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SHORTENED FORMS

ABS—Australian Bureau of Statistics
ANZSIC—Australia and New Zealand Standard Industrial Classification
DIISR—Department of Innovation, Industry, Science and Research
DFAT—Department of Foreign Affairs and Trade
ETMs—elaborately transformed manufactures
GFC—global financial crisis
GOS—gross operating surplus
GVA—gross value added
IVA—industry value added
LPI—labour price index
OECD—Organisation for Economic Co-operation and Development
R&D—research and development
SME—small and medium enterprise
STM—simply transformed manufactures
INTRODUCTION

This publication examines the manufacturing industry over the 2008–09 financial year, with emphasis on the impacts of the global financial crisis (GFC). The 2008–09 year saw the largest fall in global industrial production and exports since the great depression. Australia fared relatively well, but OECD figures suggest that manufacturing output still declined by 4.2 per cent—the largest annual fall since 1982–83 (ABS figures suggest an even sharper fall of 6.2 per cent). This contrasts against the average annual growth rate of 1.5 per cent over the 10 years to 2007–08.

Manufacturing value added represents the contribution of the manufacturing industry to the economy. While the decline in Australian manufacturing value added in 2008–09 was one of the sharpest in recent decades, it was relatively moderate compared with many other developed countries. Data on industry value added for 2008–09 is still emerging but has become available for a selection of countries, notably those shown in table 1. The table shows that Germany, Korea, the United Kingdom and France experienced significant declines in manufacturing output in 2008–09.

The relatively strong performance of Australian manufacturing during this period partly reflects solid domestic demand conditions. This is demonstrated in table 1, which shows that household consumption was stronger in Australia than in other countries in 2008–09.

Table 1: Domestic consumption and manufacturing output (chain volumes)

<table>
<thead>
<tr>
<th>Country</th>
<th>Manufacturing value added</th>
<th>Household consumption</th>
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<tbody>
<tr>
<td>Australia</td>
<td>1.5</td>
<td>-4.2</td>
</tr>
<tr>
<td>Germany</td>
<td>2.4</td>
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<tr>
<td>Republic of Korea</td>
<td>8.8</td>
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<tr>
<td>United Kingdom</td>
<td>0.4</td>
<td>-9.4</td>
</tr>
<tr>
<td>France</td>
<td>1.9</td>
<td>-9.0</td>
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*Except for Korea where data begin in 2000–01.

Data source: Thomson Reuters, OECD.

While manufacturing exports contracted across most countries, the value of Australian manufacturing exports increased during the GFC. ABS production figures suggest that exports make up around 15 per cent of the value of manufacturing sales in Australia. In 2008–09 the value of Australian manufacturing exports increased by 4.5 per cent, largely driven by exports of food product manufacturing and primary metal and metal product manufacturing (chart 1). Growth was partly offset by falls in exports of transport equipment manufacturing and petroleum and coal product manufacturing.
Export conditions may have been relatively favourable for Australian manufacturers because of the type of manufacturing products that Australia exports. Chart 1 shows that Australia has a large weighting in terms of the manufacturing of food products and metal products, which were also among the categories showing the most significant growth in export demand in 2008–09.

In contrast, countries such as Germany, France, the Republic of Korea and the United Kingdom depend more on the export of machinery and equipment, transport equipment, rubber and plastic products—all of which were among the most negatively affected Australian manufacturing exports in 2008–09. This is not surprising as many of these products are more likely to be classified as ‘discretionary items’. Australia’s higher level of less discretionary exports may have helped the domestic manufacturing sector to cope with the economic downturn.

Australian manufacturing experienced a fall in employment during the GFC, although output levels remained relatively robust. This continues a long-run trend evident in most OECD nations where output has risen relative to labour inputs. Since records began in 1984 Australia’s labour productivity has increased steadily, but overall employment in manufacturing has alternated between stability and marginal falls, with an average annual decline of 0.2 per cent over the 10 years to 2007–08. This 10-year rate of decline is markedly less significant than in the other countries shown in table 2.

Declines in manufacturing employment were commonplace throughout the OECD during the GFC. The notable exception is Germany, which managed to mitigate the effect on employment through heavy government support in the form of subsidies to firms who cut employee working hours instead of making staff redundant.
Table 2: Manufacturing output and employment growth in selected countries

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<tr>
<td>Australia</td>
<td>1.5</td>
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<td>Republic of Korea</td>
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<td>–2.9</td>
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*Except for Korea where data begin in 2000–01.

Data source: Thomson Reuters, OECD.

While the GFC may have reduced manufacturing sector output and jobs in Australia and other OECD countries, some of these losses may result in a potentially positive process of ‘creative destruction’. Creative destruction takes place when more efficient, competitive or innovative competitors replace destroyed jobs and businesses.

Creative destruction is often seen as a source for productivity growth. Productivity in the United States is significantly higher (around 20 per cent) than in Australia, due partly to very rapid ‘churn’ of firms through the US economy. Net employment growth in the United States has averaged 2.2 per cent per annum from 1976 to 2005. Underlying this growth rate has been an average annual ‘job creation rate’ of 17.6 per cent and an average annual ‘job destruction rate’ of 15.4 per cent.1 This rate of change is unusually high.

There is no data on the rate of creative destruction in Australia; however, the number of business entries and exits can serve as a very rough proxy.2 Between 2003–04 and 2006–07 entries and exits of employing firms in the Australian manufacturing sector made up approximately 5.6 per cent of total entries and exits of employing firms in Australia, slightly below average given that manufacturing accounted for 7.2 per cent of all employing businesses in 2006–07.

Working against potential creative destruction is the fact that the heaviest impact of the GFC fell on the most capital-intensive firms, such as biotechnology and pharmaceutical manufacturers—who are key innovators in areas of high-value manufacturing. These firms’ dependence on capital made them vulnerable to the early financial impact of the GFC, and their loss may be classed as ‘destructive destruction’ rather than ‘creative destruction’. The overall impact on productivity is presently unclear, but future productivity figures could provide important insights.

1 J Haltiwanger, S Jarmin, J Maranda, Who creates jobs? Small vs. large vs. young, University of Maryland, 2010.
2 Interpret results with caution. Business entry and exits can only be a proxy for creative destruction, as a business exit does not necessarily mean a business failure.
This publication seeks to provide a comprehensive account of Australia’s manufacturing sector, with particular emphasis on the effects of the GFC. It includes chapters covering a range of issues:

**Chapter 1** provides an overview of a new data set that collated microeconomic data on the effects of the global financial crisis on hundreds of individual firms across a range of industries. It includes an analysis of where the impact was hardest and what measures firms took in dealing with difficulties.

**Chapter 2** provides a macroeconomic overview of employment and underemployment, with an examination of recent trends. It uses newly released ABS data to examine the extent of underemployment in manufacturing to provide a complete picture of trends in the labour force.

**Chapter 3** presents a detailed statistical study of manufacturing exports and trade with an analysis of recent trends, particularly in the automotive sector. This sector has recently undergone significant changes in export patterns and the direction of trade.

**Chapter 4** provides an analysis of the concentration, structure and importance of small businesses in manufacturing.

**Chapter 5** presents a statistical update of the manufacturing sector’s key indicators for 2008–09 and outlines the state and performance of the manufacturing sector over the past financial year. It includes charts and data on a number of indicators, including economic contribution and value added, investment, labour force size and earnings, productivity, innovation and exports.

**Chapter 6** is a special statistical resource that provides an in-depth examination of trends among each subsector of manufacturing. It includes examination of gross value added, employment, productivity, trade and investment.
CHAPTER 1

MICROECONOMIC OVERVIEW—MANUFACTURING DURING THE GLOBAL FINANCIAL CRISIS
CHAPTER 1
MICROECONOMIC OVERVIEW—MANUFACTURING DURING THE GLOBAL FINANCIAL CRISIS

The GFC began as a crisis of confidence within the United States financial sector. It spread rapidly, becoming an economy-wide crisis affecting the entire OECD, with flow-on effects to many developing nations. The GFC affected credit, international trade, prices, confidence and ultimately domestic demand and business investment. However, the nature and severity of the crisis varied widely between countries and between industries within each country.

At the start of April 2009 the Department of Innovation, Industry, Science and Research (DIISR) began collecting data on Australian firms facing restructuring or difficulty during (and immediately after) the GFC. Over the subsequent year (comprising the June, September and December quarters of 2009 and the March quarter of 2010) DIISR gathered detailed information on 760 firms. For the purposes of the study, references to the past year refer to this period. While this is a very limited sample, some interesting trends and observations emerge from an analysis of the data.

During the June and September 2009 quarters, recovery from the GFC was tentative. Economic growth depended on stimulus measures, business investment was still weak and domestic demand was tepid, resulting in uncharacteristically strong net exports. However, during the December 2009 and March 2010 quarters the economy shifted to a more typical growth pattern fuelled by investment and household spending. Data collected during this latter period shows a significant reduction in the number of reports on troubled firms.

