, 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:

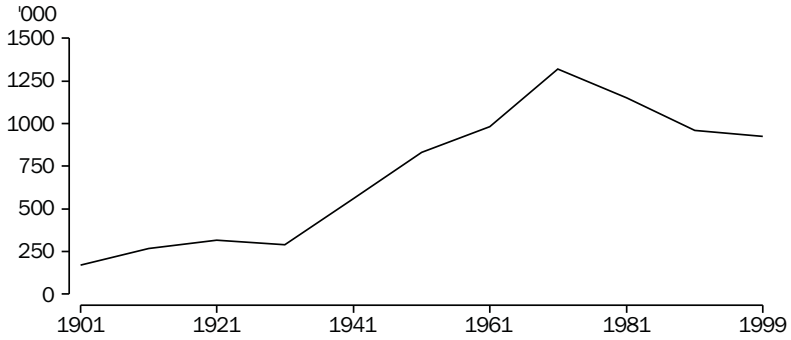
Division	Manufacturing
Subdivision	Metal product manufacturing
Group	Iron and steel manufacturing
Class	Steel pipe and tube manufacturing

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

AUSTRALIAN MANUFACTURING IN THE TWENTIETH CENTURY

Note: Prior to Federation in 1901, statistics were not generally compiled on a consistent basis across the various Australian colonies and a statistical picture of the national manufacturing industry for that period cannot be presented with any confidence. However, from 1901, statistics have been compiled on a consistent basis across States. Statistics on the manufacturing industry were compiled on two distinct bases over the twentieth century. To facilitate broad comparisons, estimates in graph 1.1 have been adjusted to bring them to approximately the same basis. For more information, see *Historic data* in the Glossary.

1.1 MANUFACTURING EMPLOYMENT(a)



(a) Adjusted to bring series to approximately common basis.

Source: Year Book Australia—Various issues.

Before Federation

The first Australian factories were based on the waterfront (mainly repairing visiting vessels), brick making (there was an operational kiln as early as the middle of 1788), making candles, brewing beer and making bread and biscuits. However, very little other manufacturing activity took place prior to the gold rushes of the 1850s. The industrialisation of the late 19th century led to an expansion into the fringe suburbs of the main coastal settlements, creating thousands of new jobs for boilermakers, engineers, iron founders and brickmakers. The decline in goldfields activity had left many immigrants unemployed and, as was said, "threw them into" the newly industrialised workforce and suburbs. At the end of the century, despite rapid industrialisation the manufacturing sector was still dominated by many smaller factories. Even in Victoria, the most industrialised colony, factories of more than fifty employees drew only half of the registered workforce. The older trades in small workshops, such as saddlemaking, coachbuilding and dressmaking, still outnumbered the new, expanding engineering trades encouraged by the burgeoning tram and railways industries.

Federation to World War II

Federation and the dismantling of the tariffs which had applied to trade between the colonies allowed the manufacturing sector to trade and prosper across the nation. Total employment in the sector rose from 190,000 in 1903 to 328,000 in 1913. However, the industry remained relatively small, contributing only 13% of Australian GDP in 1911. International tariffs allowed the sector to grow more strongly as did the requirements of World War I. National population policies after the war depended on the steady growth of the manufacturing sector, under the protection of tariffs. The sector facilitated high rates of post-war immigration at a time when Australian rural export industries were shedding labour. The Newcastle Steelworks were opened during the war and hastened the growth and diversification of metal-working industries.

By 1929, 440,000 people were employed in Australian manufacturing. The previously dominant clothing and textiles industry had experienced a relative decline in employment, while the metals and machinery industry emerged as a major contributor to both employment and production. In particular, the new motor vehicle industry of the 1920s strengthened this sector. With Holden already well established, Ford soon followed with a large motor body assembly plant in Geelong, in response to the growing demand for motor cars.

Federation to World War II
continued

While employment had increased rapidly in the early years following federation, the great depression had a devastating effect on national employment. The 440,000 persons employed in 1929 had plummeted to 339,000 by 1931. Longer term trends were also affected. Between 1901 and the start of the depression, manufacturing's total employment had increased almost threefold but the rate of increase then declined to 1.8 times between the late 1920s and late 1940s. While all Australian industries were affected, by the depression, the effect was particularly marked in the manufacturing industry, its share of total employment falling from 22% in 1921 to 18% in 1931. However, manufacturing also led the recovery out of depression, in particular when demand for the industry's output was boosted by the requirements of World War II. By 1940–41 manufacturing accounted for 25% of total employment, the largest of any industry, having overtaken even the agriculture industry's share.

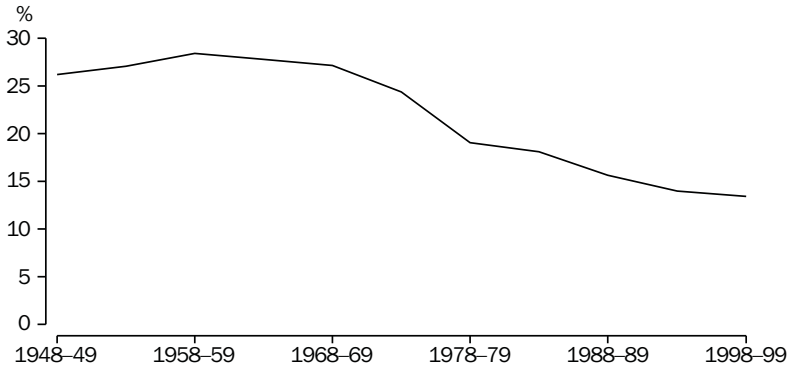
The 1940s surge in the relative importance of manufacturing coincided with periods of significant structural change in the sector. Traditional areas such as food processing, wood working and clothing gave way to the more industrially advanced areas of metals and engineering, and chemicals. World War II provided fertile ground for the development and expansion of key industries for the production of munitions, ships, aircraft, machinery and chemicals. Indeed World War II could well be thought of as marking the industrialisation of Australia. Although mass production of food, textiles, clothing and footwear was already well established, the war gave great impetus to heavy industry, chemicals and specialised engineering. In particular, the outbreak of war with Japan and Australian responsibility for supplies in the south-west Pacific aided greatly the development of the sector, and it outstripped all previous levels.

Although World War II saw a peak in female participation in the manufacturing sector, there has been surprisingly little change in the relative participation rates of women in manufacturing in the 20th century. In 1901 female workers constituted 22% of the entire sector. While this proportion peaked during World War II at 30%, women had in fact already gained a share of 28% during World War I and the Depression. Today women make up 27% of the manufacturing work force and still predominate in the footwear, clothing and textiles industry. World War II did, however, contribute to a sharp fall in unemployment numbers, in developing the manufacturing sector and, of course, in the enlistment of men and women from the labour force into armed service. As well, the resultant skills acquisition and strategic development of industry, together with the rapid diversification of scientific and technical knowledge, established a sound basis for the expansion and growth in the post-war era.

After World War II

The Australian national accounts show that the manufacturing industry's share of national GDP rose slowly from 26% in 1948–49 to a peak of 29% around 1960, fell very slowly through the 1960s and then began the more rapid decline to its present levels around 13% (graph 1.2). However, the decline in industry's share of GDP does not mean that the industry has been shrinking, simply that it has been growing less rapidly than the economy as a whole and in particular the service industries.

1.2 MANUFACTURING SHARE OF GDP



Source: Australian System of National Accounts (Cat. no. 5204.0).

The 1950s and 1960s proved to be high growth decades for the manufacturing industry. Growth rates in manufacturing output per person employed had varied from 1.0 to 1.3% per annum over the period from Federation to World War II (excluding the decline years of the great depression). During the 1950s and 60s, however, growth rose dramatically to an average of 4.3% per annum. Over this period the expansion of manufacturing productivity per annum was 11% higher than in the agricultural sector and almost double that of the economy as a whole. The entire economy was expanding, fuelled by large scale immigration and technical and scientific innovation, as well as the increasing availability of raw materials after protracted wartime shortages. With manufacturing seen as vital for national development, the pre-war protective tariff remained, and import licensing restrictions and controls were retained until 1960. As a result, by the beginning of the 1960s manufacturing's share of GDP and employment had reached historic heights.

Increased national income and population drove the demand for consumer goods. The white goods industry grew rapidly after World War II, and by 1950 the first large scale production of Australian motor vehicles had begun. The development of the motor vehicle industry created further demands for steel, gas, plastics and rubber. In 1960 one person in 16 of the entire Australian workforce was employed in the manufacture, distribution or servicing of this industry.

After World War II *continued*

Traditional industries such as food, clothing, sawmilling and wood products continued to decline, in both production and employment. In contrast, the more capital intensive industries such as electrical goods, chemicals and industrial metals steadily increased in size. For example, employment in the metals and engineering industry, as a proportion of total manufacturing employment, had increased to 48% by 1968, reflecting its centrality to the Australian industrialisation process. This increase was matched by a steady decline in the relative importance of food processing, woodworking and textiles and clothing. As well, demand for other consumer and producer goods in the 1960s provided a challenge for the development of Australian electronic industries.

During this period the structural changes to the sector were significant, but not so great as to fully ensure Australia's relative competitiveness, particularly during the 1960s. By this time the rapid growth afforded by the domestic market in the 1950s had ended and, although manufacturing exports increased, the rate of growth was small and compared poorly with that in other developed countries.

By the 1970s the world economic environment had changed dramatically. The 'stagflation' of the Australian economy reflected the greater world recession, triggered by oil price rises in 1973–74. In Australia, both the manufacturing and rural sectors experienced substantial decline in employment levels between 1973 and 1980, by 80,000 and 15,000 respectively. Manufacturing fared worst of all sectors, its share of employment falling from 25% in 1970 to 18% in 1985. As well its proportion of total GDP fell from a high of 29% in 1960 to 18% in 1985. Throughout this period Australia's international competitiveness was affected by both external and domestic issues. Increasing competition from newly industrialised Asian nations and fluctuating exchange rates, together with domestic workforce developments, led to dramatic change in the Australian workforce and production across all sectors, and manufacturing in particular.

In 1947 Australia had 2.2 million people in paid work. By 1980 this figure had risen to 6.6 million. While the country's population had doubled, its workforce had trebled, even though young people were remaining in education longer, and workers were retiring earlier. Women and migrant workers fuelled the employment explosion. The campaign for equal pay and sharp rises in all real wage costs caused a squeeze from rapidly escalating costs and intensified import competition. Tariff cuts in particular compounded the problem and, accordingly, import quotas were imposed on those goods most affected by competitive external producers. The clothing industry, for example, was in sharp decline after its peak in 1971, and this industry, along with the textiles, footwear and white goods industries, was the subject of quantitative import restrictions.

After World War II *continued*

Despite significant rationalisation, manufacturing responded to economic recovery in the 1980s more slowly than other sectors. In 1982 a difficult period for heavy industry was signalled by an announcement of the impending loss of 2,500 jobs in the Port Kembla steelworks. Meanwhile, at Whyalla in South Australia, BHP had closed its shipbuilding works in 1978, forced out of business, it was argued, by foreign competition. By the 1980s most manufacturing industries were adopting various forms of automation, especially for 'pick and place' tasks such as the loading and unloading of die-cast machines, spot welding, molten metal pouring and forging. For example, by 1980 production in the clay brick industry was 80% automated. 'Numerical control', involving the use of computer technology for improving the capability of machine tools, which had been used in the 1960s for the production of complex parts, was being applied by 1980 to more simple machinery tasks. Such automation was welcomed by manufacturers pressed by rising labour costs and vigorous import competition. However, in the 1980s Australia was already a 'post-industrial' society, in which manufacturing had come to account for a declining proportion of employment, and in which most net growth in employment occurred in service industries.

By 1988–89, manufacturing turnover was largest in the food, beverages and tobacco industry, which also employed the greatest number of workers in the sector. Turnover, at $30,757 million, represented 20% of the total for the sector. Despite industrial rationalisation, the basic metal products industry maintained a high share of both turnover and employment; in 1988–89 its turnover was $19,408 million, 13% of the total for the sector. Clothing and footwear, however, had continued to decline, with turnover representing just 4% of the total for the sector.

From 1980 to 1997 manufacturing's contribution to Australia's GDP fell from 17% to 13%. This contrasted markedly with manufacturing's virtually unchanged share (19%) of the US GDP, and the slight increase in Japan—from 25% to 27%—over the same period. In fact, the contribution of manufacturing to the GDP of all industrialised countries fell by only 2%, from 24% in 1980 to 22% in 1997.

Consistent with world trends, Australian manufacturing became increasingly export oriented throughout the 1980s and 1990s. In 1984–85 some 16% of the sales of manufacturing firms were to overseas markets. By 1997–98 this figure had risen to 26%. Import penetration of Australian markets increased more slowly over the same period, from 26% in 1984–85 to 36% by 1997–98. Australia's products featured competitively only in certain industries. In 1997 Australia ranked fifth for share of world value of non-ferrous metals, yet contributed only 4% of world supply. This share had remained relatively constant since 1985. In the supply of metal products Australia fell in world ranking from 10th to 12th in the same period, though its share of world supply remained unchanged.

After World War II *continued*

In food products, Australia's world ranking has remained at 12th, its share also remaining constant at 1.6%. In wearing apparel Australia's competitiveness has declined; in 1985 Australia ranked 14th, contributing 1.3% of production. However since 1995 Australia has not featured in the top 15 producers of wearing apparel.

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".

Manufacturing contributed more to Australian production in 1998–99 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 1.3.

Over the five year period to 1998–99, manufacturing's share of national production fell from 13.9% to 13.4%. However, this does not mean that production fell in absolute terms (see the article on Production levels which follows this article). Rather, the fall in share simply means that manufacturing production did not grow as quickly as production for some other industries, in particular some service industries. Industries which most notably increased their share of national production over the period were Construction (which increased its contribution from 5.4% to 6.6%) and Property and business services (from 9.8% to 11%).

1.3 INDUSTRY SHARES OF TOTAL PRODUCTION—1998–99

	NSW	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
Industry	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*
Agriculture, forestry and fishing	2.5	2.9	4.1	5.8	4.0	6.1	3.8	0.1	3.3
Mining and services to mining	1.7	2.1	5.2	2.3	17.4	2.0	13.8	0.0	4.2
Manufacturing	**13.4**	**16.6**	**11.1**	**17.1**	**9.9**	**14.7**	**4.3**	**1.7**	**13.4**
Electricity, gas and water supply	2.2	2.2	2.5	3.5	2.7	5.2	1.6	2.1	2.5
Construction	6.7	5.7	7.2	5.6	8.0	5.4	6.8	6.0	6.6
Wholesale trade	5.7	6.2	5.9	4.5	4.7	3.9	3.1	2.1	5.5
Retail trade	5.7	5.7	7.3	6.2	5.5	7.4	6.1	4.7	6.0
Accommodation, cafes and restaurants	2.6	1.7	3.2	2.3	1.7	2.6	3.3	2.2	2.3
Transport and storage	5.4	5.1	6.2	5.3	5.3	4.5	5.7	3.2	5.4
Communication services	3.1	3.4	3.2	2.7	2.8	2.8	3.4	2.8	3.1
Finance and insurance	7.7	7.6	4.8	5.0	4.1	4.8	3.0	3.3	6.4
Property and business services	12.8	11.7	8.7	8.5	9.3	4.8	9.3	11.3	11.0
Government administration and defence	3.4	2.9	4.2	3.3	2.6	5.5	8.4	29.8	4.0
Education	4.2	4.9	4.7	5.0	3.7	5.4	5.9	6.0	4.5
Health and community services	5.5	6.4	6.4	7.5	6.0	8.6	6.6	5.5	6.1
Cultural and recreational services	1.9	2.2	1.7	1.7	1.6	1.5	3.2	2.9	2.0
Personal and other services	2.2	2.3	2.7	2.8	2.3	2.5	3.2	3.6	2.4
Ownership of dwellings	11.1	8.5	8.6	8.6	6.7	8.9	5.9	7.9	9.2
General government	1.9	1.9	2.4	2.4	2.0	3.2	2.5	4.9	2.1

Source: Australian National Accounts: State Accounts, 1998–99 (Cat. no. 5222.0).

States and Territories

Of the industries listed in table 1.3, manufacturing production was the largest component of total 1998–99 production in all States except Western Australia where the Mining industry is much larger than the Manufacturing industry.

In Victoria, South Australia and Tasmania, manufacturing contributed substantially more than the next largest industry while in New South Wales and Queensland the margin between the contribution by manufacturing and the contribution by the next largest industry was markedly less. In Western Australia, the mining industry was the largest contributor to total 1998–99 production, with the next biggest contribution coming from manufacturing. Manufacturing remains a relatively small industry in the two Territories with several industries each contributing more to total Territory production.

Nationally, the manufacturing industry share of total production fell from 13.9% to 13.4% over the 5 years to 1998–99. Changes to the manufacturing industry's share of total State production varied from State to State. Manufacturing's relative contribution to State/Territory production fell in New South Wales (down from 14.4% to 13.4%), Victoria (down from 17.3% to 16.6%) and in the two Territories. For all other States, manufacturing's share of total State production remained virtually the same over the 5 years except in Western Australia where it grew from 9.3% to 9.9%.

TRENDS IN AUSTRALIAN MANUFACTURING—PRODUCTION LEVELS

This next section covers recent trends in the Australian manufacturing industry in three parts. The first presents information on production in real terms, 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 other sections of this publication.

Manufacturing compared to other industries

Table 1.4 shows that in 1998–99, in terms of production volumes, manufacturing continues to be the largest industry in the Australian economy although the Property and business services industry is almost as large and is growing much more rapidly than the manufacturing industry. Table 1.4 also shows growth rates for 1999–2000 and average growth rates for the 10 years to 1999–2000 and the 25 years to 1999–2000.

In terms of rate of growth from 1998–99 to 1999–2000, manufacturing ranked twelfth of the seventeen industries listed with a rate that was well below the all industries growth rate of 4.2%. Over the 10 year period 1989–90 to 1999–2000, the Manufacturing industry experienced an average growth rate of 1.6% per annum which was the lowest of all industries except for Government administration and defence.

Manufacturing compared to other industries *continued*

The Manufacturing average growth rate was less than half of the all industries rate and less than one sixth of the rate of the fastest growing industry (communication services). Taking a longer term view over the 25 years from 1974–75 to 1999–2000, gives a very similar picture with the manufacturing average growth rate of 1.7% per annum being the lowest of all industries at around half that of all industries and less than one-quarter that of the Communication services industry.

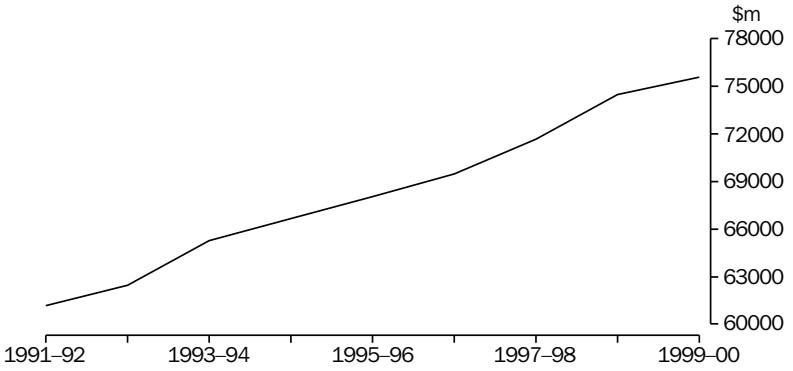
1.4 PRODUCTION VOLUMES

Industry	*1998–99* $ billion	*1999–2000* $ billion	*Change from 1998–99 to 1999–2000* %	*Average annual change from 1989–90 to 1999–2000* %	*Average annual change from 1974–75 to 1999–2000* %
Agriculture, forestry and fishing	18 052	19 005	5.3	3.2	2.7
Mining and services to mining	23 843	26 183	9.8	4.1	4.2
Manufacturing	**74 460**	**75 560**	**1.5**	**1.6**	**1.7**
Electricity, gas and water supply	11 000	11 314	2.9	2.0	3.5
Construction	33 738	34 434	2.1	3.1	2.9
Wholesale trade	32 116	33 942	5.7	3.5	2.5
Retail trade	31 840	32 737	2.8	3.2	2.8
Accommodation, cafes and restaurants	11 853	12 692	7.1	3.4	2.7
Transport and storage	33 374	34 510	3.4	3.5	3.8
Communication services	17 141	19 549	14.0	10.1	8.1
Finance and insurance	37 777	41 451	9.7	4.9	5.1
Property and business services	67 574	72 938	7.9	5.2	5.0
Government administration and defence	22 759	22 702	–0.3	1.5	2.1
Education	26 551	26 294	–1.0	2.3	3.5
Health and community services	33 169	32 771	–1.2	2.1	3.4
Cultural and recreational services	9 974	10 097	1.2	2.6	3.3
Personal and other services	13 031	13 225	1.5	2.1	2.3
All industries	498 252	519 404	4.2	3.3	3.3

(a) At 1998–99 prices.

Source: Australian National Accounts: National Income, Expenditure and Product, June Quarter 2000 (Cat. no. 5206.0).

1.5 MANUFACTURING PRODUCTION



Source: National Income, Expenditure and Product, June Quarter 2000 (Cat. no. 5206.0).

Manufacturing production growth

As shown by graph 1.5, manufacturing production has grown steadily since 1991–92 to a level in 1999–2000 which was 23.5% higher than it had been in 1991–92. On a per capita basis (i.e. per head of resident population) manufacturing production increased by around 13% over the same period.

1.6 PRODUCTION VOLUMES(a)

Industry	*1998–99* *$ billion*	*1999–2000* *$ billion*	*Change from 1998–99 to 1999–2000* *%*	*Average annual change from 1989–90 to 1999–2000* *%*
Food, beverage and tobacco mfg	14 109	14 823	5.1	2.8
Textile, clothing, footwear and leather mfg	3 257	2 831	–13.1	–3.0
Wood and paper product mfg	5 075	5 597	10.3	2.3
Printing, publishing and recorded media	6 719	7 478	11.3	2.6
Petroleum, coal, chemical and associated product mfg	10 679	10 209	–4.4	1.7
Non-metallic mineral product mfg	3 122	2 849	–8.7	–0.9
Metal product mfg	13 482	13 095	–2.9	1.2
Machinery and equipment mfg	15 326	16 264	6.1	2.4
Other mfg	2 687	2 413	–10.2	–1.3
Total Mfg	**74 460**	**75 560**	**1.5**	**1.6**

(a) At 1998–99 prices.

Source: Australian National Accounts: National Income, Expenditure and Product, June Quarter 2000 (Cat. no. 5206.0).

Production by manufacturing subdivisions

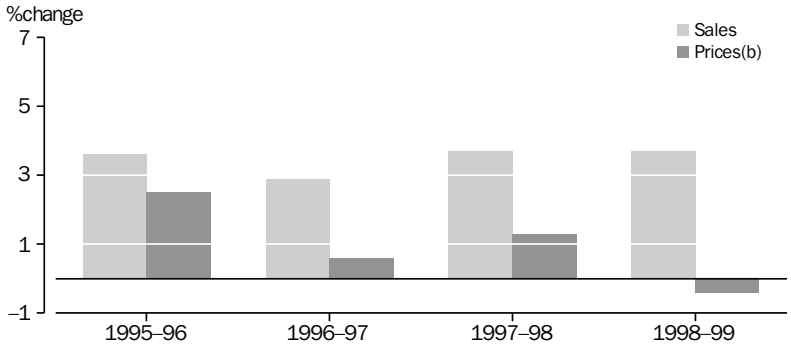
Table 1.6 shows that manufacturing subdivisions experienced a variety of growth/decline rates from 1998–99 to 1999–2000 ranging from the falls in production recorded for the Textile, clothing, footwear and leather manufacturing industry (down 13.1%) and three other industries to the 11.3% increase experienced by the Printing, publishing and recorded media industry. Though less volatile, average growth rates over the 10 years 1989–90 to 1999–2000 also showed inconsistency, ranging from the 3.0% per annum average decrease experienced by the Textile, clothing, footwear and leather manufacturing industry to the 2.8% per annum average increase in production recorded for the Food, beverage and tobacco manufacturing industry.

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 1999–2000 with an average rate of shrinkage of 1.3% per annum. Highest average growth rate among manufacturing subdivisions over the same period was 3.1% for Printing, publishing and recorded media. The remainder all fell into a band from 2.1% for Food, beverage and tobacco manufacturing down to 0.3% for Non-metallic mineral product manufacturing.

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 carried only a minimal effect on comparability of estimates for 1997–98 and later years with those for earlier years.

As graph 1.7 shows, manufacturers sales of goods and services in current prices have grown each year and have grown at a faster rate than the general level of prices of manufactured goods which implies that sales volumes have also increased each year.

1.7 MANUFACTURING—ANNUAL CHANGE(a)



(a) Percentage change from previous year.
(b) Prices of articles produced by manufacturers.

Table 1.8 provides an industry breakdown.

1.8 SALES OF GOODS AND SERVICES(a)

	1995–96	*1996–97*	*1997–98*	*1998— 99*
Industry	*$m*	*$m*	*$m*	*$m*
Food, beverage and tobacco mfg	44 350	45 711	49 200	51 729
Textile, clothing, footwear and leather mfg	9 921	10 288	10 601	10 067
Wood and paper product mfg	11 845	11 890	12 796	14 436
Printing, publishing and recorded media	13 685	14 893	15 342	16 043
Petroleum, coal, chemical and associated product mfg	35 448	37 492	37 913	36 870
Non-metallic mineral product mfg	9 524	9 832	10 364	10 841
Metal product mfg	35 325	34 561	34 749	36 192
Machinery and equipment mfg	41 564	42 398	43 645	46 526
Other mfg	5 700	6 264	6 528	6 722
Total mfg	**207 363**	**213 330**	**221 138**	**229 426**

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

Trends in the Australian manufacturing—sales of goods and services *continued*

Between 1997–98 and 1998–99, sales of goods and services by the manufacturing industry grew (by 3.7%) while average prices fell by 0.2%, implying growth in the volume of goods and services produced of around 4.0%. All but two manufacturing subdivisions increased the value of their sales of goods and services over this period. Textile, clothing, footwear and leather manufacturing recorded a 5.0% decrease in sales of goods and services and Petroleum, coal, chemical and associated product manufacturing recorded a 2.8% decrease. Wood and paper product manufacturing experienced the largest percentage growth (up 12.8%), followed by machinery and equipment manufacturing (up 6.6%).

Of the industries which grew over this period, Other manufacturing grew the least (up 3.0%).

Over the three year period from 1995–96 to 1998–99, sales of goods and services by manufacturing businesses grew from $207,363 million to $229,426 million (up 10.6%). 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 almost 6% over that period.

Between 1995–96 and 1998–99, all manufacturing subdivisions increased their sales of goods and services. The largest percentage growth rates were recorded by Wood and paper product manufacturing (up 21.9%), Other manufacturing (up 17.9%) and Printing, publishing and recorded media (up 17.2%). The least growth over the same period was by Textiles, clothing, footwear and leather manufacturing (up 1.5%).

ANALYSIS BY SIZE OF BUSINESS

This article presents information on the performance of Australian manufacturing businesses classified by business size with small businesses, medium sized businesses and large businesses being analysed separately. Information presented in this article excludes operations by non employing businesses (i.e. unincorporated businesses where the only persons employed by the business are proprietors or partners of the business).

