

The Australian Industry Group

Australian Manufacturing in 2019

Local and Global Opportunities

May 2019



ABOUT Ai GROUP

The Australian Industry Group (Ai Group) is a peak industry association which together with partner organisations represents the interests of 60,000 businesses employing more than 1 million Australians.

Ai Group members are from a broad range of industry sectors including manufacturing; engineering; construction; defence; food and beverage processing; transport and logistics; information technology; telecommunications; and labour hire.

With more than 250 staff in offices across NSW, QLD, SA, VIC and WA, we provide the practical information, advice and assistance to help members run their businesses more effectively.

Ai Group also offers members a voice at all levels of government through our policy leadership and influence. Our deep experience of industrial relations and workplace law positions Ai Group as the leading advocate on behalf of enterprises large and small across Australia.

We intrinsically appreciate the challenges facing industry and remain at the cutting edge of policy debate and legislative change – and strategic business management advice.

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Australian Manufacturing in 2019: Local and Global Opportunities

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KEY FINDINGS

Manufacturing is a vital part of the Australian economy. It is Australia's seventh largest industry for employment and sixth largest for output. It accounts for 11% of annual export earnings and has the highest business expenditure on Research & Development (BERD) of any industry. It employs close to one million people across 47,530 employing companies.

Australian manufacturing has survived many challenges over the past decade, including: the Global Financial Crisis, an extended period of unfavourably high exchange rates (with the Australian dollar trading over parity against the US dollar for about three years from 2010); the rapid rise of China as 'the world's factory' and Australia's largest trading partner; the end of local automotive assembly operations in 2017; the onset of digitalisation and 'the fourth industrial revolution'; and large increases in local energy and other input costs.

As of 2019, Australian manufacturing has survived the worst of these shocks, with recovery evident in output, employment and exports through 2017 and 2018. Manufacturing has experienced some important rebalancing in terms of its sectors, products, technologies and supply chains in response to long-term local and global structural shifts. As of May 2019, the Ai Group Performance of Manufacturing Index (Australian PMI®) has shown a manufacturing expansion since August 2016. This recent growth has been most evident in food, beverages and groceries manufacturing and in sectors connected to their supply chains (e.g. specialist food processing equipment and packaging) and in locally manufactured building materials. After rising strongly through early 2018 (and despite a lull in late 2018), manufacturing employment is projected (by Australia's Department of Jobs and Small Business) to increase further over the next five years.

Expectations in 2019

After a stronger period of activity during 2017-18, the Australian economy is slowing again in 2019. The latest RBA forecasts for the Australian economy indicate a sharp dip in GDP growth in early 2019 (+1.7% p.a. expected to June 2019), followed by modest growth at best for the remainder of 2019 (+2.6% p.a. expected to Dec 2019). Slower global and local economic growth has already been felt in manufacturing, with ABS data indicating a sudden lull in output and employment growth at the end of 2018. Reflecting this deceleration, the latest expectations of manufacturing CEOs for growth in 2019 remain cautiously positive but are slower than they experienced in 2018, and a touch slower than they previously expected for 2019.

Challenges in 2019

In the near-term, feedback in the Ai Group Australian PMI® suggests the key concerns for manufacturers in 2019 include the effects of the recent Federal election, ongoing problems with high energy input costs, high costs for other inputs (due to drought, a low Australian dollar and high commodity prices) and tighter credit conditions. Longer-term and lingering concerns for manufacturers include energy costs, global competition (including exchange rates) and the ability to develop a workforce with the right skills, in order to enable local innovation, global connections, productivity improvement and future growth.

Energy. Electricity input prices for manufacturers are at a new high in 2019, averaging 91% higher than the prices they paid at the start of the decade. Gas prices have increased by 48% over the same period. This compares to price increases for all manufacturing inputs of 22% over the same period and price rises for manufacturing outputs (i.e. their selling prices) of 19% over the same period. This has caused a serious and sustained squeeze on manufacturers' margins and cash flow, reducing the funding they can direct into other inputs or into investment.

Global competition and the AUD. When asked to identify the factors that would provide the largest threats to growth in 2019, 25% of manufacturing CEOs identified a 'lack of customer demand' as their most significant constraint (down from 31% of manufacturing CEOs in 2018 and over 50% in 2015). Another 21% of manufacturing CEOs reported competition from imports and online sources as their primary constraint for

2019. This factor has steadily increased as an inhibitor to growth since 2013. With the Australian dollar within the relatively average range of US 0.70-0.75 cents over the past year, respondents appear to be focusing more on online sources of competition rather than on physical imports as their key competitive threat.

Workplace skills and innovation. Workforce development concerns feature prominently for manufacturing businesses in 2019. 21% of manufacturing CEOs nominated 'skill shortages' as their top concern for 2019 (second only to 'lack of demand'), up from 16% in 2018. This concern has been rising steadily since 2013, reflecting an increasing focus on business capabilities, workforce development, innovation and digitalisation. In response to this concern about skills, almost half of manufacturers surveyed in the latest Ai Group Workforce Development Survey (conducted in 2018) intended to increase their number of apprentices and trainees over the next twelve months. And to gain work-ready entrants for the workforce, companies are looking at new modes of engagement with local schools and with vocational and university level education.

Opportunities in 2019

CEO strategies for 2019. In 2019, the strategies outlined by Australian manufacturing CEOs for 2019 were more diverse than in previous years, indicating a greater spread of strategy in response to rapidly evolving conditions. The most popular strategy for 2019 is 'introducing new products/services' with 30% of CEOs ranking this as their first response. This overtook 'improving sales of current products', which was the top-ranking strategy in 2018 (35% of CEOs ranking it as their first strategy in 2018) but fell to 23% in 2019. Together, these two strategies focussed on product development and innovation account for about half of the growth plans for manufacturers in 2019, compared to about two-thirds of annual growth plans since 2016. In 2019 the other half of CEOs' growth plans included a diverse range of strategies including 'downsizing/reducing operational costs', 'increasing advertising', 'developing new overseas markets' and 'increasing online presence'.

Industry 4.0. Industry 4.0 is the integration of digital technology, manufacturing and consumer life. It is the latest of many Australian industry responses to the global opportunities arising from digital technologies and the 'Fourth Industrial Revolution'. According to the World Economic Forum's *Readiness for the Future of Production Report*¹, Australia is a "high potential" country for this type of future production. Key opportunities and advantages are arising for Australian manufacturing from increasing amounts of investment in digital technologies but also from the integration of these new technologies into an increasing range of the manufacturing processes and supply chains. Manufacturing workplaces increasingly rely on complex operational and organisational structures relating to design, decision-making, coordination, stock control, quality control, distribution, sales and support services. Significantly higher demands are being placed on the workforce in terms of managing high-level complexity, abstraction, connectivity and problem solving.

Selling on the global stage. Australian manufacturing sales, employment and value-added output have all contracted in aggregate over the past five and ten years, in response to the events and trends outlined above. In contrast, export earnings from the manufacturing industry have increased by \$23.9 billion since 2008, despite total sales falling by \$46.1 billion, indicating a growing reliance on export markets as a share of total sales. High-skill and technology-intensive goods exports have more than doubled over the past two decades. Across a range of sectors and product categories, Australian manufacturers continue to be nimble and flexible when selling into global supply chains and onto a global stage.

This report is the fourth in a series that explains the experiences and expectations of Australia's CEOs in 2019, as recorded in Ai Group's annual Business Prospects Survey (see Appendix). The first report in this year's series, *NATIONAL CEO SURVEY, Business Prospects for 2019: Leadership needed as economy softens*, was published by Ai Group in January 2019. The second report, *NATIONAL CEO SURVEY: Outlook for Services Businesses* outlined the experiences and expectations reported by CEOs in Australia's services industries. The third report, *NATIONAL CEO SURVEY: Outlook for Construction Businesses* outlined the experiences and expectations reported by CEOs in Australia's construction industries. This fourth report examines the experiences and expectations reported by CEOs in Australia's manufacturing industry and the challenges and opportunities currently facing Australian manufacturing.

¹ World Economic Forum in collaboration with A.T. Kearney, *Readiness for the Future of Production Report 2018*, available [here](#).

1. Australian manufacturing in 2019

Manufacturing is any process that changes materials, substances or components into new products. It is a vital part of the Australian economy. Despite manufacturing output and employment falling as share of the Australian economy over the past three decades, it is the seventh largest employing industry, one of the largest exporters and has the highest expenditure in Research & Development (BERD) of any industry.

Australian manufacturing has endured many challenges over the past decade. The Global Financial Crisis created large shock waves for manufacturing, but the unusually high, unfavourable, exchange rates that followed were much more challenging. Since the normalization of our currency's value in 2014-15, Australian manufacturing has slowly recovered, despite facing further challenges such as the closure of local automotive passenger car assembly and high energy prices. In 2019, the Australian manufacturing sector is more diverse than ever. It includes the manufacture of food, wine, soft drinks, vitamins, vaccines, baby formula, textiles, chemicals, aluminium, fabricated metals, building materials, agricultural and mining machinery, buses, trams, trains, printing and packaging, amongst many other goods, and in many cases, supplemented with supporting services. Almost everything we eat, drink, wear, or touch is manufactured.

1.1 Size and scope

Australian manufacturing sales, employment and value-added output all contracted in aggregate over the past five and ten years, in response to the events and trends outlined above. In contrast, export earnings from the manufacturing industry have increased by \$23.9 billion since 2008, despite total sales falling by \$46.1 billion, indicating a growing reliance on export markets as a share of total sales. High-skill and technology-intensive goods exports have more than doubled over the past two decades. Across a range of sectors and product categories, Australian manufacturers continue to be nimble and flexible when selling into global supply chains and onto a global stage.

TABLE 1.1 KEY MANUFACTURING STATISTICS

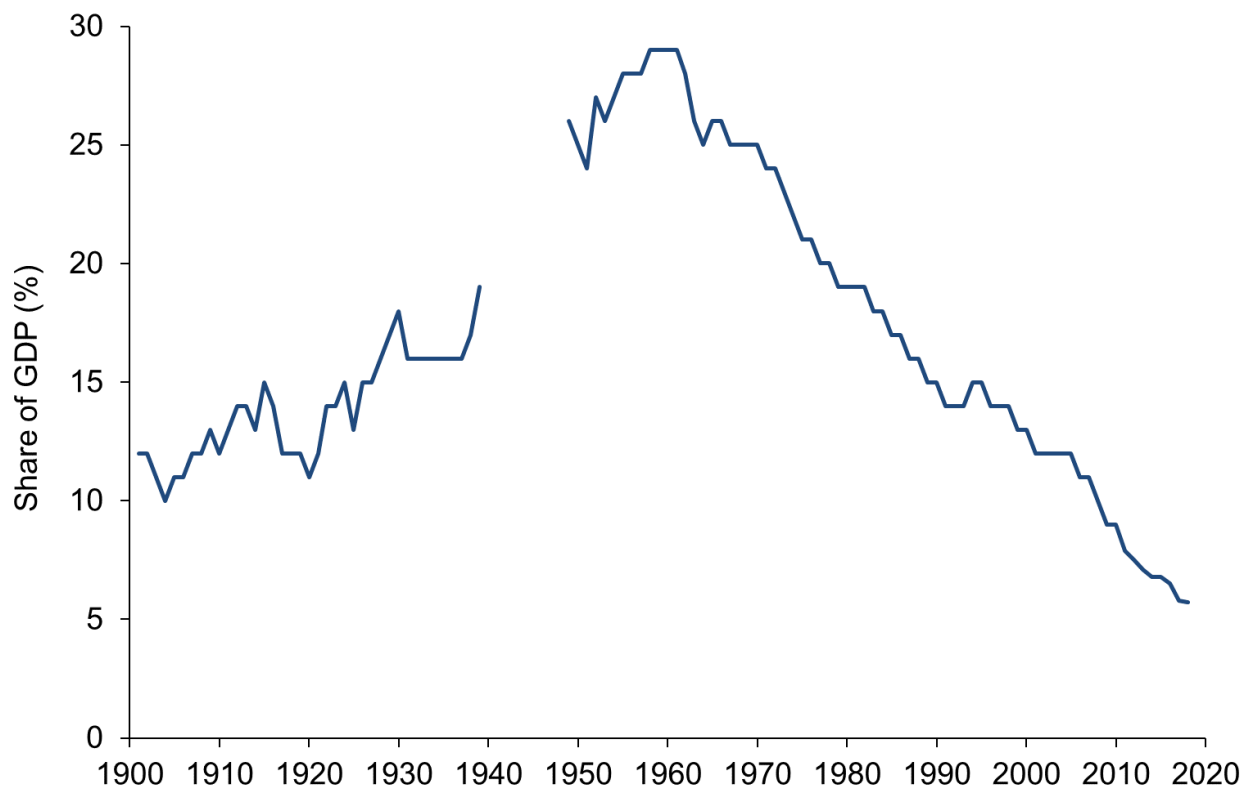
Total Manufacturing	2018	5-year change (from 2013)	10-year change (from 2008)
GDP	\$104.9bn (5.7% of total)	-\$2.7bn (-2.5%)	-\$12bn (-10.3%)
Number of employees	914,800 (7.2% of total)	-24,000 (-2.6%)	-105,600 (-8.0%)
Number of employing businesses	47,530 (5.4% of total)	-147 (-0.3%)	N/A
Export earnings	\$117.7bn (26.9% of total)	\$29.9bn (34.0%)	\$23.9bn (25.4%)
Manufacturing profits	\$32.9bn (9.3% of total*)	\$6.9bn (26.4%)	-\$3.8bn (-10.5%)
Manufacturing revenue	\$355.8bn (12.5% of total*)	-\$5.4bn (-1.5%)	-\$46.1bn (-11.5%)
Manufacturing wages bill	\$53.1bn (9.6% of total*)	-\$3.1bn (-5.5%)	-\$0.1bn (-0.1%)
Manufacturing investment	\$14.0bn (8.0% of total)	-\$0.4bn (-4.1%)	-\$4.5bn (-32.1%)
BERD (2015-16)	\$3.9bn (23.5% of total)	N/A	N/A