DIISR gathered reports on firm performance through media monitoring and other sources. The reports detail a range of job losses, restructures, bankruptcies and downgrades to profit. While this data tends towards the negative side of firm performance, it is possible to infer some improvement in conditions given the fall in the number of reports over the last two quarters of the year. Note that changes of the type detailed above do not necessarily indicate that a firm is distressed due to the GFC—such changes may simply reflect a generalised restructure or a shift in business strategy to improve long-term performance.

Well over half of reported firms were able to cope with economic difficulties while avoiding widespread disruption to firm operations, and the share of firms experiencing severe problems decreased through the latter two quarters of the year. Many firms adopted creative strategies, including asset sales, refinancing and rapid-fire share issuances. Many firms also cut working hours, offered unpaid leave and offered voluntary redundancies as alternatives to direct layoffs. The result is that less than one third of troubled firms actually cut jobs—and the share of firms announcing job cuts declined through the year.

This chapter examines the effects of the GFC on Australian manufacturing as revealed by the data, and outlines possible strategies the sector has adopted as a result.
Industry breakdown

As chart 2 shows, the number of reports was spread unevenly across different industry sectors, with the largest share of reports concentrated in manufacturing, property and business, finance and insurance and mining. Manufacturing had a particularly high share of troubled firms. A range of sectors continue to have minimal reports: the key elements in avoiding problems during the GFC appear to be close linkage with government and minimal exposure to financial and international markets. Sectors linked to government include education and health and community services—both receive regular government funding that can reduce their vulnerability to shifts in the business cycle. Sectors such as construction also benefited from one-off government stimulus funding that drove numerous construction projects.

Chart 2: Sector shares: total value added vs. total reported firms (year to March 2010)

Effects of the GFC on manufacturing

The manufacturing sector remains the most over-represented in terms of firms facing profit falls, lower employment and bankruptcy—and DIISR data suggests that this over-representation increased during the final two quarters of the year. The sector appears to be recovering on a slower trajectory than other areas of the economy. The reported 294 manufacturing firms represented over one third of all reported firms. Manufacturing firms also accounted for about half of all reported bankruptcies. Chart 3 shows total reports by subsector for the year to March 2010: while the number of reports gradually receded during the second half of the year, some subsectors continued to fare better than others.
Machinery and equipment manufacturing was among the most reported subsectors over the entire period (especially the latter half of the year). In contrast, food, beverage and tobacco initially appeared to be weathering the effects of the downturn well—a factor which was credited to the subsector’s relatively inelastic demand. However, in the second half of the year, the number of reported problems in the subsector picked up considerably. The subsector may have been caught between the effects of a long-term drought and a slower than expected pickup in demand post-GFC. In some cases, the downturn seems to have brought issues with long-term viability to the surface, resulting in the closure of facilities including abattoirs, wineries and processing plants for vegetables and dairy products.

The subsectors that appear to have lower reports are those in which there is less trade exposure (such as printing and recorded media) or close links to Australia’s natural endowments and resource advantages (such as metal products).

The following provides more information on the manufacturing subsectors that are most over-represented in terms of firms facing difficulty.

**Machinery and equipment manufacturing**

Machinery and equipment manufacturing accounted for a sizeable share of reported firms, with 113 reported entities (almost 40 per cent of all manufacturing firms in the data set). This share continued to rise during the second half of the year.

Of note is that machinery and equipment manufacturing holds a significant proportion of the most capital- and labour-intensive forms of manufacturing—and both business forms faced particular challenges during the GFC. Machinery and equipment manufacturers include small, specialised scientific equipment manufacturers. Loss of capital early in the GFC affected them severely and resulted in cutbacks of specialised staff.
However, as the nature of the downturn shifted from capital and lending markets towards a general crisis of confidence, the balance of firms facing difficulty shifted towards the less capital-intensive and more labour-intensive forms of manufacturing. These included some of the most trade-exposed industries that faced rapid falls in global trade, competition in the form of cheaper labour and an appreciating Australian dollar—all factors that affected their market penetration at a time when global demand was already shrinking.

These trade-exposed firms included automotive manufacturers and producers of industrial equipment. The sectors are deeply interconnected, both within the business sector in Australia and in terms of links to international buyers. As such, they have significant exposure to flow-on effects during a global business downturn. Although the recovery is well underway, machinery and equipment firms continue to report significant falls in income because of cancelled contracts and delayed investment plans by businesses in other areas of the economy. This may reflect the inherent durability of many machinery and equipment products, and implies commercial decisions not to upgrade existing equipment during periods of slower demand. Note that some of these flow-on effects may have been offset by government initiatives such as the investment allowance.

The automotive sector faced severe difficulties due to its high levels of trade exposure. Automotive firms are typically vulnerable to changes up and down their supply chains—decisions by firms such as Holden GM to cut production severely affected a range of automotive supply firms involved in manufacturing components. Component suppliers were also affected by changes to demand across multiple domestic and international supply chains. Some automotive firms cut shifts and reduced working weeks to avoid immediate layoffs. However, over a dozen automotive firms reported layoffs with over 1500 automotive jobs lost.

Petroleum, coal and chemical manufacturing

Petroleum, coal and chemical manufacturing firms accounted for 58 reports, of which 47 were in pharmaceutical and biotechnology manufacturing. In the early part of the downturn, capital-intensive areas such as biotechnology and pharmaceutical manufacturing were heavily affected by the disintegration of international capital markets (the latest ABS venture capital survey reported a fall of $200 million in investor commitments in 2008–09). Several firms reported that research and development in the sector had been scaled back sharply, particularly among products with long development times. Like machinery and equipment the petroleum, coal and chemical sector includes many R&D-intensive, capital-dependent firms and had a significant share of reported problems early in the year. However, the share of firms in this sector reporting difficulties has since eased. Over 1000 jobs were reported lost in pharmaceutical manufacturing over the June and September 2009 quarters, but the rate of losses declined, with around 250 redundancies reported in the second half of the year.

Textiles, clothing and footwear

Textiles, clothing and footwear manufacturing accounted for 21 reports, of which six relate to firms entering administration. Most firms reporting problems with revenue and sales were smaller firms, and most bankruptcies occurred among firms with between 100 and 200 employees. In the second half of the year, several firms announced that restructure plans had failed, with some forced to enter liquidation as a result.
Conclusion

DIISR data suggests that the manufacturing sector was significantly over-represented in firms facing difficulty during the GFC period. Common factors among the most affected firms appear to include high trade exposure, high dependence on credit or capital, low profit margins and high interconnectedness to other areas of the national or global economy—and all these factors are strongly present in various forms within the manufacturing sector. Both labour-intensive and capital-intensive manufacturing experienced the impact, and there is a risk of permanent loss of capacity because of the GFC.

However, positive signs emerged during the second half of the year as the reports of troubled firms declined for all industries, including manufacturing. There also appears to have been a decline in the severity of the reports, with a decrease in the share of reported firms intending to cut jobs. A number of firms—including manufacturers—were able to use asset sales, equity raisings and loan restructuring to cope with financial difficulties.
CHAPTER 2

MANUFACTURING EMPLOYMENT AND UNDEREMPLOYMENT
CHAPTER 2
MANUFACTURING EMPLOYMENT AND UNDEREMPLOYMENT

This chapter analyses trends in manufacturing employment and underemployment in Australia using recently released ABS data, with particular emphasis on the period of the GFC.

Overview of manufacturing employment

Employment in the manufacturing sector exceeds that of the mining and agriculture sectors combined. However, chart 4 shows that the manufacturing output decreased during the GFC, with resulting impacts on employment in the sector.

Chart 4: Employment and output comparisons (annual)

Data source: ABS Cat. No. 5206.0, table 33 and Cat. No. 6291.0.55.003, table 6.

The economy-wide unemployment rate reached a low of 3.9 per cent in February 2008, but rose over the course of the GFC to over 5 per cent. Despite the growing number of unemployed persons, the labour market as a whole has remained comparatively resilient, with total employed persons rising slightly over the GFC period. The manufacturing sector, however, has not shown the same level of resilience.
As shown in chart 5, from February 2008 to May 2009, total employment in manufacturing declined from 1,074,000 persons to 993,000 persons—although there have been some provisional signs of recovery.

Chart 5: Manufacturing employment

![Chart showing manufacturing employment trend from February 2008 to August 2009](image)


**Productivity and employment**

Research has emerged in recent years proposing several causes and implications for the relative decline in manufacturing output and employment:

- On the output side, the relative decline mainly reflects Australians’ preference for more services as incomes rise. Import competition from lower-wage developing economies has only been a small contributor.  
  