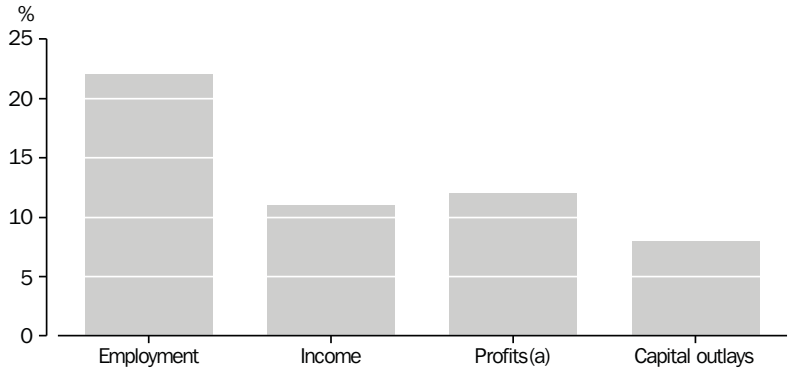
Employing businesses have been classified as small, medium sized or large according to the number of persons employed by the business at 30 June 1999. Businesses employing fewer than 20 persons have been classified as small businesses, those employing at least 20 but less than 100 persons have been classified as medium sized and those employing at least 100 persons have been classified as large. In a small number of cases, businesses which had low 30 June employment but operated on a large scale during 1998–99 have been re-classified as large businesses. These re-classifications mostly related to participants in unincorporated joint ventures in the Metal product manufacturing industry.

Further information about business performance is contained in chapter 2 of this publication.

Share of industry activity

Small businesses make up around 85% of employing manufacturing businesses but as graph 1.9 shows, their share of economic activity is much less.

1.9 SMALL BUSINESS—SHARE OF MANUFACTURING ACTIVITY



(a) Operating profit before tax.

In six of the nine manufacturing subdivisions, small businesses contribute 20% or more of industry employment although their share of income, profits and capital outlays is generally less than their employment share. As table 1.10 shows, the other manufacturing industry has a relatively high contribution by small businesses with 50% of industry profits coming from small businesses.

1.10 SMALL BUSINESS SHARES OF INDUSTRY ACTIVITY—1998–99

Industry	*Persons employed at 30 June* %	*Operating income* %	*Operating profit before tax(a)* %	*Capital outlays* %
Food, beverage and tobacco mfg	9	4	5	7
Textile, clothing, footwear and leather mfg	26	20	37	22
Wood and paper product mfg	32	14	11	8
Printing, publishing and recorded media	29	17	17	12
Petroleum, coal, chemical and associated product mfg	15	6	8	5
Non-metallic mineral product mfg	18	7	5	4
Metal product mfg	26	12	12	4
Machinery and equipment mfg	20	11	19	9
Other mfg	56	44	50	41
Total mfg	**22**	**11**	**12**	**8**

(a) Many small manufacturing businesses are unincorporated and this affects the apparent profit share relative to medium and large businesses. See the explanation below under "Profitability".

Income statement

In 1998–99 small manufacturing businesses employed 218,000 people, generated $24.6 billion in income and $1.4 billion in profits and outlayed $841 million on new capital items. Operating income for small manufacturing businesses in total was 1.6% higher than for 1997–98 income but profits were down 6.3%.

1.11 INCOME STATEMENT FOR SMALL BUSINESSES—1998–99

Industry	*Operating income* $m	*Cost of sales* $m	*Labour costs* $m	*Depreciation* $m	*Interest expenses* $m	*Other operating expenses* $m	*Operating profit before tax* $m
Food, beverage and tobacco mfg	2 241	1 580	381	65	38	31	146
Textile, clothing, footwear and leather mfg	2 027	1 411	425	32	24	17	117
Wood and paper product mfg	2 045	1 280	541	36	23	45	120
Printing, publishing and recorded media	2 842	1 639	877	87	35	52	152
Petroleum, coal, chemical and associated product mfg	2 070	1 381	451	42	19	28	149
Non-metallic mineral product mfg	797	521	191	21	9	10	45
Metal product mfg	4 523	2 911	1 166	79	56	46	267
Machinery and equipment mfg	5 094	3 311	1 276	100	59	68	279
Other mfg	2 976	1 858	838	43	41	67	128
Total mfg	**24 614**	**15 893**	**6 145**	**506**	**304**	**364**	**1 403**

Profitability

This section presents information on the profitability of small manufacturing businesses as measured in the annual manufacturing survey. When making comparisons between the profitability of small manufacturing businesses and the profitability of other manufacturing businesses, readers should note that the types of legal organisation involved will affect the profit margins of small businesses relative to those of other businesses. The effect stems from the compensation paid to the managers of incorporated businesses in the form of wages and salaries (these are included in the statistics for labour costs) compared to the compensation received by proprietors and partners of unincorporated businesses (which are taken in the form of drawings from profits and which are not included in the statistics). Because unincorporated businesses constitute a much higher proportion of small businesses than they do of other businesses, the effect on profitability measures is much greater for small businesses.

To allow for this effect, table 1.12 includes, in addition to the recorded profits data, a set of adjusted profit margins which reflects the result which would have occurred had each working proprietor and each working partner of the unincorporated manufacturing businesses been paid the average wage for their industry. The adjusted data shows that had the proprietors of unincorporated manufacturing businesses been paid average industry wages, then the overall profit margin for small manufacturers would have been 3.2% instead of the 5.6% compiled using recorded data. Adjusted profit margins for all small manufacturers in total fall below profit margins for medium sized and large manufacturers whereas their reported profit margins are higher than for other sized manufacturers.

Profits per person employed for 1998–99 (not adjusted) were $6,400 for small manufacturing businesses overall, ranging from a low of $4,100 for the Other manufacturing industry to a high of $9,900 for the Petroleum, coal, chemical and associated product manufacturing industry.

1.12 PROFITABILITY OF SMALL MANUFACTURERS

	1997–98		1998–99		
Industry	*Proportion of businesses making a profit(a)* %	*Industry profit margin(b)* %	*Proportion of businesses making a profit(a)* %	*Industry profit margin(b)* %	*Adjusted industry profit margin(b)(c)* %
Food, beverage and tobacco mfg	70	3.4	76	6.5	4.5
Textile, clothing, footwear and leather mfg	80	5.8	75	5.8	2.8
Wood and paper product mfg	80	5.4	89	5.9	0.9
Printing, publishing and recorded media	77	6.0	64	5.4	3.2
Petroleum, coal, chemical and associated product mfg	78	8.5	72	7.2	6.2
Non-metallic mineral product mfg	77	6.0	69	5.6	1.3
Metal product mfg	82	6.4	82	5.3	2.7
Machinery and equipment mfg	79	5.2	74	5.5	4.0
Other mfg	74	5.2	83	4.3	1.7
Total mfg	**78**	**5.8**	**77**	**5.6**	**3.2**

(a) This statistic is also affected by the exclusion of drawings by working proprietors and partners from the statistics.

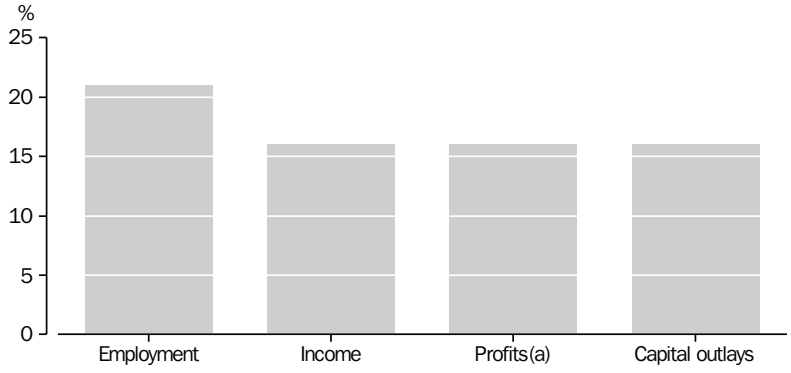
(b) The profit margin is operating profit before tax expressed as a percentage of total operating income.

(c) Results which would have applied had working proprietors and partners of unincorporated businesses received average industry wages (see above).

ANALYSIS BY SIZE OF BUSINESS—MEDIUM SIZED MANUFACTURING BUSINESSES

In total, medium sized manufacturing businesses have a similar share of total manufacturing activity as small manufacturing businesses do. However, their relative levels of activity are indicated by Australia having only about one seventh as many medium sized manufacturing businesses as small manufacturing businesses.

1.13 MEDIUM SIZED BUSINESS—SHARE OF MANUFACTURING ACTIVITY



(a) Operating profit before tax.

Table 1.14 shows the shares of economic activity generated by medium sized businesses in 1998–99.

1.14 MEDIUM SIZED BUSINESS SHARES OF INDUSTRY ACTIVITY—1998–99

Industry	Persons employed at 30 June %	Operating income %	Operating profit before tax(a) %	Capital outlays %
Food, beverage and tobacco mfg	14	12	26	12
Textile, clothing, footwear and leather mfg	35	29	27	29
Wood and paper product mfg	18	15	15	16
Printing, publishing and recorded media	22	19	8	18
Petroleum, coal, chemical and associated product mfg	21	14	16	14
Non-metallic mineral product mfg	20	20	29	21
Metal product mfg	24	17	18	17
Machinery and equipment mfg	20	15	11	15
Other mfg	30	36	60	36
Total mfg	**21**	**16**	**16**	**16**

Income statement

In 1998–99 medium sized manufacturing businesses employed 208,000 people, generated $37.9 billion in income and $1.8 billion in profits and outlayed $1.9 billion on new capital items. Both income and profits for medium sized manufacturing businesses in total were higher than for 1997–98 with income up 14.4% and profits up 6.4%.

1.15 INCOME STATEMENT FOR MEDIUM SIZED BUSINESSES—1998–99

Industry	Operating income $m	Cost of sales $m	Labour costs $m	Depreciation $m	Interest expenses $m	Other operating expenses $m	Operating profit before tax $m
Food, beverage and tobacco mfg	6 452	4 956	896	176	88	86	250
Textile, clothing, footwear and leather mfg	2 988	1 960	793	64	47	29	96
Wood and paper product mfg	2 168	1 562	402	48	21	63	72
Printing, publishing and recorded media	3 127	1 802	850	110	35	67	263
Petroleum, coal, chemical and associated product mfg	5 157	3 620	952	190	97	64	233
Non-metallic mineral product mfg	2 192	1 614	357	86	47	31	57
Metal product mfg	6 348	4 217	1 408	149	57	52	465
Machinery and equipment mfg	6 952	4 726	1 665	175	58	64	264
Other mfg	2 473	1 692	562	44	19	44	113
Total mfg	**37 858**	**26 147**	**7 885**	**1 042**	**469**	**500**	**1 815**

Profitability

Profits per person employed for 1998–99 were $8,700 for medium sized manufacturing businesses overall, ranging from a low of $3,800 for the Textile, clothing, footwear and leather manufacturing industry to a high of $13,000 for the Metal product manufacturing industry.

Table 1.16 presents some general profitability measures for medium sized manufacturers.

1.16 PROFITABILITY OF MEDIUM SIZED MANUFACTURERS

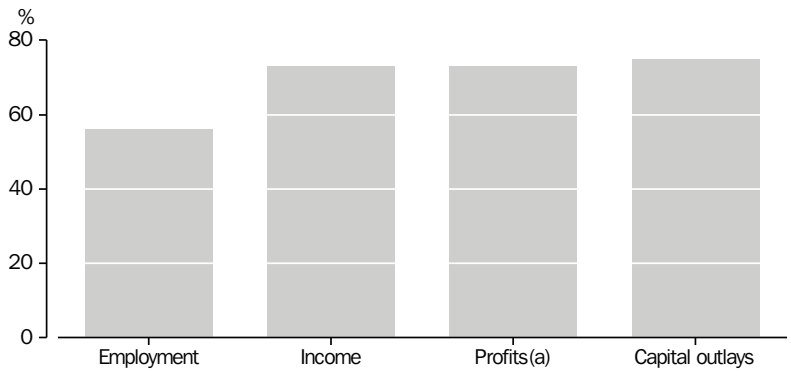
	1997–98		1998–99	
Industry	Proportion of businesses making a profit %	Industry profit margin(a) %	Proportion of businesses making a profit %	Industry profit margin(a) %
Food, beverage and tobacco mfg	87	6.4	73	3.9
Textile, clothing, footwear and leather mfg	71	3.3	79	3.2
Wood and paper product mfg	71	4.3	75	3.3
Printing, publishing and recorded media	79	5.5	79	8.4
Petroleum, coal, chemical and associated product mfg	79	4.7	70	4.5
Non-metallic mineral product mfg	73	2.1	71	2.6
Metal product mfg	84	7.3	76	7.4
Machinery and equipment mfg	75	3.5	81	3.8
Other mfg	84	3.0	84	4.6
Total mfg	**79**	**4.9**	**77**	**4.8**

(a) The profit margin is operating profit before tax expressed as a percentage of total operating income.

ANALYSIS BY SIZE OF BUSINESS—LARGE MANUFACTURING BUSINESSES

Large manufacturing businesses have a major share of manufacturing activity despite their relatively low numbers (only around 3% of manufacturing businesses are large businesses).

1.17 LARGE BUSINESSES—SHARE OF MANUFACTURING ACTIVITY



(a) Operating profit before tax.

Table 1.18 shows the shares of economic activity generated by large businesses in 1998–99.

1.18 LARGE BUSINESS SHARES OF INDUSTRY ACTIVITY—1998–99

Industry	Persons employed at 30 June %	Operating income %	Operating profit before tax(a) %	Capital outlays %
Food, beverage and tobacco mfg	78	84	86	78
Textile, clothing, footwear and leather mfg	39	51	32	60
Wood and paper product mfg	50	71	82	85
Printing, publishing and recorded media	49	64	53	78
Petroleum, coal, chemical and associated product mfg	64	81	78	75
Non-metallic mineral product mfg	62	73	88	81
Metal product mfg	50	69	68	71
Machinery and equipment mfg	60	74	63	79
Other mfg	14	20	7	33
Total mfg	**56**	**73**	**73**	**75**

Income statement

In 1998–99 large manufacturing businesses employed 551,000 people, generated $170 billion in income and $8.2 billion in profits and outlayed $8.4 billion on new capital items. Operating income for large manufacturing businesses in total was higher than for 1997–98 (up 3.2%) but profits fell by 10.7% between the two years.

1.19 INCOME STATEMENT FOR LARGE BUSINESSES—1998–99

Industry	Operating income $m	Cost of sales $m	Labour costs $m	Depreciation $m	Interest expenses $m	Other operating expenses $m	Operating profit before tax $m
Food, beverage and tobacco mfg	44 114	31 977	6 717	1 347	1 366	213	2 494
Textile, clothing, footwear and leather mfg	5 204	3 670	1 144	148	78	62	102
Wood and paper product mfg	10 319	6 807	1 657	432	245	301	877
Printing, publishing and recorded media	10 456	6 317	2 400	392	208	675	465
Petroleum, coal, chemical and associated product mfg	30 068	23 190	3 752	1 094	328	322	1 383
Non-metallic mineral product mfg	8 131	5 226	1 423	449	180	68	784
Metal product mfg	25 755	18 295	4 062	1 194	480	192	1 531
Machinery and equipment mfg	35 110	26 272	6 078	1 083	286	467	924
Other mfg	1 335	1 002	301	n.a.	11	n.a.	18
Total mfg	**170 493**	**122 755**	**27 534**	**6 180**	**3 184**	**2 262**	**8 577**

Profitability

Profits per person employed for 1998–99 were $15,600 for large manufacturing businesses overall, ranging from a low of $2,300 for the Other manufacturing industry to a high of $32,000 for the Non-metallic mineral product manufacturing industry.

Table 1.20 presents some profitability measures for large manufacturers.

1.20 PROFITABILITY OF LARGE MANUFACTURERS

	1997–98		1998–99	
Industry	Proportion of businesses making a profit %	Industry profit margin(a) %	Proportion of businesses making a profit %	Industry profit margin(a) %
Food, beverage and tobacco mfg	77	6.0	81	5.7
Textile, clothing, footwear and leather mfg	71	1.9	71	2.0
Wood and paper product mfg	81	7.1	86	8.5
Printing, publishing and recorded media	80	4.7	78	4.5
Petroleum, coal, chemical and associated product mfg	80	4.7	82	4.6
Non-metallic mineral product mfg	76	8.4	77	9.7
Metal product mfg	83	6.6	72	6.0
Machinery and equipment mfg	73	4.6	68	2.7
Other mfg	76	3.6	62	1.3
Total mfg	**78**	**5.6**	**75**	**5.0**

(a) The profit margin is operating profit before tax expressed as a percentage of total operating income.

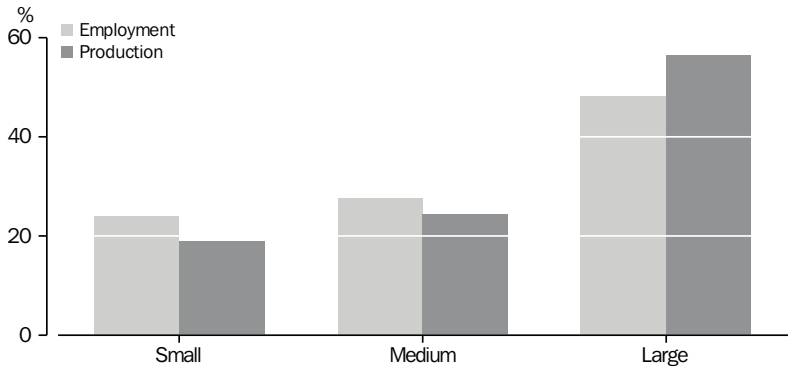
ACTIVITY BY SIZE OF ESTABLISHMENT

While the previous article was based on business size, the statistics in this article 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 1999), and 1998–99 industry value added (IVA) which is a key 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 relatively small number of large manufacturing establishments to dominate the activity levels of their industries. Large manufacturing establishments employed 48.3% of the manufacturing workforce in June 1999 and generated 56.6% of 1998–99 manufacturing IVA. Establishments employing 20–99 people accounted for 27.6% of the manufacturing workforce and generated 24.1% of manufacturing IVA. The remaining 24.1% of the manufacturing workforce and 18.9% of IVA were contributed by a large number of small establishments. Overall value added per person employed was greater in large establishments than in smaller establishments.

1.21 ESTABLISHMENT SIZE DATA—1998–99



Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

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.

1.22 INDUSTRY CONTRIBUTION, BY SIZE OF ESTABLISHMENT—1998–99

	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	10.0	5.7	21.9	17.8	68.1	76.5
Textile, clothing, footwear and leather mfg	31.8	24.1	32.1	33.7	36.1	42.2
Wood and paper product mfg	34.9	17.7	26.3	23.8	38.8	58.5
Printing, publishing and recorded media	28.2	17.6	28.4	26.4	43.4	56.0
Petroleum, coal, chemical and associated product mfg	16.4	11.1	33.5	28.5	50.2	60.5
Non-metallic mineral product mfg	24.3	11.9	31.3	33.3	44.3	54.8
Metal product mfg	27.9	47.0	29.7	26.0	42.4	27.0
Machinery and equipment mfg	20.4	13.3	24.0	19.9	55.6	66.8
Other mfg	53.7	45.7	34.9	40.1	11.4	14.3
Total mfg	**24.1**	**18.9**	**27.6**	**24.5**	**48.3**	**56.6**

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

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 of the variable "industry value added" (see glossary for definition).

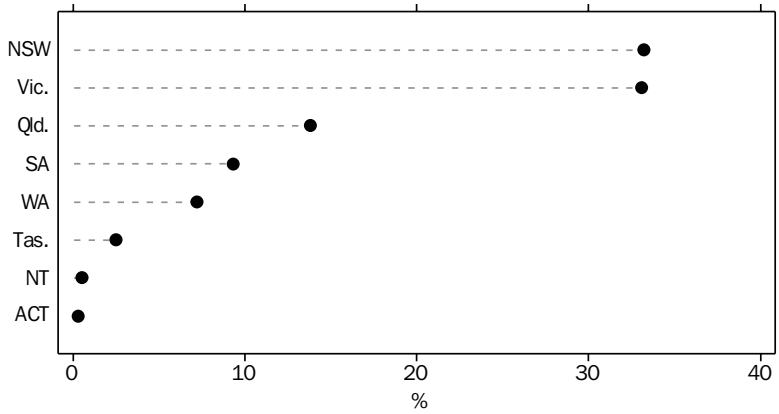
For information about distribution of manufacturing activity within States, readers should consult the 1999 issue of this publication which presents sub-State data from the 1996–97 manufacturing census (the most recent census).

STATES AND TERRITORIES OF AUSTRALIA

Production and employment

Graph 1.23 shows relative contributions to national production by States and Territories in 1998–99. 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, until the mid 1990s New South Wales had consistently been the larger contributor. However in 1996–97, Victoria became the larger contributor to manufacturing turnover and manufacturing production and in 1997–98, Victoria also overtook New South Wales as the larger employer in the manufacturing industry. Differences in manufacturing activity levels of the two States remain small.

1.23 MANUFACTURING PRODUCTION



The State/Territory distribution exhibited by 1998–99 production was broadly similar for persons employed in manufacturing in June 1999 although differences were sufficient to generate some variation in production per person employed as shown by table 1.24. The main causes of difference in the State/Territory relativities in manufacturing overall is the industry mix within the particular State or 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 has relatively high production per person employed.

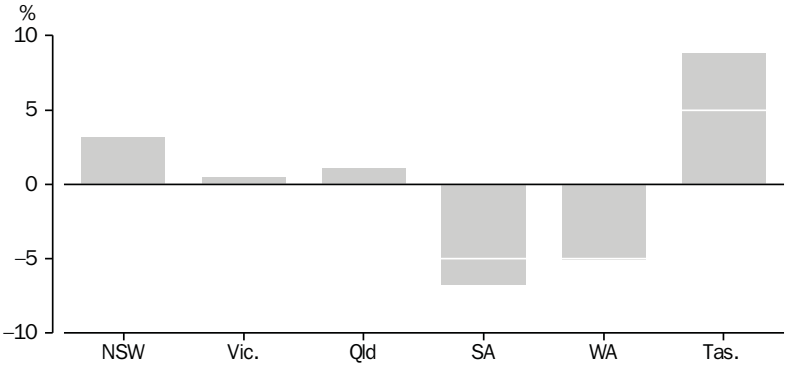
1.24 MANUFACTURING ACTIVITY—1998–99

State and Territory	Employment at end of June '000	Turnover $ billion	Industry value added $ billion	Industry value added per person employed $ '000
New South Wales	297	71.9	22.9	77
Victoria	299	72.0	22.8	76
Queensland	145	32.2	9.5	66
South Australia	83	20.2	6.4	77
Western Australia	73	17.8	5.0	68
Tasmania	20	5.3	1.7	85
Northern Territory	3	0.9	0.3	94
Australian Capital Territory	3	0.6	0.2	67
Australia	**923**	**220.8**	**68.9**	**75**

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

Between 1997–98 and 1998–99 manufacturing production grew in four States (and the Australian Capital Territory) and fell in two States (and the Northern Territory). Largest relative growth for any State was for Tasmania where production of the Food, beverage and tobacco manufacturing industry has increased to the extent that it has replaced Wood and paper product manufacturing as the largest manufacturing industry in Tasmania. The decrease in manufacturing production in South Australia was mainly due to reduced production in the Metal product manufacturing industry and to a lesser extent in the Machinery and equipment manufacturing industry.

1.25 CHANGE IN PRODUCTION—1997–98 TO 1998–99



Source: Manufacturing Industry, Australia (Cat. no. 8221.0).

New South Wales

In 1998–99, New South Wales had marginally lower manufacturing employment (297,000 people) but marginally higher manufacturing production ($22.9 billion) than Victoria and substantially more than any other State or Territory. The largest manufacturing industries within New South Wales are Food, beverage and tobacco manufacturing with 47,700 persons employed and $4.2 billion of production, Metal product manufacturing (51,800 and $4.1 billion) and Machinery and equipment manufacturing (59,500 and $4.0 billion). Largest relative growth in production between 1997–98 and 1998–99 was by Non-metallic mineral product manufacturing (up 27.6%) and the largest relative production decrease was by Textile, clothing, footwear and leather manufacturing (down 7.8%).

Victoria

In 1998–99, Victoria had the highest manufacturing employment (298,700 people) of all States and Territories but marginally lower manufacturing production ($22.8 billion) than New South Wales. The largest manufacturing industries in Victoria were Machinery and equipment manufacturing with 67,100 people employed and $5.4 billion of production, Food, beverage and tobacco manufacturing (47,000 and $4.5 billion) and Petroleum, coal, chemical and associated product manufacturing (35,500 and $3.5 billion). Largest relative growth in production between 1997–98 and 1998–99 was shared by Wood and paper product manufacturing and Non-metallic mineral product manufacturing (each up 13.7%) and the largest relative production decrease was by Metal product manufacturing (down 7.8%).

Queensland

In 1998–99, Queensland continued to be the third largest of the States and Territories in terms of both manufacturing employment (144,600 people) and manufacturing production ($9.5 billion). The largest manufacturing industries within Queensland are Food, beverage and tobacco manufacturing with 37,200 employed and $2.6 billion of production, Metal product manufacturing (26,200 and $1.9 billion), Machinery and equipment manufacturing (23,600 and $1.3 billion) and Petroleum, coal, chemical and associated product manufacturing (12,000 and $1.1 billion). Largest relative growth in production between 1997–98 and 1998–99 was by Wood and paper product manufacturing (up 7.2%) and the largest relative production decrease was by Petroleum, coal, chemical and associated product manufacturing (down 4.5%).

South Australia

In 1998–99, South Australia continued to be the fourth largest of the States and Territories in terms of both manufacturing employment (83,400 people) and manufacturing production ($6.4 billion). The largest manufacturing industries within South Australia are Machinery and equipment manufacturing with 28,500 employed and $2.3 billion of production and Food, beverage and tobacco manufacturing (15,600 and $1.6 billion). Between 1997–98 and 1998–99, production fell for seven of nine manufacturing subdivisions. Of the two subdivisions experiencing growth, largest relative growth was by Food, beverage and tobacco manufacturing (up 7.2%) while the largest relative production decreases were by Textile, clothing, footwear and leather manufacturing (down 35.1%) and Metal product manufacturing (down 26.3%).

Western Australia

In 1998–99, Western Australia was the smallest of the mainland States in terms of both manufacturing employment (72,700 people) and manufacturing production ($5.0 billion) but nevertheless is much larger than Tasmania and the Territories. The largest manufacturing industries within Western Australia are Metal product manufacturing with 16,400 employed and $1.1 billion of production and Food, beverage and tobacco manufacturing (12,900 and $0.8 billion). Largest relative growth in production between 1997–98 and 1998–99 was by Printing, publishing and recorded media (up 17.2%) and the largest relative production decrease was by Metal product manufacturing (down 22.1%).

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 (20,200 people) and manufacturing production ($1.7 billion). The largest manufacturing industries within Tasmania are Food, beverage and tobacco manufacturing with 6,000 employed and $0.5 billion of production and Wood and paper product manufacturing (3,400 and $0.4 billion). Largest relative growth in production between 1997–98 and 1998–99 was by Food, beverage and tobacco manufacturing (up 40.4%) and the largest relative production decrease was by Metal product manufacturing (down 16.5%).

Northern Territory

Manufacturing is not a large industry in the Northern Territory. The industry employed 3,400 people in June 1999 and generated around $320 million of production in 1998–99. Metal product manufacturing was by far the largest industry in the Northern Territory contributing around 40% of manufacturing employment and around 60% of manufacturing production.

Australian Capital Territory

Manufacturing is not a large industry in the Australian Capital Territory. The industry employed 3,300 people in June 1999 and generated around $225 million of production in 1998–99. Printing, publishing and recorded media contributed around 35% of the manufacturing employment and around 40% of manufacturing production.

THE MANUFACTURING WORKFORCE

The next series of articles presents 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.