* % of total in Business Indicators. Note: GDP, profits, revenue, wages bill and investment are annual through the year to December 2018. Employment is seasonally adjusted from November 2018. Annual export earnings are unadjusted data through the year to December 2018. Number of employing businesses is at June 30 2018.

Sources: ABS, *National Accounts*, Dec 2018; ABS, *Labour force Australia, detailed quarterly*, Nov 2018; ABS, *Business Counts*, 2017-18; ABS, *International Trade in Goods and Services*, Feb 2018; ABS, *Business Indicators*, Dec 2018; ABS, *Private New Capital Expenditure and Expected Expenditure*, Dec 2018. ABS, *Research and Experimental Development, Businesses*, 2015-16.

Manufacturing accounted for just under 30 per cent of Australian GDP in the late 1950s and early 1960s, which was its all-time peak on that measure. Since the 1970s, faster growth by the services sector has seen manufacturing’s share of output decline. It now accounts for 5.7% of GDP (Chart 1.1). This is a global trend that has occurred across all advanced economies. Despite this declining share, the sector’s absolute output has grown for most of that time. In 2019, Australia is making more things, and better, than ever before.

CHART 1.1 MANUFACTURING SHARE OF GDP IN AUSTRALIA, 1901 to 2018



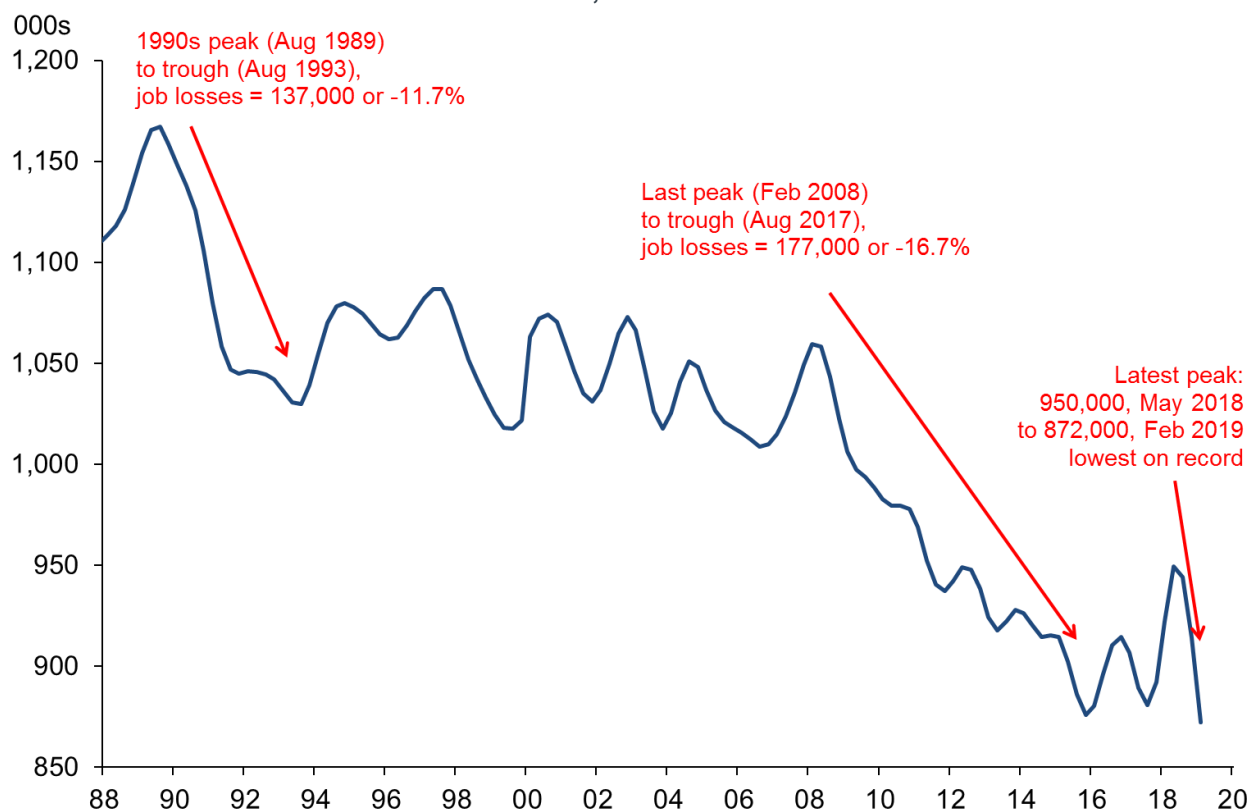
Note: Data not available from 1940 to 1948.

Sources: Data from the Department of Industry, Innovation and Science, *Flexibility and Growth*, 2018. Originally sourced from Butlin, M., Dixon, R. and Lloyd, P. *A statistical narrative: Australia, 1800-2010* in Ville, S. and Withers, G., *The Cambridge Economic History of Australia*, Cambridge University Press; ABS, *National Accounts*, Dec 2018.

Prior to Australia’s last recession in 1991, manufacturing employed over 1.1 million people (more than 16% of Australian workers). Since then, the sector has become progressively more capital-intensive and less labour-intensive, and the wider population and workforce have grown strongly. Large declines in manufacturing employment in Australia occurred during the last recession in 1991 and after the Global Financial Crisis (GFC) and subsequent period of high exchange rates, where the Australian dollar (AUD) rose above parity. From August 1989 to August 1993, Australian manufacturing employment fell by 11.7% and then held relatively steady until the onset of the GFC (see Chart 1.2). From a recent peak in February 2008 until the most recent trough in August 2017, manufacturing employment fell by 16.7%. More recently, manufacturing employment recovered to 950,000 in mid-2018 but subsequently fell dramatically over the summer of 2018-19, with a reduction of 41,600 over the three months to February 2019 (trend).

Over the year to February 2019 (latest data available at the time of this Report), manufacturing employment fell by 5.4% p.a. to 873,000, which is the lowest number of manufacturing jobs recorded in the current labour force data series (commencing in 1984, trend). The reasons for this sudden reversal in 2018’s recent (and very promising) jobs recovery in manufacturing are not yet clear. Even after this latest fall however, total manufacturing accounts for 6.8% of all employment and is Australia’s seventh largest employing industry.

CHART 1.2 MANUFACTURING EMPLOYMENT, TREND



Sources: ABS, *Labour force Australia, detailed quarterly*, Feb 2019.

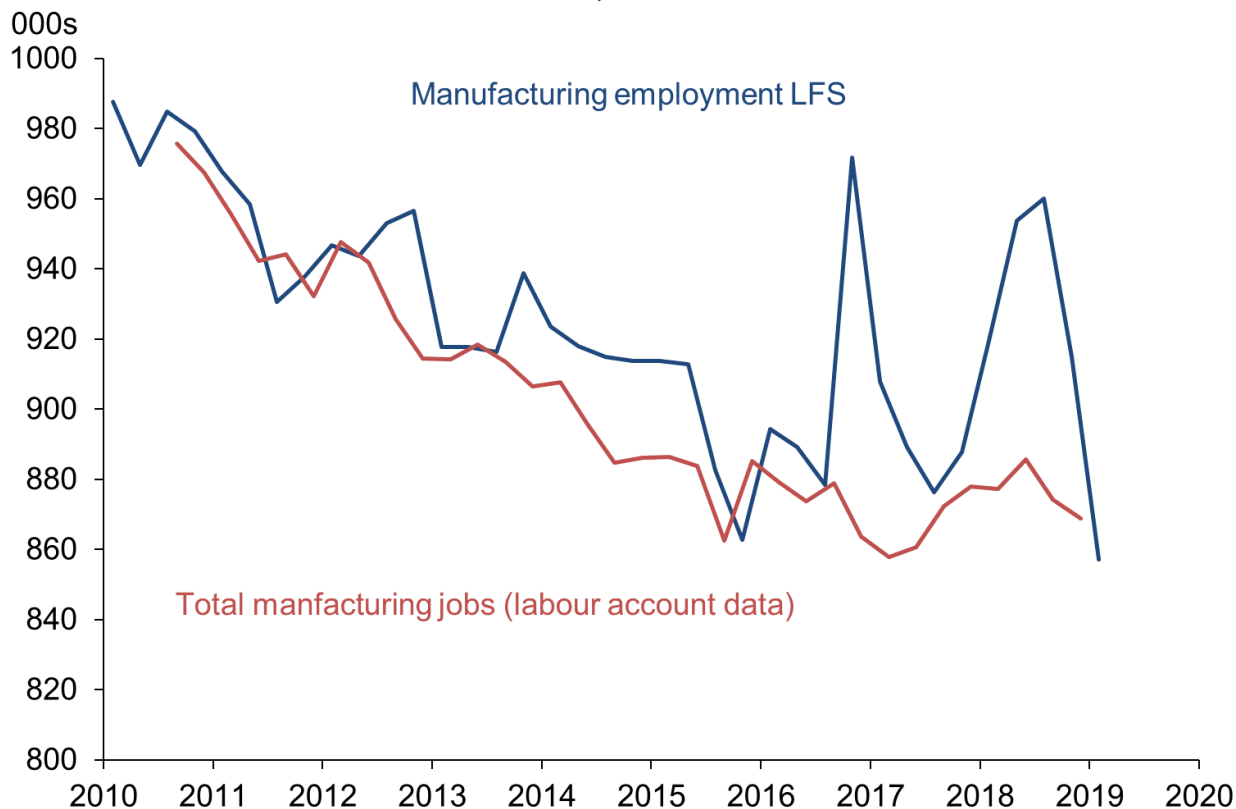
Manufacturing remains one of Australia's largest full-time employing industries. In February 2019, 85.5% of the manufacturing workforce were in full-time employment, compared with 69% of the total workforce. Manufacturing workers work an average of 37.7 hours per week in 2019, compared with an average of 33.5 hours for the total workforce.