- On the employment side, the decline is testimony to strong labour productivity growth, as shown in chart 6.

- Some service activities once categorised as part of manufacturing have been outsourced (though this effect is relatively modest).

- The effects of structural change on unemployment have generally been moderate, but more significant for some less competitive industries and regions.

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Hours of work have increased for full-time, part-time and casual employees over time. Skilled employment has become more important, driving greater educational requirements and changing the occupational mix of jobs. This increase in emphasis on skilled labour may reflect the combination of rising terms of trade and the advent of cheap labour-intensive manufacturing good imports, which have undercut low-skilled manufacturing in Australia and driven an increase in the returns on skilled labour relative to unskilled labour.4

Data source: ABS Cat. No. 5204.0, table 5.

Skill levels

Chart 7 shows that the composition of manufacturing has shifted over time towards more high-skilled labour. In 1996 high-skilled labour was about 15.6 per cent of the manufacturing workforce; by August 2009 it had increased to 22.3 per cent of the total manufacturing workforce. Low-skilled labour declined sharply over the same period from 40.5 per cent to 31.4 per cent, while the proportion of medium-skilled labour increased slightly from 43.9 per cent to 46.3 per cent.

Data source: ABS Cat. No. 6291.0.55.003, table 7.
Note: High skill—managers and professionals. Medium skill—technicians and trades workers, community and personal service workers. Low skill—clerical and administrative workers, sales workers, machinery operators, drivers and labourers.
Hours worked

Chart 8 illustrates the percentage of hours worked at each skill level. Hours worked by both high-skilled and medium-skilled manufacturing workers have increased over the last decade, while the hours worked by low-skilled workers have decreased gradually over the same period. This primarily reflects capital deepening and the effects of import competition. There has, however, been further marginal change because of a trend towards higher technology manufacturing, most notably with the development of biotechnology and pharmaceutical manufacturing in Australia.

Data source: ABS Cat. No. 6291.0.55.003 (E09).

Note: High skill—managers and professionals. Medium skill—technicians and trades workers, community and personal service workers. Low skill—clerical and administrative workers, sales workers, machinery operators, drivers and labourers.
Chart 9 shows a gradual decline in hours worked. It shows a notable decline in people working 45 hours or more, while more are working 30–34 hours. The capacity for firms to make cuts in hours worked has acted as buffer against direct job losses in the sector and reflects the flexibility of the manufacturing workforce.

Chart 9: Employed persons in manufacturing by hours worked

Data source: ABS Cat. No. 6291.0.55.003, table 11.

Part-time employment

Part-time employment has become increasingly important in the Australian labour market. In 1978 only 15 per cent of total employment was part-time, but by early 2010 roughly one third of all jobs were part-time. While some industries are more inclined to provide a greater proportion of part-time work, only three industries have recorded a decrease in the proportion of part-time employment since 1995 (mining, construction and financial and insurance services). The remaining 16 industry sectors—including manufacturing—recorded an increased proportion of part-time employment.

Traditionally, the manufacturing sector has had a relatively low proportion of part-time workers. However, as illustrated in chart 10, the ratio of part-time to full-time workers has been increasing. Linear trends are used to show the overarching change over time.
The ratio of part-time employment within manufacturing has risen significantly, increasing from around 10 per cent in 1994 to roughly 14.5 per cent in 2010. Over the same period, the percentage of part-time employment in the general economy increased from approximately 24 per cent to 30 per cent. In trend terms, the overall part-time/full-time ratio provisionally appears to be flattening. This plateau could well be the natural ratio or approaching the natural ratio of part-time to full-time employment in the general economy (all things being equal)—although the natural ratio may be shifting in line with structural change. The trend line for manufacturing appears to be increasing steadily, while the overall trend suggests a levelling off. If this trend continues, it is likely that the manufacturing ratio of part-time to full-time employment will continue to increase and eventually level off like the overall trend. It is unclear when this will happen, but it is likely that the ideal (natural) ratio will be somewhat lower than the overall economy, given the historical importance of full-time employment in manufacturing.

As at February 2010, 7 per cent of males employed in manufacturing were part-time, while female part-time employment was much higher at 35 per cent. Overall, 16.2 per cent of males are employed part-time compared with 46 per cent of females. The part-time ratio for females employed in manufacturing has recently grown significantly more than the ratio for females employed through the whole economy: from 1996–97 to 2009–10, the female manufacturing ratio grew by 30 per cent, increasing from 26 to 34 per cent. Over the same period, the overall female part-time rate remained between 43 and 45 per cent. The male manufacturing and overall part-time rates grew at a much faster rate than for females, growing respectively by 66 and 40 per cent from 1996–97 to 2009–10.

It is worth noting that the female part-time employment ratio in manufacturing is unusually high relative to the male ratio. This is indicative of more females working in supporting occupations within manufacturing, such as clerical and administrative and sales. Some 57 per cent of part-time females in manufacturing work in the clerical and administrative and sales occupations, compared with 42 per cent in the overall economy. These jobs have proven relatively resilient—as many older-style jobs involving operation of machinery have gradually declined, the share of administrative jobs (and therefore the overall level of female employment within the sector) has increased.
As highlighted in the introduction to this chapter, Australia’s employment numbers were relatively positive compared with most advanced economies during the global economic downturn. From November 2008 to November 2009, overall full-time jobs decreased by 1.2 per cent, while part-time jobs increased by 5.3 per cent. In comparison, manufacturing full-time jobs declined by 4.1 per cent, while part-time jobs increased by 5.3 per cent. It seems that throughout the downturn, part-time employment held up better for both manufacturing and the economy as a whole. This observation could have been strengthened by firms reducing hours worked, forcing otherwise full-time workers into part-time roles. More recent data (February, March 2010) suggests that firms are beginning to shift workers back to full-time, as indicated by relatively strong growth in full-time employment and a decline in part-time employment.

### Underemployment

The ABS defines underemployed workers in Australia as: ...

... part-time workers who want, and are available for, more hours of work than they currently have, and full-time workers who worked part-time hours during the reference week for economic reasons. The number of underemployed workers constitutes an important component of underutilised labour resources in the economy, along with the number of unemployed and some people with marginal attachment to the labour force.

According to ABS research and data, underemployment tends to be concentrated in the low-skilled occupation groups. People employed in high-skilled occupations, such as managers and administrators, are much less likely to be underemployed.

The industries with the highest proportion of underemployed workers tend to be those in the services sector. Manufacturing is one of the industries where underemployment is less prevalent, with only around 5 to 6 per cent of manufacturing workers counted as underemployed at the start of 2010. This partially reflects the shift in manufacturing employment towards high-skilled labour. This trend is likely to persist as the number of high-skilled workers in manufacturing continues to rise.

Table 3 shows a comparison of the components of underutilisation by sector. Between May 2008 and May 2009 there were relatively small changes in total employment in most industries. In contrast, the change in the percentage of underemployment was considerably more pronounced over the period, with the proportion of underemployed workers increasing from 6.3 per cent to 8.2 per cent. There was a similar rise in underemployment in manufacturing, with the proportion of underemployment increasing from 3.1 per cent to 5.5 per cent over the course of 2008–09. This is suggestive of firms reducing hours worked during the downturn in order to preserve jobs.

In May 2009 people working in the accommodation and food services sector reported the highest rate of underemployment, reflecting the relatively high proportion of part-time workers in the industry. People working in the arts and recreation, administrative and support services and retail trade followed next. By contrast, people employed in mining—a sector with relatively little part-time employment—maintained the lowest rate of underemployment. The largest year-on-year change in underemployment occurred among people working in information media and telecommunications, with an increase of 3.6 percentage points.