THE MANUFACTURING WORKFORCE—PERSONS EMPLOYED

Persons employed in the manufacturing industry

In August 2000, the manufacturing industry employed 12.6% 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 2000, the vast majority of males employed in the manufacturing industry (95.1%) were employed full-time. The corresponding proportion for females was considerably lower (74.8%). The proportion of people with full-time jobs in manufacturing has fallen slightly over the past ten years, from 97.1% for males and 75.1% for females.

After adjusting for people working zero hours in the survey week (for example, people on leave for the whole week), average hours worked in the manufacturing industry was the same in August 2000 (40.5 hours) as they had been in August 1990 (40.5 hours). However, some compositional changes have occurred over the ten year period. The largest change has been to the proportion of people working 50 and over hours a week, increasing from 16.1% in 1990 to 19.7% of all employees in August 2000. This change reflects an increase for both male and female workers. The proportion of women working 50 and over hours almost doubled from 5.1% to 9.3%, while the corresponding estimate for males rose from 20.1% to 23.6%. Male workers also recorded an increase in those working less than 30 hours a week, from 5.7% in 1990 to 7.8% in 2000, while persons employed in general for less than 30 hours rose from 10.6% to 12.0% over the ten year period. Falls were recorded in the number of employees recorded working between 30 and 39 hour weeks (down from 31.2% to 28.3%), and between 40 and 49 hour weeks (down from 42.1% to 39.9%).

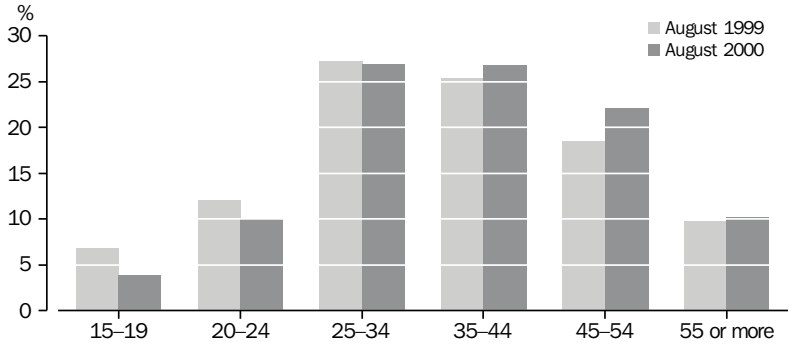
In August 2000, the length of the working week in manufacturing was:

- up to 30 hours for 7.8% of males and 23.5% of females
- 30 but less than 40 hours for 26.4% of males and 33.5% of females
- 40 but less than 50 hours for 42.2% of males and 28.6% of females
- 50 or more hours for 23.6% of males and 9.3% of females.

Age profile

The manufacturing workforce is dominated by those aged between 25–34 and 35–44. These two groups combined make up 53.8% of the workforce, a slightly higher proportion than for industry overall (49.5%). Graph 1.26 shows that over the ten year period from 1990 to 2000, these age groups have recorded the least significant proportional change. However, the younger age groups of 15–19 and 20–24 have shown significant decreases. Workers aged 15–19 have fallen from 6.9% to 3.9% of all manufacturing employees, while those aged 20–24 fell from 12.1% to 10%.

1.26 AGE PROFILE OF MANUFACTURING WORKFORCE



Source: Labour Force, Australia, August 2000 (Cat. no. 6203.0).

Manufacturing industry subdivisions

In August 2000, the largest manufacturing subdivisions in terms of employment were Machinery and equipment manufacturing (21.8% of people employed in manufacturing), Metal product manufacturing (16.9%) and Food, beverage and tobacco manufacturing (15.1%). The largest employers of males were Machinery and equipment manufacturing (23.8%), Metal product manufacturing (20%) and Food, beverage and tobacco manufacturing (13.8%). The largest employers of females were Food, beverage and tobacco manufacturing (18.6%), Textile, clothing, footwear and leather manufacturing (17%) and Machinery and equipment manufacturing (16.4%).

The most highly male dominated industries were Wood and paper product manufacturing (87.3% male) and Metal product manufacturing (86% male). The most highly female dominated manufacturing industry was by far, Textile clothing, footwear and leather manufacturing (60.0% female). This is followed by Printing, publishing and recorded media (39.1% female).

Comparisons with earlier periods are necessarily approximate due to changes in industry classifications used. However, in August 1990, relative industry sizes appear to have been very similar to the current profile (August 2000). Machinery and equipment manufacturing was the largest employer in 1990 (23%) followed by Metal product manufacturing (16.3%) and Food, beverage and tobacco manufacturing (15.5%). The most substantial change is that in 1990, Textile, clothing, footwear and leather manufacturing was relatively, an even larger employer of females (22.7% of all female manufacturing employees).

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

1.27 EMPLOYED PERSONS—AUGUST 2000

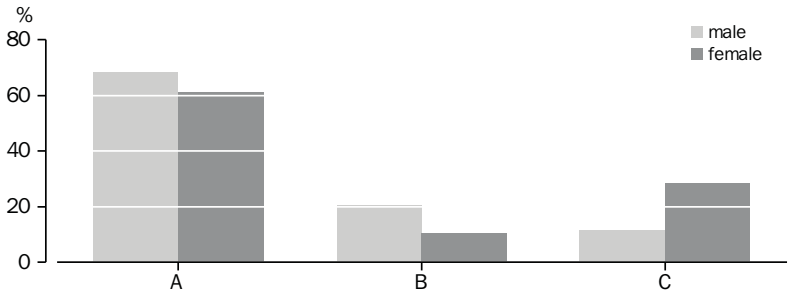
Industry	Males %	Females %	Persons %
Food, beverage and tobacco mfg	13.8	18.6	15.1
Textile, clothing, footwear and leather mfg	4.2	17.0	7.6
Wood and paper product mfg	8.0	3.2	6.7
Printing, publishing and recorded media	9.3	16.2	11.2
Petroleum, coal, chemical and associated product mfg	8.6	12.1	9.5
Non-metallic mineral product mfg	4.6	2.3	4.0
Metal product mfg	20.0	8.7	16.9
Machinery and equipment mfg	23.8	16.4	21.8
Other mfg	7.7	5.4	7.1
Total mfg	**100.0**	**100.0**	**100.0**

Source: Labour Force, Australia, August 2000 (Cat. no. 6203.0).

Australian versus overseas born

At August 2000, 66.4% of people employed in the Australian manufacturing industry were Australian born. The corresponding figure for all civilian industries was 75.6%. This compares to 1990 when 62.5% of manufacturing employees and 73.2% of all civilian employees were Australian born. Of those born overseas 66.9% were born in other than main English speaking countries, similar to 1990 (65.4%). As graph 1.28 shows, of all males employed in the Australian manufacturing industry in August 2000, 68.3% were Australian born. For females, the corresponding proportion was 61.2%.

1.28 EMPLOYED PERSONS MANUFACTURING BIRTHPLACE—AUGUST 2000



A - Born in Australia
B - Born Overseas Main English Speaking Country
C - Born Overseas Other than Main English Speaking Country

Source: Labour Force, Australia, August 2000 (Cat. no. 6203.0).

Australian versus overseas born *continued*

Table 1.29 shows the proportions of the manufacturing workforce according to whether born in Australia or overseas. It shows that in August 2000 just over half (53.3%) of the people employed in the Textile, clothing, footwear and leather manufacturing industry were born outside Australia (55% of males in the industry and 52.3% of females), and that just over one-third (31.4%) of this industry was constituted by female workers born outside Australia. This industry recorded the highest proportion of employees born outside of Australia, as well as the highest proportion of employees born in other than mainly English speaking countries (45.7%). Proportions of those born outside Australia for the other subdivisions were substantially lower, ranging from 21.8% for Food, beverage and tobacco manufacturing to 40.7% for Petroleum, coal, chemical and associated product manufacturing.

1.29 EMPLOYED PERSONS, BY BIRTHPLACE—AUGUST 2000

	Proportion of total persons employed					
	Born in Australia			*Born outside Australia*		
	Males	Females	Persons	Males	Females	Persons
Industry	%	%	%	%	%	%
Food, beverage and tobacco mfg	54.6	23.7	78.2	12.1	9.7	21.8
Textile, clothing, footwear and leather mfg	17.9	28.7	46.7	21.9	31.4	53.3
Wood and paper product mfg	65.6	10.5	76.1	21.5	2.4	23.9
Printing, publishing and recorded media	43.0	26.9	70.0	17.8	12.2	30.0
Petroleum, coal, chemical and associated product mfg	39.6	19.8	59.3	26.2	14.4	40.7
Non-metallic mineral product mfg	58.5	11.7	70.2	25.6	4.2	29.8
Metal product mfg	58.2	9.1	67.3	27.9	4.8	32.7
Machinery and equipment mfg	52.0	11.6	63.6	27.7	8.7	36.4
Other mfg	52.1	8.9	61.0	27.3	11.7	39.0
Total mfg	**49.8**	**16.5**	**66.4**	**23.2**	**10.5**	**33.6**
Total civilian	41.6	33.9	75.6	14.3	10.1	24.4

Source: Labour Force Survey, August 2000; and unpublished data.

THE MANUFACTURING WORKFORCE—PERSONS PREVIOUSLY EMPLOYED

The August 2000 Labour force survey estimated that there were 272,700 people who were unemployed at the time but who had been employed full time at some time during the previous two years. Table 1.30 shows that of these 272,700 people, 50,500 (19%) had been last employed full time in the manufacturing industry. This was the largest number for a single industry, followed by Retail trade (13%) and Construction (12%).

For male ex-full time workers, manufacturing with 38,900 people represented the largest number for a single industry while for female ex-full time workers, manufacturing with 11,600 was smaller in this regard than retail trade.

1.30 UNEMPLOYED PERSONS(a), PREVIOUS INDUSTRY(b)—AUGUST 2000

	Males	*Females*	*Persons*
Industry	*'000*	*'000*	*'000*
Agriculture, forestry and fishing	14.1	4.4	18.5
Manufacturing	**38.9**	**11.6**	**50.5**
Construction	31.9	1.2	33.1
Retail trade	18.7	17.0	35.6
Accommodation, cafes and restaurants	16.3	10.7	27.1
Property and business services	20.3	10.6	30.9
Other services industries	23.4	17.4	40.8
Other industries	27.4	8.8	36.2
All industries	191.0	81.7	272.7

(a) Persons aged 15 or over who were in the workforce in August 2000 but were not employed during the survey week.

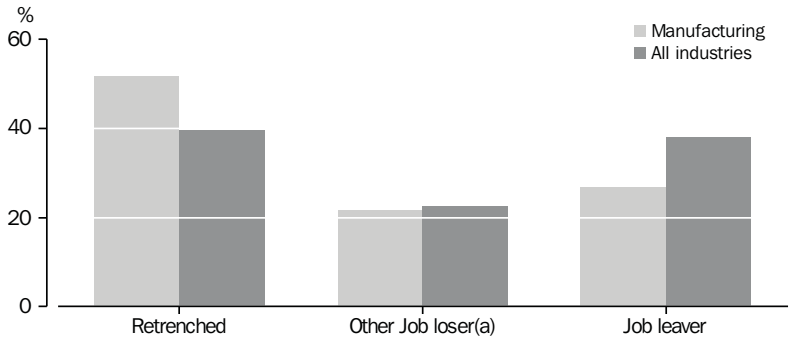
(b) Industry of last full time job.

Source: Labour Force, Australia, August 2000 (Cat. no. 6203.0).

The manufacturing workforce–persons previously employed *continued*

Graph 1.31 shows the relative proportions of unemployed workers classified according to the reason for ceasing employment.

1.31 EX-FULL TIME EMPLOYEES



(a) Left job involuntarily for reasons other than retrenchment (for example, bad health).

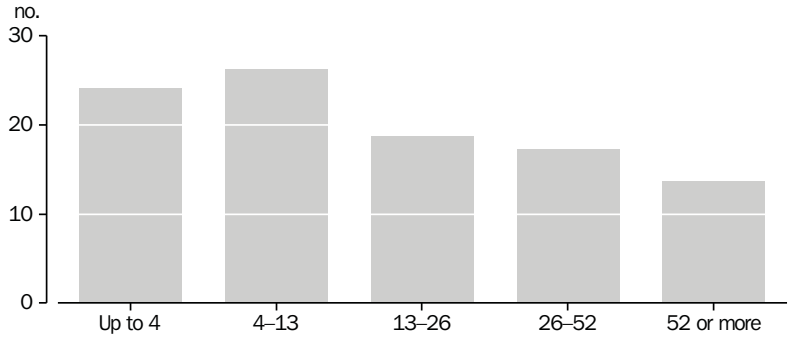
Source: Labour force, Australia, August 2000 (Cat. no. 6203.0).

Manufacturing had a much higher proportion of ex-full time workers who had been retrenched (52%) than the corresponding all industries proportion (40%). For manufacturing, 57% of male ex-full time workers had been retrenched, a much higher proportion than for female ex-full time workers (33%).

Of those retrenched, from full time manufacturing employment, 33% had been labourers or related workers, 27% had been intermediate production or transport workers, 20% had been tradespersons or related workers while the remaining 20% had been in other occupations (managerial, professional, clerical, sales or service).

Graph 1.32 shows the duration of unemployment for ex-full time workers in the manufacturing industry.

1.32 EX-MANUFACTURING—WEEKS UNEMPLOYED(a)



(a) As at August 2000.

Source: Labour Force, Australia, August 2000 (Cat no 6203.0).

The manufacturing workforce–persons previously employed *continued*

Just under half of ex-full time manufacturing workers had been unemployed for 13 weeks or more at the time of the August 2000 survey including 31% who had been unemployed for 26 weeks or more and 14% who had been unemployed for 52 weeks or more. Of those who had been unemployed for 13 weeks or more 41% had been labourers or related workers, 27% had been intermediate production or transport workers, 18% had been tradespersons or related workers while the remaining 14% had been in other occupations (managerial, professional, clerical, sales or service).

THE MANUFACTURING WORKFORCE—INDUSTRIAL DISPUTES

Manufacturing compared with other industries

Industrial disputation increased across Australia in 1999, the second consecutive year of increase. There were 729 industrial disputes recorded in 1999, an increase of 40% from 1998 and the highest number of disputes since 1991 (1,036). The Construction industry accounted for approximately one-third of disputes (247) closely followed by Manufacturing (208).

Manufacturers lost approximately 171 working days per thousand employees, more than double the rate for the total of all industries. While the manufacturing industry employed 12% of the Australian workforce (on average over the year), Manufacturing contributed 25% of all employees involved in disputes, the third highest rate after Education (32%) and Construction (27%). Manufacturing contributed the second highest proportion of all working days lost (28%), behind Education (34%).

For Manufacturing, the average number of working days lost per employee involved was 1.6, third behind Wholesale trade, retail trade, accommodation, cafes and restaurants (2.1 days), and Finance and insurance, and Property and business services (1.7 days).

1.33 INDUSTRIAL DISPUTES—1999

Industry	Disputes no.	Employees involved '000	Working days lost '000	Working days lost per employee involved no.	Working days lost per thousand employees no.
Mining and services to mining	89	21	28	1.3	362.4
Manufacturing	**208**	**114**	**185**	**1.6**	**171.3**
Electricity, gas and water supply	19	7	8	1.1	119.6
Construction	247	124	165	1.3	250.7
Wholesale trade; retail trade; accommodation, cafes and restaurants	14	2	3	2.1	1.5
Transport and storage	80	25	20	0.8	47.4
Communication services	6	1	1	0.8	4.5
Finance and insurance; property and business services	27	3	6	1.7	4.6
Government administration and defence	14	3	3	1.0	7.8
Education	26	147	221	1.5	361.4
Health and community services	15	3	3	1.0	3.6
Other services	n.p.	10	8	0.8	13.7
Total	**(a)729**	**348**	**526**	**1.5**	**74.5**

(a) The total number of disputes may 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: Industrial Disputes, Australia, 1999 (Cat. no. 6322.0) and unpublished data.

Manufacturing subdivisions

Table 1.34 a shows that, of the disputes which occurred in the manufacturing industry in 1999, the majority were recorded in Metal product manufacturing (62) Machinery and equipment manufacturing (46) and Food, beverage and tobacco manufacturing (43). These three subdivisions accounted for 74% of manufacturing employees involved in disputes and 82% of the working days lost. Machinery and equipment manufacturing recorded the highest working days lost per thousand employees in manufacturing (324) followed by Food, beverage and tobacco manufacturing (265).

1.34 INDUSTRIAL DISPUTES—1999

Industry	Disputes no.	Employees involved '000	Working days lost '000	Working days lost per employee involved no.	Working days lost per thousand employees no.
Food, beverage and tobacco mfg	43	12.5	46.4	3.7	265.1
Textile, clothing, footwear and leather mfg	12	6.8	8.6	1.3	97.3
Wood and paper product mfg	14	4.7	5.1	1.1	78.9
Printing, publishing and recorded media	7	4.2	5.7	1.4	31.3
Petroleum, coal, chemical and associated product mfg	31	9.9	10.9	1.1	103.2
Metal product mfg	62	36.4	32.1	0.9	188.5
Machinery and equipment mfg	46	35.5	72.2	2.0	324.1
Non-metallic mineral product mfg; Other mfg	18	4.2	5.7	1.4	41.3
Total	**(a)208**	**113.9**	**184.5**	**1.6**	**171.3**

(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: Industrial Disputes, Australia, 1999 (Cat. no. 6322.0); and unpublished data.

Cause of disputes

In the manufacturing industry, the two main causes recorded for disputes ending in 1999, as measured by working days lost, were managerial policy (93,200 days lost) and 'other' causes (which include protests directed against persons or situations other than those relating to the employer/employee relationship) (48,400 days lost), accounting for 52% and 27% of the total, respectively. For all industries, managerial policy, (387,700 days lost) and 'other' causes (135,800 days lost), 60% and 21% of the total respectively, were also the two main causes of disputes.

Change from 1998 to 1999

The number of disputes involving manufacturers increased by 66% (from 125 to 208) from 1998 to 1999, compared to the increase of 40% (519 to 729) for industry overall. All manufacturing subdivisions recorded either an increase or the same number of disputes and all subdivisions reported an increase in the number of employees involved in disputes. Metal product manufacturing recorded the greatest increase in employees involved, increasing from 66,000 in 1998 to 364,000 in 1999.

The greatest percentage increase in number of disputes was recorded in Petroleum, coal, chemical and associated product manufacturing, which increased from 7 disputes in 1998 to 31 in 1999. However, the disputes in 1999 were less severe on average as this industry also recorded the greatest decrease in working days lost per employee involved falling from 7 days in 1998 to 1 day in 1999. The number of working days lost in manufacturing overall increased 94% from 952,800 in 1998 to 1,845,000 in 1999. All subdivisions except Wood and paper product manufacturing and Non-metallic mineral product and Other manufacturing recorded an increase in the number of working days lost over this period.

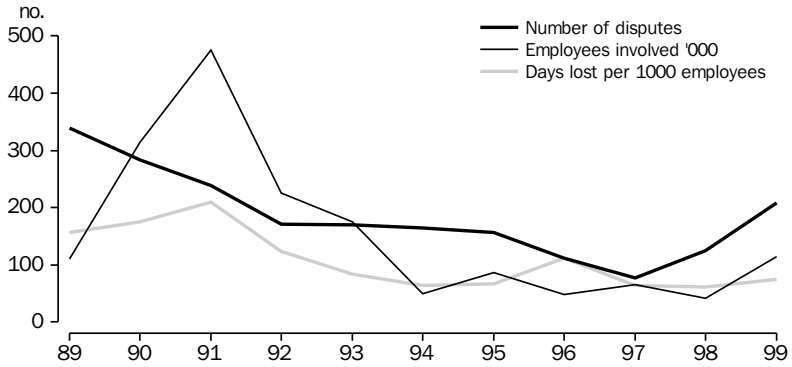
Longer term comparison

Comparing 1999 with ten years earlier shows a decrease in number of disputes, across all industries, except Finance and insurance and Property and business services. The total number of disputes fell 48% from 1,402 in 1989 to 729 in 1999, with the number of working days lost decreasing from 1,202,400 to 650,400. The high 1989 figures are primarily due to 559 disputes recorded in the Mining industry in 1989 (89 in 1999) and 339 disputes involving the Manufacturing industry (208 in 1999).

In 1999, 39% fewer disputes were recorded in Manufacturing than ten years earlier, compared to the 48% decrease recorded over the same period by industry overall. However, the proportion of all disputes involving Manufacturing increased from 24% to 29%. While the number of days lost per thousand employees has fallen 47%, the number of employees involved in disputes has increased 3% in the Manufacturing industry over this period.

Graph 1.35 shows the trends in industrial disputes recorded in the Manufacturing industry over the ten year period 1989–1999. The number of disputes has declined in total, from 339 to 208, but as can be seen, fluctuations have occurred. In particular, the number of employees involved in disputes rose dramatically from 1990 to 1991, peaking in 1991 at 474,800. The number of days lost per 1,000 employees has remained more stable, but also peaked in 1991 at 209.

1.35 INDUSTRIAL DISPUTES IN MANUFACTURING



Source: Industrial Disputes, Australia, 1999 (Cat. no. 6322.0).

THE MANUFACTURING WORKFORCE—INDUSTRIAL ACCIDENTS

This article is based on data published by the National Occupational Health and Safety Commission in *Compendium of Workers' Compensation Statistics, Australia, 1997–98*. 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.

Manufacturing compared with other industries

New workers' compensation cases reported for 1997–98 are summarised in table 1.36. The manufacturing industry accounted for 23.6% of the total for all industries, considerably more than any other industry. Manufacturing ranks second behind Mining in the incidence of new cases per thousand employees (39 compared to 40.7 in Mining), but Manufacturing recorded the highest number of new cases per million hours worked (20.1). In both cases, these rates for manufacturing are significantly above the rates for all industries.

Between 1996–97 and 1997–98 the number of new cases reported has fallen for manufacturing, and for all industry (down by 2.2% and 3.5%, respectively). As well, both the incidence per thousand employees and frequency per million hours worked have fallen over this period (down 0.9% and 1.5%, respectively).

1.36 NEW WORKERS COMPENSATION CASES(a)—1997–98

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	5 177	4.4	35.3	16.8
Mining	3 107	2.6	40.5	18.3
Manufacturing	**27 665**	**23.6**	**39.0**	**20.1**
Electricity, gas and water supply	1 223	1.0	24.7	13.2
Construction	11 347	9.7	38.9	19.1
Wholesale trade	6 142	5.2	18.7	9.5
Retail trade	10 679	9.1	14.1	9.8
Accommodation, cafes and restaurants	5 393	4.6	19.3	12.8
Transport and storage	8 753	7.5	36.2	18.3
Communication	2 694	2.3	21.6	11.8
Finance and insurance	1 075	0.9	5.1	2.8
Property and business services	6 511	5.5	12.5	6.7
Government administration and defence(b)	4 432	3.8	15.7	8.9
Education	4 194	3.6	10.0	5.8
Health and community services	11 711	10.0	21.0	13.9
Cultural and recreational services	2 211	1.9	18.1	11.5
Personal and other services	4 510	3.8	22.2	13.1
All Industries(b)	117 466	100.0	22.0	12.6

(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, 1997–98.

Manufacturing industry subdivisions

Table 1.37 summarises new workers' compensation cases for manufacturing subdivisions in 1997–98. Of the manufacturing subdivisions, Food, beverage and tobacco manufacturing constituted the greatest proportion of all new compensation claims made in manufacturing, at 27.1%. This industry also had the highest incidence of injury both on a per thousand employees basis and on a per million hours worked basis.

Between 1996–97 and 1997–98, Textile, clothing, footwear and leather manufacturing recorded the greatest percentage increase in new compensation claims (9.12%). This industry also recorded the greatest percentage increase per thousand employees, and per million hours worked (up 26.3% and 27.1%, respectively). In contrast, Printing publishing and recorded media recorded the greatest decrease in new claims (down 17.8%) as well as in both incidence and frequency (down 18.7% and 15.4%, respectively).

1.37 NEW WORKERS COMPENSATION CASES(a)—1997–98

Industry	New cases	Proportion of total manufacturing	Incidence (per thousand employees)	Frequency (per million hours worked)
	no.	%	no. of cases	no. of cases
Food, beverage and tobacco mfg	7 489	27.1	57.8	30.5
Textile, clothing, footwear and leather mfg	1 089	3.9	27.1	15.0
Wood and paper product mfg	1 765	6.4	42.0	20.9
Printing, publishing and recorded media	931	3.4	12.1	7.0
Petroleum, coal, chemical and associated product mfg	1 789	6.5	29.6	15.1
Non-metallic mineral product mfg	1 341	4.8	42.9	20.7
Metal product mfg	5 603	20.3	43.7	21.8
Machinery and equipment mfg	5 978	21.6	38.6	19.2
Other mfg	1 670	6.0	35.9	18.4
Total mfg	**27 666**	**100.0**	**39.0**	**20.1**

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

Source: National Occupational Health and Safety Commission, Compendium of Workers' Compensation Statistics, Australia, 1997–98.

THE MANUFACTURING WORKFORCE—TRADE UNION MEMBERSHIP

Manufacturing compared to other industries

In August 1999, 325,800 employees in the manufacturing industry (33% of employees) were members of a trade union. This represented a higher proportion of members than for industry overall, of which 26% of the workforce belonged to a union. Over the five year period, 1994 to 1999, in the manufacturing industry, the proportion of trade union members has fallen 8 percentage points, compared to 9.3 percentage points for industry overall. The greatest overall falls in union membership rates over this period were recorded in the Communication services industry and Electricity, gas and water supply industry (down 17% and 16% respectively). Nevertheless, these two industries still had the highest percentage of unionised workers. At August 1999, 48% of Communication services workers and 50% of Electricity, gas and water supply workers belonged to a trade union.

1.38 TRADE UNION MEMBERSHIP—AUGUST 1999

	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	4	3	8	3.5	7.4	4.7
Mining	24	0	24	38.8	0.0	35.4
Manufacturing	**270**	**56**	**326**	**36.4**	**22.2**	**32.8**
Electricity, gas and water supply	32	3	35	55.1	25.9	50.1
Construction	109	1	111	28.5	3.0	25.7
Wholesale trade	38	8	46	11.7	5.0	9.6
Retail trade	76	117	193	14.7	19.8	17.4
Accommodation, cafes and restaurants	12	23	35	8.3	11.6	10.1
Transport and storage	111	18	128	45.0	20.6	38.7
Communication services	50	15	65	55.8	33.3	48.3
Finance and insurance	29	52	82	24.0	30.0	27.5
Property and business services	43	32	75	10.5	8.8	9.7
Government administration and defence	86	55	140	45.8	35.6	41.2
Education	100	180	280	49.9	43.9	45.8
Health and community services	47	179	227	30.7	30.7	30.7
Cultural and recreational services	17	11	27	17.6	13.6	15.7
Personal and other services	57	22	79	40.4	18.8	30.5
Total	**1 104**	**775**	**1 878**	**27.7**	**23.4**	**25.7**

Source: Employee Earnings, Benefits and Trade Union Membership, Australia, August 1999 (Cat. no. 6310.0).

MANUFACTURING INDUSTRY—PROFILE OF TRADE UNION MEMBERS

Gender At August 1999, of all manufacturing trade union members, 83% were male and 17% were female. Employment in the manufacturing industry was predominantly of men and proportionately, men made up an even greater percentage of union members. Of all manufacturing employees, 269,900 males (36%) and 55,900 females (22%) were union members. For males, this is a higher proportion than industry overall (28%), while it is a slightly lower proportion than for females (23% overall).

Work status Thirty five per cent of full-time manufacturing employees were trade union members in August 1999. Only 12% of part-time employees were members. The proportion of full time male employees who were trade union members (38%) was substantially higher than that of full time female employees (26%), whereas the membership rates for male and female part-time employees were equal at 12%.