An alternative measure of jobs in manufacturing (from the ABS *Labour Account*²) shows that manufacturing jobs reached a recent peak in the first half of 2018, and then declined in the second half of 2018, albeit by a smaller degree to that indicated by the ABS labour force data series. According to the Labour Account data, there were 869,000 manufacturing jobs in Australia in December 2018, of which 858,000 were filled and another 11,000 positions were unfilled vacancies (1.2% of total positions). These unfilled vacancies reflect recent reports of difficulty in filling some types of skilled occupations among manufacturing businesses.

The long-term decline in manufacturing employment is expected to abate over the next five years as production and sales volumes stabilise, with Department of Jobs and Small Business projecting manufacturing employment to recover to around 949,000 by 2023 (see Chart 1.4 and Section 1.2 below).

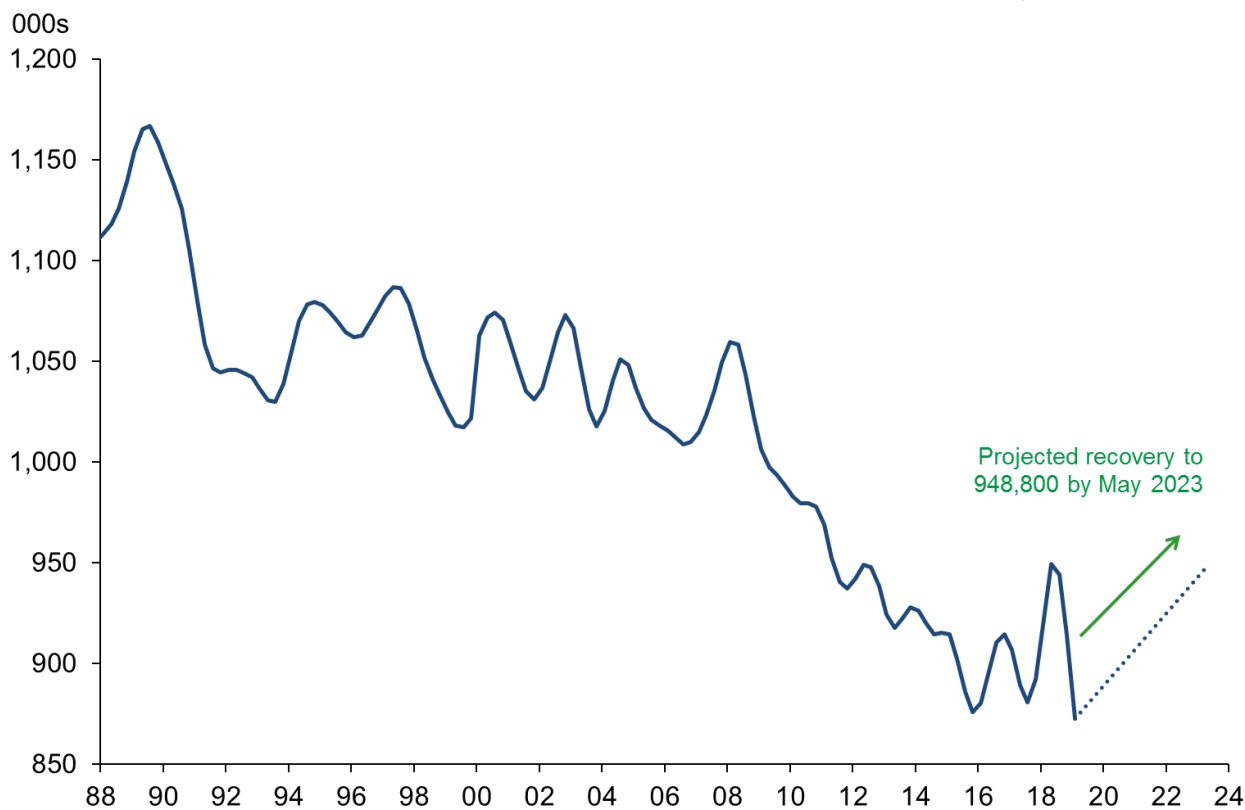
² The Australian Bureau of Statistics (ABS) has recently introduced an experimental labour market data release called the Labour Account. This pulls together information from separate household, business and government data sources. The Labour Account includes quarterly estimates of employment and jobs by industry. This is different to the traditional source of industry employment data from the Labour Force Survey (LFS), which is a household survey with industry data published once every quarter. The differences between the industry employment estimates may arise from differences in how households and businesses report their industry. For example: The ABS classify employees of labour supply firms as being employed in administrative services, part of the administration & support industry, although many of those employees report in the LFS that they are working in the industry of their place of work, such as transport or manufacturing. For more information please see Reserve Bank of Australia, Statement on Monetary Policy: Box C - New Industry Employment Estimates, Feb 2019, available [here](#).

CHART 1.3 MANUFACTURING LABOUR DATA, SEASONALLY ADJUSTED



Sources: ABS, *Labour force Australia, detailed quarterly*, Feb 2019; ABS, *Labour Account*, Dec 2018.

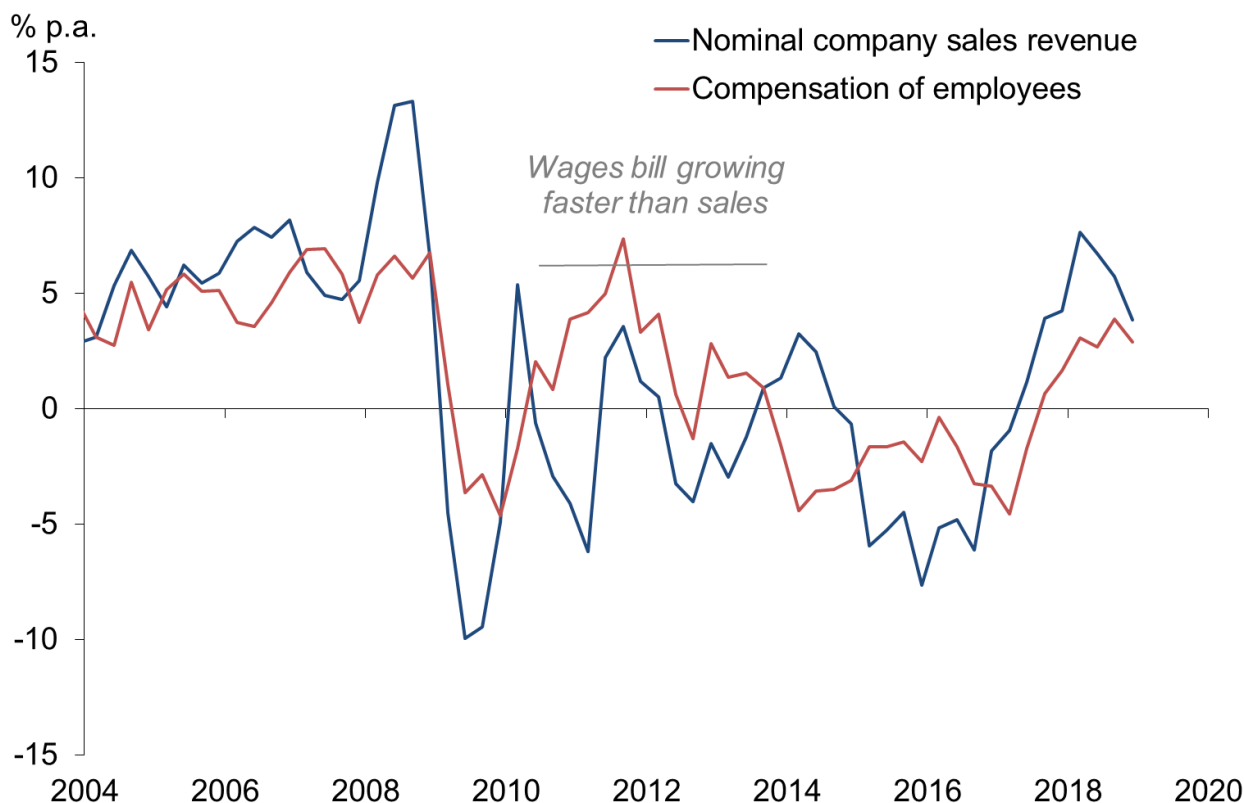
CHART 1.4 MANUFACTURING EMPLOYMENT AND PROJECTED EMPLOYMENT, TREND



Sources: ABS, *Labour force Australia, detailed quarterly*, Feb 2019; Department of Jobs and Small Business, *Employment Projections*.

The Global Financial Crisis created a trade and demand shock for manufacturing globally, but its effects were relatively brief in Australia. For Australian manufacturing, the unusually unfavourable exchange rates that followed were much more challenging. This period of unfavourable exchange rates made sales of Australian manufacturing products less competitive internationally (that is, as exports and in competition with imported products), but it also pushed up local labour costs. From mid-2010 to late 2013, growth in manufacturing compensation of employees grew at a much faster pace than aggregate nominal sales, making Australian manufacturers less competitive. Aggregate nominal sales shrank during 2015 and 2016 (as did aggregate nominal wages), before recovering during 2017 and 2018 (see Chart 1.5 and 1.6).

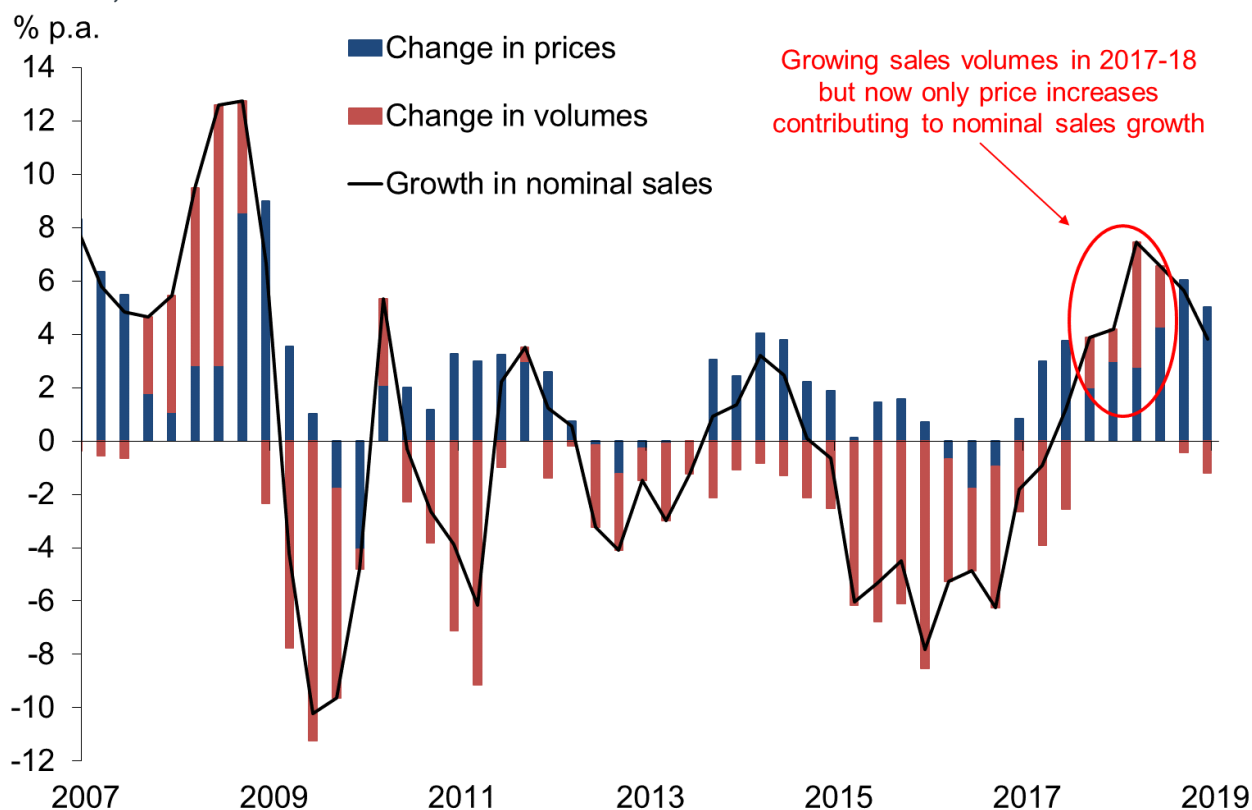
CHART 1.5 MANUFACTURING NOMINAL SALES AND COMPENSATION OF EMPLOYEES GROWTH, SEASONALLY ADJUSTED



Sources: ABS, *Business Indicators*, Feb 2019; ABS, *Labour Account*, Dec 2018.