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6 Over the months of February and March 2010, 39 500 full-time jobs were created, compared with a decline of 24 700 part-time jobs (seasonally adjusted).
7 ABS Cat. No. 6265.0, Underemployed Workers, Australia.
8 ABS Cat. No. 6105.0, Australian Labour Market Statistics.
Table 3: Employment and underemployment by sector: original

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>368.1</td>
<td>348.1</td>
<td>3.4</td>
<td>4.1</td>
</tr>
<tr>
<td>Mining</td>
<td>164.5</td>
<td>152.3</td>
<td>*0.9</td>
<td>*0</td>
</tr>
<tr>
<td>Manufacturing</td>
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<td>993.5</td>
<td>3.1</td>
<td>5.5</td>
</tr>
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<td>Services</td>
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<td>9 287.8</td>
<td>9.2</td>
<td>10.0</td>
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<td>Electricity, gas, water and waste services</td>
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<td>136.7</td>
<td>*1.2</td>
<td>*3.9</td>
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<td>Construction</td>
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<td>984.1</td>
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<td>7.0</td>
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<td>Wholesale trade</td>
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<td>399.2</td>
<td>3.4</td>
<td>4.7</td>
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<td>Retail trade</td>
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<td>1 209.5</td>
<td>11.3</td>
<td>13.7</td>
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<td>Accommodation and food services</td>
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<td>Transport, postal and warehousing</td>
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<td>599.2</td>
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<td>Information media and telecommunications</td>
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<td>4.0</td>
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<tr>
<td>Financial and insurance services</td>
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<td>391.6</td>
<td>1.5</td>
<td>*1.5</td>
</tr>
<tr>
<td>Rental, hiring and real estate services</td>
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<td>5.5</td>
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<td>Professional, scientific and technical services</td>
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<td>762.4</td>
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<td>5.9</td>
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<tr>
<td>Administrative and support services</td>
<td>339.3</td>
<td>340.4</td>
<td>11.5</td>
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</tr>
<tr>
<td>Public administration and safety</td>
<td>628.1</td>
<td>693.1</td>
<td>3.7</td>
<td>3.3</td>
</tr>
<tr>
<td>Education and training</td>
<td>825.7</td>
<td>808.8</td>
<td>7.2</td>
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</tr>
<tr>
<td>Health care and social assistance</td>
<td>1 109.2</td>
<td>1 189.4</td>
<td>7.3</td>
<td>9.1</td>
</tr>
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<td>Arts and recreation services</td>
<td>178.1</td>
<td>204.6</td>
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<tr>
<td>Other services</td>
<td>446.8</td>
<td>441.5</td>
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<td>Total</td>
<td>10 744.8</td>
<td>10 781.6</td>
<td>6.3</td>
<td>8.2</td>
</tr>
</tbody>
</table>


Note: * estimate is subject to sampling variability too high for most practical purposes.

Conclusion

Manufacturing plays a major role in the Australian economy, accounting for almost 10 per cent of total employment. Manufacturing is a highly diverse sector in terms of its labour and skill intensities, trade orientation and growth rates. It is also relatively stable, although the long-term employment level is subject to significant variations during and after recessions.

The GFC-related downturn in the Australian economy in 2008 and 2009 has had a visible effect on the labour market and on underemployment. However, manufacturing is one of the industries where underemployment is less prevalent, and this persisted despite the significant impacts of the GFC. This relative resilience partially reflects the shift in manufacturing employment towards higher skilled labour—a trend that is expected to continue.
CHAPTER 3
MANUFACTURING TRADE
AND FOREIGN INVESTMENT
CHAPTER 3
MANUFACTURING TRADE AND FOREIGN INVESTMENT

This chapter presents a detailed statistical study of manufacturing exports and trade, with analysis of trends during the period of the GFC. The chapter includes particular emphasis on the automotive sector, which was heavily affected by the GFC, and is undergoing profound changes in export patterns and the direction of trade.

Exports

Despite continuing strong growth in manufacturing exports, the manufacturing sector has been overtaken by mining and is now Australia’s second largest export earning industry. Manufacturing accounted for 33.6 per cent of the total value of exports in 2008–09—down from 39.9 per cent in 2007–08. The recent surge in the value of mining exports lifted its sectoral share from 32.9 per cent in 2007–08 to 42.7 per cent in 2008–09 (chart 11).

Between 2005–06 and 2008–09, the value of manufacturing exports increased by an average annual rate of 7.2 per cent, while the value of total exports grew by an average annual rate of 14.4 per cent, driven largely by the commodity boom.

Chart 11: Composition of total exports by sector 2008–09 (current prices)

![Chart 11](image)

Data source: ABS Cat. No. 5368.0, table 32a.

In volume terms, exports of Australian manufactured goods grew strongly over the earlier part of the decade before contracting with the onset of the GFC. The volume of manufactured goods exports grew by an average annual rate of 5.5 per cent in the 10 years to the June quarter 2008. However, manufactured exports peaked at $15.1 billion in the June quarter 2008 and have subsequently declined, reaching $13.7 billion in the December quarter 2009. However, there are provisional signs that this decline may be turning (chart 12).
Conversely, exports in the mining sector have proven more resilient and continued to experience net growth over the period, while services exports have edged down slightly (chart 12).

Chart 12: Exports by industry sector (chain volumes)

Data source: ABS Cat. No. 5302.0, table 11. Export volume measurements in the above chart use a commodity breakdown that is not necessarily identical to ANZSIC.

Subsector exports

In 2008–09 metal products accounted for 41.4 per cent of total manufacturing exports, food, beverages and tobacco for 20.1 per cent, machinery and equipment for 18.6 per cent, and petroleum, coal, chemical and associated products for 12.8 per cent of total manufacturing exports. Exports of metal products have occupied an increasing share of manufactured exports in recent years, averaging growth of 13.7 per cent per annum in the three years to 2008–09.

Food, beverages and tobacco only averaged 4.1 per cent growth in the three years to 2008–09, resulting in a falling share of total manufacturing exports. Machinery and equipment exports averaged 2.5 per cent growth in the three years to 2008–09. Petroleum, coal chemical and associated products averaged growth of 4.5 per cent over the three years to 2008–09, but contracted by 5.0 per cent in 2008–09 in the wake of the GFC.
Imports

Imports by sector

Manufacturing imports made up 72.1 per cent of Australia’s total imports in 2008–09, with imports of services comprising 20.8 per cent and mining 6.6 per cent (chart 14). Manufacturing imports grew by 7.4 per cent in 2008–09, while in the three years to 2008–09, the value of manufacturing imports increased by an average annual rate of 8.5 per cent.
Subsector imports

Manufacturing imports largely comprised *machinery and equipment* and *petroleum, coal chemical and associated products*, which accounted for 45.8 per cent and 21.7 per cent respectively of total manufacturing imports in 2008–09. However, import growth of *machinery and equipment* has been much slower than the growth of total manufacturing imports in recent years. *Machinery and equipment* imports contracted by 1.2 per cent in 2008–09 and averaged 4.3 per cent growth in the three years to 2008–09. This compares with an average three-year growth rate of 8.5 per cent for manufacturing imports as a whole.

Conversely, the import of *petroleum, coal, chemical and associated products* and *metal products* increased sharply in 2008–09, growing by 8.1 per cent and 37.7 per cent respectively, having averaged growth of 10.3 per cent and 22.7 per cent respectively in the three years to 2008–09. While making up only a small part of total manufactured imports, *food, beverage and tobacco, printing and recorded media*, and *textiles, clothing and footwear* experienced strong double-digit growth rates in 2008–09, and averaged growth of 14.0 per cent, 11.5 per cent and 7.7 per cent respectively in the three years to 2008–09.

![Chart 15: Manufacturing subsector imports, 2007–08 and 2008–09](image-url)

Data source: ABS Cat. No. 5368.0, table 35a.
Trends in automotive trade

The automotive sector remains a key part of the manufacturing sector, and one that has been notably affected during the GFC. In 2008–09 the value of Australian automobile exports fell by 20.8 per cent to $2.7 billion, while automobile imports fell by 23.0 per cent to $11.6 billion. However, over the 10 years to 2008–09, automobile exports have increased by an average annual rate of 7.2 per cent, while imports have increased by an average annual rate of 8.4 per cent.10

In 2008–09 automobiles represented 1.2 per cent of the total value of commodities exports, down from 1.5 per cent 10 years earlier. In terms of imports, automobiles represented 5.3 per cent of total commodities, down from 6.6 per cent 10 years earlier.

The value of Australian automobile vehicle exports has doubled over the past decade and the value of imports increased by around 180 per cent. However, in absolute terms the value of imports has risen more sharply, increasing from $6.5 billion in 1998–99 to $11.6 billion in 2008–09—a rise of $5.1 billion over the period, compared with an increase of $1.3 billion in the value of exports.

Chart 16 shows that automobile export growth over the past decade has been characterised by a strong performance through to 2000–01, followed by stagnant growth over the remainder of the period to 2008–09. Import growth has been characterised by consistent strong growth up to 2008–09, when the value of imports fell sharply. Recent domestic automobile sales indicate that the downturn in imports is likely to be short-lived—but the hesitant global economic recovery makes an immediate recovery in automobile exports less certain.

Chart 16: Australian automobile trade, 1998–99 to 2008–09

Data source: DFAT, Composition of Trade Australia, 2008–09, November 2009.

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10 Totals reflect DFAT published trade data. The DFAT STARS data set (which counts components as well as assembled vehicles) provides larger totals for imports and exports. However, both data sets reflect the trend of falling trade during the GFC.
Automobile exports

Chart 17 shows that Australia’s largest motor vehicle export markets in 2008–09 were Saudi Arabia, the United States and the United Arab Emirates. Since 1998–99 each of these countries has increased its share of Australian motor vehicle exports, from 25.4 to 36.4 per cent in Saudi Arabia, 17.2 to 19.8 per cent in the United States and 9.1 to 10.5 per cent in the United Arab Emirates.