Background At August 1999 64% of trade union members were born in Australia with the remaining 36% born overseas. Of those born overseas, 26% were born in mainly English speaking countries and 74% were born in other countries. This compares to industry overall with 76% of members born in Australia and 24% born overseas—42% in main English speaking countries, and 58% in other countries.

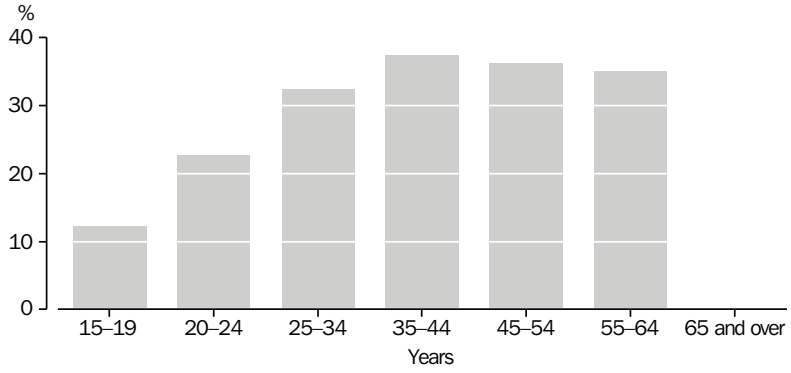
Age The age profile of manufacturing trade union members has altered somewhat over the five year period from 1994 to 1999. In 1999 the majority of members (31%) were aged 35–44, which was similar to 1994, when this age group made up 28% of members.

Age *continued*

However significant change has occurred for those aged 55–64. In 1994, 50% of all manufacturing workers aged 55–64 were members of a union. By 1999 this figure had fallen to 35%, but had maintained a constant share of all trade union memberships (9% in both 1994 and 1999). This suggests that retired union members have not been replaced in unions over this five year period by new and existing workers, and that attrition through retirement plays an important role in the overall decline in membership rates. A similar trend has occurred in industry overall, with 42% of workers aged 55–64 belonging to a union in 1994 but by 1999 this had declined to 31%.

Graph 1.39 shows the distribution of trade union members by age in August 1999. The 35–44 year old age group has the greatest proportion of union members, at 37%, with the youngest group 15–19 recorded the lowest memberships, at 12%.

1.39 MANUFACTURING TRADE UNION MEMBERS—AGE



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

Within manufacturing

In August 1999, the manufacturing subdivision with the highest proportion of female trade union members was Textile, clothing, footwear and leather manufacturing, of which 64% of union members were female. Wood and paper product manufacturing, along with Metal Product manufacturing had the most male dominated unions (97% and 95% respectively). The Textile, clothing, footwear and leather manufacturing subdivision also reflected the highest rate of union membership per female worker (35% of all female workers were union members). However, this has decreased from 47% in 1994.

Food, beverage and tobacco manufacturing attracted the greatest proportion of male workers as union members, with 45% of all male workers in this subdivision belonging to a trade union. In 1998 this subdivision also had the greatest proportion of female workers as members (37%), but had slipped below the Textile, clothing, footwear and leather manufacturing subdivision, to 34% in 1999.

1.40 TRADE UNION MEMBERSHIP—AUGUST 1999

	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	57.5	15.6	73.0	45.3	33.9	42.2
Textile, clothing, footwear and leather mfg	7.4	12.9	20.3	31.8	35.1	33.7
Wood and paper product mfg	21.4	*0.7	22.0	41.2	*9.3	36.9
Printing, publishing and recorded media	15.1	*4.5	19.6	26.2	*9.7	18.9
Petroleum, coal, chemical and associated product mfg	25.1	7.9	33.0	34.2	23.4	30.8
Non-metallic mineral product mfg	13.8	*1.0	14.8	35.8	*10.4	30.7
Metal product mfg	48.3	*2.4	50.7	36.3	*11.2	32.8
Machinery and equipment mfg	71.9	9.7	81.6	40.6	25.5	37.7
Other mfg	9.4	*1.2	10.6	15.7	*9.8	14.7
Manufacturing	**269.9**	**55.9**	**325.8**	**36.4**	**22.2**	**32.8**

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

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

Over the five year period, 1994–1999, all manufacturing subdivisions experienced a decline in total trade union membership. Wood and paper product manufacturing fell the least, from 39% in 1994 to 37% in 1999. Printing, publishing and recorded media experienced the greatest fall in membership, down from 35% in 1994 to 19% in 1999.

The membership rates of all male employees fell in each subdivision. However female membership rates actually rose in 2 subdivisions from 1994 to 1999, viz

- Non-metallic mineral product manufacturing where female membership increased from 4% of female workers to 10% in 1999
- Other manufacturing where female membership increased from 8% of female workers to 10%.

ENERGY USE BY MANUFACTURERS

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 24 years from 1973–74 to 1997–98 (table 1.41) and is projected to continue to grow at around that same rate until 2014–15 (table 1.42). 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.

1.41 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.

1.42 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.

1.43 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, Northern Territory manufacturing was the highest energy consumer, followed by Western Australia and Queensland. On this basis, Victoria was the lowest energy consumer.

1.44 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.

DEGREE OF TRANSFORMATION BY MANUFACTURERS

This article presents statistics for manufactured goods classified by degree of transformation. Table 1.46 shows the value of goods produced by manufacturers during 1998–99 and either sold or transferred within the business. The duplication effect on data in table 1.46 is minor. Transfers for further processing are double counted but amount to less than 2% of the value of goods for total manufacturing and the highest proportion for any subdivision is around 3%.

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 still 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.

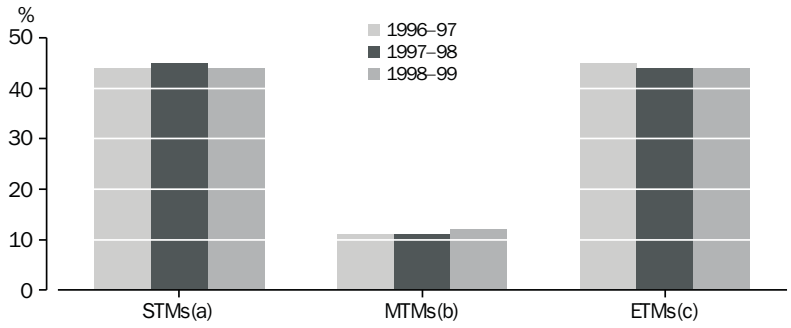
Degree of transformation by manufacturers *continued*

The classification has five broad categories. However, the first three of these have been combined together in the graph and table below because the boundaries between the categories have not been finally established. The categories are:

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

Graph 1.45 shows that the proportions of simply modified, moderately modified and elaborately modified manufactures have remained virtually unchanged for the last three years.

1.45 PROPORTIONS BY DEGREE OF TRANSFORMATION



(a) Simply transformed manufactures.
(b) Moderately transformed manufactures.
(c) Elaborately transformed manufactures.

Table 1.46 shows that Machinery and equipment manufacturing is the industry subdivision with the greatest proportion of elaborately transformed manufactures among its products while Metal product manufacturing and Wood and paper product manufacturing have the most even spread of values across the various degrees of transformation categories.

1.46 DEGREE OF TRANSFORMATION—1998–99

Industry	*Simply transformed manufactures(a)* $ billion	*Moderately transformed manufactures* $ billion	*Elaborately transformed manufactures* $ billion	*Manufactures not yet classified* $ billion
Food, beverage and tobacco mfg	48.7	—	—	—
Textile, clothing, footwear and leather mfg	1.1	2.8	5.1	—
Wood and paper product mfg	4.8	4.3	3.0	—
Printing, publishing and recorded media	—	—	10.9	0.3
Petroleum, coal, chemical and associated product mfg	13.3	6.6	12.1	0.3
Non-metallic mineral product mfg	7.7	0.8	0.6	—
Metal product mfg	14.4	9.1	13.3	—
Machinery and equipment mfg	0.2	0.2	38.1	—
Other mfg	—	—	6.2	—
Total mfg	**90.2**	**23.9**	**89.2**	**0.6**

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

Exports

Data in this section about exports by degree of transformation have been taken from *Exports of primary and manufactured products, Australia, 1999* 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 the above table, although the elaborately transformed manufactures category is very similar. The data show that the tendency has continued for elaborately transformed manufactures to be the fastest growing category of exports.

Exports of Australian produce in 1999 comprised:

- Unprocessed primary products and minerals 37.8%
- Processed primary products and minerals 21.0%
- Simply transformed manufactures 10.8%
- Elaborately transformed manufactures 20.4%
- Other (mainly non monetary gold) 9.5%

Average annual growth 1989 to 1999 was:

- Unprocessed primary products and minerals 4.0%
- Processed primary products and minerals 5.6%
- Simply transformed manufactures 5.4%
- Elaborately transformed manufactures 12.6%
- Other (mainly non monetary gold) 6.9%

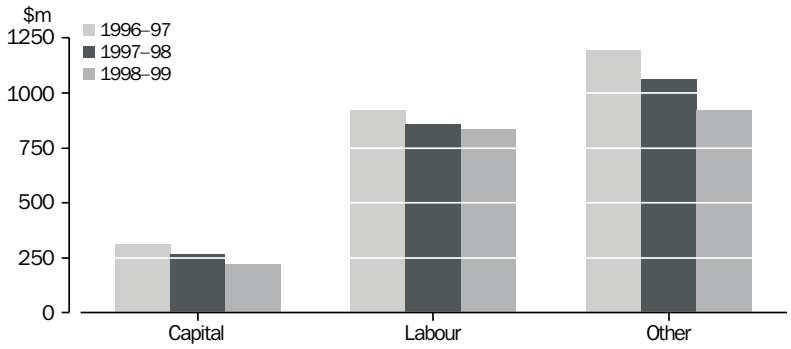
Research and experimental development expenditure

In 1998–99 total expenditure by all businesses in the Australian economy on research and experimental development (R&D) was $3.9 billion, around 5% lower than 1997–98 expenditure. The 1998–99 estimate was the third consecutive decrease. Expenditure on R&D by the manufacturing industry has followed a similar trend in recent years with expenditure falling to $1.9 billion in 1998–99 (down 7.4% from 1997–98). Manufacturing's contribution to the all industries total has fallen from slightly more than half (50.9% in 1997–98) to slightly less (49.7% in 1998–99).

Only a small proportion of R&D expenditure by manufacturers (3%) was devoted to basic research with 20% being devoted to applied research and the majority of expenditure (77%) being devoted to experimental development.

As graph 1.47 shows, current expenditure (labour costs plus other expenditure) by manufacturers on R&D is several times larger than their capital expenditure on R&D. Within the manufacturing industry, 1998–99 R&D expenditure consisted of 88.9% current expenditure and 11.1% capital expenditure, proportions which were similar to those for the total of all industries. Both current and capital expenditure on R&D by manufacturers fell between 1997–98 and 1998–99. Of the total current expenditure for the manufacturing industry, almost half (47.5%) related to labour costs and these too decreased between 1997–98 and 1998–99 but only marginally (down 0.8%).

1.47 R&D EXPENDITURE BY MANUFACTURERS



Source: Research and Experimental Development, Business Enterprises, 1998–99 (Cat. no. 8104.0).

Manufacturing subdivisions

In 1998–99 expenditure on R&D decreased, from the previous year, in all but three of the manufacturing subdivisions (table 1.48). Except for the very small Other manufacturing industry, the most significant relative decreases were by Non-metallic mineral product manufacturing (down 24.9%) and Wood and paper product manufacturing (down 23.8%). Of the three subdivisions that experienced an increase in R&D expenditure from 1997–98, the greatest relative increase occurred in the Printing, publishing and recorded media industry (up 34.7%) although this was a very small movement in absolute terms.

With $962 million of R&D expenditure in 1998–99, Machinery and equipment manufacturing was by far the largest manufacturing subdivision. This industry contributed 48.5% of the total spent by manufacturers and almost a quarter (24.1%) of expenditure by all businesses in the economy. For this industry, 1998–99 expenditure was principally current expenditure (93.8%) of which 50.6% was labour costs and 49.4% was other costs with capital expenditure accounting for the remaining 6.2% of R&D costs. The second largest contributor to manufacturing R&D was Petroleum, coal, chemical and associated product manufacturing. This industry recorded an increase in R&D expenditure from 1997–98 to 1998–99 (up 8.3%) and was responsible for 17.1% of all manufacturing R&D spending. Its primary spending (49%) was on other current expenditure.

Other industries with more than 10% of total manufacturing R&D expenditure in 1998–99 were Metal product manufacturing (13.6%) and Food, beverage and tobacco manufacturing (10.4%).

1.48 EXPENDITURE ON RESEARCH AND DEVELOPMENT

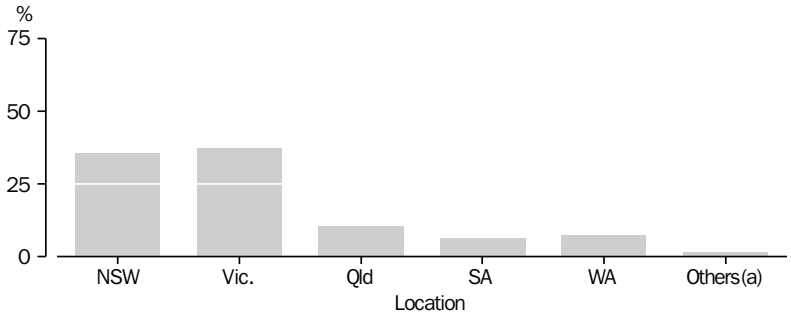
	1996–97	*1997–98*				*1998–99*
	Total expenditure	*Total expenditure*	*Capital expenditure*	*Labour costs*	*Other current expenditure*	*Total expenditure*
Industry	*$m*	*$m*	*$m*	*$m*	*$m*	*$m*
Food, beverage and tobacco mfg	231	180	46	75	85	206
Textile, clothing, footwear and leather mfg	21	22	10	9	9	19
Wood and paper product mfg	191	117	13	22	53	89
Printing, publishing and recorded media	17	19	15	15	10	26
Petroleum, coal, chemical and associated product mfg	309	314	33	140	166	340
Non-metallic mineral product mfg	66	72	6	22	27	54
Metal product mfg	361	331	59	88	122	269
Machinery and equipment mfg	1 051	1 051	60	456	446	962
Other mfg	46	36	3	9	6	18
Total mfg	**2 240**	**2 142**	**221**	**837**	**925**	**1 983**

Source: Research & Experimental Development, Business Enterprises, Australia, 1998–99 (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 (38%), New South Wales (36%), Queensland (11%), Western Australia (8%), South Australia (6%) and Tasmania and the Territories (2% in combination).

1.49 STATE PROPORTIONS OF R&D SPENDING



(a) Tasmania, the two Territories and overseas.

Source: Research and Experimental Development, Business Enterprises, Australia, 1998–99 (Cat. no. 8104.0).

In 1998–99, Machinery and equipment manufacturing was by far the largest manufacturing subdivision in terms of R&D expenditure, in Victoria (53.6% of total manufacturing), New South Wales (49.3%) and Western Australia (41.2%). This industry also contributed 62.1% of overseas research and development expenditure by Australian businesses. The second largest contributing industry in all of these States was Petroleum, coal, chemical and associated product manufacturing, which contributed 17.1% of all R&D.

Expenditure by size of business

Large businesses (businesses employing 100 people or more) were responsible for 74.7% of 1998–99 R&D expenditure by manufacturers, medium sized businesses (employment of 20–99 people) were responsible for 19.5% and small businesses (employing fewer than 20 people) accounted for the remaining 5.8%, falling from 11% the previous year.

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 (ANZSIC Subdivisions) within manufacturing. Comparative 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 NSW 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* immediately following Explanatory Notes.

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".

Data presented in this chapter exclude the operations of non employing businesses. Such businesses, typically sole proprietorships or partnerships 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.

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 thirteenth of fifteen 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 (25.3% for Finance and insurance) and was just over half of the total of all industries (9.5%). In terms of return on assets (pre-tax profits as a percentage of the total value of assets) manufacturing ranked only (equal) tenth of the fifteen industries but at 5.7% was above that of the total of all industries (4.5%).

2.1 PERFORMANCE RATIOS—1997–98

Industry	*Profit margin* %	*Return on assets* %	*Interest coverage* times	*Investment rate* %
Agriculture, forestry and fishing	14.9	3.2	3.9	39.5
Mining	16.6	7.6	4.4	42.9
Manufacturing	**5.1**	**5.7**	**4.2**	**18.9**
Electricity, gas and water supply	21.4	5.4	3.0	35.5
Construction	5.7	12.7	9.3	11.5
Wholesale trade	3.8	8.4	6.2	13.6
Retail trade	3.4	10.8	3.5	10.9
Accommodation, cafes and restaurants	6.0	5.7	3.4	16.5
Transport and storage	7.7	6.4	3.7	26.6
Communication services	20.0	14.1	8.1	38.8
Finance and insurance	25.3	2.4	1.8	n.a.
Property and business services	11.8	6.4	3.8	13.7
Private community services(a)	10.4	9.7	9.0	13.9
Cultural and recreational services	13.6	9.7	9.5	37.0
Personal and other services	6.8	4.6	5.8	19.1
All industries(b)	9.5	4.5	2.8	21.8

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

(b) For the investment rate, all industries excludes the Finance and insurance industry.

Source: Business Operations and Industry Performance, Australia Preliminary, 1998–99 (Cat. no. 8142.0) and Manufacturing Survey.

Changes in performance by the manufacturing industry

Excluding very small businesses (see the introduction to this chapter), it is estimated that approximately 52,000 manufacturing businesses were in operation at 30 June 1999 and that these businesses employed 977,000 people, a decrease of 2.2% from the previous year. During 1998–99 manufacturing businesses generated sales of $229.4 billion, an increase of 3.7% on 1997–98 sales. Sales continued to grow even though the general level of prices for manufactured goods fell by 0.2% between 1997–98 and 1998–99. As a result, the volume of goods and services provided by manufacturing businesses is estimated to have grown by around 4% from 1997–98 to 1998–99.

Changes in performance by the manufacturing industry *continued*

Operating profits before tax fell by 4.8% to 11.8 billion between 1997–98 and 1998–99. Operating profits per person employed fell by 2.4% from $12,400 to $12,070.

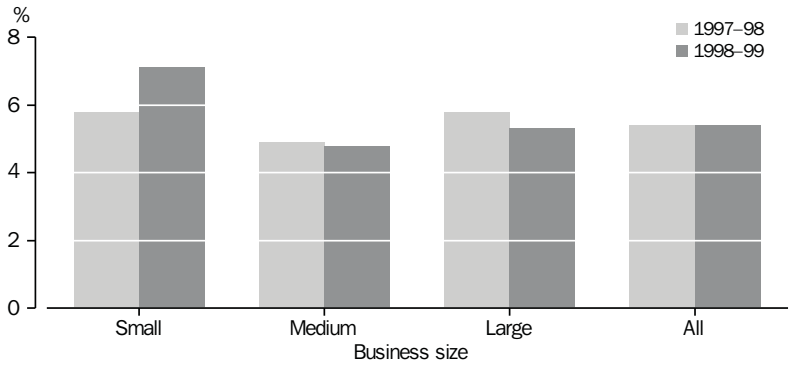
The balance sheet for the manufacturing industry shows a decrease in net worth of $3.1 billion (3.8%) as a result of liabilities (and in particular, non current liabilities) increasing faster than assets. Capital outlays on fixed tangible assets decreased by 5.5% between 1997–98 to 1998–99 following a substantial increase the previous year. Expenditure on plant, machinery and equipment (including motor vehicles) continues to dominate in 1998–99 by accounting for $9.5 billion (85%) of the total capital expenditure on fixed tangible assets by manufacturing businesses.

2.2 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	221 138	229 426	3.7
Other operating income	2 329	3 540	52.0
Total operating income	*223 467*	*232 966*	*4.3*
Cost of sales	157 076	164 795	4.9
Labour costs	39 937	41 565	4.1
Depreciation	7 258	7 727	6.5
Interest expenses	3 786	3 956	4.5
Other operating expenses	3 022	3 127	3.5
Total operating expenses	*211 079*	*221 170*	*4.8*
Operating profit before tax	**12 389**	**11 795**	**–4.8**
Balance sheet			
Current assets	76 503	80 240	4.9
Non-current assets	115 166	124 251	7.9
Total assets	*191 669*	*204 490*	*6.7*
Current liabilities	59 201	70 850	19.7
Non-current liabilities	50 095	54 411	8.6
Total liabilities	*109 296*	*125 261*	*14.6*
Net worth	**82 373**	**79 229**	**–3.8**
Capital outlays			
Acquisition of fixed tangible assets(a)	11 785	11 131	–5.5

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

2.3 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

The 1998–99 industry profit margin of 5.1% (i.e. $51 of operating profit before tax per $1,000 of operating income) was a 4.8% fall from the 1997–98 result. Nevertheless, 77% of manufacturers recorded an operating profit before tax for 1998–99 with 30% of manufacturers recording a profit margin greater than 10% (i.e. $100 or more of profit per $1,000 of operating income). Results by business size showed that 75% of large manufacturers made profit with the corresponding rates for medium sized manufacturers and small manufacturers both being 77%.

Quartiles (see glossary) give an indication of the spread of 1998–99 profit margins in the manufacturing industry. These indicate for example that the best performing 25% of manufacturers experienced profit margins of $123 or more of operating profit before tax per $1,000 of operating income while at the other end of the scale, 25% of manufacturers experienced profit margins of $1 or less of operating profit before tax per $1,000 of operating income with a large proportion of these recording an operating loss.

- First quartile 12.3%
- Median 4.0%
- Third quartile 0.1%

In 1998–99, all of the other performance measures shown in table 2.4 also reflected a worse position than for the previous year. The most notable of the 1998–99 industry performance trends was the continued tendency for the long-term debt to equity ratio to rise (up 12.9%). The rise caused an increase in the industry debt position to about 69% of net worth. The current ratio fell (down 12.4%) from 1997–98 to 1998–99 as did the interest coverage ratio (down 2.5%).

2.4 INDUSTRY PERFORMANCE

Industry performance	*1997–98*	*1998–99*	*Relative change(a) %*
Selected performance measures			
Profit margin	5.6	5.1	–8.9
Return on assets	6.5	5.7	–11.1
Long term debt to equity	0.6	0.7	12.9
Current ratio	1.3	1.1	–12.4
Interest coverage	4.3	4.2	–2.5

(a) Relative changes are calculated using unrounded data.

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 later in 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 1998–99, manufacturing businesses generated around $229 billion of sales of goods and services, an increase of 3.7% compared with the previous year. These sales represented an average of $234,000 per person employed in manufacturing, a 6.0% increase over the average for 1997–98. All manufacturing subdivisions increased their sales between 1996–97 and 1997–98 except for Textile, clothing, footwear and leather manufacturers (down 5.0%) and Petroleum, coal, chemical and associated product manufacturers (down 2.8%). The largest percentage increases in sales were recorded by Wood and paper product manufacturers (up 12.7%) and Machinery and equipment manufacturers (up 6.4%).

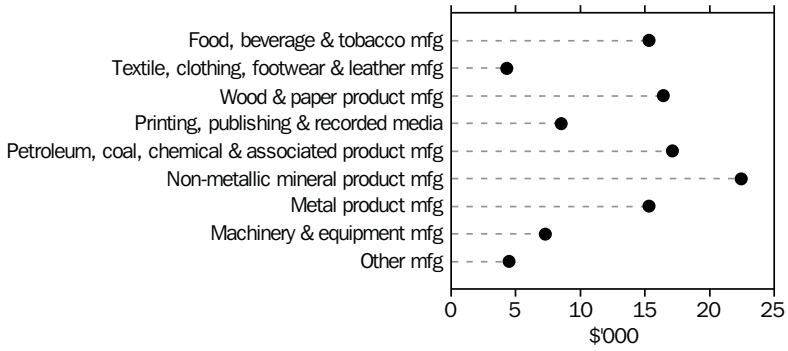
Sales per person employed also increased between 1997–98 and 1998–99 for all manufacturing subdivisions except Textile, clothing, footwear and leather Manufacturers (down 4.8%) and Petroleum, coal, chemical and associated product manufacturers (down 2.9%). The largest percentage increases in sales per person employed were recorded by Wood and paper product manufacturers (up 15.9%), Printing, publishing and recorded media (up 13.0%), Machinery and equipment manufacturers (up 11.9%) and Non-metallic mineral product manufacturers (up 9.9%).

Operating profits before tax (OPBT)

In 1998–99, manufacturing businesses generated around $11.8 billion of operating profits before tax. This represented, on average, around $12,000 per person employed in manufacturing and $51 for every $1,000 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 1998–99 than they had been in 1997–98 (by 3.0% and 3.7% respectively).

Performance varied widely within the manufacturing industry. As shown by graph 2.5, Non-metallic mineral product manufacturers generated OPBT of around $22,400 per person employed while Textile, clothing, footwear and leather manufacturers generated around $4,300 per person employed.

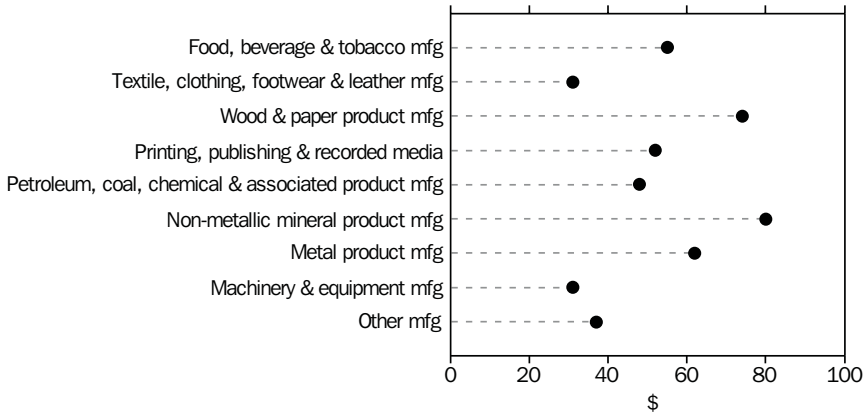
2.5 OPBT PER PERSON EMPLOYED—1998–99



Source: ABS, Manufacturing Survey.

Similarly a variety of results were recorded for 1998–99 for OPBT generated per thousand dollars of operating income (graph 2.6). Results ranged from about $80 of OPBT per thousand dollars of operating income for Non-metallic mineral product manufacturers down to about $31 of OPBT per thousand dollars of operating income for Textile, clothing, footwear and leather manufacturers and Machinery and equipment manufacturers.

2.6 OPBT PER $'000 OF INCOME—1998–99



Manufacturing subdivisions which increased their OPBT per thousand dollars of operating income between 1997–98 and 1998–99 were:

- Non-metallic mineral product manufacturing (from $74 to $80)
- Wood and paper product manufacturing (from $64 to $74)

In all other manufacturing subdivisions, OPBT per thousand dollars of operating income fell between 1997–98 and 1998–99. The largest relative falls were:

- Machinery and equipment manufacturing (from $45 to $31)
- Other manufacturing (from $50 to $37)
- Metal product manufacturing (from $78 to $62)

Assets and liabilities

At the end of 1998–99, manufacturers held $204 billion in assets of which, 61% were non current assets. For manufacturers as a whole, the value of assets at the end of 1998–99 was 6.7% higher than a year earlier. All industry subdivisions experienced a rise in the value of assets during 1998–99 except Textile, clothing, footwear and leather manufacturing (down 14.4%) and Printing, publishing and recorded media (down 8.4%). The largest relative increases were for Food, beverage and tobacco manufacturers (up 13.2%) and the relatively small Other manufacturing industry (up 14.5%).