This nascent recovery in late 2017 and early 2018 in manufacturing sales represented a real sales increase and not just a price rise: in (inflation-adjusted) terms (see Chart 1.6). This was the strongest real sales growth since the GFC and occurred for four consecutive quarters (for the first time since the GFC). Sales volumes contracted in the second half of 2018, with only rising prices contributing to rising nominal sales.

CHART 1.6 MANUFACTURING NOMINAL SALES GROWTH, CONTRIBUTION FROM VOLUMES AND PRICES, SEASONALLY ADJUSTED



Source: ABS, *Business Indicators*, Dec 2018.

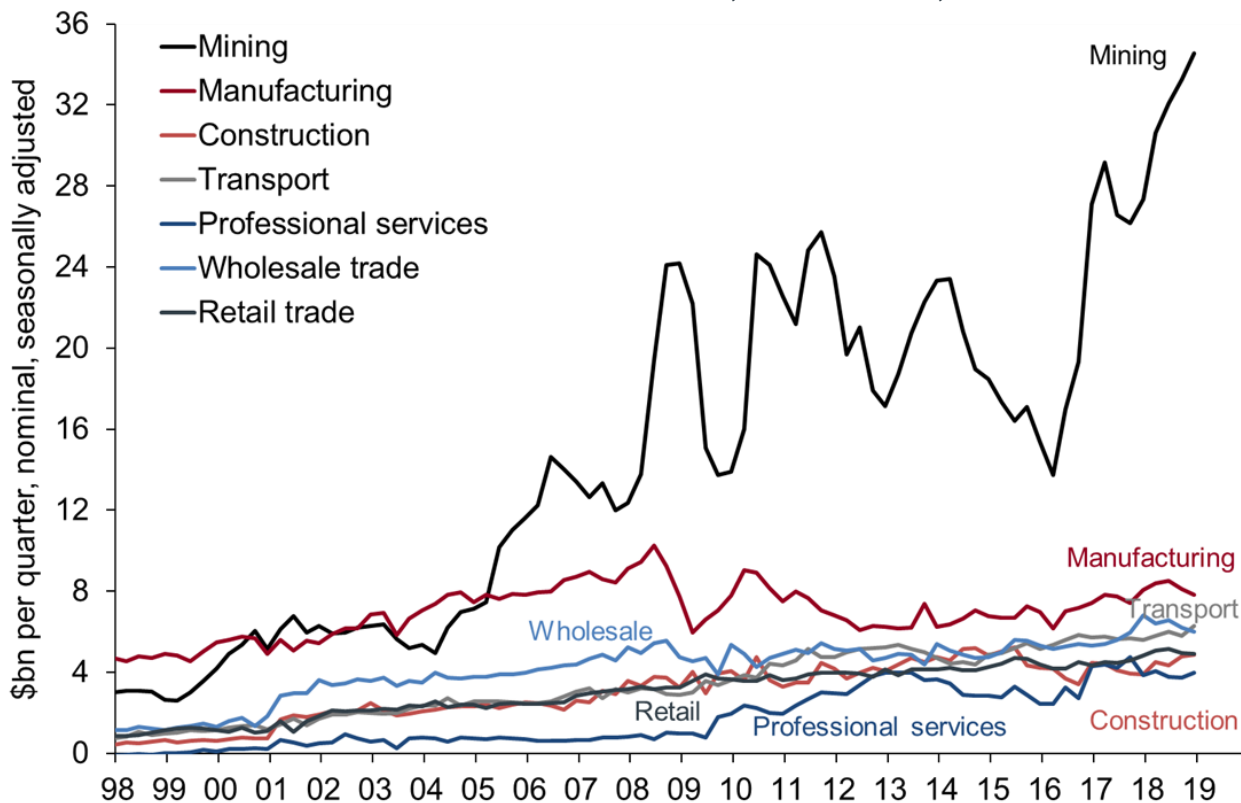
National aggregate company profits data from the Australian Bureau of Statistics indicate a growing gap in earnings and profitability between Australia’s mining and non-mining industries. Based on a subset of the industries³ covered in the ABS *National Accounts*, these data indicated that total nominal company profits rose by 0.8% q/q and 10.5% p.a. in Q4 2018 to \$90.1 billion (nominal and seasonally adjusted). As has been the case in many quarters over recent years, the bulk of this increase in nominal profits in occurred in the mining sector, which saw its profits rise by 4.0% q/q and 26.3% p.a. to a new record of \$34.6 billion in the quarter. This increase in mining profits accounted for 84% of the increase in company profits over the year to Q4 2018. Nominal aggregate profits in the non-mining sectors fell by 1.0% q/q but rose 2.5% p.a. in Q4 to \$55.5 billion. The success of mining has been due to a mix of rising (but volatile) commodity prices and rising outputs. It has seen the share of total company gross operating profits earned by the mining sector rise to 38% in 2018, up from 23% in 2008 and 17% in 1998.

In contrast to the rise and rise of mining industry earnings, gross operating profits in the manufacturing sector rose very mildly through 2017 and 2018, but then abated in the second half of 2018, with total manufacturing nominal profits falling by 2.9% p.a. to \$7.8 billion in Q4. Even before this latest fall in late 2018, aggregate nominal manufacturing profits for Australian manufacturing were still well below the high point reached just before the GFC in June 2008, of \$10.1bn (See Chart 1.7).

Since the Australian dollar’s return to long-run average exchange rates in 2014-15, industry has recovered some of its lost ground. As of April 2019, the Ai Group Australian PMI[®] had shown the sector in expansion for 32 consecutive months (see Chart 1.8).

³ These data are for private companies only and exclude health, education and parts of finance.

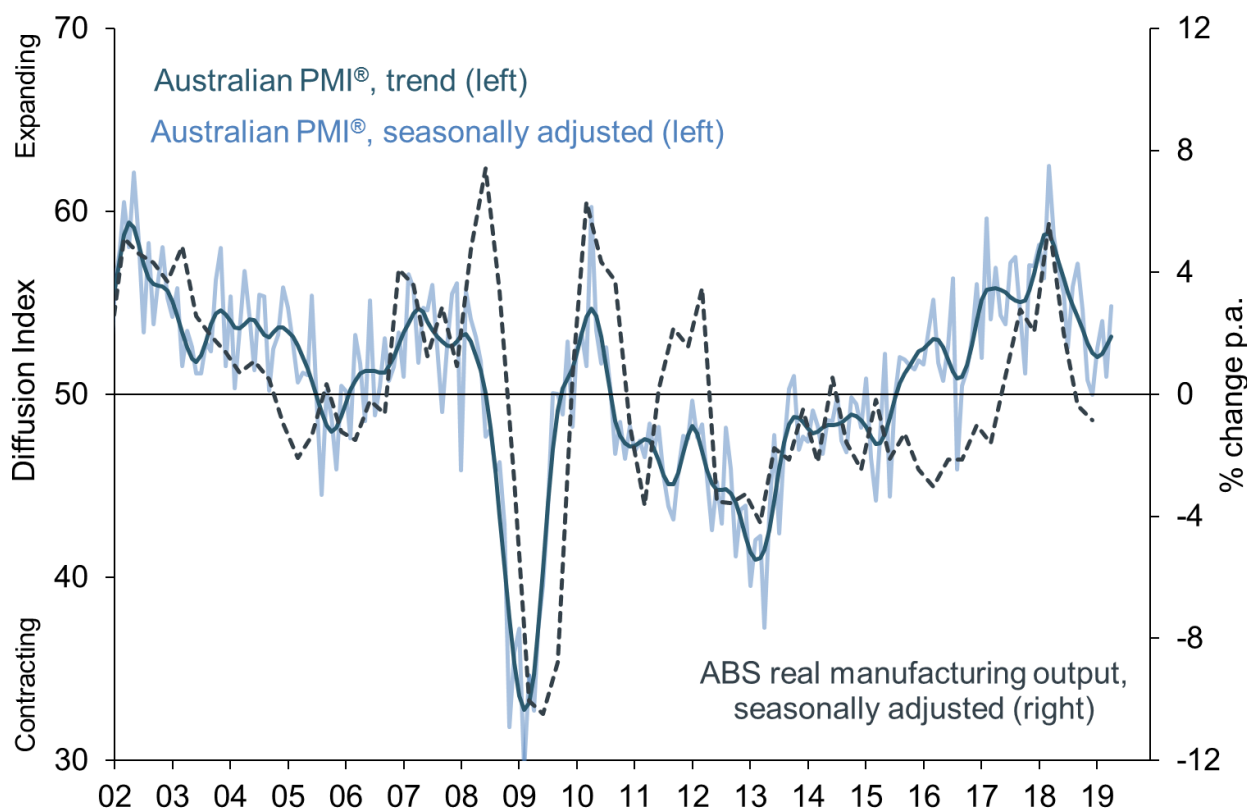
CHART 1.7 AGGREGATE NOMINAL COMPANY PROFITS*, PER QUARTER, SELECTED INDUSTRIES



* Company gross operating profits for industries that are included in the Business Indicators dataset. "Selected items are excluded from company profits before income tax to provide a measure of underlying company profits. These items include interest income and expenses; depreciation and amortisation; and selected items which do not involve the production of goods and services such as net foreign exchange gains/losses, gains/losses arising from the sale of non-current assets, and net unrealised gains/losses from the revaluation of current or non-current assets".

Source: ABS, Business Indicators, Dec 2018.

CHART 1.8 Ai GROUP AUSTRALIAN PMI®



Sources: Ai Group, Australian PMI®, Apr 2019; ABS, National Accounts, Dec 2018.

1.2 Manufacturing employment is rebalancing

Manufacturing sectors have taken a wide variety of growth paths over the past decade. Manufacturing employment has been under pressure from shrinking labour-intensive industries (most notably in textiles, clothing and footwear and in printing). Other sectors are growing but are becoming more capital intensive (with increasing automation and digitalisation) and are in need of higher skilled labour (see Section 2.3). Sectors of manufacturing employment growth in the past decade include:

- Food, beverages & tobacco⁴ employment increased by 9.2% over the last decade to 247,700. It now accounts for 27% of manufacturing employment.
- The second area of stability and growth is building materials, furniture and household furnishings (excluding electrical appliances). Those making building-related products have benefitted from the resurgence in residential building activity on the east coast over the last five years. Non-metallic minerals employment (making building-related products such as concrete, bricks, glass, ceramics and plaster) has fallen slightly over the past decade but has increased over the past five years. 'Furniture and other manufacturing' employment has increased over the past decade and past five years with employment now at 71,700. Growth has been evident in furniture and related homewares manufacturing due to demand flow-ons from the residential construction boom.
- Another growth area over the past decade has been 'basic chemical manufacturing'. This small but extremely diverse sector includes pharmaceuticals, toiletries and health supplements. Demand for high-quality medicinal and healthcare products both domestically and abroad (particularly in Asia) has resulted in employment in this sector rising by 16% over the past decade to 53,500.

The areas of contracting manufacturing employment over the past decade were centred on transport equipment (mainly passenger car assembly), petroleum & coal products and the smaller textiles, clothing, footwear, printing and paper sectors.

- Transport equipment employment fell by over a third, from just under 100,000 in 2009 to 61,800 in 2019. This decline reflected the cessation of passenger car assembly in Australia with the last Holden (in Elizabeth, South Australia) and Toyota (Altona, Victoria) assembly facilities closing in October 2017. Employment in the remaining automotive components and other transport equipment businesses has now stabilised. A small rise in employment is projected from here, reaching 68,100 by May 2023. Australia continues to make a wide range of transport equipment components and complete vehicles such as boats, trams, trains, trucks and mining transport equipment.
- Employment in the small textile, clothing and footwear (TCF), printing and paper sectors has fallen by about a quarter in the last decade. Manufacturers in these sectors have faced tough local and global trading conditions over an extended period, with intense competition, new technologies and falling consumer prices denting local activity. Most recently the packaging sector has bucked this trend and experienced relatively strong recovery in the past 5 years, benefitting from the growth of food processing which has generated related growth in the production of food packing products.
- Employment in petroleum & coal products has fallen by 15.2% over the past decade and 11.2% over the past five years. This sector has always been a relatively small component of manufacturing in Australia. Employment in this sector is now just below 7,000. This sector is mainly engaged in refining or blending heavy petroleum fuels, most of which is imported into Australia.