Saudi Arabia has been the strongest growth market. Middle-Eastern countries are featuring prominently because Australian-engineered vehicles are suitable to the similar operating conditions in the region. The apparent robust growth of sales to Saudi Arabia over the past decade masks a recent, sharp slowdown in export values, which decreased by 25 per cent to $1.0 billion in 2008–09 (having peaked at $1.3 billion in 2001–02).

Exports to the United States increased from $229 million in 1998–99 to $529 million in 2008–09—an increase of 131 per cent over the decade (despite a sharp fall in exports from a record $678 million in 2007–08). During this time, Australia produced some of the most popular mass-produced rear-wheel drive platforms in the world, often marketed to American consumers. However, in April 2009 General Motors announced the termination of the Pontiac brand by the end of 2010 as part of their rationalisation plan to avoid receivership and return to profitability. This has had a significant effect on the export of Australian GM Holden cars (rebadged as Pontiac vehicles) with the loss of an estimated $A1 billion export market.

Holden continues to export cars to Asia, Africa, Europe and the Middle East. It has indicated its commitment to look for other opportunities in the US market.


Data source: DFAT, Composition of Trade Australia, 2008–09, November 2009.
Automobile imports

Australia’s largest sources for imported motor vehicles in 2008–09 were Japan, Germany and the Republic of Korea. Since 1998–99 each of these countries has reduced its share of Australia’s total motor vehicle imports, from 58.8 to 47.5 per cent in Japan, 15.6 to 15.1 per cent in Germany and 9.9 to 9.3 per cent in the Republic of Korea. Countries such as the United States and more particularly South Africa and Thailand have come to account for a greater market share (albeit off low bases).

While the value of total automotive imports to Australia fell by 23 per cent in 2008–09, imports from Germany increased by 3 per cent, making them the only major importer to increase the value of imports in the year.

Data source: DFAT, Composition of Trade Australia, 2008–09, November 2009.


Foreign investment in manufacturing

In 2008 foreign investment in the Australian manufacturing sector was valued at $73.8 billion. It accounted for 18.8 per cent of total foreign direct investment in Australia compared with 25.4 per cent in mining and 52.5 per cent in services.

While foreign direct investment in manufacturing in Australia grew by 3.6 per cent in 2008 (with an average annual growth of 7.9 per cent since 2005), investment growth has stagnated over the past decade, averaging only 1.4 per cent between 2001 and 2008. The decade has also been characterised by substantial volatility, with investment rising from $73.9 billion in 2003 to $130.1 billion in 2004, before contracting sharply to $54.5 billion in 2005.

In contrast, total foreign direct investment in Australia grew at an average annual rate of 7.6 per cent from 2001 to 2008, due to robust average growth of 13.3 per cent in the mining sector and 7.9 per cent in the services sector—the latter despite a mild contraction of 0.7 per cent in 2008.
Direct investment abroad

In 2008 Australian investment in manufacturing industries abroad was valued at $124.4 billion. It accounted for 44.3 per cent of total Australian investment abroad compared with 11.4 per cent in mining and approximately 44 per cent in services. Of note is that Australian investment in manufacturing industries abroad is considerably higher than foreign direct investment in Australian manufacturing.

Australian investment in manufacturing industries abroad fell by 16.0 per cent in 2008 and at an average annual rate of 0.3 per cent over the five years to 2008 (although this is a volatile series). Investment in services industries abroad fell by 19.8 per cent in 2008.

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11 Excluding accommodation, cafes and restaurants—data is not available for 2008.
12 Data for Australian investment in mining industries abroad is not available for 2007.
CHAPTER 4

SMALL BUSINESSES IN MANUFACTURING
SMALL BUSINESSES IN MANUFACTURING

According to the OECD, small and medium enterprises (SMEs) and entrepreneurs (which tend to be SMEs) are the key generators of employment and income. They are also drivers of innovation and economic growth. They represent more than half of the labour force in the private sector. Small firms are relatively highly concentrated in the services sector, with the OECD reporting that only a small percentage of service firms have more than five employees—while manufacturing firms tend to be larger on average.  

In Australia, small businesses similarly account for a larger proportion of businesses in the services sector relative to manufacturing. The most recent data shows that at the end of 2006–07, small businesses accounted for 90 per cent of businesses in the manufacturing sector, compared with 95.8 per cent in the total economy and 96.0 per cent in the services sector.

For the purposes of this chapter, small firms are considered to have fewer than 20 employees, while medium enterprises are considered to have between 20 and 199 employees. The chapter uses the latest available data, but this data is not recent enough to cover the GFC period.

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Total businesses</th>
<th>Total small businesses</th>
<th>Small businesses as % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>215 247</td>
<td>209 211</td>
<td>97.2</td>
</tr>
<tr>
<td>Mining</td>
<td>7 296</td>
<td>6 786</td>
<td>93.0</td>
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<tr>
<td>Services</td>
<td>1 685 700</td>
<td>1 618 734</td>
<td>96.0</td>
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<tr>
<td><strong>Manufacturing</strong></td>
<td><strong>105 702</strong></td>
<td><strong>95 097</strong></td>
<td><strong>90.0</strong></td>
</tr>
<tr>
<td>Food, beverage and tobacco manufacturing</td>
<td>7 146</td>
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<td>79.9</td>
</tr>
<tr>
<td>Textile, clothing, footwear and leather manufacturing</td>
<td>9 447</td>
<td>8 817</td>
<td>93.3</td>
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<tr>
<td>Wood and paper product manufacturing</td>
<td>8 040</td>
<td>7 287</td>
<td>90.6</td>
</tr>
<tr>
<td>Printing and recorded media</td>
<td>12 465</td>
<td>11 496</td>
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</tr>
<tr>
<td>Petroleum, coal, chemical and associated product manufacturing</td>
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<td>5 583</td>
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<td>Non-metallic mineral product manufacturing</td>
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<td>Machinery and equipment manufacturing</td>
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<td>Other manufacturing</td>
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<td><strong>1 929 828</strong></td>
<td><strong>95.8</strong></td>
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</table>


Note: Please use caution when interpreting these numbers as there are margins for error. This publication refers to ANZSIC 1993 categories. The total number of businesses in this table is the derived figure based on ‘operating at start of financial year’ + ‘entries’ – ‘exits’.

Economic contribution

As chart 21 shows, small business contributed around 39 per cent of private industry value added in 2007–08. However, only about 8 per cent of the total small business contribution can be attributed to the manufacturing sector. Small business contributed approximately 24 per cent of manufacturing sector value added in 2007–08.

Chart 21: Contribution to industry value added by business size, 2007–08

Data source: ABS Cat. No. 8155.0.

Exports

Number of businesses exporting goods

There were approximately 17,000 small businesses exporting goods in 2007–08, representing 39 per cent of all businesses exporting goods. Around 18 per cent of small businesses exporting goods in 2007–08 were in the manufacturing sector, while 24 per cent of all exporting businesses were in the manufacturing sector.

Value of goods exported

Small businesses exported goods to the value of $1.2 billion in 2007–08, representing 1 per cent of the total value of goods exported. The manufacturing sector accounted for almost 21 per cent of the value of goods exported by small businesses, and accounted for around 29 per cent of the value of goods exported by all businesses.

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14 DIISR estimate based on ABS Cat. No. 8155.0, Australian industry, 2007–08.
Employment

The manufacturing sector accounted for approximately 7 per cent of small business employment (0.4 million persons employed out of a total 5.1 million) and approximately 10 per cent of total employment (1 million persons employed out of a total 10 million persons), as shown in table 5.

Table 5: Employment by sector, 2007–08 (latest available data)

<table>
<thead>
<tr>
<th>Industry sector</th>
<th>Total employment ('000s)</th>
<th>Total small business employment ('000s)</th>
<th>Small business employment as % of industry sector employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>510</td>
<td>430</td>
<td>84.3</td>
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<tr>
<td>Mining</td>
<td>128</td>
<td>22</td>
<td>17.2</td>
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<tr>
<td>Services</td>
<td>8 319</td>
<td>4 268</td>
<td>51.3</td>
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<tr>
<td>Manufacturing</td>
<td>1 039</td>
<td>376</td>
<td>36.2</td>
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<td><strong>Total industry</strong></td>
<td><strong>9 996</strong></td>
<td><strong>5 095</strong></td>
<td><strong>51.0</strong></td>
</tr>
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</table>

Data source: ABS Cat. No. 8155.0
Note: Categories may not sum due to rounding.
CHAPTER 5

STATISTICAL UPDATE FOR 2008–09
CHAPTER 5
STATISTICAL UPDATE FOR 2008–09

The following is a statistical overview of the manufacturing sector. It outlines the state and performance of the manufacturing sector over the financial year 2008–09 (some sections may refer to 2007–08 due to a lack of more recent data).