At the end of 1998–99 total liabilities for manufacturers were $125 billion of which 57% were current liabilities. During 1998–99, the value of liabilities for manufacturers as a whole rose (up 14.6%) which was relatively more than the rise in the value of assets (up 6.7%). Non current liabilities rose by 8.6% and as net worth fell by 3.8% over the same period a worsening (by 12.9%) 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 Textile, clothing, footwear and leather Manufacturing (down 7.0%) and Non-metallic mineral product manufacturing (down 2.7%). The largest increases in the value of liabilities were for Food, beverage and tobacco manufacturers (up 26.8%), Metal product manufacturers (up 25.0%) and Printing, publishing and recorded media (up 17.3%). Seven of the industry subdivisions within manufacturing experienced a worsening of their long term debt to equity positions with only Non-metallic mineral product manufacturing and Wood and paper product manufacturing recording an improvement.

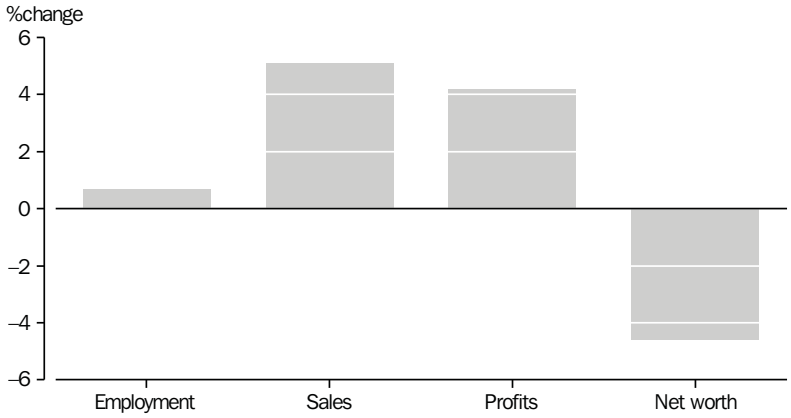
Capital expenditure

In 1998–99, manufacturers undertook capital expenditure on tangible assets of over $11 billion but this was down 5.5% on the previous year's expenditure. Of 1998–99 expenditure, almost $9.5 billion (85%) was on plant, machinery and equipment (including motor vehicles). Capital expenditure increased in three industry subdivisions, the largest increase being for Wood and paper product manufacturing (up 35.2%). Of the 6 industry subdivisions which recorded falls in capital expenditure, the largest falls were recorded for Textile, clothing, footwear and leather manufacturing (down 38.6%), Non-metallic mineral product manufacturing (down 28.7) and Machinery and equipment manufacturing (down 26.4%).

FOOD, BEVERAGE AND TOBACCO MANUFACTURING

Food, beverage and tobacco manufacturing businesses

2.7 CHANGE FROM 1997–98 TO 1998–99



In June 1999, Food, beverage and tobacco manufacturers employed 189,000 people, an increase of 0.7% over the previous year. These manufacturers generated almost $52 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.

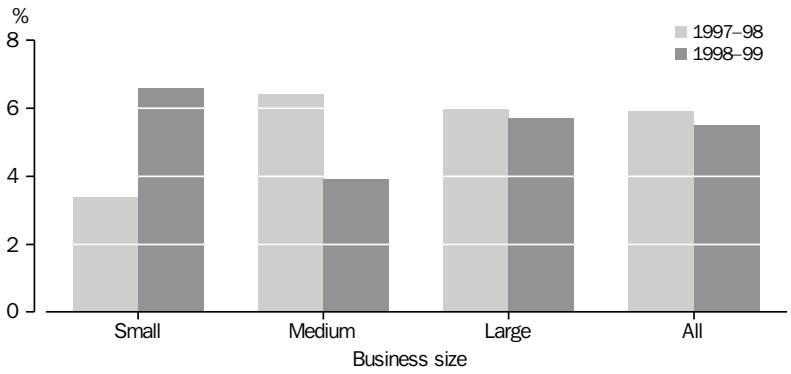
The industry balance sheet shows that the net worth of the industry fell by around $1 billion (4.6%). This was despite increases in both current and non current assets resulting in overall growth of $6.4 billion in the value of assets. Both current and non current liabilities increased in value resulting in an increase in the value of liabilities which was greater than the increase in assets. Capital expenditure on tangible assets at $2.6 billion was the second largest value for any manufacturing subdivision despite having fallen by 3.2% from the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $2,025 million.

2.8 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	49 200	51 729	5.1
Other operating income	1 053	1 078	2.4
Total operating income	*50 252*	*52 808*	*5.1*
Cost of sales	36 666	38 512	5.0
Labour costs	7 487	7 993	6.8
Depreciation	1 480	1 589	7.4
Interest expenses	1 473	1 492	1.3
Other operating expenses	373	331	–11.2
Total operating expenses	*47 478*	*49 917*	*5.1*
Operating profit before tax	**2 775**	**2 890**	**4.2**
Balance sheet			
Current assets	16 394	20 015	22.1
Non-current assets	32 309	35 113	8.7
Total assets	*48 703*	*55 128*	*13.2*
Current liabilities	13 418	18 278	36.2
Non-current liabilities	14 231	16 773	17.9
Total liabilities	*27 649*	*35 051*	*26.8*
Net worth	**21 054**	**20 077**	**–4.6**
Capital outlays			
Acquisition of fixed tangible assets(a)	2 647	2 562	–3.2

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

2.9 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

For 1998–99, the industry profit margin was 5.5% (i.e. $55 of pre-tax profits per $1,000 of operating income) a small decrease from the 1997–98 result. Pre-tax profits were recorded in 1998–99 by 76% of Food, beverage and tobacco manufacturers (75% of large businesses, 77% of medium sized businesses and 77% of small businesses).

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 12.3%
- Median 3.7%
- Third quartile 0.1%

As table 2.10 shows, there was a deterioration in all performance measures except for the small improvement in interest coverage.

2.10 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	5.6	5.5	–1.1
Return on assets	5.7	5.2	–8.0
Long term debt to equity	0.7	0.8	23.6
Current ratio	1.2	1.1	–10.4
Interest coverage	2.9	2.9	1.9

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.11 presents establishment data for the 10 industry classes with the largest production (industry value added) out of the 23 industry classes within the Food, beverage and tobacco manufacturing industry. These industries accounted for 64% of the people employed in the Food, beverage and tobacco manufacturing industry in June 1999 and for 65% of 1998–99 production. Meat processing was by far the largest industry class. It had the greatest production (over $1.5 billion) and turnover ($6.9 billion) and with over 30,000 people employed, accounted for 18% of all people employed by Food, beverage and tobacco manufacturing establishments.

2.11 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value added (production)*
	no.	*$m*	*$m*
Meat processing	30 049	6 868	1 554
Wine mfg	8 726	3 323	1 326
Food mfg n.e.c	15 232	3 145	1 011
Fruit and vegetable processing	11 194	3 532	924
Beer and malt mfg	2 894	2 518	892
Dairy product mfg n.e.c.	8 219	4 362	857
Soft drink, cordial and syrup mfg	5 869	2 589	807
Poultry processing	13 282	2 405	681
Cereal food and baking mix mfg	5 911	2 088	668
Confectionery mfg	5 920	1 469	616
Balance of food, beverage and tobacco mfg	60 059	17 985	4 963
Total food, beverage and tobacco mfg	**167 355**	**50 284**	**14 299**

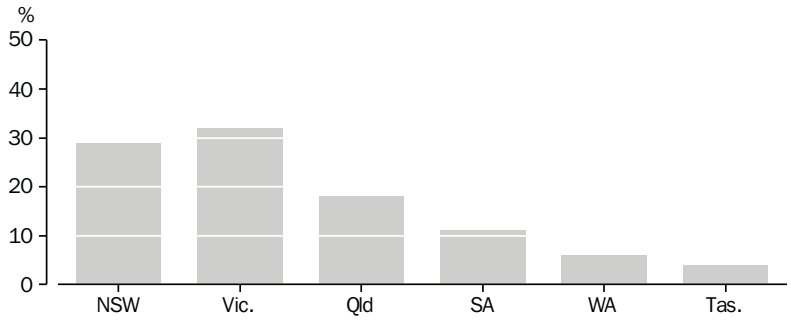
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.12 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".

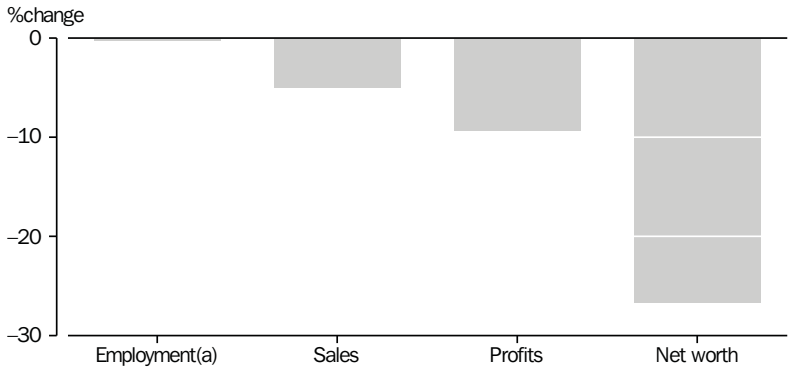
2.12 PRODUCTION(a)—1998–99



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

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

2.13 CHANGE FROM 1997–98 TO 1998–99



(a) Employment decreased by 0.3%.

Textile, clothing, footwear and leather manufacturing businesses

In June 1999 Textile, clothing, footwear and leather manufacturers employed 73,600 people, down 0.3% from a year earlier. During 1998–99, these manufacturers generated over $10 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.

The industry balance sheet shows a substantial fall in net worth of $717 million (26.7%) between 1997–98 to 1998–99 following an increase of around half that magnitude the previous year. Capital expenditure on tangible assets by Textile, clothing, footwear and leather manufacturers fell by 38.6% between 1997–98 and 1998–99 to $255 million. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $219 million during the year.

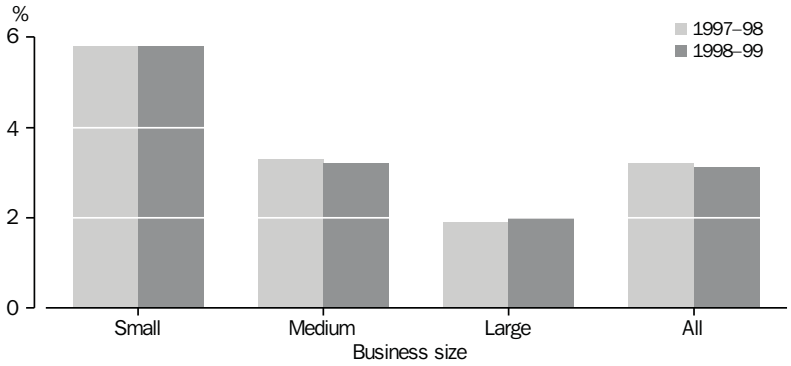
2.14 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	10 601	10 067	–5.0
Other operating income	117	153	30.2
Total operating income	*10 718*	*10 220*	*–4.6*
Cost of sales	7 521	7 041	–6.4
Labour costs	2 339	2 361	1.0
Depreciation	273	243	–10.9
Interest expenses	148	150	1.6
Other operating expenses	99	108	9.5
Total operating expenses	*10 379*	*9 904*	*–4.6*
Operating profit before tax	**339**	**316**	**–6.8**
Balance sheet			
Current assets	4 420	3 766	–14.8
Non-current assets	2 713	2 340	–13.7
Total assets	*7 133*	*6 106*	*–14.4*
Current liabilities	2 948	2 446	–17.0
Non-current liabilities	1 500	1 692	12.8
Total liabilities	*4 448*	*4 138*	*–7.0*
Net worth	**2 685**	**1 968**	**–26.7**
Capital outlays			
Acquisition of fixed tangible assets(a)	415	255	–38.6

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

Performance indicators

2.15 PROFIT MARGIN (a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

For 1998–99, the industry profit margin was 3.1% (i.e. $31 of pre-tax profits per $1,000 of operating income) a slight fall from the 1997–98 result (3.2%). Nevertheless, pre-tax profits were recorded for 74% of Textile, clothing, footwear and leather manufacturers for 1998–99 (70% of large businesses, 79% of medium sized businesses and 75% of small businesses).

Performance indicators *continued*

Quartiles (see glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 17.4%
- Median 5.5%
- Third quartile –0.1%

The most notable feature of the data presented in table 2.16 is that long term debt to equity rose substantially in the industry between 1997–98 and 1998–99.

2.16 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	3.2	3.1	–2.2
Return on assets	4.8	5.2	8.8
Long term debt to equity	0.6	0.9	53.9
Current ratio	1.5	1.5	2.7
Interest coverage	3.3	3.1	–5.8

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.17 presents establishment data for the 8 industry classes with the largest production (industry value added) out of the 19 industry classes within the Textile, clothing, footwear and leather manufacturing industry. These industry classes accounted for almost 70% of the people employed in the Textile, clothing, footwear and leather manufacturing industry in June 1999 and a similar proportion of 1998–99 production. Three of the four largest of these industry classes (in terms of production) 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 almost 40% of employment and for a third of the production in the Textile, clothing, footwear and leather manufacturing industry.

2.17 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Clothing mfg n.e.c.	9 422	1 011	427
Women's and girls' wear mfg	9 706	1 204	379
Knitting mill product mfg n.e.c.	3 814	812	285
Men's and boys' wear mfg	6 831	814	278
Synthetic fibre textile mfg	3 618	719	246
Textile floor covering mfg	3 274	726	230
Made-up textile product mfg	5 196	625	204
Footwear mfg	4 964	600	198
Balance of textile, clothing, footwear and leather mfg	20 887	3 275	1 023
Total textile, clothing, footwear and leather mfg	**67 712**	**9 788**	**3 268**

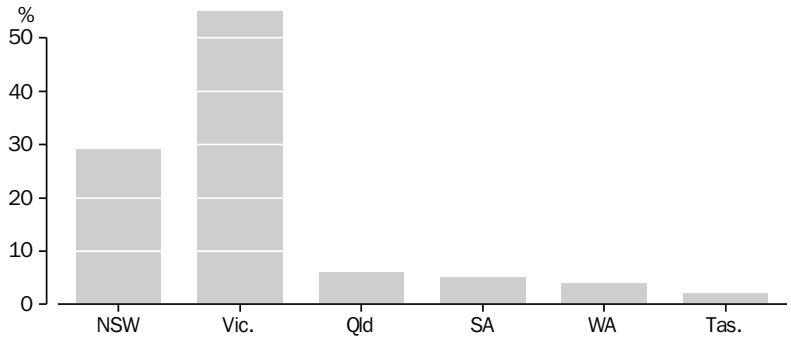
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.18 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".

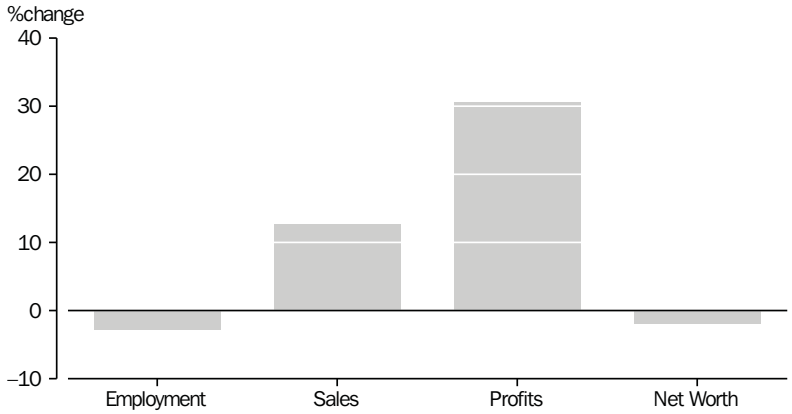
2.18 PRODUCTION(a)—1998–99



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

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

2.19 CHANGE FROM 1997–98 TO 1998–99



Wood and paper product manufacturing businesses

In June 1999, Wood and paper product manufacturing businesses employed 65,300 people, a decrease of 2.7% from the previous year. During 1998–99, these businesses generated $14.4 billion in sales of goods and services and $1,069 million in pre-tax profits. Among the manufacturing subdivisions, Wood and paper product manufacturing is one of the smaller industries.

The industry balance sheet shows a fall of $78 million in the net worth of the industry (down 1.5%). Both current and non current assets grew between 1997–98 and 1998–99 but a mixed change emerged for liabilities with current liabilities showing a substantial increase but non current liabilities falling by 14.4%.

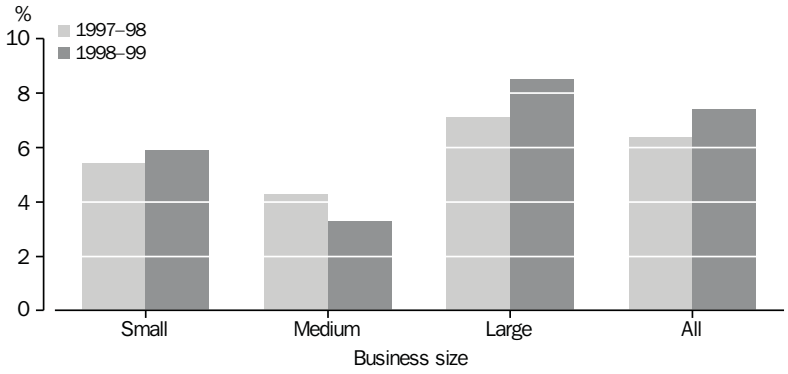
Capital expenditure on tangible assets by Wood and paper product manufacturers rose substantially to $944 million in 1998–99 following a substantial fall in the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $681 million in 1998–99.

2.20 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	12 796	14 436	12.8
Other operating income	119	96	–19.6
Total operating income	*12 916*	*14 532*	*12.5*
Cost of sales	8 338	9 649	15.7
Labour costs	2 543	2 600	2.2
Depreciation	493	516	4.7
Interest expenses	294	288	–2.0
Other operating expenses	429	409	–4.6
Total operating expenses	*12 097*	*13 462*	*11.3*
Operating profit before tax	**819**	**1 069**	**30.6**
Balance sheet			
Current assets	4 366	4 456	2.1
Non-current assets	8 389	9 024	7.6
Total assets	*12 755*	*13 480*	*5.7*
Current liabilities	3 225	4 631	43.6
Non-current liabilities	4 186	3 583	–14.4
Total liabilities	*7 411*	*8 213*	*10.8*
Net worth	**5 344**	**5 266**	**–1.5**
Capital outlays			
Acquisition of fixed tangible assets(a)	698	944	35.2

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

2.21 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

Performance indicators

For 1998–99, the industry profit margin was 7.4% (i.e. $74 of pre-tax profits per $1,000 of operating income) an improvement on the 1997–98 result (6.4%). Pre-tax profits were recorded for 88% of Wood and paper product manufacturers for 1998–99 (86% of large businesses, 75% of medium sized businesses and 89% of small businesses).

Performance indicators *continued*

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 15.3%
- Median 4.7%
- Third quartile 2.4%

Of the other performance measures for the industry, the long term debt to equity ratio and the interest coverage ratio reflected an improved position for 1998–99 compared to 1997–98 but the current ratio indicated a worse liquidity position for 1998–99 than for the previous year.

2.22 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	6.4	7.4	16.1
Return on assets	6.4	7.9	23.6
Long term debt to equity	0.8	0.7	–13.1
Current ratio	1.4	1.0	–28.9
Interest coverage	3.8	4.7	24.5

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.23 presents establishment data for five of the largest industry classes within the Wood and paper product manufacturing industry. These classes together accounted for almost two thirds of people employed in June 1999 and for over 60% of 1998–99 production for the Wood and paper product manufacturing industry as a whole.

2.23 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Wooden structural component mfg	20 134	2 512	806
Pulp, paper and paperboard mfg	4 382	2 114	711
Timber resawing and dressing	6 242	1 177	495
Log sawmilling	5 550	729	318
Paper product mfg n.e.c.	3 681	1 085	302
Balance of wood and paper product mfg	20 729	4 584	1 663
Total wood and paper product mfg	**60 718**	**12 201**	**4 295**

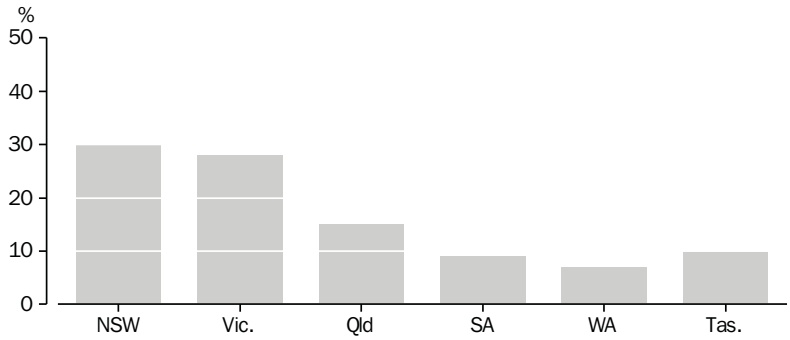
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.24 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".

2.24 PRODUCTION(a)—1998–99

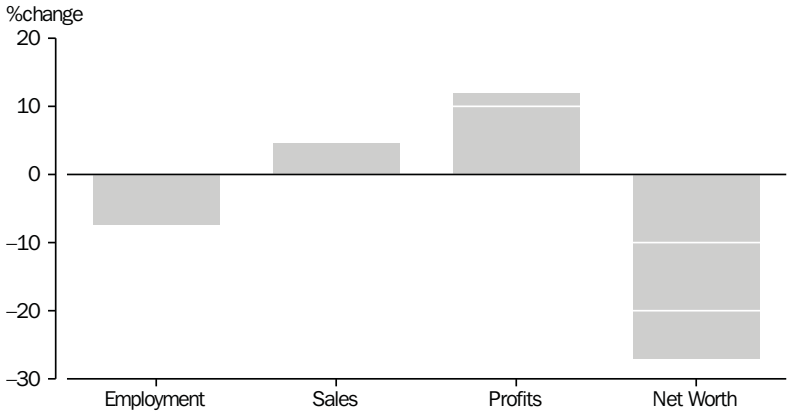


(a) NT and ACT each contrbuted less than 1% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

PRINTING, PUBLISHING AND RECORDED MEDIA

2.25 CHANGE FROM 1997–98 TO 1998–99



Printing, publishing and recorded media businesses

In June 1999, Printing, publishing and recorded media businesses employed just over 100,000 people, a 7.4% decrease from a year earlier. During 1998–99, these businesses generated $16 billion in sales of goods and services and $880 million in operating profit before tax. Among the manufacturing subdivisions, Printing, publishing and recorded media is a medium sized industry.

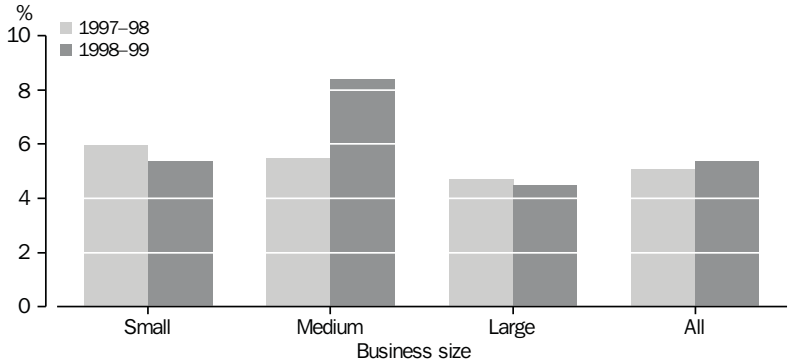
The industry balance sheet shows a decrease of over $3.2 billion in the net worth of the industry between 1997–98 and 1998–99. Both current assets and non current assets fell between June 1998 and June 1999 while both current and non current liabilities increased. Capital expenditure on tangible assets fell by 22.6% between 1997–98 and 1998–99 following a substantial rise the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $507 million.

2.26 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	15 342	16 043	4.6
Other operating income	161	382	137.4
Total operating income	*15 503*	*16 425*	*5.9*
Cost of sales	9 168	9 758	6.4
Labour costs	3 941	4 128	4.7
Depreciation	526	589	11.9
Interest expenses	278	278	0.0
Other operating expenses	805	793	–1.4
Total operating expenses	*14 717*	*15 545*	*5.6*
Operating profit before tax	**785**	**880**	**12.0**
Balance sheet			
Current assets	6 011	4 806	–20.1
Non-current assets	14 453	13 932	–3.6
Total assets	*20 464*	*18 738*	*–8.4*
Current liabilities	4 001	5 256	31.4
Non-current liabilities	4 599	4 832	5.1
Total liabilities	*8 600*	*10 088*	*17.3*
Net worth	**11 864**	**8 650**	**–27.1**
Capital outlays			
Acquisition of fixed tangible assets(a)	749	580	–22.6

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

2.27 PROFIT MARGIN (a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

Performance indicators

For 1998–99, the industry profit margin was 5.4% (i.e. $54 of pre-tax profits per $1,000 of operating income), a 6.3% improvement on the 1997–98 result (5.1%). Pre-tax profit was recorded for 66% of Printers, publishers and recorded media manufacturers for 1998–99 (78% of large businesses, 79% of medium sized businesses and 64% of small businesses).

Performance indicators *continued*

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 11.5%
- Median 2.9%
- Third quartile –4.2%

The large decrease in net worth during 1998–99 led to deterioration in the long term debt to equity ratio and the current ratio also fell. However, the other performance measures shown reflected an improved industry position.

2.28 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	5.1	5.4	6.3
Return on assets	3.8	4.7	22.5
Long term debt to equity	0.4	0.6	44.1
Current ratio	1.5	0.9	–39.1
Interest coverage	3.8	4.1	78.9

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.29 presents establishment data for all seven industry classes within the Printing, publishing and recorded media industry for 1998–99. 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 72% of the production of the total Printing, publishing and recorded media industry.

2.29 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Newspaper printing or publishing	29 696	5 326	2 574
Printing	39 902	5 613	2 190
Paper stationery manufacturing	10 157	1 432	535
Other periodical publishing	5 956	1 125	371
Book and other publishing	5 368	1 256	363
Recorded media manufacturing and publishing	2 350	693	309
Services to printing	5 910	552	287
Total printing, publishing and recorded media	**99 339**	**15 998**	**6 629**

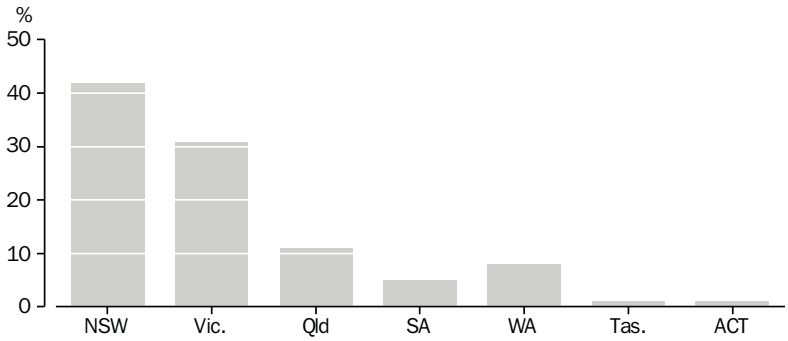
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.30 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 the Printing, publishing and recorded media industry is contained in chapter 1 under the heading "Geographic distribution".