⁴ The 'tobacco' sector is negligible. The ABS recorded 21 people employed in cigarette & tobacco product manufacturing in 2016-17.

TABLE 1.2 MANUFACTURING EMPLOYMENT BY SECTOR, SIZE, SHARE AND GROWTH, FEB 2019

Manufacturing sector employment Four-quarter average	Employment Feb-2019	Share	1-year growth Feb-2018 to Feb 2019	5-year growth Feb-2014 to Feb 2019	10-year growth Feb 2009 to Feb 2019
	000s	%	%	%	%
Manufacturing	918.2	100.0	3.2	-0.9	-11.0
Food, beverage & tobacco products	247.7	27.0	6.7	12.1	9.2
Food product manufacturing	213.3	23.2	5.8	14.9	8.7
Beverage & tobacco products	34.4	3.7	12.7	-2.5	12.7
Machinery & equipment w/ transport	184.4	20.1	-0.4	-9.1	-12.5
Transport equipment	61.8	6.7	-16.6	-20.9	-35.0
Machinery and equipment	122.6	13.4	10.5	-1.6	6.0
Metal products	138.0	15.0	10.5	3.8	-11.8
Primary metal products	64.4	7.0	16.2	-12.9	-26.0
Fabricated metal products	73.6	8.0	6.0	24.7	6.2
Chemicals, petroleum and rubber	94.4	10.3	7.1	9.9	2.5
Petroleum & coal products	6.7	0.7	-37.0	-11.2	-15.2
Basic chemicals	53.5	5.8	10.0	13.0	16.0
Polymer product and rubbers	34.2	3.7	18.8	10.4	-10.3
Building, wood, furniture & other	159.2	17.3	5.7	18.0	5.4
Non-metallic mineral products	39.2	4.3	11.5	11.2	-3.8
Wood products	48.2	5.2	3.2	11.1	1.4
Furniture and other manufacturing	71.7	7.8	4.4	27.6	14.4
TCF, paper & printing products	90.2	9.8	-0.1	-5.0	-23.4
TCF manufacturing	40.8	4.4	10.8	4.2	-10.4
Pulp, paper & converted paper	15.6	1.7	1.3	22.6	-26.4
Printing (including recorded media)	33.8	3.7	-11.1	-21.4	-33.7
Manufacturing nfd	4.3	0.5	-77.3	-92.0	-94.4

Note: Data is smoothed using a four-quarter average. Nfd. is not further defined.

Source: ABS, *Labour Force Detailed Quarterly*, Feb 2019.

As noted in Section 1.1, the Department of Jobs and Small Business expects this long-term decline in manufacturing employment to abate over the five years to May 2023. This is due to multiple factors including:

- Increased competitiveness provided by the lower trading range of the Australian dollar. All manufacturing exporters and import-competing producers are benefiting from the lower dollar in 2019, although it also means that imported inputs are more expensive.
- Increased focus on adding value in global supply chains rather than basic manufacturing (see Section 3.2).
- The end of job shedding in motor vehicle assembly and parts manufacturing now that the cessation of car assembly at Ford, General Motors Holden and Toyota has been finalised.
- Rising Government expenditure on defence industries and procurement that is supporting manufacturing in sectors such as 'Other Transport Equipment Manufactures'.

These various trends are supporting important growth pockets in manufacturing employment including in food products, medical equipment, infant formula, pharmaceuticals, cosmetics, agritech machinery, mining machinery & equipment. Steel manufacturing is also recovering well, with positive support from large local infrastructure and defence project pipelines. As noted above, the long-term decline in employment in transport equipment and petroleum & coal products is expected to abate. It is projected that the declines in employment in the smaller TCF, printing and paper sectors will continue but at a much slower rate.

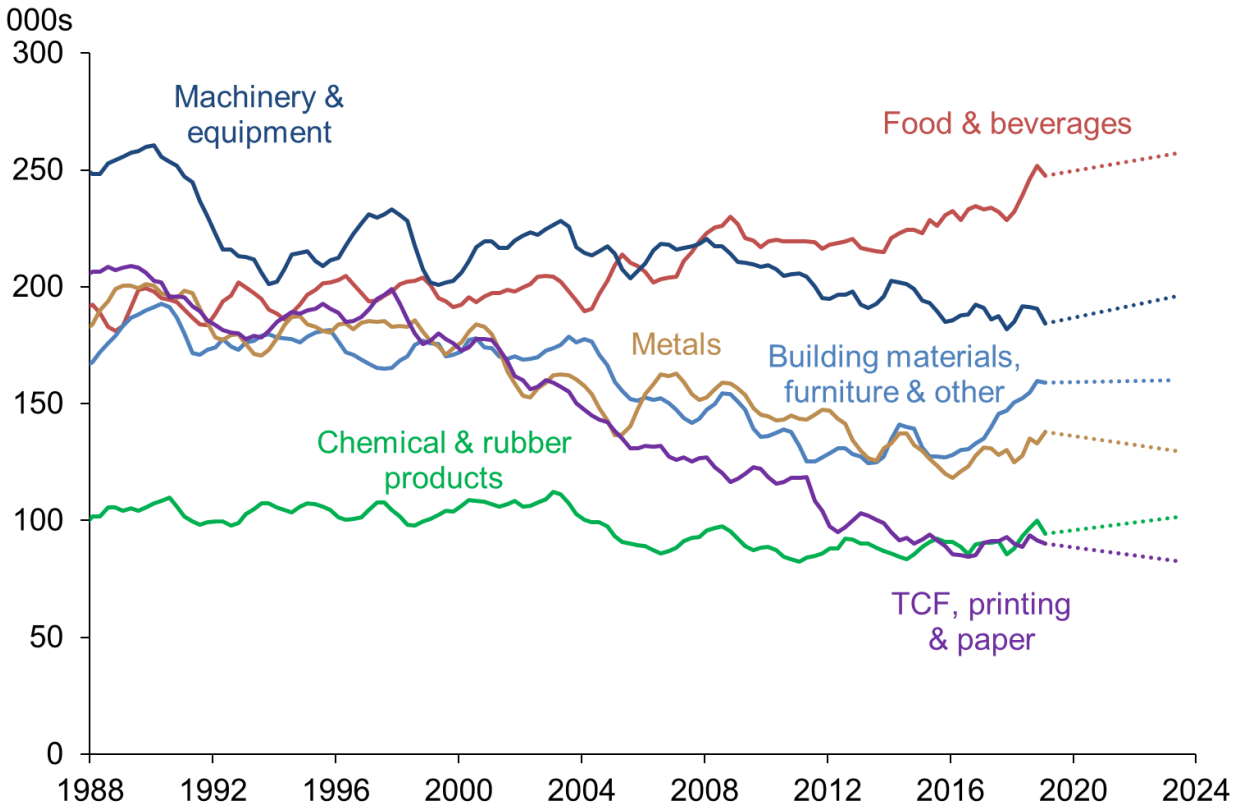
TABLE 1.3 PROJECTED ANUFACTURING EMPLOYMENT GROWTH TO 2023, BY SECTOR

Manufacturing sector employment	Employment level – Feb 2019	Projected employment level - May 2023	5-year growth to May 2023
	000s	000s	%
Manufacturing	918.2	948.8	3.3
Food, beverage & tobacco products	247.7	257.0	3.8
Food product manufacturing	213.3	224.8	5.4
Beverage & tobacco products	34.4	32.3	-6.2
Machinery & equipment w/ transport	184.4	196.0	6.3
Transport equipment	61.8	68.1	10.2
Machinery and equipment	122.6	127.9	4.3
Metal products	138.0	129.7	-6.0
Primary metal products	64.4	55.1	-14.4
Fabricated metal products	73.6	74.6	1.3
Chemicals, petroleum and rubber	94.4	101.6	7.5
Petroleum & coal products	6.7	7.1	5.0
Basic chemicals	53.5	61.7	15.3
Polymer product and rubbers	34.2	32.8	-4.0
Building, wood, furniture & other	159.2	160.2	0.6
Non-metallic mineral products	39.2	32.1	-18.2
Wood products	48.2	55.6	15.4
Furniture and other manufacturing	71.7	72.5	1.0
TCF, paper & printing products	90.2	82.7	-8.3
TCF manufacturing	40.8	39.2	-3.8
Pulp, paper & converted paper	15.6	15.1	-2.8
Printing (including recorded media)	33.8	28.4	-16.2
Manufacturing nfd	4.3	8.7	102.7

Note: Data is smoothed using a four-quarter average. Nfd. is not further defined.

Source: ABS, *Labour Force Detailed Quarterly*, Department of Jobs and Small Business, *Employment Projections*.

CHART 1.9 MANUFACTURING EMPLOYMENT AND PROJECTED EMPLOYMENT, TREND



Sources: ABS, *Labour force Australia, detailed quarterly*, Feb 2019; Department of Jobs and Small Business, *Employment Projections*.

1.3 Manufacturing businesses

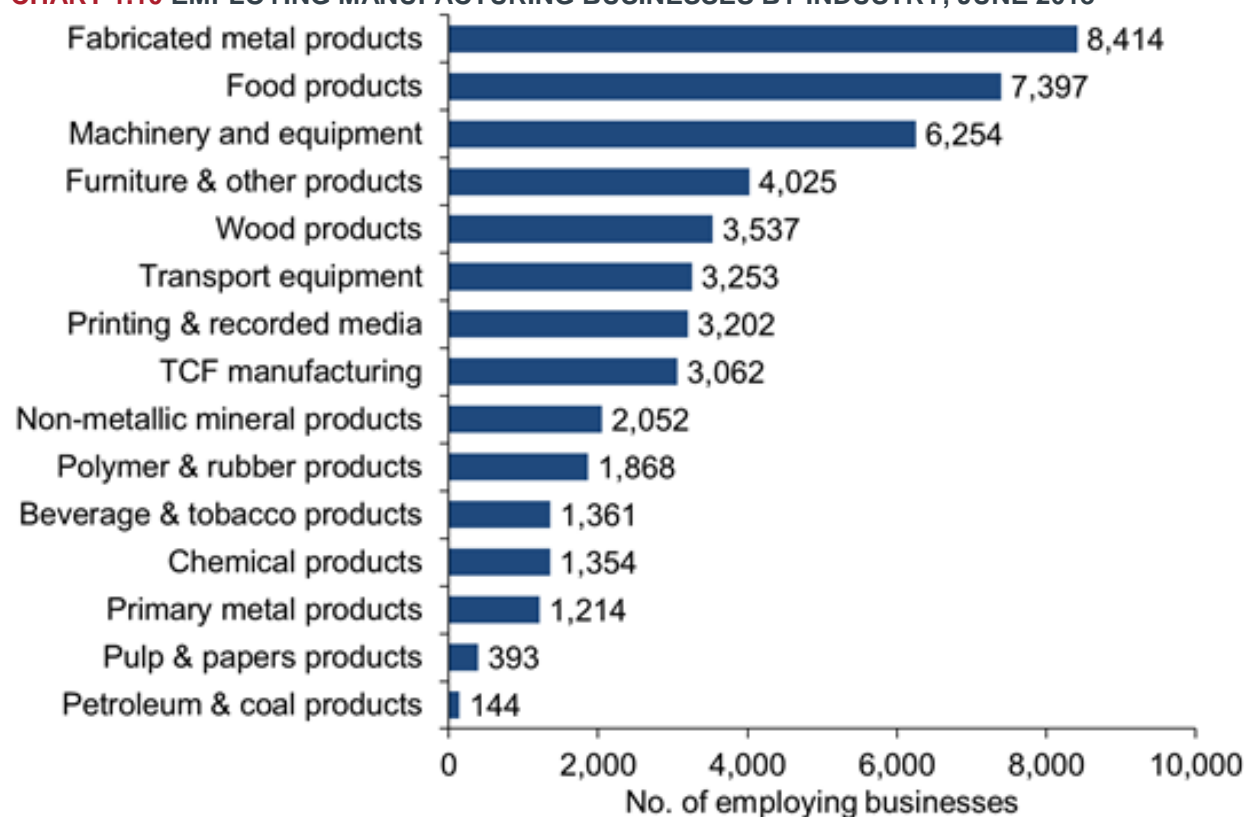
As of June 2018, there were 84,622 active manufacturing businesses in Australia, up 520 (0.6%) from one year earlier. Of these, 47,530 manufacturing businesses had at least 1 employee, down 147 (-0.3%) from one year earlier.