This section includes charts and data on the following:
- Economic contribution and value added
- Investment
- Labour force size and earnings
- Productivity
- Research and development (R&D)
- Exports

Economic contribution

Gross value added

In national accounts terms, the manufacturing sector contributed 10.2 per cent of industry gross value added in 2008–09—the second largest share (chart 22). Financial and insurance services (which contributed 11.7 per cent) was the only ANZSIC industry sector that contributed more than 11 per cent of industry value added.

Chart 22: Industry gross value added, 2008–09 (chain volumes)

Data source: ABS Cat. No. 5204.0, table 5.
The manufacturing sector comprises a number of subsectors. Chart 23 shows the shares each subsector contributed to overall manufacturing value added in 2008–09.

Chart 23: Manufacturing sector composition, 2008–09 (value added in chain volumes)

5% Non-metallic mineral products
6% Wood and paper products
4% Printing and recorded media
16% Petroleum, coal, chemical and rubber products
20% Food, beverage and tobacco
25% Metal products
19% Machinery and equipment
20% Textile, clothing and other manufacturing

Data source: ABS Cat. No. 5204.0, table 5.

The share of total manufacturing in gross industry value added has been declining steadily for some years—from 15.9 per cent (1983–84) to 13.3 per cent (1996–97) to 10.2 per cent in 2008–09. However, this still represents a major contribution. Reflecting the impact of the GFC, value added in the manufacturing sector decreased by 6.2 per cent in real terms in 2008–09, while the economy as a whole (GDP) grew by 1.1 per cent. It is important to note that while the share of manufacturing has declined over time, the size of the sector is growing on average. Between 1983–84 and 2008–09, manufacturing value added increased by 48 per cent in real terms. Manufacturing’s share is declining simply because other sectors of the economy are growing at a faster rate.

Chart 24: Annual growth in manufacturing industry value added and share of total value added (chain volumes)

Data source: ABS Cat. No. 5204.0, table 5.

Manufacturing value added fell in all manufacturing subsectors in 2008–09, with the strongest decrease in printing and recorded media (–17.5 per cent), textile, clothing and other manufacturing (–10.5 per cent) and petroleum, coal, chemical and rubber products (–10.1 per cent).
Chart 25: Change in gross value added by industry subsector, 2008–09 (chain volumes)

Data source: ABS Cat. No. 5204.0, table 5.

Investment

Investment (or new capital expenditure) refers to the acquisition of new assets and includes major improvements, alterations and additions.

Private new capital expenditure

Private new capital expenditure in manufacturing declined from $12 340 million in 2007–08 to $12 154 million in 2008–09, or by 1.5 per cent (chart 26). This is below the historical peak of $14 033 million recorded in 2005–06, but still well above levels of a decade ago.

Chart 26: Private new capital expenditure in manufacturing (chain volumes)

Data source: ABS Cat. No. 5625.0, table 3b.
Chart 27 shows a mixed picture for growth in private new capital expenditure during 2008–09 across the manufacturing subsectors. The strongest increases were in machinery and equipment (52.2 per cent), wood product (50.0 per cent), polymer product and rubber product (30.1 per cent), and non-metallic mineral product (28.5 per cent). The strongest decreases were experienced in furniture and other (~34.1 per cent), transport equipment (~21.4 per cent), and beverage and tobacco product (~21.2 per cent).

In the five years since 2004–05, the strongest average annual growth has been for furniture and other (29.5 per cent), petroleum and coal (19.9 per cent) primary metal and metal product (15.5 per cent), printing (11.4 per cent) and polymer product and rubber product (10.6 per cent). Transport equipment recorded the largest average annual negative growth over the period (~8.3 per cent). Most subsectors experienced negative growth in 2006–07, but 9 out of the 15 subsectors experienced positive growth in 2008–09. Machinery and equipment (52.2 per cent) and wood product (50 per cent) subsectors recorded the strongest growth during this time.

Data source: ABS Cat. No. 5625.0, table 2a.

Labour market

Employment

Around 1 million people were employed in the manufacturing sector at the end of 2008–09 (seasonally adjusted), representing 9.2 per cent of total employment. Only retail trade and health care and social assistance employed more people in 2008–09.

While total employment increased by 0.3 per cent in the year to May 2009, employment in the manufacturing sector was 7.2 per cent lower than a year ago. The annual rate of growth in total employment declined significantly in 2008–09, particularly during the GFC. Total employment growth was 2.0 per cent from October 2007 to October 2008, but only 0.2 per cent from October 2008 to October 2009. Over the longer term, rationalisation and higher labour productivity in the manufacturing sector led to a steady decline in the sector’s relative contribution to total employment. The manufacturing sector employed 11.8 per cent of the workforce by the end of 1998–99, compared with 9.2 per cent in 2008–09. Manufacturing employment declined in absolute terms from about 1.3 million persons in the mid-1960s to around 1.1 million in the early 1990s, when employment levels stabilised. Since the early 1990s, employment has ranged between one and 1.1 million persons.
The largest employers among manufacturing subsectors in 2008–09 were food product and machinery and equipment. These two groups accounted for around one third of the sector’s employment (see chart 29).

Earnings

The most commonly publicised measure of earnings is the ABS average weekly earnings series. Average weekly earnings (full-time, adult, ordinary time) rose by 2.6 per cent in manufacturing between August 2008 and August 2009, compared with 5.2 per cent across all industries. Over a 10-year period, average weekly earnings in manufacturing rose by an average annual rate of 4.7 per cent between August 1999 and August 2009—this is the same as the average annual rate for industry as a whole.

The ABS has advised that the average weekly earnings series can be affected by compositional changes in the sample. However, the labour price index (LPI) is unaffected by the quality and quantity of work performed and the composition of the labour force, and is therefore a valuable measure of wage cost movements.

The manufacturing LPI rose by 3 per cent from 2007–08 to 2008–09, compared to growth of 3.4 per cent across all industries. From 2001–02 to 2008–09, the LPI for manufacturing rose by an average annual rate of 3.7 per cent, while the total LPI rose at an average annual rate of 3.8 per cent.

The national accounts measure of compensation of employees provides a broader measure. It covers total remuneration payable to employees and includes employee benefits such as irregular bonuses, severance and termination pay, employer superannuation contributions, and workers compensation fund premiums. Growth in total compensation to employees from 1998–99 to 2008–09 has been generally lower in manufacturing than in other sectors of the economy (chart 30). The rate of growth in total employee compensation in the manufacturing sector has been slowly declining since 2006–07. Total employee compensation in the manufacturing sector rose by 6.2 per cent in 2006–07, while compensation over the economy as a whole rose by 9.6 per cent. This is in comparison to growth of 1.4 per cent in the manufacturing sector and 5.6 per cent over the whole economy for 2008–09.

Chart 30: Growth in compensation of employees (current prices)

Data source: ABS Cat. No. 5204.0, table 48.
Indicators of performance

Productivity

Chart 31 shows that labour productivity (defined as gross value added per hour worked) in manufacturing fell by 1.7 per cent over 2008–09, compared with a 0.1 per cent increase recorded across the overall market sector. Over the 10 years since 1998–99, the labour productivity index for the manufacturing sector has increased at an average rate of 1.9 per cent per year—compared with an average increase of 1.3 per cent per year for the overall market sector.

Chart 31: Gross value added per hour worked in manufacturing and overall market sector

Data source: ABS Cat. No. 5204.0, table 15.

Company profits

Profits before income tax for companies in the manufacturing sector fell by 35.7 per cent in 2008–09 to $16.9 billion. Manufacturing sector profits before income tax have increased by 75.4 per cent since 1998–99, representing an average annual compound growth rate of 5.8 per cent. However, this growth rate has not kept pace with profit growth in the mining sector (see chart 32).
Gross operating profits (which more accurately reflect the return on capital) in the manufacturing sector decreased by 19.4 per cent in 2008–09. Chart 33 shows that over the period from 1998–99, manufacturing sector gross operating profits have increased by 57.4 per cent, representing an average annual compound growth rate of 4.6 per cent. This once again falls below the growth rate for the mining sector as well as the wider economy.
Company gross operating profits rose in three of the 15 manufacturing subsectors in 2008–09. **Machinery and equipment** profits rose by 27.4 per cent, followed by **food product** (14.4 per cent) and **transport equipment** (6.2 per cent).

On the other hand, the strongest declines in company gross operating profits were in **petroleum and coal** (down by 83.5 per cent), **printing** (down by 49.0 per cent), and **primary metal and metal product** (down by 45.1 per cent) (see chart 34).

Chart 34: Growth in company gross operating profits by subsector, 2008–09

Data source: ABS Cat. No. 5676.0, table 29.