2.30 PRODUCTION(a)—1998–99

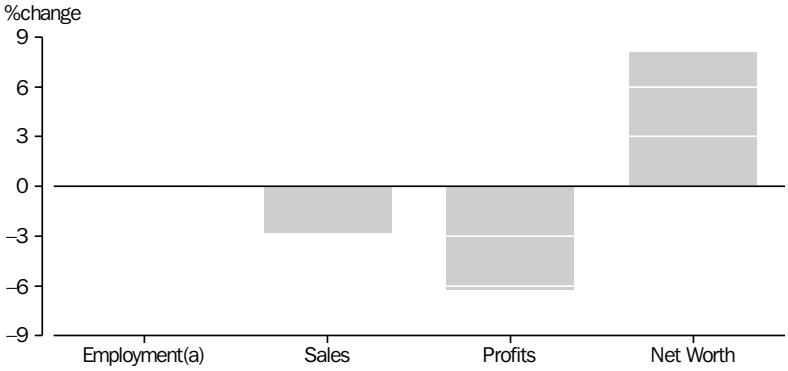


(a) The Northern Territory contrbuted less than 0.5% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

PETROLEUM, COAL, CHEMICAL AND ASSOCIATED PRODUCT MANUFACTURING

2.31 CHANGE FROM 1997–98 TO 1998–99



(a) Employment rose by 0.1%.

Petroleum, coal, chemical and associated product manufacturing businesses

In June 1999, Petroleum, coal, chemical and associated product manufacturers employed 103,400 people, virtually the same number as in June 1998. During 1998–99, these manufacturers generated $36.9 billion in sales of goods and services (down 2.8%) and almost $1.8 billion in operating profit before tax (down 6.2%). Among the manufacturing subdivisions, Petroleum, coal, chemical and associated product manufacturing is one of the larger industries.

Petroleum, coal, chemical and associated product manufacturing businesses *continued*

The industry balance sheet shows an increase of $962 million (8.1%) in the net worth of the industry between 1997–98 and 1998–99 as a result of the value of assets rising more quickly than the value of liabilities. Capital expenditure on tangible assets by Petroleum, coal, chemical and associated product manufacturers rose by almost 20%. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $1,547 million.

2.32 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	37 913	36 870	–2.8
Other operating income	376	425	13.3
Total operating income	*38 289*	*37 295*	*–2.6*
Cost of sales	29 192	28 191	–3.4
Labour costs	5 042	5 155	2.2
Depreciation	1 311	1 326	1.2
Interest expenses	462	445	–3.8
Other operating expenses	399	414	3.7
Total operating expenses	*36 406*	*35 531*	*–2.4*
Operating profit before tax	**1 883**	**1 765**	**–6.2**
Balance sheet			
Current assets	12 234	12 871	5.2
Non-current assets	15 104	16 445	8.9
Total assets	*27 339*	*29 316*	*7.2*
Current liabilities	9 951	10 577	6.3
Non-current liabilities	5 525	5 915	7.1
Total liabilities	*15 476*	*16 492*	*6.6*
Net worth	**11 862**	**12 824**	**8.1**
Capital outlays			
Acquisition of fixed tangible assets(a)	1 498	1 784	19.1

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

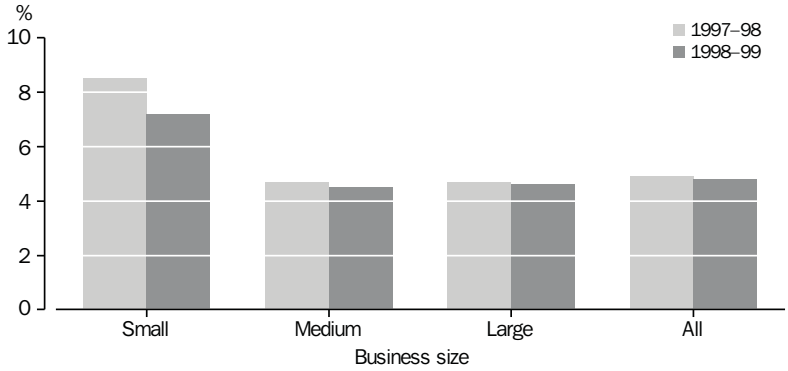
Performance indicators

For 1998–99, the industry profit margin was 4.8% (i.e. $48 of pre-tax profits per $1,000 of operating income) a slight fall from the 4.9% experienced in 1997–98. Pre-tax profits were recorded for 72% of Petroleum, coal, chemical and associated product manufacturers for 1998–99 (82% of large businesses, 70% of medium sized businesses and 72% of small businesses).

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

- First quartile 10.1%
- Median 3.6%
- Third quartile –1.6%

2.33 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

2.34 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	4.9	4.8	–3.7
Return on assets	6.9	6.0	–12.6
Long term debt to equity	0.5	0.5	–1.0
Current ratio	1.2	1.2	–1.0
Interest coverage	5.1	5.0	–2.0

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.35 presents establishment data for the 8 industry classes with the largest production (industry value added) from the 23 industry classes within the Petroleum, coal, chemical and associated product manufacturing industry. In combination, these classes accounted for 60% of people employed in the Petroleum, coal, chemical and associated product manufacturing industry as a whole and for over 65% of turnover and industry value added (production).

2.35 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Medicinal and pharmaceutical product mfg	13 939	5 261	1 681
Petroleum refining	4 050	7 191	1 259
Plastic injection moulded product mfg	16 380	2 354	996
Inorganic industrial chemical mfg n.e.c.	3 779	1 744	599
Paint mfg	5 760	1 589	563
Plastic bag and film mfg	5 942	1 334	466
Soap and other detergent mfg	3 793	1 263	420
Synthetic resin mfg	4 050	1 842	411
Balance of petroleum, coal, chemical and associated product mfg	38 283	11 154	3 406
Total petroleum, coal, chemical and associated product mfg	**95 976**	**33 733**	**9 801**

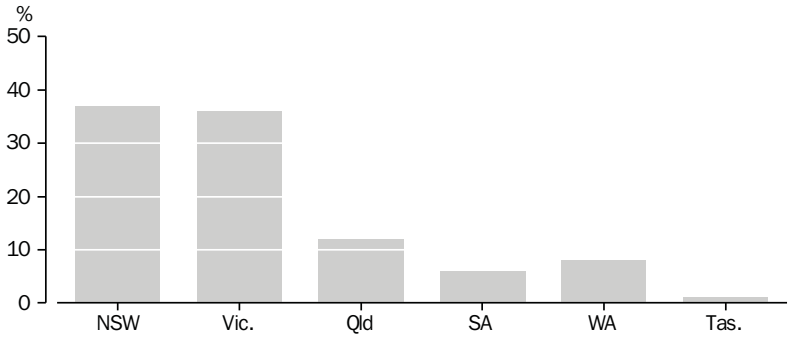
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.36 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".

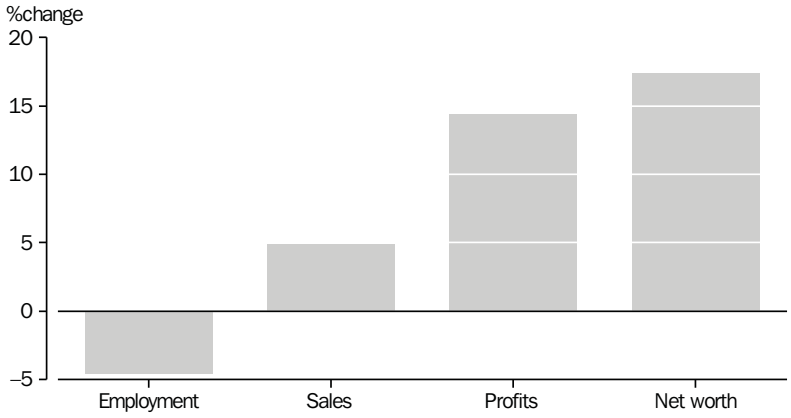
2.36 PRODUCTION(a)—1998–99



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

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

2.37 CHANGE FROM 1997–98 TO 1998–99



Non-metallic mineral product manufacturing businesses

In June 1999, Non-metallic mineral product manufacturers employed around 39,500 people, a fall of 4.6% from the previous year. During 1998–99, these manufacturers generated $10.8 billion in sales of goods and services and almost $900 million in operating profit before tax. Among the manufacturing subdivisions, Non-metallic mineral product manufacturing is one of the smaller industries.

The industry balance sheet shows that the net worth of the industry rose by $772 million (17.4%) from 1997–98 to 1998–99, the main cause being an almost $700 million increase non current assets. Capital expenditure on tangible assets fell by almost 30% to $531 million. The largest component of capital expenditure in 1998–99 was outlays on plant, machinery and equipment (including motor vehicles) which amounted to $469 million (88% of total acquisitions).

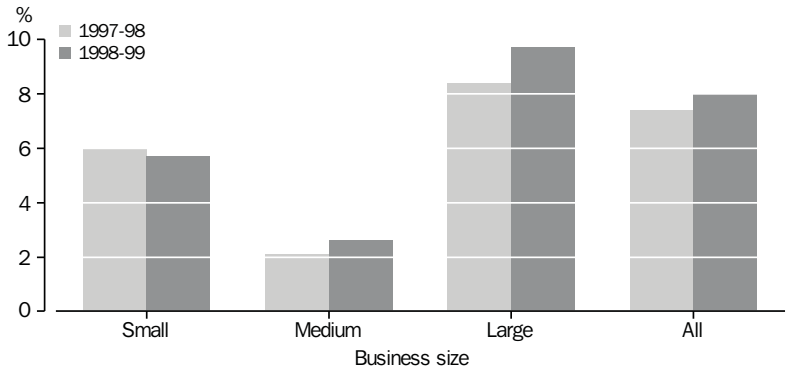
2.38 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	10 364	10 841	4.6
Other operating income	174	278	59.6
Total operating income	*10 539*	*11 120*	*5.5*
Cost of sales	6 944	7 361	6.0
Labour costs	1 898	1 971	3.8
Depreciation	588	556	–5.4
Interest expenses	194	235	21.5
Other operating expenses	139	110	–21.1
Total operating expenses	*9 764*	*10 234*	*4.8*
Operating profit before tax	**775**	**886**	**14.4**
Balance sheet			
Current assets	3 932	3 825	–2.7
Non-current assets	7 564	8 256	9.1
Total assets	*11 496*	*12 081*	*5.1*
Current liabilities	4 259	4 102	–3.7
Non-current liabilities	2 796	2 766	–1.1
Total liabilities	*7 055*	*6 868*	*–2.7*
Net worth	**4 441**	**5 213**	**17.4**
Capital outlays			
Acquisition of fixed tangible assets(a)	744	531	–28.7

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

Performance indicators

2.39 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

The 1998–99 industry profit margin of 8.0% (i.e. $80 of pre-tax profits per $1,000 of operating income) was an increase of 8.3% from the 1997–98 result. The industry recorded the highest profit margin of all manufacturing subdivisions, well above the overall manufacturing profit margin (5.1%). However, despite this overall result only 70% of Non-metallic mineral product manufacturers recorded pre-tax profits for 1998–99 (77% of large businesses, 71% of medium sized businesses and 69% of small businesses). This was the second lowest proportion of all manufacturing subdivisions and lower than the overall proportion for manufacturers (77%)

Performance indicators *continued*

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 13.6%
- Median 4.6%
- Third quartile –0.6%

The most notable change in the other performance indicators was the improvement in the long term debt to equity ratio. This improvement followed on from a similar improvement in the previous year.

2.40 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	7.4	8.0	8.3
Return on assets	6.7	7.3	8.8
Long term debt to equity	0.6	0.5	–15.7
Current ratio	0.9	0.9	1.0
Interest coverage	5.0	4.8	–4.7

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.41 presents establishment data for the six industry classes with the largest production (industry value added) from the 11 industry classes within the Non-metallic mineral product manufacturing industry. These classes accounted for 80% of people employed in the Non-metallic mineral product manufacturing industries as a whole in June 1999 and for 82% of the 1998–99 industry value added (production).

2.41 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Concrete slurry mfg(b)	5 314	2 540	508
Cement and lime mfg	1 959	1 338	494
Concrete product mfg n.e.c.	5 716	1 361	480
Glass and glass product mfg	4 932	1 106	460
Non-metallic mineral product mfg n.e.c.	6 221	1 271	458
Clay brick manufacturing	3 672	831	378
Balance of non-metallic mineral product mfg	6 777	1 415	624
Total non-metallic mineral product mfg	**34 591**	**9 862**	**3 402**

(a) Includes working proprietors.

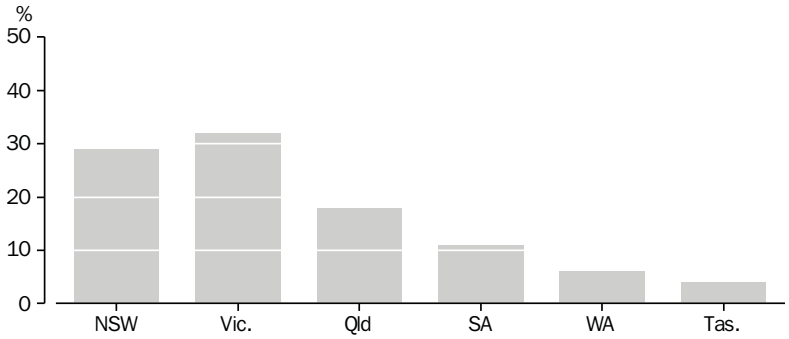
(b) Principally ready mixed concrete manufacturing.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.42 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".

2.42 PRODUCTION(a)—1998–99

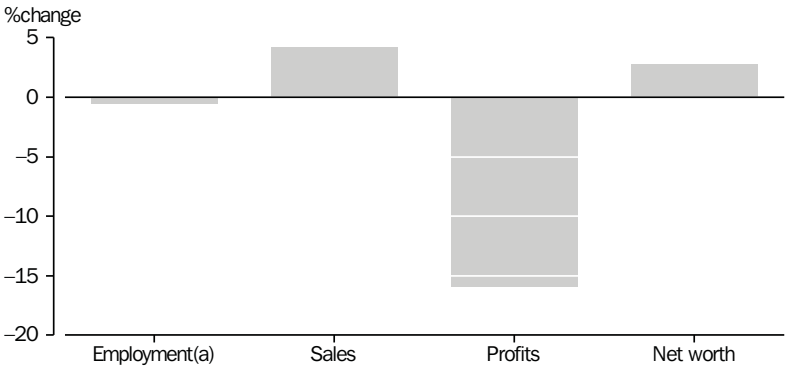


(a) NT and ACT each contrbuted less than 0.5% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

METAL PRODUCT MANUFACTURING

2.43 CHANGE FROM 1997–98 TO 1998–99



(a) Employment fell by 0.5%.

Metal product manufacturing businesses

In June 1999, Metal product manufacturers employed almost 150,000 people (virtually unchanged from a year earlier). In 1998–99, these manufacturers generated $36 billion in sales of goods and services and almost $2.3 billion in operating profit before tax. Among the manufacturing subdivisions, Metal product manufacturing is one of the larger industries.

The industry balance sheet shows an increase of $366 million (2.8%) in the net worth of the industry from 1997–98 to 1998–99 despite a large increase in liabilities especially current liabilities. Capital expenditure by Metal product manufacturers fell to $2,851 million in 1998–99. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to over $2.6 billion.

2.44 INCOME STATEMENT AND BALANCE SHEET

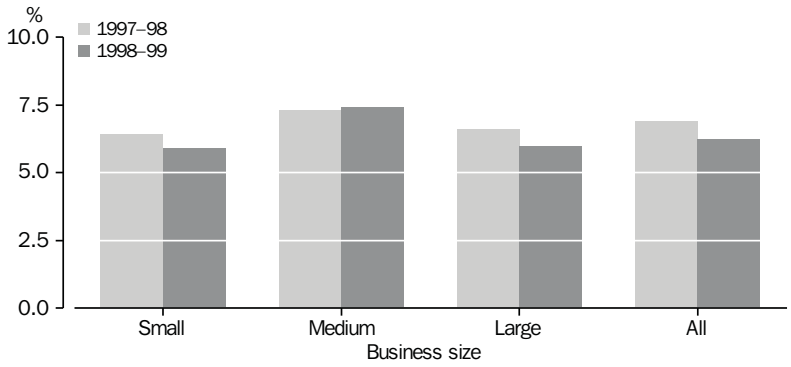
	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	34 749	36 192	4.2
Other operating income	(a) – 359	435	n.a.
Total operating income	*34 472*	*36 626*	*6.3*
Cost of sales	23 304	25 422	9.1
Labour costs	6 401	6 636	3.7
Depreciation	1 326	1 422	7.2
Interest expenses	503	593	17.9
Other operating expenses	245	290	18.4
Total operating expenses	*31 780*	*34 364*	*8.1*
Operating profit before tax	**2 692**	**2 263**	**–15.9**
Balance sheet			
Current assets	11 420	12 277	7.5
Non-current assets	20 895	25 251	20.8
Total assets	*32 315*	*37 528*	*16.1*
Current liabilities	9 046	12 227	35.2
Non-current liabilities	10 350	12 016	16.1
Total liabilities	*19 396*	*24 243*	*25.0*
Net worth	**12 919**	**13 285**	**2.8**
Capital outlays			
Acquisition of fixed tangible assets(b)	2 938	2 851	–3.0

(a) See Glossary for explanation of negative value.

(b) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

Performance indicators

2.45 PROFIT MARGIN (a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

For 1998–99, the industry profit margin was 6.2% (i.e. $62 of pre-tax profits per $1,000 of operating income), considerably below the 7.8% recorded for the previous year. In 1998–99, around 81% of Metal product manufacturers made an operating profit before tax (72% of large businesses, 76% of medium sized businesses and 82% of small businesses). The industry profit margin remained well above the overall manufacturing profit margin (5.1%).

Performance indicators *continued*

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

- First quartile 12.1%
- Median 35.0%
- Third quartile 0.3%

All performance measures reflected a worse position for 1998–99 comparted to 1997–98.

2.46 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	7.8	6.2	–20.9
Return on assets	8.3	6.0	–27.6
Long term debt to equity	0.8	0.9	12.9
Current ratio	1.3	1.0	–20.5
Interest coverage	6.4	4.8	–24.2

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.47 presents establishment data for the 7 classes with the largest production (industry value added) out of the 21 industry classes within the Metal product manufacturing industry. These classes accounted for two thirds of people employed and almost 70% of the production of the Metal product manufacturing industry as a whole.

2.47 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Basic iron and steel mfg	18 838	8 605	2 092
Structural steel fabricating	20 634	3 864	1 234
Fabricated metal product mfg n.e.c.	21 310	2 545	1 030
Alumina production	5 518	3 274	994
Aluminium smelting	5 440	3 666	817
Sheet metal product mfg n.e.c.	12 920	1 889	695
Architectural aluminium product mfg	13 644	2 164	669
Balance of metal product mfg	49 606	12 915	3 384
Total metal product mfg	**147 910**	**38 923**	**10 915**

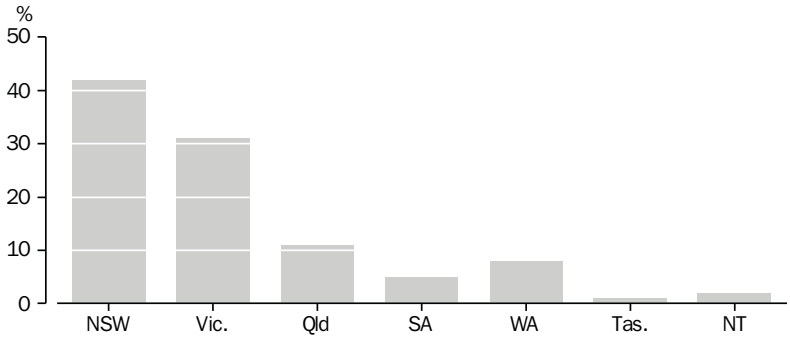
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.48 shows how production by Metal product manufacturing establishments is distributed by State and Territory. Production is measured by the variable "Industry value added".

2.48 PRODUCTION(a)—1998–99

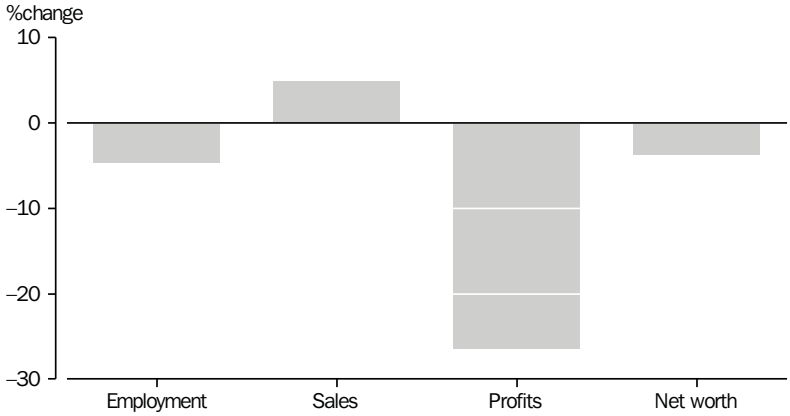


(a) The Australian Capital Territory contrbuted less than 0.5% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

MACHINERY AND EQUIPMENT MANUFACTURING

2.49 CHANGE FROM 1997–98 TO 1998–99



In June 1999, Machinery and equipment manufacturers employed 202,000 people, more than any other manufacturing subdivision but nevertheless, a 4.9% decrease from June 1998. During 1998–99, these manufacturers generated $46 billion in sales of goods and services and $1,467 million of operating profits before tax. Among the manufacturing subdivisions, Machinery and equipment manufacturing is one of the largest industries.

The industry balance sheet shows a fall of $586 million (3.7%) in the net worth of the industry during 1998–99 despite an increase in the value of assets. Capital expenditure on tangible assets by Machinery and equipment manufacturers fell substantially from 1997–98 to 1998–99 following a large increase the previous year. The largest component of capital expenditure was outlays on plant, machinery and equipment (including motor vehicles) which amounted to almost $1.2 billion.

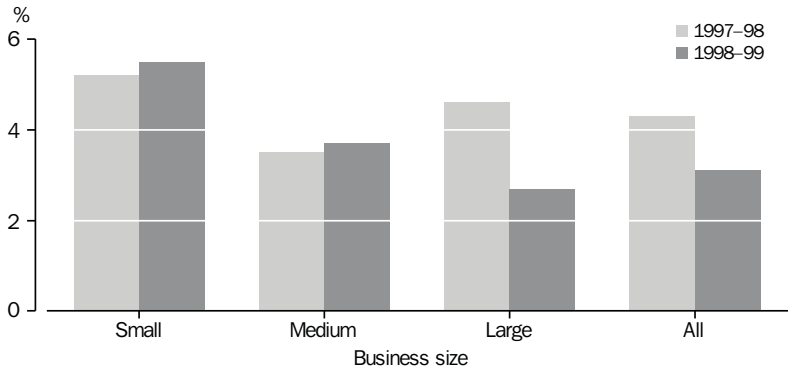
2.50 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	43 645	46 526	6.6
Other operating income	569	629	10.6
Total operating income	*44 214*	*47 156*	*6.7*
Cost of sales	31 571	34 309	8.7
Labour costs	8 676	9 019	4.0
Depreciation	1 146	1 358	18.5
Interest expenses	366	404	10.3
Other operating expenses	463	599	29.4
Total operating expenses	*42 221*	*45 689*	*8.2*
Operating profit before tax	**1 993**	**1 467**	**–26.4**
Balance sheet			
Current assets	16 006	16 176	1.1
Non-current assets	12 533	12 590	0.5
Total assets	*28 540*	*28 766*	*0.8*
Current liabilities	11 185	12 012	7.4
Non-current liabilities	6 277	6 090	–3.0
Total liabilities	*17 462*	*18 102*	*3.7*
Net worth	**11 078**	**10 664**	**–3.7**
Capital outlays			
Acquisition of fixed tangible assets(a)	1 906	1 403	–26.4

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

Performance indicators

2.51 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

The 1998–99 industry profit margin of 3.1% (i.e. $31 of pre-tax profits per $1,000 of operating income) represented a substantial decrease on the 1997–98 margin of 4.3% and leaves this industry with the equal lowest profit margin of all of the manufacturing subdivisions, well below the overall manufacturing profit margin (5.1%). Nevertheless, almost 75% of Machinery and equipment manufacturers made an operating profit before tax for 1998–99 (68% of large businesses, 81% of medium sized businesses and 74% of small businesses).

Performance indicators *continued*

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 12.5%
- Median 3.8%
- Third quartile –0.4%

As table 2.52 shows, all other industry performance measures also showed a worse position for 1998–99 than for 1997–98.

2.52 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	4.5	3.1	–30.9
Return on assets	7.0	5.1	–27.0
Long term debt to equity	0.6	0.6	0.8
Current ratio	1.4	1.3	–5.9
Interest coverage	6.4	4.6	–28.1

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.53 presents establishment data for the ten industry classes with the largest production (industry value added) from the 27 industry classes within the Machinery and equipment manufacturing industry. These ten classes accounted for over 60% of people employed and for almost 70% of 1998–99 industry value added (production) by the Machinery and equipment manufacturing industry as a whole.

2.53 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Motor vehicle mfg	17 837	10 796	2 876
Automotive component mfg n.e.c.	20 461	3 479	1 319
Aircraft mfg	12 079	1 922	900
Electrical equipment mfg n.e.c.	14 453	2 398	822
Industrial machinery and equipment mfg n.e.c.	11 875	1 704	694
Electronic equipment mfg n.e.c.	10 275	2 177	642
Household appliance mfg	11 412	2 189	631
Mining and construction machinery mfg	8 685	1 829	556
Lifting and material handling equipment mfg	7 933	1 458	547
Shipbuilding	7 063	1 545	508
Balance of machinery and equipment mfg	72 896	13 865	4 503
Total machinery and equipment mfg	**194 969**	**43 363**	**13 996**

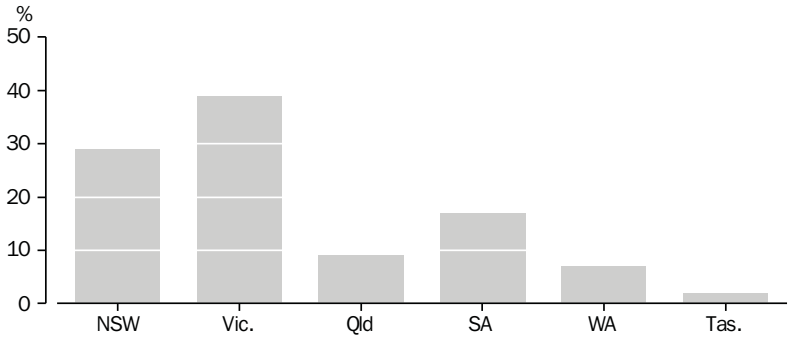
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.54 shows how production by Machinery and equipment manufacturing establishments is distributed by State and Territory. Production is measured by the variable "Industry value added".

2.54 PRODUCTION(a)—1998–99

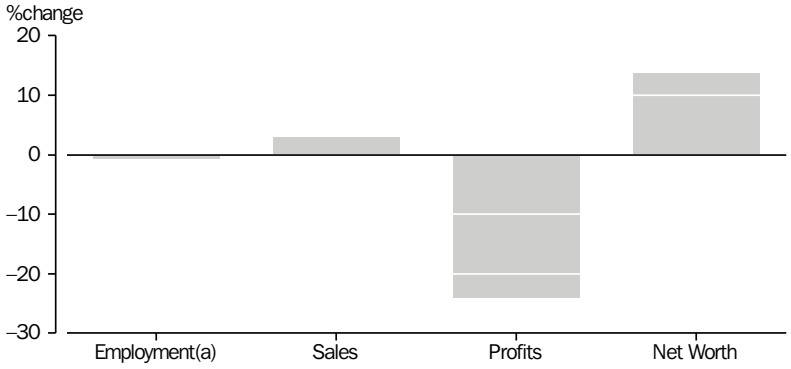


(a) The NT and the ACT each contrbuted less than 0.5% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

OTHER MANUFACTURING

2.55 CHANGE FROM 1997–98 TO 1998–99



(a) Employment fell by 0.7%.