The manufacturing industries with the largest numbers of employing businesses in June 2018 were fabricated metals (8,414), food products (7,397) and machinery & equipment (not including transport equipment, 6,254). These three sectors accounted for 46% of all employing manufacturing businesses (see Chart 1.10).

Over the past five years, the number of employing manufacturing businesses has expanded in the ‘food & beverages’ and the ‘building materials, wood, furniture & other manufacturing’ industries, while the number of businesses in other manufacturing industries have mostly contracted.

Food and beverage manufacturers have benefitted from a lower Australian dollar and steady growth in regional (mainly Asian) demand for Australian food & beverages, while demand for building related products has been strong over the past five years with elevated levels of construction activity (see Table 1.4).

CHART 1.10 EMPLOYING MANUFACTURING BUSINESSES BY INDUSTRY, JUNE 2018



Source: ABS, *Counts of Australian Businesses*, June 2014 to June 2018.

TABLE 1.4 MANUFACTURING EMPLOYMENT BY SECTOR, SIZE, SHARE AND GROWTH

Manufacturing sector employment Four-quarter average	Employing businesses	Share	5-year change
	number	%	number
Manufacturing	47,530	100.0	-147
Food, beverage & tobacco products	8,758	18.4	365
Food product manufacturing	7,397	15.6	107
Beverage & tobacco products	1,361	2.9	258
Machinery & equipment w/ transport	9,507	20.0	-204
Transport equipment	3,253	6.8	-146
Machinery and equipment	6,254	13.2	-58
Metal products	9,628	20.3	-340
Primary metal products	1,214	2.6	-214
Fabricated metal products	8,414	17.7	-126
Chemicals, petroleum and rubber	3,366	7.1	-157
Petroleum & coal products	144	0.3	-22
Basic chemicals	1,354	2.8	87
Polymer product and rubbers	1,868	3.9	-222
Building, wood, furniture & other	9,614	20.2	341
Non-metallic mineral products	2,052	4.3	63
Wood products	3,537	7.4	153
Furniture and other manufacturing	4,025	8.5	125
TCF, paper & printing products	6,657	14.0	-1120
TCF manufacturing	3,062	6.4	-474
Pulp, paper & converted paper	393	0.8	-83
Printing (including recorded media)	3,202	6.7	-563

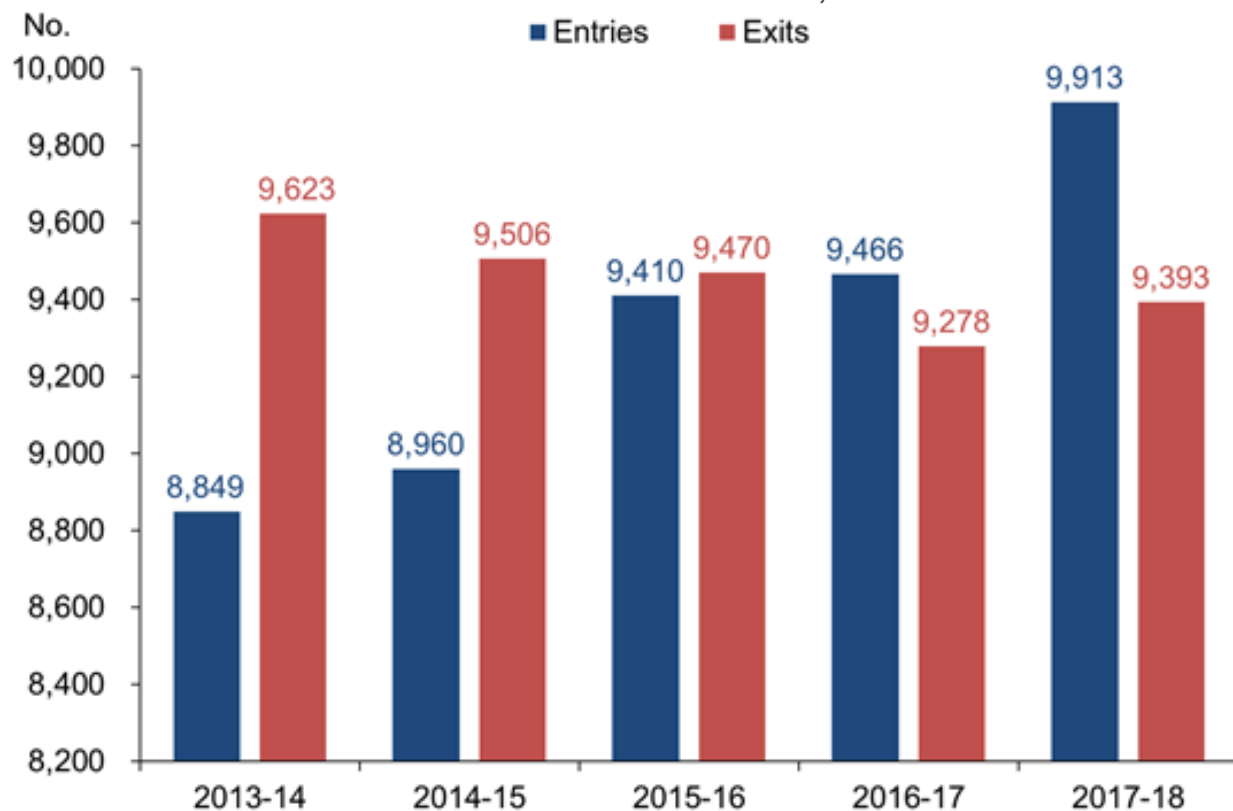
Source: ABS, *Counts of Australian Businesses*, June 2014 to June 2018.

In June 2018:

- 44% of active manufacturing businesses were non-employing (including self-employed, sole proprietor and trading only businesses).
- Small businesses (1-19 employees) accounted for almost half (49%) of all manufacturing businesses (and 87% of all employing manufacturing businesses).
- Medium businesses (20-199 employees) represented 7% of all manufacturing businesses and 12% of employing manufacturing businesses.
- Large business (over 200 employees) represented only 0.6% of all manufacturing businesses and 1% of employing manufacturing businesses.

For the second consecutive year there were more manufacturing business entries than exits in 2018 (employing and non-employing). There were 9,913 entries (new manufacturing businesses) and 9,393 exits (manufacturing closures) (see Chart 1.11). In 2018 however, most new entries appeared to be non-employing manufacturing businesses. The number of non-employing manufacturing businesses increased by 706 businesses in 2017-18, while the number of small manufacturing business was barely unchanged, rising by 18 businesses and the number of medium (-158) and large (-7) manufacturing businesses fell.

CHART 1.11 MANUFACTURING BUSINESS ENTRIES AND EXITS, 2013-14 TO 2017-18



Sources: ABS, *Counts of Australian Businesses*, June 2014 to June 2018.

1.4 Australian manufacturing performance

In line with improving local economic conditions in the first half of 2018, Australian CEOs participating in the latest Ai Group Business Prospects survey reported a broadly positive year. Manufacturing CEOs generally reported a better year compared to other sectors. In 2018, the majority of manufacturing CEOs reported improving business conditions, turnover and profit margins. Most respondents reported no change for export revenues and productivity while employment outcomes were more mixed (Chart 1.12).

On a net balance basis, (that is, the proportion of all survey respondents that reported an improvement minus the proportion that reported a deterioration in each indicator) all business performance indicators rose to higher levels than the previous five years, except for productivity (see Chart 1.13 and 1.14).