**Manufacturing sales**

Manufacturing sales volumes have averaged an annual compound growth rate of 2.3 per cent from 1998–99 to 2008–09. In 2008–09, manufacturing sales volume fell by $17.5 billion (or by 4.5 per cent) to $373.7 billion (chart 35).

Chart 35: Manufacturing sales (volumes)

Data source: ABS Cat. No. 5676.0, table 4.
In 2008–09, sales volumes rose in two of the 15 manufacturing industry subsectors. The best performers were machinery and equipment (up by 6.5 per cent or $1.9 billion) and primary metal and metal product (up by 0.7 per cent, or $0.4 billion). The largest falls in sales volumes were in furniture and other (down by 17.9 per cent, or $1.7 billion) and printing (down by 16.9 per cent, or $1.8 billion).

![Chart 36: Growth in sales by industry subsector, 2008–09 (volumes)](image_url)

Data source: ABS Cat. No. 5676.0, table 24.

**Manufacturing inventories**

Manufacturing inventories fell by 6.6 per cent in volume terms in 2008–09. From 1998–99 to 2008–09 the average annual compound growth rate in year-end inventories was 0.4 per cent (chart 37).

![Chart 37: Manufacturing inventories (volumes)](image_url)

Data source: ABS Cat. No. 5676.0, table 1.

The ratio of inventories to sales fell rapidly during the late 1980s and early 1990s as manufacturers aggressively adopted ‘just in time’ techniques. Since the mid-1990s the inventories-to-sales ratio has fluctuated within a relatively narrow range. This may indicate that computerised inventory control systems have become widespread, and that relatively little extra cost savings can be achieved in this area for the time being (chart 38).
Research and development

Research and development (R&D) is an input to innovation and represents a key mechanism for future growth. It has helped Australia to develop new competitive edges in high-technology exports, such as scientific and medical equipment, telecommunications and aerospace products.

The manufacturing sector spent $4 304 million on R&D in 2007–08 (the most recent year for which data is available)—an increase of 12.2 per cent compared with $3 836 million on R&D in 2006–07.16 This was well ahead of the second largest R&D expenditure by a sector ($3 283 million from mining). Total R&D for the whole economy was $14 380 million in 2007–08.

16 Note that this data now works on the ANZSIC2006 classifications and due to these revisions may not strictly equal historical data.
The manufacturing subsector that spent the most on R&D was *transport equipment* ($1,022 million), followed by *machinery and equipment* ($979 million). The strongest growth in R&D levels was in *fabricated metal product* (up by 39.4 per cent), followed by *basic chemical and chemical product* (up by 27.3 per cent) and *beverage and tobacco product* (up by 26.1 per cent). Pulp, paper and converted product and *wood product* were the only manufacturing subsectors to record a decline in R&D spending in 2007–08 (down by 10.2 per cent and 7.0 per cent respectively).

**Exports**

**Exports by industry**

Manufacturing is now Australia’s second largest export earning sector, accounting for 34 per cent of the total value of exports in 2008–09 (chart 40). The mining sector assumed the largest export earning position in June 2008.

**Chart 40: Composition of total exports by sector, 2008–09 (current prices)**

![Chart showing export composition by sector]

Data source: ABS Cat. No. 5368.0, table 32a.

*Primary metal and metal product, food product, and machinery and equipment* accounted for the largest share of manufacturing export values in 2008–09. Manufacturing export values increased for nine of the 15 subsectors. The strongest increases were in *furniture and other* (up by 42.6 per cent), *food product* (up by 14.4 per cent) and *primary metal and metal product* (up by 8.4 per cent). The strongest declines in manufacturing exports were in *petroleum and coal* (down by 20.1 per cent), *textile, leather, clothing and footwear* (down by 13.0 per cent) and *transport equipment* (down by 12.7 per cent) (chart 41).
Manufacturing sector exports

In volume terms, manufacturing sector exports have fluctuated over the time of the GFC, but decreased through the year to September 2009. Manufacturing export volumes grew by an average annual compound rate of 1.6 per cent between the September quarter 1999 and the September quarter 2009, compared with 2.9 per cent per year for all industries (chart 42).

Chart 42: Exports by industry sector (seasonally adjusted, chain volumes)

Data source: ABS Cat. No. 5302.0, tables 11 and 109. Export volume measurements in the above chart use a commodity breakdown that is not necessarily identical to ANZSIC.
**Elaborately transformed manufactures**

The growth of Australian exports of manufactured products (in current prices) during the 1990s was characterised by substantial exports of higher value-added or elaborately transformed manufactures (ETMs). Around 62 per cent of Australia’s manufacturing exports in 2008–09 were ETM products (the balance were simply transformed manufactures, STMs).

The main drivers of ETM growth over the past 10 years have been chemicals and other semi-manufactured products, which have increased in value terms by around 91 per cent since 1998–99, and engineering products, which have increased by 48 per cent.

According to the Department of Foreign Affairs and Trade (DFAT), exports of ETMs decreased by 5.5 per cent to $23.1 billion in 2008–09, following a 4.0 per cent rise in 2007–08. Since 1998–99 ETM exports have grown by 47.8 per cent (chart 43).

![Chart 43: Elaborately transformed manufacturing exports (current prices)](chart)

Data source: DFAT, *Exports of Primary and Manufactured Products Australia, 2008–09.*
Export destinations

The United States was the principal destination for manufacturing exports during 2008–09, accounting for 12.2 per cent of Australia’s manufactured exports. Other principal markets for manufactured exports were New Zealand, China, Japan, and the Republic of Korea. These export destinations, together with the United States, accounted for 43 per cent of Australia’s manufactured exports over the year.

During 2008–09 manufacturing exports to China increased by $851 million to $2 946 million (a 40.6 per cent rise), while exports to the United States increased by $80 million to $4 536 million. However, exports to Japan, New Zealand and the Republic of Korea all decreased significantly. Exports to Japan experienced the largest fall, down by 16.1 per cent from $2 923 million in 2007–08 to $2 452 million in 2008–09.

Over the last 10 financial years Australia’s export destinations have changed significantly, with the shares of exports to China increasing from 3 per cent in 1998–99 to 7 per cent in 2008–09. Shares of exports to principal destinations such as the United States and New Zealand have fallen slightly, while the share of exports to other major export destinations for Australia experienced only minor changes (chart 44).

Chart 44: Export destinations—10 year comparison

Data source: DFAT, Exports of Primary and Manufactured Products Australia, 2008–09.
CHAPTER 6
AUSTRALIA’S MANUFACTURING SUBSECTORS IN FOCUS
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AUSTRALIA’S MANUFACTURING SUBSECTORS IN FOCUS

This section provides an overview of each subsector within the manufacturing sector. Data was collected on trends in output, employment, gross value added (GVA) per employee, gross operating surplus (GOS), investment and sales.

The ABS National Accounts publication disaggregates manufacturing into the following:

- food, beverage and tobacco manufacturing
- textile, clothing and other manufacturing
- wood and paper product manufacturing
- printing and recorded media manufacturing
- petroleum, coal, chemical and rubber manufacturing
- non-metallic mineral product manufacturing
- metal product manufacturing
- machinery and equipment manufacturing

The following chapter considers each category separately.
Food, beverage and tobacco manufacturing

This subsector includes the manufacture of meat and meat products, processed seafood, dairy, processed fruit and vegetables, oils and fat, grain mill and cereal products, bakery products, sugar and confectionery products, beverages and tobacco.

Trends

Food, beverage and tobacco is a key part of Australia’s manufacturing and employs around 220,000 people—almost a quarter of total manufacturing employment. Employment has been flat over the long term, but has picked up over the last five years, while GVA per employee has been falling. The subsector also accounts for around 20 per cent of manufacturing value added. It is one of two net exporting manufacturing industries; with the other being metal product manufacturing.

The subsector held up relatively well during the GFC, with value added remaining steady. Employment dipped briefly but recovered swiftly, while investment, profitability and production all remained on an upward trend.

Part of the subsector’s strong performance reflects the fact that the processed food and beverage industry is highly concentrated. Mergers, acquisitions and vertical integration with agricultural enterprises to achieve efficiency gains and price competitiveness are increasing. As a result, the basis of competition has shifted from product versus product and firm versus firm, to whole-of-chain competition.

Chart 45: Industry value added—food, beverage and tobacco (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 46: Employment and GVA per employee—food, beverage and tobacco


Chart 47: Profit and investment—food, beverage and tobacco

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Textile, clothing and other manufacturing

This subsector includes textile products, leather tanning, fur dressing and leather products, knitted products, clothing and footwear. ‘Other manufacturing’ includes domestic and commercial furniture manufacturing, jewellery, toys and sporting goods.

Trends

Employment in this subsector is volatile but has recently averaged around 100 000 people—this is well below the level of 20 years ago. Employment has gradually declined and the profit-to-sales ratio suggests volatile but falling margins. The subsector has been subject to long-term flat growth in industry value added over time, with an observable decline over recent years.