In June 1999, Other manufacturing businesses employed 55,700 people which represented a 0.7% fall from a year earlier. In 1998–99, these businesses generated just over $6.7 billion in sales of goods and services and $259 million in operating profits before tax. In terms of the subdivisions within the manufacturing industry, Other manufacturing is a small industry.

The industry balance sheet shows a $154 million (13.7%) increase in the net worth of the industry from 1997–98 to 1998–99. Capital expenditure on tangible assets by Other manufacturers rose to $222 million (up 17.8%) of which $186 million (84%) was outlays on plant, machinery and equipment (including motor vehicles).

2.56 INCOME STATEMENT AND BALANCE SHEET

	1997–98	*1998–99*	*Relative change*
	$m	*$m*	*%*
Income statement			
Sales of goods and services	6 528	6 722	3.0
Other operating income	36	62	70.5
Total operating income	*6 565*	*6 784*	*3.3*
Cost of sales	4 373	4 552	4.1
Labour costs	1 610	1 701	5.7
Depreciation	114	128	12.0
Interest expenses	68	71	5.0
Other operating expenses	71	73	2.3
Total operating expenses	*6 237*	*6 525*	*4.6*
Operating profit before tax	**328**	**259**	**–21.1**
Balance sheet			
Current assets	1 719	2 048	19.1
Non-current assets	1 205	1 299	7.8
Total assets	*2 924*	*3 347*	*14.5*
Current liabilities	1 168	1 322	13.2
Non-current liabilities	630	745	18.1
Total liabilities	*1 798*	*2 067*	*14.9*
Net worth	**1 126**	**1 280**	**13.7**
Capital outlays			
Acquisition of fixed tangible assets(a)	188	222	17.8

(a) Includes capitalised computer software but excludes intangible assets such as goodwill and patents.

Performance indicators

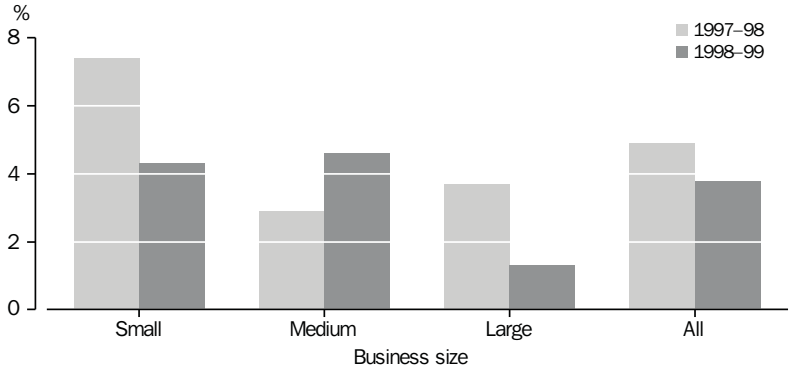
The 1998–99 industry profit margin of 3.8% (i.e. $38 of pre-tax profits per $1,000 of operating income) represented a substantial decrease on the 1998–99 margin of 5.0% and leaves this industry with a profit margin well below the overall manufacturing profit margin (5.1%). Nevertheless, 82% of Machinery and equipment manufacturers made an operating profit before tax for 1998–99 (62% of large businesses, 84% of medium sized businesses and 82% of small businesses).

Quartiles (see Glossary) give an indication of the spread of 1998–99 profit margins in this industry.

- First quartile 11.2%
- Median 4.7%
- Third quartile 0.6%

In contrast, there was an improvement in the long term debt to equity position.

2.57 PROFIT MARGIN(a) BY SIZE OF BUSINESS



(a) Operating profit before tax as a percentage of operating income.

2.58 INDUSTRY PERFORMANCE

			Relative change(a)
Industry performance	*1997–98*	*1998–99*	*%*
Selected performance measures			
Profit margin	5.0	3.8	–25.7
Return on assets	11.2	7.5	–33.5
Long term debt to equity	0.6	0.6	3.9
Current ratio	1.5	1.5	5.2
Interest coverage	5.8	4.5	–22.7

(a) Relative changes are calculated using unrounded data.

Largest industry classes

Table 2.59 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 almost half of the people employed and over 40% of industry value added (production) for the total Other manufacturing subdivision.

2.59 INDUSTRY COMPOSITION—1998–99

	Employment at end of June(a)	*Turnover*	*Industry Value Added (production)*
	no.	*$m*	*$m*
Wooden furniture and upholstered seat mfg	26 883	2 761	957
Furniture mfg n.e.c.	7 721	1 061	396
Manufacturing n.e.c.	5 250	707	235
Sheet metal furniture mfg	3 930	475	194
Mattress mfg (except rubber)	2 842	433	149
Prefabricated metal building mfg	2 285	492	164
Toy and sporting good mfg	1 920	231	77
Jewellery and silverware mfg	3 481	454	123
Prefabricated building mfg n.e.c.	528	84	29
Total other mfg	**54 839**	**6 698**	**2 324**

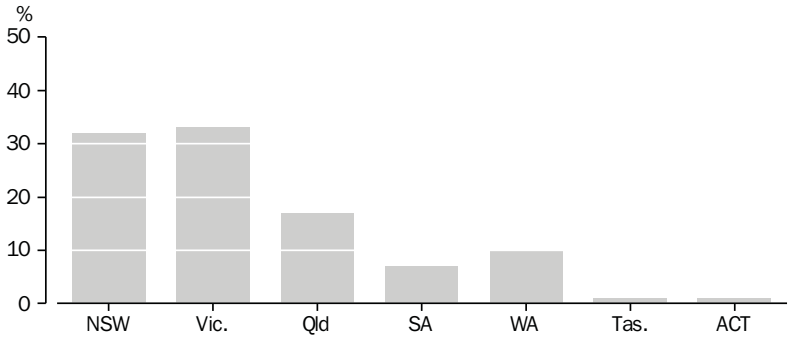
(a) Includes working proprietors.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

State and Territory distribution of 1998–99 production

Graph 2.60 shows how production by Other manufacturing establishments is distributed by State and Territory. Production is measured by the variable "Industry value added".

2.60 PRODUCTION(a)—1998–89



(a) The Northern Territory contrbuted less than 0.5% of production for this industry.

Source: Manufacturing Industry, Australia, 1998–99 (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 for 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 (less any indirect taxes payable to governments) and in volume terms (expressed in 1998–99 prices). 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". The Explanatory Notes contain a more detailed explanation of chain volume measures.

The total sales of goods by manufacturers increased by 2.3% from 1998–99 to 1999–2000 measured in current price values and by 0.1% in volume terms. This result implies an average price increase for manufactured goods of around 2% between the two years. As would be expected in periods of relatively small price movements, changes from 1998–99 to 1999–2000 tended to be in the same direction for both the value of sales and volume measures of sales and all subdivisions recorded results consistent with increases in the level of prices. The largest increases in current price sales were recorded by Wood and paper product manufacturing (up 12.8%), Printing, publishing and recorded media (up 9.1%) and Food, beverage and tobacco manufacturing (up 5.9%) with the same industries (in the same order) also recording the greatest increases in the volume of sales. The largest decreases in current price sales were recorded by Textile, clothing, footwear and leather manufacturing, (down 12.0%), Other manufacturing (down 8.8%) and Non-metallic mineral product manufacturing (down 6.3%) with the same industries (in the same order) also recording the greatest decreases in the volume of sales.

A guide to changes in average price levels for the industries shown in table 3.1 can be derived by dividing 1999–2000 current price sales by 1999–2000 volume of sales. Taking Food, beverage and tobacco manufacturing as an example gives 49,892/49,391 = 1.010 implying that average price levels for that industry for 1999–2000 were 1.0% higher than average price levels for 1998–99. On this basis, all industry subdivisions experienced increases in the average level of prices with Petroleum, coal, chemical and associated product manufacturing showing the largest increase (up 4.7%) mainly as a result of increased prices for petroleum products.

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 3.12. 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 3.12 exclude sales to other businesses in the same industry. Also, for manufacturing as a whole, there are small classification differences between the ANZSIC on which table 3.1 is based and the ASIC on which table 3.12 is based.

3.1 SALES OF GOODS PRODUCED

	Current prices			Chain volume measures(a)		
	1998–99	*1999–2000*	*Change*	*1998–99*	*1999–2000*	*Change*
Industry	*$m*	*$m*	*%*	*$m*	*$m*	*%*
Food, beverage and tobacco mfg	47 110	49 892	5.9	47 110	49 391	4.8
Textile, clothing, footwear and leather mfg	9 494	8 353	–12.0	9 494	8 310	–12.5
Wood and paper product mfg	14 462	16 315	12.8	14 462	15 985	10.5
Printing, publishing and recorded media	11 206	12 226	9.1	11 206	11 812	5.4
Petroleum, coal, chemical and associated product mfg	35 681	35 748	0.2	35 680	34 128	–4.3
Non-metallic mineral product mfg	11 097	10 402	–6.3	11 097	10 360	–6.6
Metal product mfg	31 019	32 164	3.7	31 020	31 192	0.6
Machinery and equipment mfg	41 615	41 980	0.9	41 614	41 515	–0.2
Other mfg	7 067	6 444	–8.8	7 067	6 298	–10.9
Total mfg	**208 750**	**213 524**	**2.3**	**208 750**	**208 992**	**0.1**

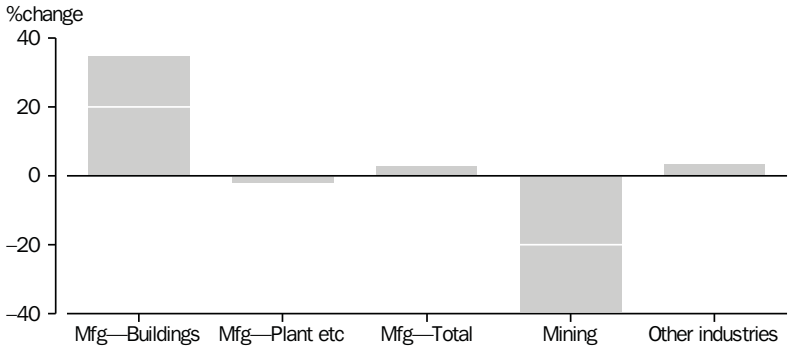
(a) Reference year for chain volume measures is 1998–99 and thus, values for that year are the same under both measures.

Source: Inventories and Sales, Selected industries, Australia, June Quarter 2000 (Cat. no. 5629.0).

CAPITAL EXPENDITURE

This article covers private sector capital expenditure for most industries. Excluded is all capital expenditure by governments and all private expenditure in the Agriculture, Education and Health and community services industries. Of the industries covered, the manufacturing industry was responsible for 23% of 1999–2000 capital expenditure by private sector businesses in Australia, an increase from 21% the year before. Capital expenditure by the manufacturing industry increased by $275 million (up 2.9%) between 1998–99 and 1999–2000. This increase resulted from a 34.8% rise in expenditure on buildings and structures as expenditure on equipment, plant and machinery fell by 1.4% over the same period.

3.2 CHANGE FROM 1998–99 TO 1999–2000



Source: Private New Capital Expenditure and Expected Expenditure, Australia, June Quarter 2000 (Cat. no. 5625.0).

Capital expenditure *continued*

Total private sector capital expenditure fell by 5.0% ($2,255 million) from 1998–1999 to 1999–2000 as a result of a 39.4% ($3,438 million) decrease by the Mining industry which experienced falls in capital expenditure on buildings and structures as well as on equipment, plant and machinery. Mining's share of all private capital expenditure fell from 19.5% to 12.5% during this period. Property and business services reported the greatest increase in private sector capital expenditure, up 15.6% ($1,024 million).

Manufacturing's 2.9% increase in capital expenditure was largely driven by increased expenditure by Wood and paper product manufacturing (up 25.6%) and by Petroleum, coal, chemical and associated product manufacturing (up 20.6%). The largest percentage decrease was recorded by Textile, clothing, footwear and leather manufacturing (down 25.5%). Metal product manufacturing also reported a substantial decrease (down 23.6%) after being the only manufacturing subdivision to record an increase in capital expenditure (up 17.2%) the previous year.

In 1999–2000 the manufacturing subdivisions which undertook the most capital expenditure were Food, beverage and tobacco manufacturing (22.9% of total manufacturing), and Petroleum, coal, chemical and associated product manufacturing (18.7%). Metal product manufacturing recorded the greatest relative decrease, falling from 20.6% to 15.3% of manufacturing capital expenditure.

3.3 PRIVATE NEW CAPITAL EXPENDITURE

	1998–99	*1999–2000*	*Change*
Industry	*$m*	*$m*	*%*
Food, beverage and tobacco mfg	2 088	2 227	6.7
Textile, clothing, footwear and leather mfg	263	196	–25.5
Wood and paper product mfg	786	987	25.6
Printing, publishing and recorded media	803	782	–2.6
Petroleum, coal, chemical and associated product mfg	1 512	1 818	20.2
Non-metallic mineral product mfg	499	469	–6.0
Metal product mfg	1 941	1 482	–23.6
Machinery and equipment mfg	1 335	1 528	14.5
Other mfg	209	220	5.3
Total mfg	**9 435**	**9 710**	**2.9**
Of which			
Buildings and structures	1 116	1 504	34.8
Equipment, plant and machinery	8 320	8 206	–1.4

Source: Private New Capital Expenditure and Expected Expenditure, Australia, June Quarter 2000 (Cat. no. 5625.0).

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 survey is primarily intended to provide indications of the direction and magnitude of changes to industry profits, though it also gives a reasonable guide to profit levels.

3.4 COMPANY PROFITS BEFORE INCOME TAX

	1998–99	*1999–2000*	*Change*
Industry	*$m*	*$m*	*%*
Mining	4 883	9 813	101.0
Manufacturing	**10 936**	**12 632**	**15.5**
Construction	939	1 061	13.0
Wholesale trade	2 851	3 371	18.2
Retail trade	2 552	2 274	–10.9
Transport & storage	1 459	1 836	25.8
Services to finance & insurance	1 105	585	–47.1
Property & business services	516	830	60.9
Other services	2 710	3 973	46.6
All industry	**27 951**	**36 375**	**30.1**

Source: Company Profits, Australia, June Quarter 2000 (Cat. no.5651.0).

Between 1998–99 and 1999–2000 most manufacturing subdivisions experienced increases in pre-tax profits, the most notable increases being for the Metal product manufacturing industry which recorded a substantial increase of 95.7% (after recording a fall of 53.3% the previous year) and the relatively small Other manufacturing industry which recorded a rise of 111%. Relatively minor falls in Manufacturing profit between 1998–99 and 1999–2000 were recorded for Machinery and equipment manufacturing (down 4.5%) and Food, beverage and tobacco manufacturing (down 0.9%), these two subdivisions being the only ones to record a fall in profit over this period.

3.5 MANUFACTURERS' PROFITS BEFORE INCOME TAX

Industry	1998–99 $m	1999–2000 $m	Change %
Food, beverage and tobacco mfg	2 966	2 938	–0.9
Textile, clothing, footwear and leather mfg	198	287	45.0
Wood and paper product mfg	882	1 018	15.4
Printing, publishing and recorded media	1 349	1 554	15.2
Petroleum, coal, chemical and associated product mfg	2 290	2 382	4.0
Non-metallic mineral product mfg	837	1 134	35.5
Metal product mfg	929	1 818	95.7
Machinery and equipment mfg	1 413	1 350	–4.5
Other mfg	72	152	111.1
Total mfg	**10 936**	**12 632**	**15.5**

Source: Company Profits, Australia, June Quarter 2000 (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 3.6 presents estimates of the average number of wage and salary earners (employees) in Australian Manufacturing during February 1999 and February 2000. Manufacturing experienced a decrease of 28,600 employees between the two periods (down 3.1%). The overall fall in the number of employees in Manufacturing resulted from a 5.8% fall in full-time employees which more than offset the increase in part-time employee numbers (up by 18.8%). Part-time employees rose from 11% to 13% of all Manufacturing employees between the two periods.

The decrease in Manufacturing employees differed markedly to the economy overall, where the number of employees decreased by only 0.1%. Another industry which experienced falls in the number of employees between February 2000 and a year earlier was Mining (down 12.6%). Similar to Manufacturing, Mining also experienced an increase of part-time employees (up 48%), which was more than offset by a decrease in full-time employees (down 14.7%). In contrast, industries which experienced the most growth over the same period were Electricity, gas and water supply (up 6.7%) and Transport and storage (up 5.9%).

The proportion of Manufacturing employees who were full-time fell between February 1999 and February 2000 (from 89.2% to 86.7%). The proportion for all industries varied little falling from 68.5% to 68.2%. Communication services experienced the greatest decrease in full time employment, falling from 87.7% to 81.9% and also the greatest increase in part time employment, rising by 44.7%.

3.6 WAGE AND SALARY EARNERS

	Manufacturing	*Total of all industries(a)*
	'000	'000
February 1999		
Full-time	821.2	4 905.7
Part-time	99.7	2 253.8
Total	920.9	7 159.5
February 2000		
Full-time	773.9	4 876.1
Part-time	118.4	2 278.6
Total	892.3	7 154.7
	%	%
Change		
Full-time	–5.8	–0.6
Part-time	18.8	1.1
Total	–3.1	–0.1

(a) Excludes Agriculture, forestry and fishing.

Source: Wage and Salary Earners, Australia, March Quarter 2000 (Cat. no. 6248.0).

While the total numbers of employees in the Manufacturing industry in Australia fell between the year averaged to February 1999 to the year averaged to February 2000, the States and Territories experienced a variety of change patterns in their average numbers of employees. As table 3.7 shows, four States recorded a decrease in the number of employees. This contrasts to industry overall in which only NSW and the ACT recorded a decrease.

3.7 WAGE AND SALARY EARNERS

	Manufacturing (average over year)			*Manufacturing share of all industries*	
	Average to February 1999	*Average to February 2000*		*Average to February 1999*	*Average to February 2000*
	'000	*'000*	*Change %*	*%*	*%*
New South Wales	281.0	270.7	–3.7	11.5	11.1
Victoria	321.1	303.9	–5.4	18.2	16.7
Queensland	140.4	138.2	–1.6	11.3	10.6
South Australia	83.4	82.0	–1.7	16.2	15.6
Western Australia	69.0	70.4	2.1	9.8	9.7
Tasmania	22.1	22.4	1.2	14.2	14.0
Northern Territory	2.8	2.9	2.1	4.1	3.9
Australian Capital Territory	2.6	3.0	14.5	1.6	2.0
Australia	**922.6**	**893.5**	**–3.2**	**13.1**	**12.4**

Source: Wage and Salary Earners, Australia, March 2000 (Cat. no. 6248.0).

Over the past ten years the shift in numbers of paid employees has been more pronounced. Between the year averaged to February 2000 and 10 years earlier, the total number of employees in Manufacturing fell 19.1% from 1,104,200 to 893,480. This contrasts markedly to the increase in the total for all industry of 11.4% over the same period. Manufacturing's proportion of all employees fell from 17.1% to 11.4% over those 10 years. All States recorded decreases over this period except Queensland.

Average weekly earnings of employees

Table 3.8 presents information on average total earnings (i.e. ordinary time earnings plus overtime earnings) at the mid-point of the June quarter 2000 for full-time employees. At that time, average earnings for full-time Manufacturing employees ($806) were slightly lower than the all industries' full-time average ($822). Ten of the sixteen industries show higher average full-time earning rates than Manufacturing.

3.8 AVERAGE WEEKLY EARNINGS(a), AUSTRALIA, JUNE QUARTER 2000

	Full time adult males	*Full time adult females*	*Full time adult persons*
Industry	$	$	$
Mining	1 413	931	1363
Manufacturing	**844**	**671**	**806**
Electricity, gas and water supply	1 064	843	1033
Construction	834	566	797
Wholesale trade	832	659	784
Retail trade	670	563	630
Accommodation, cafes and restaurants	648	580	623
Transport and storage	932	715	880
Communication services	1 014	837	963
Finance and insurance	1 222	755	971
Property and business services	943	689	841
Government administration and defence	913	789	863
Education	955	832	880
Health and community services	945	768	821
Cultural and recreational services	829	722	786
Personal and other services	886	651	799
All industries(b)	885	714	822

(a) Average gross earnings before tax (including overtime).

(b) Excluding Agriculture, forestry and fishing.

Source: Average Weekly Earnings, States and Australia, June Quarter 2000 (Cat. no. 6302.0).

Unlike table 3.8 which presented data for average total earnings, table 3.9 and graph 3.10 present data for ordinary time earnings (i.e. average weekly earnings excluding overtime earnings). Table 3.9 shows that average weekly ordinary time earnings for full-time adult employees in Manufacturing grew by 2.4% from June quarter 1999 to June quarter 2000. If industries were ranked from the highest increase (Communication services—up 11.0%) to the lowest (Construction—down 4.0%), Manufacturing would rank twelfth of the sixteen industries which was well below the all industries increase of 4.2%.

Table 3.9 also shows that ordinary time earnings of adult full-time female employees grew more quickly in manufacturing than corresponding male earnings whereas the corresponding growth estimates for all industries were very similar for males and females.

3.9 CHANGE IN AVERAGE EARNINGS(a), AUSTRALIA—1999 TO 2000

Industry	*Full time adult males* %	*Full time adult females* %	*Full time adult persons* %
Mining	7.5	2.8	6.8
Manufacturing	**2.3**	**3.4**	**2.4**
Electricity, gas and water supply	10.0	6.4	9.4
Construction	–3.7	–4.5	–4.0
Wholesale trade	5.4	4.7	4.7
Retail trade	5.6	5.8	5.6
Accommodation, cafes and restaurants	8.5	8.2	8.4
Transport and storage	7.2	0.9	6.2
Communication services	12.7	5.8	11.0
Finance and insurance	6.8	6.0	5.7
Property and business services	4.4	6.2	6.4
Government administration and defence	5.8	4.5	5.0
Education	3.1	1.5	2.0
Health and community services	–0.8	4.2	2.1
Cultural and recreational services	6.8	5.6	7.0
Personal and other services	3.0	–1.5	1.6
All industries(b)	4.3	4.2	4.2

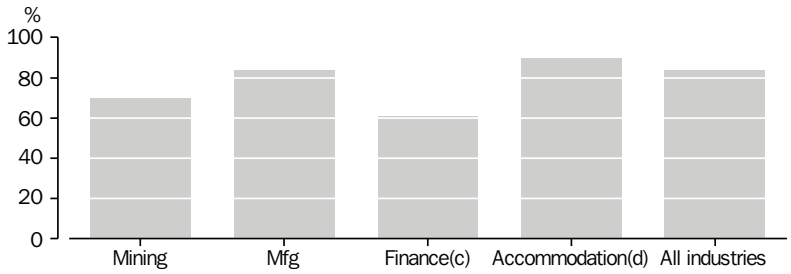
(a) Change from June quarter 1999 to June quarter 2000 in average ordinary time earnings ie gross earnings before tax (excluding overtime)

(b) Excluding Agriculture, forestry and fishing.

Source: Average Weekly Earnings, States and Australia, June Quarter 2000 (Cat. no. 6302.0).

Graph 3.10 shows ordinary time earnings of adult full-time female employees as a percentage of corresponding male earnings. In terms of this percentage, manufacturing is very close to the all industries average (around 84%). Percentages range from 61% for the Finance and insurance industry to 90% for the Accommodation, cafes and restaurants industry.

3.10 FEMALE/MALE ORDINARY TIME(a) EARNINGS RATIO(b)



(a) Gross earnings before tax less overtime earnings.
(b) Female earnings expressed as a percentage of male earnings
(c) Finance and Insurance.
(d) Accommodation, cafes and restaurants.

Source: Average Weekly Earnings, States and Australia, (Cat no. 6302.0).

As table 3.11 presents quantities of production for selected manufactured commodities for 1997–98, 1998–99 and 1999–2000.

Most of the selected commodities reflect higher levels of production for 1999–2000 than for 1998–99 with the largest relative increase in production between the two years occurring for hardwood woodchips (up 26.9%) followed by ready mixed concrete (up 12.1%) and clay bricks (up 9.0%). There were also some substantial falls in production between the two years notably, scoured and carbonised wool (down 17.1%), cotton broadwoven fabric (down 15.4%) and footwear other than waterproof or sports footwear (down 14.3%).

3.11 PRODUCTION OF SELECTED MANUFACTURED COMMODITIES

Commodity	*Unit of quantity(a)*	*1997–98*	*1998–99*	*1999–2000*
Red meat	'000 t	2 927	2 994	3 000
Chicken meat	'000 t	550	564	593
Beer	million L	1 757	1 729	1 745
Tobacco and cigarettes	t	21 258	21 045	20 688
Scoured and carbonised wool	t	165 104	129 753	107 608
Wool and man-made fibre tops	t	60 084	53 162	55 335
Wool yarn	t	18 077	17 668	19 020
Cotton yarn	t	36 897	36 814	33 368
Synthetic fibre yarn	t	12 913	10 311	11 148
Wool broadwoven fabric	'000 m^2	6 636	6 254	5 427
Cotton broadwoven fabric	'000 m^2	62 088	55 824	47 230
Man-made fibre broadwoven fabric	'000 m^2	135 768	136 886	130 461
Knitted or crocheted fabrics	t	13 019	14 004	14 135
Textile floor coverings	'000 m^2	44 494	r45 142	46 401
Footwear (excl waterproof and sports)	'000 pairs	12 367	11 238	9 627
Newsprint	'000 t	402	399	381
Wood pulp	'000 t	958	871	861
Hardwood woodchips	'000 t	5 665	4 856	6 164
Paperboard containers	'000 t	1 177	1 285	p1 338
Superphosphates	'000 t	1 819	1 464	1 429
Cement, Portland	'000 t	7 235	7 705	7937
Clay bricks	million	1 532	1 593	1 736
Ready mixed concrete	'000 m^3	r17 428	r18 600	20 849
Basic iron, spiegeleisen and sponge iron(b)	'000 t	7 928	7 453	6 489
Steel blooms and slabs(b)	'000 t	8 356	7 677	6 742
Electricity	million kWh	176 211	179 630	184 790
Gas	petajoules	650	675	726

(a) See 'Symbols and other usages' immediately after the Chapter contents.

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

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

PRICES 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 3.12 on an ASIC basis. The data presented in table 3.13, showing price changes of materials used, is based on the ANZSIC.

Price changes are net for the industry shown which means that changes shown in table 3.12 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 3.12 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 3.13 are also on a net industry basis.

Changes in prices of articles produced

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 being for Petroleum and coal products (down 14.6%). Paper, paper products, printing and publishing recorded the greatest increase (up 2.5%).

However between 1998–99 and 1999–2000 the price of articles produced by the manufacturing industry increased by 4.3%. The overall manufacturing increase was strongly influenced by the very large increase recorded for the Petroleum and coal products industry (up 58.5%). This reflects substantial price increases for refined petroleum products over this period following a decrease in price (down 14.6%) between 1997–98 and 1998–99. No manufacturing subdivisions recorded a decrease in the price of articles produced between 1998–99 and 1999–2000.

3.12 PRICE CHANGES OF ARTICLES APPROVED

Industry	*Change from 1997–98 to 1998–99* %	*Change from 1998–99 to 1999–2000* %
Food, beverages and tobacco	0.5	2.0
Textiles	–1.7	0.8
Clothing and footwear	1.2	1.4
Wood, wood products and furniture	1.4	3.8
Paper, paper products, printing and publishing	2.5	3.1
Basic chemicals and other chemical products	0.1	0.9
Petroleum and coal products	–14.6	58.5
Non-metallic mineral products	0.3	0.4
Basic metal products	–3.4	6.2
Fabricated metal products	0.5	1.4
Transport equipment	1.1	1.4
Other machinery and equipment	–0.5	0.7
Other mfg	0.5	0.9
Total mfg	**–0.2**	**4.3**

Source: Price Indexes of Article Produced by Manufacturing Industry, Australia, June Quarter 2000 (Cat. no. 6412.0).