CHART 1.12 MANUFACTURING INDICATORS IN 2018: PERFORMANCE, INVESTMENT AND PRICING

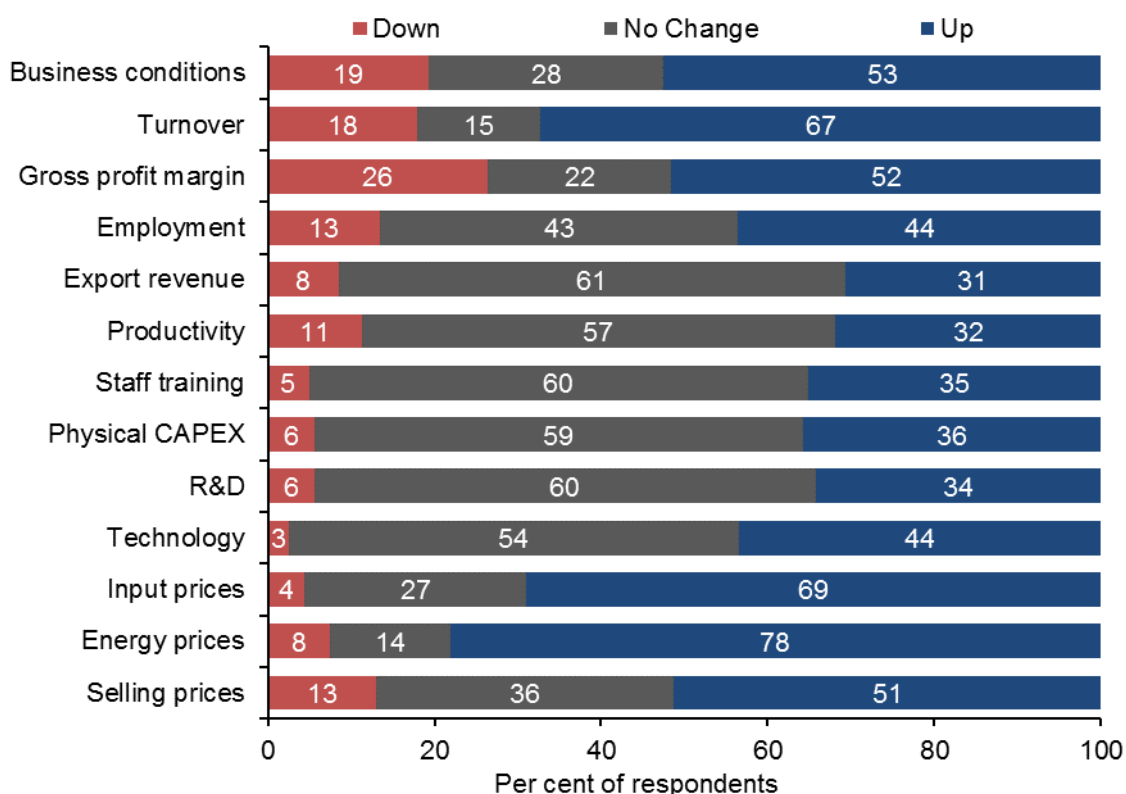
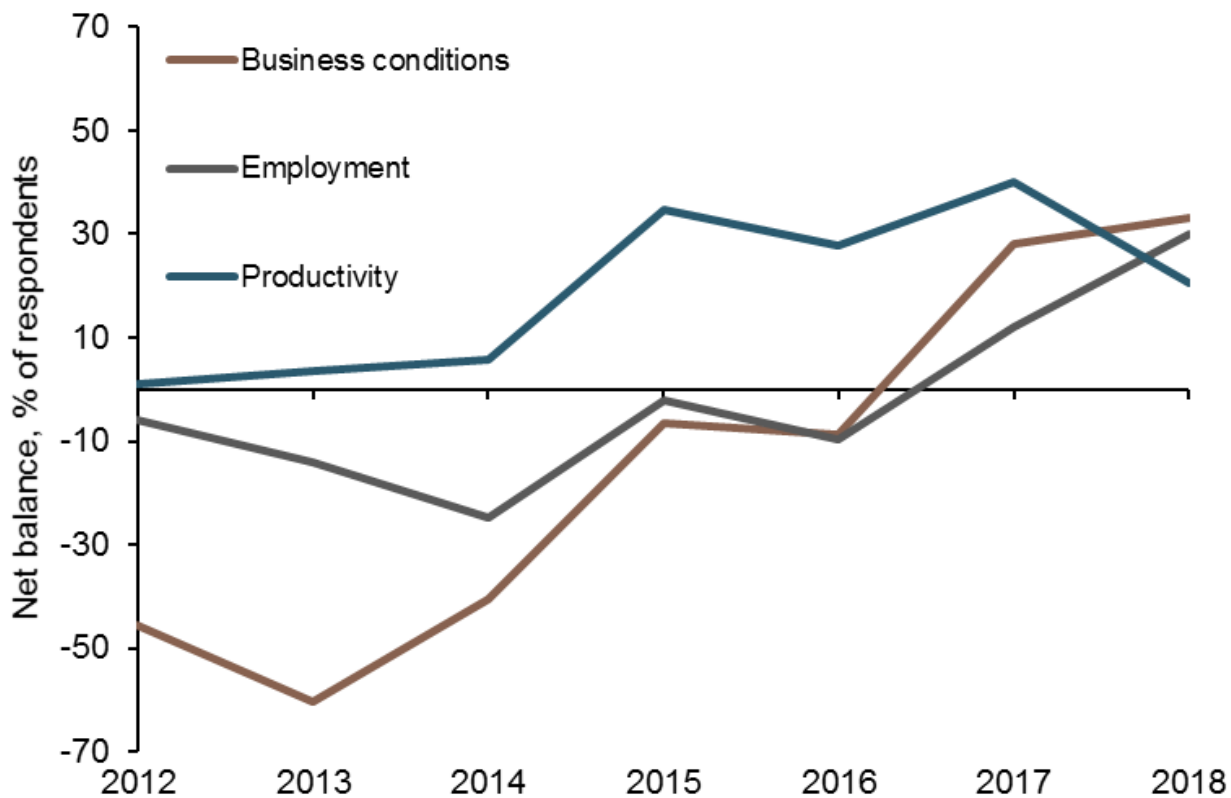
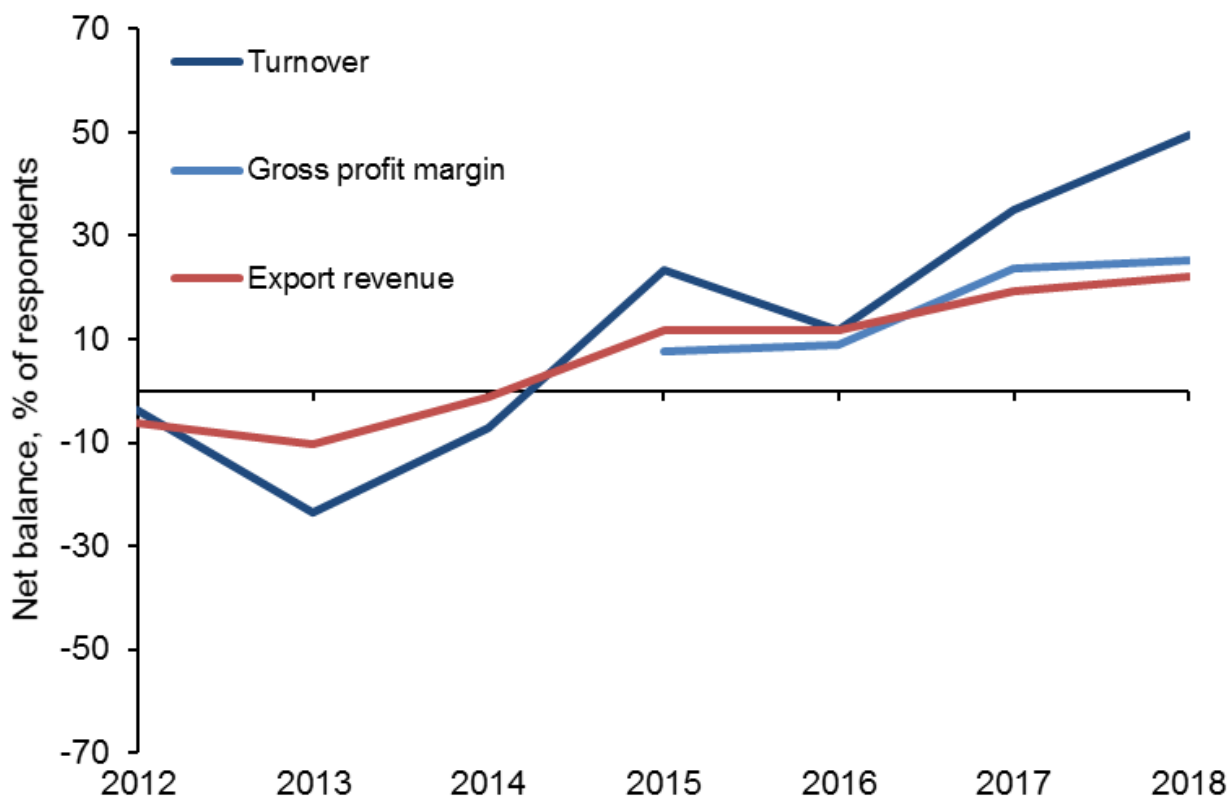


CHART 1.13 MANUFACTURING PERFORMANCE INDICATORS, 2012-2018



'Net balance' is the proportion of all survey respondents that reported an improvement minus the proportion that reported a deterioration in each indicator. Aggregate results include respondents from all surveyed industries and are weighted by ABS estimates of output from each industry.

CHART 1.14 MANUFACTURING PERFORMANCE INDICATORS, 2012-2018



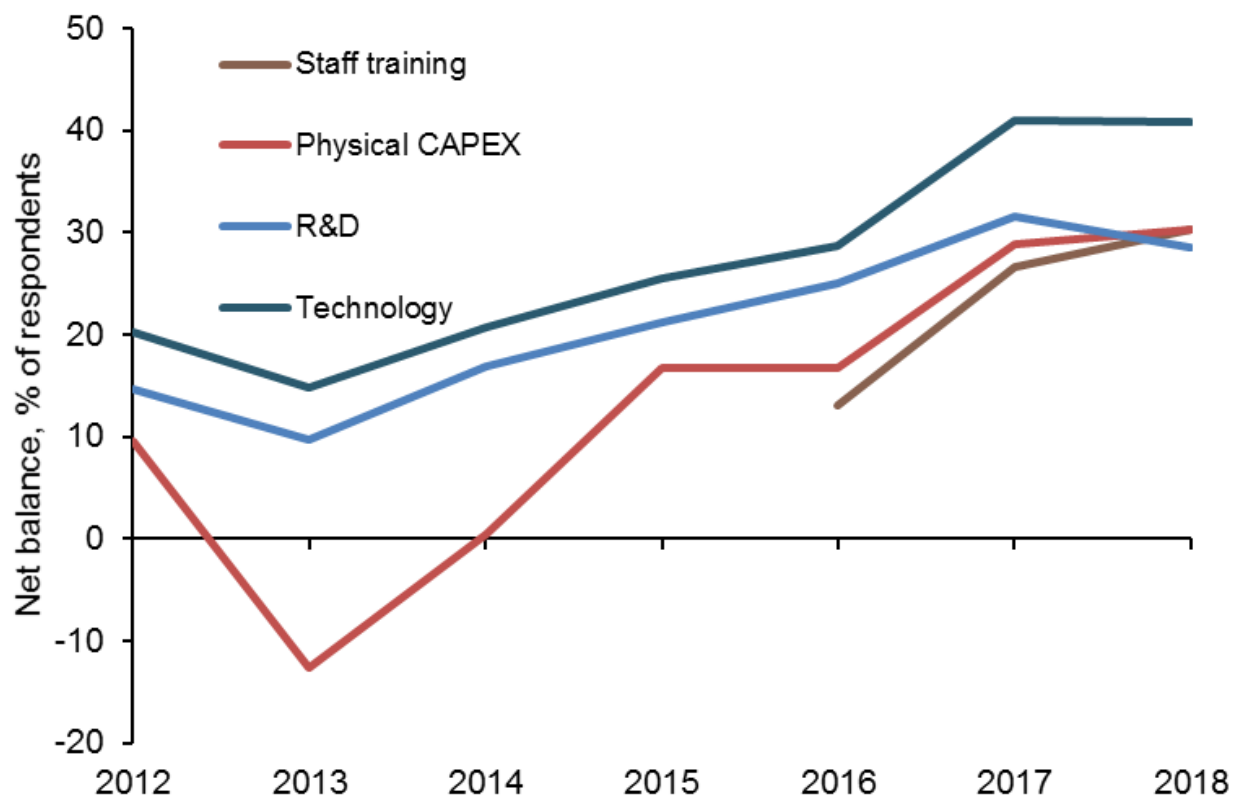
'Net balance' is the proportion of all survey respondents that reported an improvement minus the proportion that reported a deterioration in each indicator. Aggregate results include respondents from all surveyed industries and are weighted by ABS estimates of output from each industry.

1.5 Manufacturing spending and investment

Ai Group’s annual Business Prospects survey of Australian CEOs has indicated an upward trend in annual spending by manufacturers on technology, staff training and physical capital expenditure (CAPEX) since at least 2016 (see Chart 1.15).

A greater proportion of manufacturing CEOs have reported growth in spending on technology than other investment options in each year since 2012. This focus on investing in technology has increased over time, along with staff training. It is possible that investment spending on staff training has increased alongside the increase in spending on new technologies because staff training is needed to support such an investment.

CHART 1.15 MANUFACTURING INVESTMENT INDICATORS, 2012-2018



'Net balance' is the proportion of all survey respondents that reported an improvement minus the proportion that reported a deterioration in each indicator. Aggregate results include respondents from all surveyed industries and are weighted by ABS estimates of output from each industry.

2. Challenges

After a stronger period of activity during 2017-18, the Australian economy slowed again in the second half of 2018. Reflecting this deceleration, the latest CEO expectations for growth in 2019 remain cautiously positive but are slightly slower than was experienced in 2018, and a touch slower than were previously expected for 2019. For Australian manufacturers as for other Australian businesses, the risk of disruption and/or trading water has risen in 2019, locally and globally (see *Business Prospects Report 2019*⁵).

In the near-term, feedback in the monthly Ai Group Performance of Manufacturing Index (Australian PMI[®]) suggests concerns for manufacturers in 2019 include the recent Federal election, high energy prices, high input costs (due to drought, a low dollar and high commodity prices) and tighter credit conditions. Beyond 2019, longer-term and lingering concerns for manufacturers include energy costs and reliability, global competition (including exchange rates) and the ability to develop the right workforce and hire people with the right skills.

2.1 Energy

Energy prices are a serious concern for most manufacturers. Industrial gas prices rose from their long-term average of \$3-4 per gigajoule to hit more than \$20/GJ in 2017, driven by exports and scarcity. With more gas hitting the market in 2018 prices fell – but only to \$10/GJ. In 2019, there is every chance that rising international oil and gas price trends will see local gas prices rise again. Electricity prices have been dragged up by gas prices, a trend intensified by the greater dependence of the energy system on gas generation following the closure of big old coal generators. Wholesale prices more than doubled from 2016 to 2017.

Rising energy prices (and reliability of supply) are a key long-term risk for an increasing number of Australian manufacturing businesses. At the start of 2017, 57% of manufacturers expected their energy prices to increase, but by the end of 2017, 80% reported experiencing higher energy prices. Energy costs were expected to rise further in 2018, with 85% of CEOs expecting energy costs for their business to increase. By the end of 2018 however, 78% of CEOs reported higher energy prices, with a small number reporting some welcome pricing stability after the price rises of 2017, but not a price reduction.