Furnishing includes two distinct industries—domestic and commercial. Domestic furnishing production is largely labour-intensive and craft-based. It is under pressure from low labour-cost countries such as China, and from flat-pack technology, which involves home assembly. It lacks established brands and manufacturing processes often do not have sufficient scale to be internationally competitive. The commercial furnishing area has similar pressures, but includes some firms that have successfully established niches with brands or design.

Textiles and clothing manufacturers face very similar issues. It is an industry in which business sizes are relatively small and its form of production tends towards labour intensity. It is also highly trade exposed and is migrating towards global niche production of which the growing (and highly skilled) technical textiles sector is one example.

Chart 48: Industry value added—textile, clothing and other (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 49: Employment and GVA per employee—textile, clothing and other


Chart 50: Profit and investment—textile, clothing and other

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Wood and paper product manufacturing

This subsector includes saw milling and timber dressing, and paper manufacture. The sector ranges from low-value products, such as wood chips and newspaper pulp, to products of intermediate complexity such as paper packaging, cardboard and paperboard, through to higher value wood-based building products.

Trends

Wood and paper product manufacturing has long been a relatively small and stable subsector, employing around 60 000 to 70 000 people, with minimal shifts in value added over time (although the latter fell during the GFC to be below its 20-year average).

The industry is relatively labour intensive, and GVA per employee has shifted only marginally upwards over time. In 2009 a Pulp and Paper Industry Strategy Group was established to undertake a review of the pulp and paper segment of the industry. The strategy group’s report (completed in March 2010) states:

Australia’s pulp and paper industry is going through a rationalisation process with several mills closing recently. Nevertheless the industry has high potential and is also attracting new investment from local and international sources … The industry, however, faces many challenges internationally and domestically and needs further consolidation and modernisation to remain viable and competitive.

Investment has been volatile but relatively flat over time, while the profit-to-sales ratio has been trending down over the past five years—possibly reflecting intense competition and high trade exposure to similar manufacturers across south-east Asia.

Chart 51: Industry value added—wood and paper (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 52: Employment and GVA per employee—wood and paper


Chart 53: Profit and investment—wood and paper

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Printing and recorded media manufacturing

This subsector includes printing and the manufacture of recorded media. It has undergone rapid technological change that is blurring the boundaries between itself and the communications sector.

Trends

Printing and recorded media manufacturing employs around 50,000 people—with minimal change over the past 20 years. Industry GVA has alternated between slow increases and stability over this time, but dropped sharply in the GFC. Employment proved somewhat more resilient during this time, leading to a fall in labour productivity.

Technology is driving significant shifts in this sector—most notably in the form of media content, where manufacture of recorded media faces challenges from the emergence of digital content.

Investment in the sector has proven to be erratic, but the five-year trend suggests an increasing level of investment over time—potentially reflecting the level of restructuring occurring as the sector faces technical challenges from newer forms of content distribution.

Chart 54: Industry value added—printing and recorded media
(quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 55: Employment and GVA per employee—printing and recorded media


Chart 56: Profit and investment—printing and recorded media

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a
Petroleum, coal, chemical and rubber manufacturing

This subsector includes a wide range of very different businesses and manufacturing processes. Chemical, rubber and plastic product manufacturing are dominant, although smaller, capital-intensive areas such as petroleum refining, and medicinal and pharmaceutical product manufacturing are also included.

Trends

This subsector employs around 90,000 people, with the number dropping in 2002 and 2003, and again during the GFC. Industry value added increased gradually between the late 1980s and the early 2000s, but has since declined.

Different parts of the subsector have different pressures and opportunities. The highly capital-intensive refining and manufacturing industries are under increasing pressure from plants in Asia, which have more modern technology. Inputs into manufacturing processes are increasingly being sourced offshore, resulting in higher imports.

The five-year value added trend shows a decline, and while employment has been trending downwards over time, it seems to have stabilised over the past few years. The subsector has taken part in the recent investment boom, with a steady upward trend in investment over the past five years. Both profits and production increased during the commodity boom, although the speed of the expansion in production has meant that the ratio of profits to production has eased in recent years.

Chart 57: Industry value added—petroleum, coal, chemical and rubber (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 58: Employment and GVA per employee—petroleum, coal, chemical and rubber


Chart 59: Profit and investment—petroleum, coal, chemical and rubber

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Non-metallic mineral product manufacturing

This subsector is closely aligned to the construction sector and produces glass, ceramics, cement, lime, plaster and bricks.

Trends

Non-metallic mineral products is a relatively capital-intensive subsector that employs around 35 000 people, making it the lowest employing manufacturing subsector. The clearest trend in this subsector is the sharp increase in GVA per employee over the last five years, associated with a large increase in output despite declining or flat employment. This trend picked up during the GFC, when employment fell sharply relative to value added. The subsector has moved from being one of the lowest productivity performers in manufacturing to one of the highest. The rapid increase in output has been absorbed in the domestic market as inputs into the construction sector.

The profit share of the subsector declined in the early stages of the GFC, but has since recovered. This may lead to ongoing investment growth (which is already significant) or could result in a recovery in employment in the subsector, which is currently below the pre-GFC level.

Non-metallic mineral products is a relatively trade-exposed area, but in an unusual fashion. The subsector is characterised by a number of ‘multi-domestics’. These firms do not export products, but export their business model and produce bulky materials offshore for consumption in those markets.

Chart 60: Industry value added—non-metallic mineral products (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 61: Employment and GVA per employee—non-metallic mineral products


Chart 62: Profit and investment—non-metallic mineral products

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Metal product manufacturing

This subsector involves the refinement and manufacture of iron, steel, aluminium, copper and zinc, as well as fabricated metal products including structural steel and sheeting.

Trends

This subsector accounts for around 140 000 to 150 000 people—around 15 per cent of total manufacturing employment—and contributes the largest value added of any manufacturing subsector.

Parts of the sector are export-oriented, with refining of base metals—aluminium, copper and zinc—primarily serving export markets. However, other parts such as the fabricated metal products industries have historically produced for the domestic market—most notably in the form of inputs to the construction sector. Of note is that some such firms have successfully globalised their activities and now have well-developed positions in global markets.

The subsector benefited strongly from the commodity boom, and value added remains above the level of three years ago despite the effects of the GFC. While value added fell during the GFC, there are tentative signs of recovery. Profits increased relative to actual production during the early stages of the commodity boom, but have since returned to a more typical share.

The subsector has fluctuated in recent years, with rapid expansion during the commodity boom followed by equally rapid contraction during the GFC. Most indicators are currently comparable to their levels at the earliest stages of the previous commodity boom, and there is potential for a new boom to emerge soon in global commodity markets.

Chart 63: Industry value added—metal products (quarterly, chain volumes)
Chart 64: Employment and GVA per employee—metal products


Chart 65: Profit and investment—metal products

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
Machinery and equipment manufacturing

This subsector includes motor vehicles and parts, other transport equipment including shipbuilding and defence materials, photographic and scientific equipment, electronic and electrical equipment, and appliances and industrial machinery.

Trends

Machinery and equipment is a key sector of Australian manufacturing, contributing the second largest share of value added among manufacturing subsectors, and employing around 200 000 people.

The indicators suggest there is a good deal of strength in this subsector despite intensifying competition. Value added has increased strongly and steadily over time, and the sector has recovered well following a downturn during the GFC. Employment remained solid throughout the GFC; although over the past five years there has been a gradual decline. The ratio of profits to sales has held up well, although investment by the subsector has gradually eased over time.

Around 30 per cent of the subsector comprises motor vehicle and parts manufacturers. This form of manufacturing has faced difficult times in recent years, with restructuring and job losses evident in many parts of the world. Large rear-wheel passenger cars represent a key speciality within Australian automotive manufacturers, but have been subject to particularly large falls in demand in light of higher petrol prices and the GFC. However, there are signs that automotive manufacturing may be on a successful path to restructuring that will help it cope with future challenges and ongoing trade exposure.

The machinery and equipment subsector also contains some of Australia’s highest value manufacturing products, and as such is likely to be a key player in the development of Australian manufacturing in the future.

Chart 66: Industry value added—machinery and equipment (quarterly, chain volumes)

Data source: ABS Cat. No. 5206.0, table 6.
Chart 67: Employment and GVA per employee—machinery and equipment


Chart 68: Profit and investment—machinery and equipment

Data source: ABS Cat. No. 5676.0, tables 25 & 29, and ABS Cat. No. 5625.0, table 2a.
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CONTACTS

Department of Innovation, Industry, Science and Research

For inquiries about this report or to obtain a copy contact:

Mark Gibbons
Tel: 02 6276 1205
Email: mark.gibbons@innovation.gov.au