Changes in prices of materials used

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%), with the next greatest decrease, recorded by Rubber and plastics (down 2.9%). The largest increases were recorded by Transport equipment and parts (up 2.9%) and Printing and publishing (up 2.5%).

However between 1998–99 and 1999–2000 manufacturing recorded a price increase of 9.3% for materials used. Again, Petroleum and coal products recorded the greatest fluctuation, increasing by 67.2% which reflected a world wide increase in crude oil prices. The greatest decrease in prices was recorded by the knitting mills and clothing sector, down 3.6%.

3.13 PRICE CHANGES OF MATERIALS USED

Industry	*Change from 1997–98 to 1998–99* %	*Change from 1998–99 to 1999–2000* %
Food, beverages and tobacco	0.5	0.3
Textiles and textile products	–2.4	–2.6
Knitting mills and clothing	–0.7	–3.6
Footwear	0.5	–2.6
Leather and leather products	1.7	4.6
Sawmilling and timber products	0.0	2.7
Paper and paper products	1.2	2.3
Printing, publishing and recorded media	2.5	–0.4
Petroleum and coal products	–12.9	67.2
Chemicals	–0.4	2.3
Rubber and plastics	–2.9	0.7
Non-metallic mineral products	–1.2	–0.5
Basic metal products	–1.8	0.9
Fabricated metal products	–1.0	–0.1
Transport equipment and parts	2.9	3.2
Electronic equipment and other machinery	–0.9	–0.3
Other mfg	1.3	3.0
Total mfg	**–1.0**	**9.3**

Source: Price Indexes of Materials Used by Manufacturing Industries, Australia, June Quarter 2000 (Cat. no. 6411.0).

CHAPTER 4 INTERNATIONAL TRADE

INTRODUCTION

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

It begins with an article written by Tim Harcourt, the Chief Economist for the Australian Trade Commission (Austrade). The article follows on from the work presented in the joint ABS/Austrade publication *A Portrait of Australian Exporters* (Cat. No. 8154.0) which was based on the recently completed ABS Business Longtitudinal Study (BLS). The following article builds on the original work by bringing in data from the 1998–99 Manufacturing Survey.

BENEFITS FROM EXPORTING

The benefits of exporting activity to Australia are usually presented in terms of macroeconomics. Economists usually talk about Australia's balance of payments and the benefits of exports to economic growth. Exporting is also advocated from a business perspective. This is because exports help businesses expand (which is especially important given the small size of Australia's domestic market) and can have a favourable effect on profit margins. Exporting also helps a business keep up with the latest international trends in technology, training and consumer tastes giving Australian businesses a world view and an incentive to innovate and grow.

But is this all that exporting does? Is it just about macroeconomic and business performance? What about Australian workers and Australian communities in general? How do they benefit from exporting?

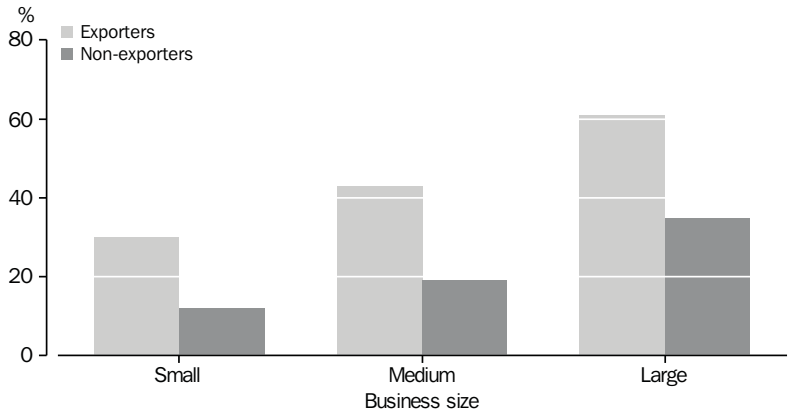
A recent report from Austrade and the Centre for Applied Economic Research at the University of New South Wales focussed particularly on the benefits to the workforce. The report made extensive use of an ABS/Austrade publication, *A Portrait of Australian Exporters* (Cat. No. 8154.0) which was based on the ABS Business Longitudinal Survey (BLS). The BLS sampled from a population of some 540,000 Australian companies from 1994–95 to 1997–98. The data show that exporters, generally speaking, are good employers as they outperform non-exporters in terms of wages and salaries, employment conditions, occupational health and safety and employment status.

For example, in terms of wages and salaries, exporters, on average, pay better than non-exporters. This is because exporters are usually more innovative than non-exporters, investing in technology and using advanced management techniques. Their workers are typically highly skilled. The higher productivity generated enables exporters to pay higher wages. According to the BLS data, 34% of exporters paid their workers above average weekly earnings (AWE) compared to only 12% of non-exporters.

Benefits from exporting *continued*

It is often said that this is a function of scale (exporters, on average, being larger businesses and hence more capital-intensive). However, as graph 4.1 shows, exporters pay better than non-exporters regardless of business size.

4.1 MANUFACTURERS PAYING MORE THAN AWE



Manufacturing exporters

The results for the economy as a whole have prompted further interest in the results for different industries. Most interest has been in manufacturing given its labour intensity and traditional role as a large-scale employer of Australian workers. The ABS Manufacturing Survey is a good source of data on the role of manufacturing exporters and the labour market.

The 1998–99 Survey represented around 52,000 businesses or 'management units' in the Australian manufacturing industry. The management units employed just fewer than 977,500 employees altogether. While exporters represented only 16% of all manufacturing businesses covered by the survey, they accounted for just over half (52%) the total number of employees. Some key characteristics of exporters and non-exporters in manufacturing are presented in table 4.2.

In terms of wages, the wages bill for manufacturing exporters was $22.4 billion compared to $15.7 billion for manufacturing non-exporters ($44,600 per employee and 33,100 per employee respectively). On a per employee basis, manufacturing exporters paid $44,600 compared to $33,100 for non-exporters.

Manufacturing exporters behaved similarly to exporters in other industries in respect of being, on average, more committed to staff training than non-exporters, out-spending them by a ratio of almost 2.3:1. Assuming average hours worked to be similar for exporters and non-exporters, manufacturing exporters had a higher capital/labour ratio than non-exporters by almost 2:1.

SELECTED STATISTICS FOR AUSTRALIAN MANUFACTURERS—1998–99

4.2 SELECTED STATISTICS FOR AUSTRALIAN MANUFACTURERS

Commodity	*Unit*	*Exporters*	*Non-exporters*
Persons employed(a)	'000	504	474
Wages and salaries	$m	22 450	15 678
Wages and salaries per employee	$'000	45	33
Expenditure on training	$m	231	101
Capital expenditure	$m	8 280	4 186
Capital expenditure per person employed(b)	000	16	9

(a) Includes working proprietors and partners of unincorporated businesses.

(b) Capital expenditure during 1998–99 per person employed at 30 June 1999.

Source: Manufacturing Survey 1998–99.

In conclusion, the manufacturing survey has provided further evidence on how exporters compare to non-exporters in the labour market. As for the economy as whole, manufacturing exporters, on average, tend to employ more workers than non-exporters and pay higher wages. They also spend a significantly higher proportion of their budget on the training of their staff. This shows that manufacturing exporters, like Australian exporters in general, practice a high skill, high wage, high productivity strategy in raising their international competitiveness and expanding their sales in world markets.

EXPORTS AND IMPORTS BY INDUSTRY

Table 4.3 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 4.3 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.

4.3 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					
1998–1999	47.1	11.7	4.2	39.6	11
1999–2000	49.9	13.2	4.5	41.2	11
Textile, clothing, footwear and leather mfg					
1998–1999	9.5	2.5	6.4	13.3	48
1999–2000	8.4	2.6	6.9	12.7	54
Wood and paper product mfg					
1998–1999	14.5	1.2	3.0	16.3	18
1999–2000	16.3	1.4	3.5	18.4	19
Printing, publishing and recorded media					
1998–1999	11.2	0.5	2.1	12.8	17
1999–2000	12.2	0.5	2.0	13.7	15
Petroleum, coal, chemical and associated product mfg					
1998–1999	35.7	5.6	15.0	45.1	33
1999–2000	35.7	6.9	16.8	45.6	37
Non-metallic mineral product mfg					
1998–1999	11.1	0.3	1.3	12.1	11
1999–2000	10.4	0.3	1.4	11.5	12
Metal product mfg					
1998–1999	31.0	17.3	7.7	21.4	36
1999–2000	32.2	18.3	7.9	21.8	36
Machinery and equipment mfg					
1998–1999	41.6	12.2	50.0	79.4	63
1999–2000	42.0	13.9	56.1	84.2	67
Other mfg					
1998–1999	7.1	0.7	2.8	9.2	31
1999–2000	6.4	0.8	3.1	8.8	36
Total mfg					
1998–1999	**208.8**	**52.1**	**92.4**	**249.2**	**37**
1999–2000	**213.5**	**57.9**	**102.4**	**257.9**	**40**

(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: International Merchandise Trade, Australia (Cat. no. 5422.0); 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 1999–2000 were estimated to be $57.9 billion which was an 11% increase on 1998–99. All manufacturing subdivisions either increased or maintained their levels of exports between 1998–99 and 1999–2000.

The Metal product manufacturing industry continued to have the highest value of exports with $18.3 billion worth of goods being sold overseas, accounting for around one-third of all manufacturing exports. Table 4.8 shows that basic non ferrous metal products made up a substantial proportion of exports by this industry. Other manufacturing industries to have exports valued at over $10 billion were Machinery and equipment manufacturing ($13.9 billion) and Food, beverage and tobacco manufacturing ($13.2 billion).

Imports by industry of origin

Imports also increased by around 11% between 1998–99 and 1999–2000. This resulted in Australian manufacturing experiencing a trade deficit in manufactured goods of $44.5 billion against the rest of the world in 1999–2000.

At $56.1 billion in value, goods classified to the Machinery and equipment manufacturing industry accounted for around 55% of manufacturing imports. Table 4.7 shows that around $11.5 billion of this related to imports of motor vehicles and parts. Petroleum, coal, chemical and associated product manufacturing was the next largest with its $16.8 billion accounting for just over 16% of imports of manufactured goods. The level of imports by industry of origin increased for all manufacturing subdivisions except for Printing, publishing and recorded media. The rate of increase was fairly consistent across industries.

Market size by industry of origin

By adding imports to the sales by 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 1998–99 and 1999–2000. Under this method the estimate for the Australian domestic market for manufactured goods in 1999–2000 was $257.9 billion, an increase of $8.7 billion (3.5%) on the previous year and approximately $13,500 per head of resident Australian population.

The industry (of origin) with the largest Australian market for its products was the Machinery and equipment manufacturing industry (which covers a wide range of consumer goods and capital goods) with an estimated 1999–2000 market size of $84.2 billion. This was followed by Petroleum, coal, chemical and associated product manufacturing ($45.6 billion) and Food, beverage and tobacco manufacturing ($41.2 billion).

The market for goods grew in six of the nine manufacturing subdivisions between 1998–99 and 1999–2000. The largest relative growth occurred in Wood and paper product manufacturing (up 13.0%) while the largest relative fall was for Textile, clothing, footwear and leather manufacturing (down 4.9%).

Import penetration

Import penetration estimates provide an insight into the level of imported goods which make their way into the Australian market. In 1999–2000, imports were estimated to satisfy 40% of the Australian market for all manufactured goods.

The greatest level of import penetration for an industry (of origin) in 1998–99 was for Machinery and equipment manufacturing where an estimated 67% 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 54% of the Australian market being satisfied by overseas products.

Import penetration *continued*

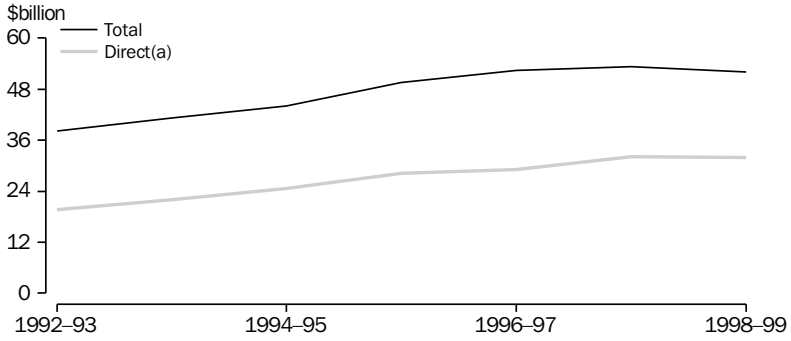
Markets (industry of origin) dominated by domestic goods in 1998–99 were the Food, beverage and tobacco manufacturing (89% of demand satisfied by domestic products) and Non-metallic mineral product manufacturing and Printing, publishing and recorded media where 88% and 85% respectively of demand was satisfied by domestic goods.

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 on exports and imports by industry.

Graph 4.4 shows that, in recent years, the value of direct exports by manufacturers has grown more quickly than the value of total exports of manufactured goods, indicating that manufacturers are taking an increasing role in the export of the goods that they produce. Except for a very small fall in 1996–97, the proportion of exports of manufactured goods undertaken by manufacturers has grown steadily from 1992–93 when it was 51.4% to 1998–99 when it reached 61.4%.

4.4 EXPORTS OF MANUFACTURED GOODS



(a) Exports by manufacturers or their agents.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

Exports as a proportion of goods manufactured

Direct exports by manufacturers as a proportion of goods manufactured fell slightly to 15.7% of sales in 1998–99 in contrast to a steadily rising trend in recent years. The industries which directly export the highest proportion of their manufactured goods are Metal product manufacturing (27.7%), Food, beverage and tobacco manufacturing (18.3%) and Machinery and equipment manufacturing (16.7%). The proportion of goods directly exported by manufacturers decreased between 1997–98 and 1998–99 for five of the nine manufacturing subdivisions, particularly in Wood and paper product manufacturing and Textile, clothing, footwear and leather manufacturing industries. Small rises were recorded for the Metal product manufacturing and Printing, publishing and recorded media industries.

4.5 EXPORT PERCENTAGE(a)—1998–99

Industry	*Employment under 100* %	*Employment of 100 or more* %	*Total* %
Food, beverage and tobacco mfg	14.4	19.7	18.3
Textile, clothing, footwear and leather mfg	8.6	20.7	13.9
Wood and paper product mfg	8.6	3.9	5.9
Printing, publishing and recorded media	5.4	3.9	4.7
Petroleum, coal, chemical and associated product mfg	9.0	11.7	10.8
Non-metallic mineral product mfg	2.3	4.5	3.5
Metal product mfg(b)	25.7	29.4	27.7
Machinery and equipment mfg	10.8	19.3	16.7
Other mfg	2.7	5.9	3.2
Total mfg	**12.6**	**17.6**	**15.7**

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

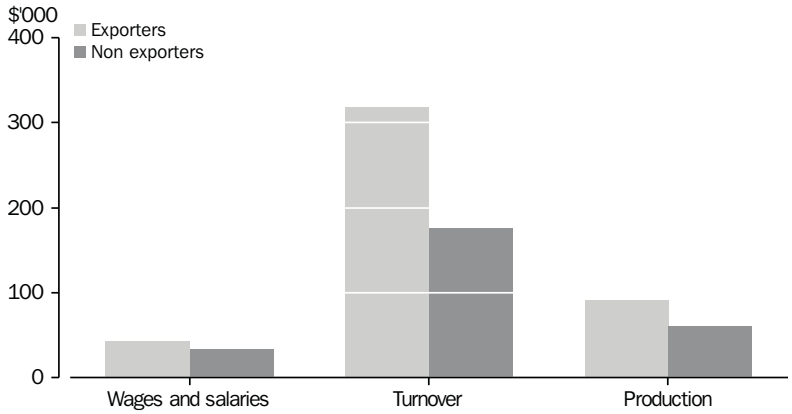
(b) Statistics classified by employment size category for this industry are influenced by operations of unincorporated joint venture businesses. For further information, refer to the note immediately preceding table 1.22 and to the Glossary.

Source: Manufacturing Industry, Australia, 1998–99 (Cat. no. 8221.0).

Performance measures

Graph 4.6 and table 4.7 show that in total, manufacturing establishments which undertook export activity in 1998–99 averaged 80% more turnover per person employed and 50% more production (industry value added) per person employed than those which undertook none. Wages and salaries per person were also much higher for exporters.

4.6 1998–99 PERFORMANCE PER PERSON EMPLOYED



Performance measures

In 1998–99, all industry subdivisions recorded higher averages per person employed for both performance measures shown in table 4.7 with the lone exception being turnover per person employed in Non-metallic mineral product manufacturing. However, between 1997–98 and 1998–99 production per person employed by exporting manufacturers rose by only 0.9% while the corresponding rise for non exporters was 13.3%. At the industry level, production per person employed rose more for non exporters in six of the nine subdivisions and actually fell for exporters in three subdivisions.

4.7 PERFORMANCE OF EXPORTING MANUFACTURERS—1998–99

	Turnover per person employed		*IVA per person employed*	
	Direct exporters	*Non-exporters*	*Direct exporters*	*Non-exporters*
Industry	*$'000*	*$'000*	*$'000*	*$'000*
Food, beverage and tobacco mfg	352	245	101	69
Textile, clothing, footwear and leather mfg	193	108	59	40
Wood and paper product mfg	315	162	106	59
Printing, publishing and recorded media	210	148	75	64
Petroleum, coal, chemical and associated product mfg	418	252	112	88
Non-metallic mineral product mfg	257	301	105	95
Metal product mfg	396	164	98	56
Machinery and equipment mfg	273	159	83	57
Other mfg	160	112	51	40
Total mfg	**319**	**177**	**92**	**61**

EXPORTS AND IMPORTS OF MANUFACTURED GOODS

Exports of manufactured goods

This section shows 1999–2000 levels of imports and exports for major manufactured commodity items. Table 4.8 shows 1999–2000 exports of manufactured products with exports valued at $500 million or more.

Comparisons of 1999–2000 value of exports for manufactured goods with data from 1998–1999 shows that the overall value of exports of manufactured goods has increased by 11%. The majority of the commodities show increased value of exports but relative increases have ranged widely. The greatest percentage increase was recorded in Nickel and alloys (33.8%), followed by Copper and alloys (28%). The majority of commodities however recorded increases ranging between 0.3% (Meat of bovine animals) and 5.4% (Zinc and alloys).

Of those commodities recording a decrease in exports, Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles, recorded the greatest decrease (down 2.9%), followed by Machinery specialised for particular industries (down 1.4%).

4.8 EXPORTS OF SELECTED MANUFACTURED COMMODITIES(a)—1999–2000

Commodity	*$m*
Gold, non-monetary (excl. gold ores and concentrates)	5 090
Aluminium	3 796
Alumina	3 391
Meat of bovine animals, fresh, chilled or frozen	3 179
Cars and other road vehicles (incl. air-cushion vehicles)	2 808
Petroleum products	2 266
Beverages	1 513
Iron and steel	1 407
Office machines and automatic data processing machines	1 307
Milk and cream and milk products other than butter or cheese	1 281
Nickel and alloys, unwrought	1 134
Machinery specialised for particular industries	1 103
Crustaceans, molluscs and aquatic invertebrates (except canned or bottled)	1 008
Power generating machinery and equipment	919
Copper and alloys, unwrought	839
Cheese and curd	806
Meat of sheep and goats, fresh, chilled or frozen	730
Fruit and nuts, fresh, dried or preserved and fruit preparations (incl. fruit juices)	687
Wood in chips or particles	657
Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles	592
Zinc and alloys, unwrought	550

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

Source: International Merchandise Trade (Cat. No. 5422.0).

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 4.9 shows 1999–2000 imports of manufactured products with imports valued at $1 billion or more in that year.

Comparing 1999–2000 data with that of 1998–1999 shows that the overall value of imports of manufactured goods has also increased by around 11%. The majority of the commodities show increased value of imports, ranging from 0.1% for Printed matter to 2.6% for Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles. Civil engineering and contractor's plant equipment was the only commodity to record a decrease in import value (down 0.5%).

4.9 IMPORTS OF MAJOR MANUFACTURED COMMODITIES(a)—1999–2000

	$m
Passenger motor vehicles (other than public transport type vehicles), station wagons and racing cars	6 911
Telecommunication equipment n.e.s. and parts n.e.s. and accessories	5 315
Automatic data processing machines and units thereof	4 900
Aircraft and associated equipment, spacecraft (including satellites) and spacecraft launch vehicles	4 163
Medical and pharmaceutical products	3 520
Organic chemicals	2 874
Articles of apparel and clothing accessories	2 795
Motor vehicles for the transport of goods including off highway dumpers	2 426
Paper and paperboard and articles of paper pulp, or paper or of paperboard	2 330
Parts and accessories of motor vehicles and tractors, track-laying and wheeled	2 274
Parts and accessories for office and automatic data processing machines	2 254
Plastics in primary and non-primary form	2 030
Measuring, checking, analysing and controlling instruments and apparatus n.e.s.	1 685
Electrical machinery and apparatus n.e.s.	1 578
Iron and steel	1 506
Chemical materials and products n.e.s.	1 242
Internal combustion piston engines, and parts thereof n.e.s.	1 211
Baby carriages, toys, games and sporting goods	1 131
Machinery and equipment speciaised for particular industries and parts thereof	1 112
Civil engineering and contractors' plant and equipment	1 105
Television and radio broadcast receivers	1 063
Ships, boats (including hovercraft) and floating structures	1 062
Household type electrical and non electrical equipment n.e.s.	1 043
Printed matter	1 007

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

Source: International Merchandise Trade (Cat. no. 5422.0)

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 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.

4 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

5 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

6 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

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

8 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.

9 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.

10 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

11 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.

12 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 1%.

13 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

14 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

15 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.

16 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

17 A list of all manufacturing subdivisions, groups and classes is contained in an appendix to this publication.

ANZSIC Divisions

18 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

19 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

20 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

21 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.

22 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.

23 From 1997–98 manufacturing data, the ABS has implemented revised international standards for measuring economic variables. Details of the changes which affect data presented in this publication are in paragraphs 24 to 31 inclusive.

24 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 to represent "production" are:

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

25 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 ABS *Information Paper Upgraded Australian National Account*s (Cat. no. 5253.0) which can also be accessed via the ABS web site.

26 Commencing with estimates for 1997–98, contribution to gross domestic product (GDP) by manufacturing industries are 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).

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

	Turnover (new standards—see table)
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

28 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

	Effect on estimates of turnover	*Difference between IVA estimates and IGP estimates*
Industry	*%*	*%*
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**

29 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) —1997–98

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: Manufacturing Survey, 1997–98.

30 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.

31 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

32 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.

33 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.

34 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.

35 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.

36 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.

37 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).

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

39 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.

40 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

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

42 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

43 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.

44 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.

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
262 Ceramic Product 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 this publication, business size is defined as:

- Small businesses are those which employ fewer than 20 people (except if employment is zero and sales exceed $10 million).
- Medium sized businesses are those which employ 20 to 99 people plus any which employ zero and have sales between $10 million and $50 million.
- Large businesses are those which employ 100 or more people plus any which employ zero and have sales of $50 million or more.

However, small businesses exclude non employing businesses i.e. unincorporated businesses where the only persons working in the business are the proprietors or partners in the business. While omission of these businesses from the statistics has very little effect on the industry estimates, their omission will potentially affect small business statistics to greater extent. For example for 1997–98, it was estimated by the Australian Taxation Office that these non employing businesses had around 1.5% of total manufacturing sales of goods and services. As small manufacturing businesses contribute only around one-fifth of manufacturers' sales, this implies that their omission would understate activity for small businesses by around 7% to 8% overall.

Non employing businesses are different from the zero employment cases included in the above definitions. The zero employment cases are incorporated businesses which are almost exclusively participants in unincorporated joint ventures (see entry for UJVs). These businesses have zero employment but in all other respects operate on a much larger scale than small businesses do and it is more appropriate to treat them as large or medium sized businesses rather than small.

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 the entry for "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.

Closing inventories

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.

Commission manufacturing 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 payroll tax and fringe benefits tax 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 1 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.

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 the entry for business size.

Fixed tangible assets Includes land, buildings and other structures, plant machinery and equipment and computer software (if capitalised).

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 5 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 earnings; 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.

Gross value added at basic prices See "Industry value added". Gross value added at basic prices is a national accounting measure of production which at industry level is virtually identical to industry value added.

Historic data Prior to Federation in 1901, statistics were not generally compiled on a consistent basis across the various Australian colonies, and for this reason, a statistical picture of the national manufacturing industry cannot be presented for this period with any confidence. However, from 1901 statistics have been compiled on a consistent basis across States allowing compilation of consistently defined national data.

Statistics on the manufacturing industry in the twentieth century divide into two distinct periods. In the first period, from 1901 to 1968, manufacturing statistics were compiled on an activity basis (i.e. businesses were asked to report information on their manufacturing activities regardless of the main industry of the business). Also, prior to 1967–68, the manufacturing industry included a number of activities that are not now included (such as electricity generation, motor vehicle repair and servicing and making hot mix bitumen for roadmaking).

From 1968–69 onwards, statistics for the manufacturing industry have been a component of the ABS suite of economic censuses and surveys which have been compiled on the an industry basis whereby businesses and establishments are assigned to an industry on the basis of their predominant activity, with the effect that manufacturing statistics include any secondary non manufacturing activities but exclude any secondary manufacturing activities carried out by non manufacturing businesses and establishments. Data for 1968–69 onward are also based on a different set of definitions and classifications to the earlier series.

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.

Industry subdivision 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 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 and workers' compensation costs. Other labour costs such as payroll tax, fringe benefits tax, staff training expenditure and staff amenities expenses are included in cost of sales.

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.

Large businesses Businesses which employ 100 or more people plus any incorporated businesses with zero employment and sales of $50 million or more. See the entry for business size for further explanation.

Large establishments An establishment employing 100 or more people.

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 from the statistics in this publication.

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 is the middle observation in a set of observations ranked from largest to smallest i.e. 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.

Medium sized businesses Businesses which employ 20 to 99 people plus any incorporated businesses with zero employment and sales between $10 million and $50 million. See the entry for business size for further explanation.

Medium sized establishments An establishment employing 20 to 99 people.

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.

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).

Opening inventories 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.

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. 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 research and development (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 plus 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 the entry for "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 the entry for "Commission manufacturing".

Small businesses Businesses which employ fewer than 20 people (unless they have zero employment and sales over $10 million). Excludes non employing unincorporated businesses. See the entry for business size for further explanation.

Small establishments An establishment employing fewer than 20 people. Excludes establishments of non employing unincorporated businesses.

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 the entry for "Commission manufacturing" for further details).

UJVs Unincorporated Joint Ventures (UJVs) are large scale operations where the expertise, resources and risks associated with the venture are shared between a number of participating businesses. Typically, each participant will incur an agreed proportion of venture costs and will receive an agreed proportion of venture output. Also typically, each venture will have a business which acts as venture manager and which employs all staff and undertakes processing. Processing costs are shared among the participants but a variety of accounting arrangements are possible.

In manufacturing, most UJVs occur in non ferrous metals processing (in the Metal Products manufacturing subdivision) but occur in other industries as well.

UJVs *continued* For the purpose of manufacturing statistics, a management unit (business) and an establishment unit are delineated for each participant and for the venture manager as well. Because of the nature of UJVs, this means that for each venture there will be a number of business units with substantial income but no employees and one unit with employees but quite possibly no income. Because for any single venture, all venture participants and the venture manager are all in the same industry, aggregate statistics reflect the correct levels of economic activity. However, statistics based on employment size will be severely affected.

An attempt has been made to overcome the distorting effect of UJVs in statistics based on business size (see entry for business size for 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.

LIST OF REFERENCES

REFERENCES

Where ABS time series data has been presented in tables or graphs, 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.

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