ABS data continues to demonstrate the cumulative impact of energy price rises on manufacturing businesses. As of Q1 of 2019, electricity input prices for manufacturers are at a new high and 91% higher than prices paid at the start of the decade. Gas prices have increased by 48% over the same period. This compares to price increases for all manufacturing inputs of 22% over the same period, and price rises for manufacturing outputs (i.e. their selling prices) of 19% over the same period. This demonstrates a substantial degree of margin compression due to rising energy input costs for manufacturing businesses operating across Australia. Energy intensive manufacturers are the businesses hardest hit by these rising energy prices. Their high exposure to global trade and competition often leaves little ability to pass on cost increases to customers. The cumulative impact of rising energy costs is a big challenge, even for those manufacturing businesses that are relatively less energy intensive:

- For the machinery and equipment sector, Ai Group estimated that in 2018⁶ the increase in electricity and gas prices was equivalent to 0.1% of their sales revenue and 0.3% of their value-added output. That is noticeable but outranked by other factors.
- For primary metals and metal product manufacturers, Ai Group estimated that in 2018 the price rise would equate to 4% of sales and 24% of industry value-added output. That would be a hammer blow, though the longer-term contracts typical in this sector have warded it off for many so far.
- The wood products sector is in between, with estimated price rises equivalent to 1.1% of value-added output in 2018. That is big enough to require a response but is not necessarily a death sentence.

⁵ Ai Group, *National CEO Survey: Business Prospects for 2019, Leadership needed as economy softens*, Jan 2019, available [here](#).

⁶ Ai Group, *From worse to bad: Eastern Australian Energy Prices*, July 2018, available [here](#).

Other industries with particularly severe impacts from high energy costs include: fuel refining (7.0% of value-added output); the pulp and paper sector (5.9% of value-added output); chemicals (4.7% of value-added output); cement, glass and other non-metallic mineral products (3.9% of value-added output); and food processing (1.7% of value-added output).

CHART 2.1 MANUFACTURING ENERGY PRICE INCREASES, ACTUAL VS EXPECTED*, 2013 TO 2019

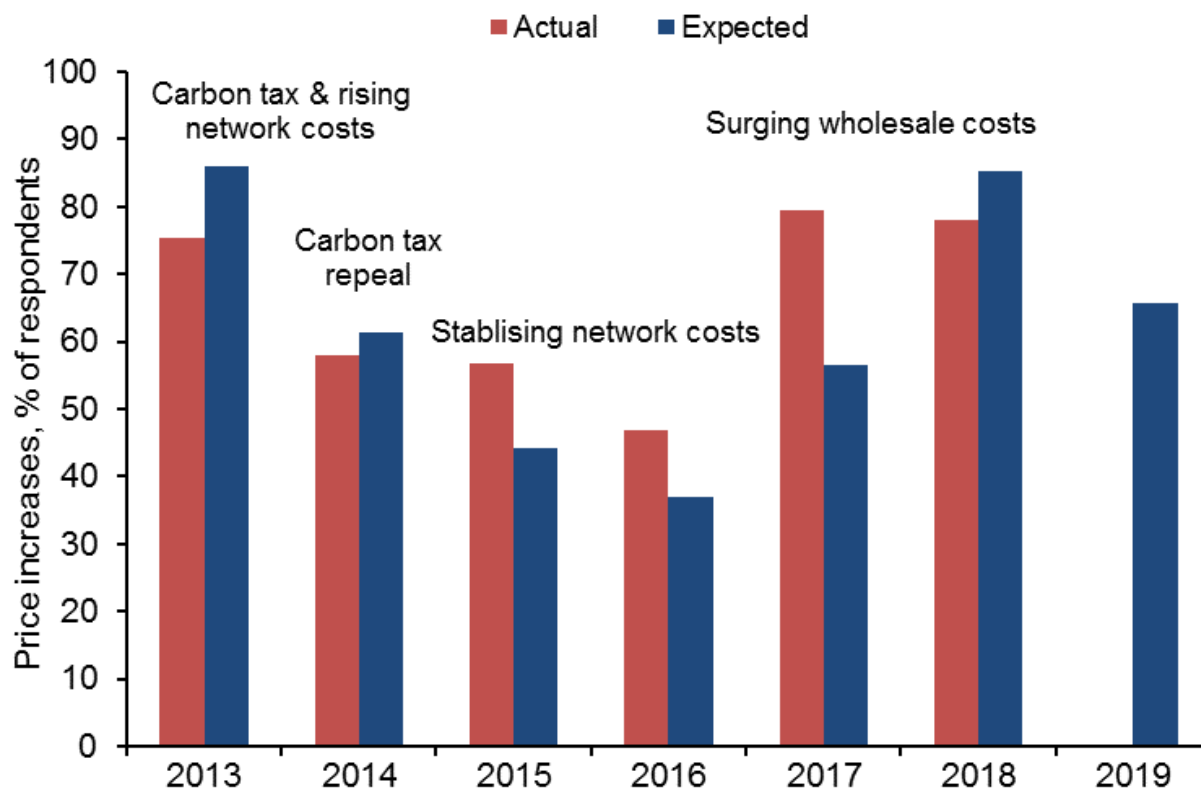
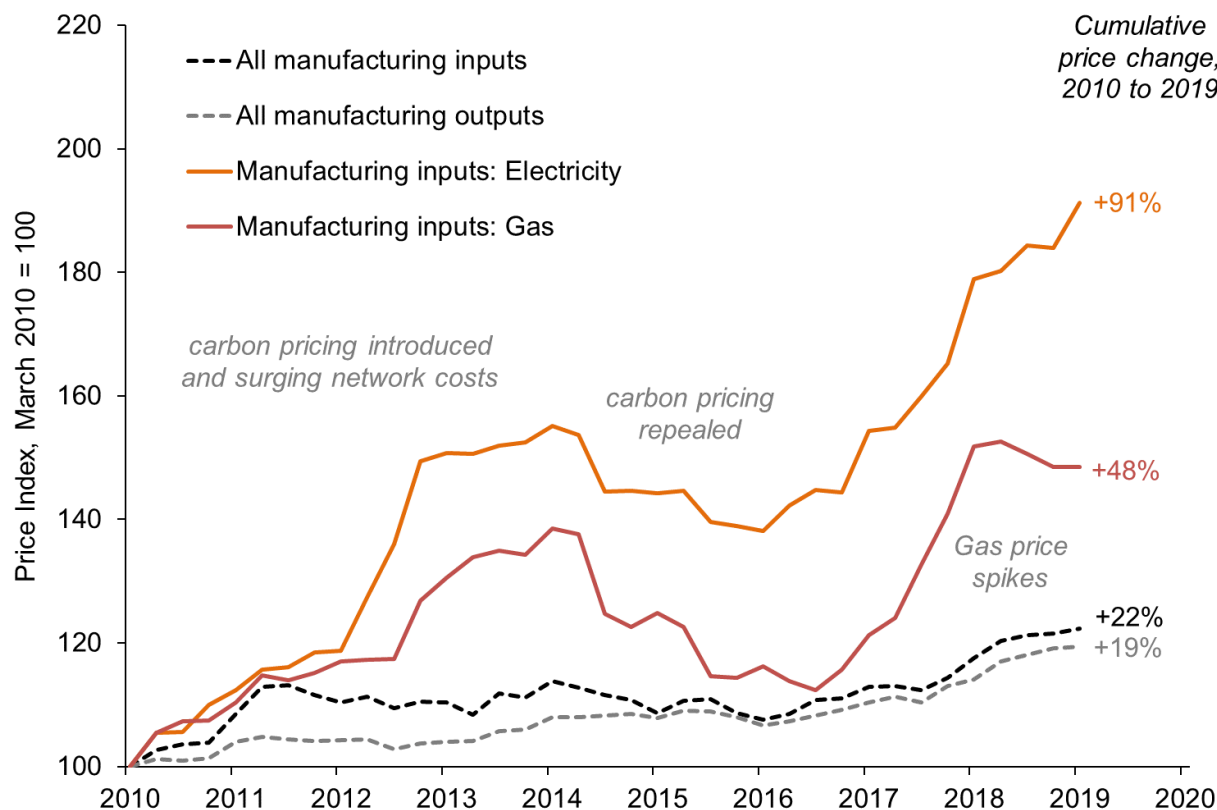


CHART 2.2 MANUFACTURING ELECTRICITY AND GAS INPUT PRICE INDEXES, CUMULATIVE CHANGE*, 2010 TO 2019



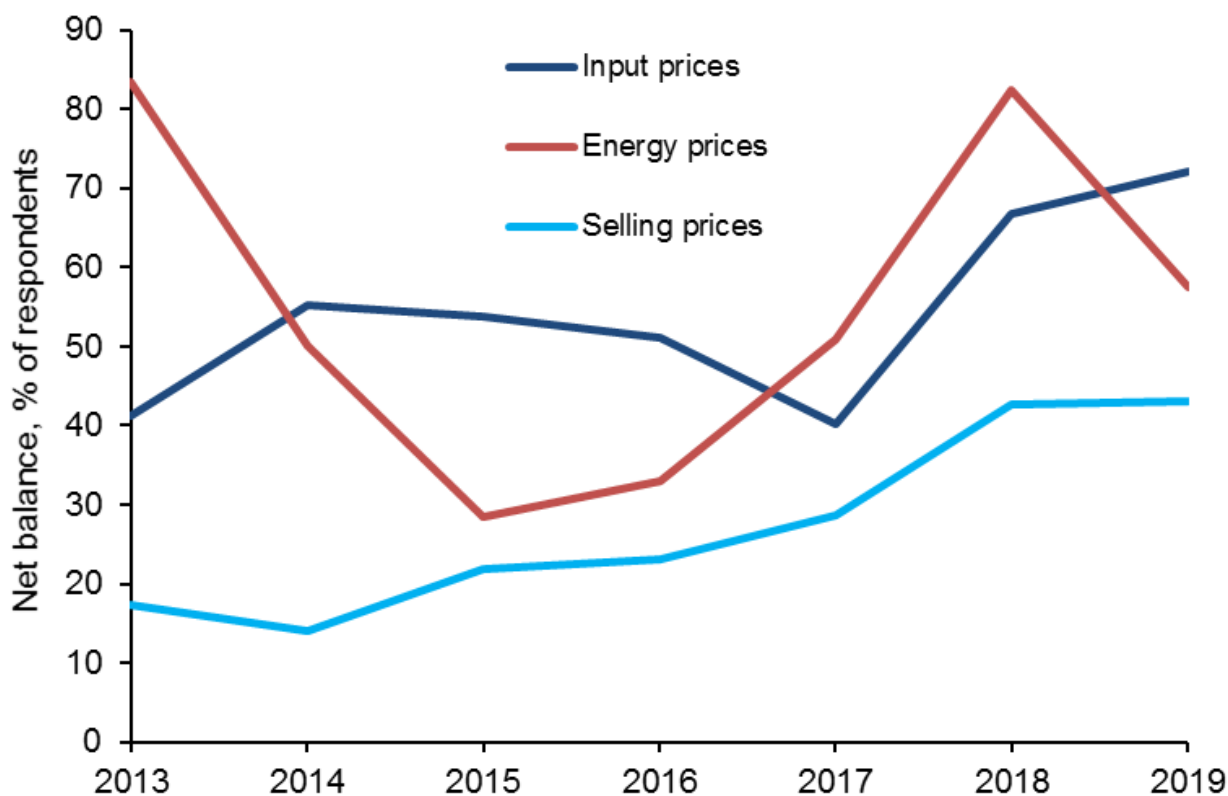
*Producer price indexes rebased to March Quarter 2010 = 100
Source: ABS, *Producer Price Index*, Mar 2019.

Manufacturing CEOs' expectations for energy prices in 2019

In 2019, 66% of CEOs expect further increases to the energy prices they must pay, while only 8% expect lower energy prices (giving a 'net balance' of +58%). Most Australian manufacturing CEOs expect prices to rise for both their inputs (77% of CEOs) and their outputs (53% of CEOs) in 2019. A higher proportion of businesses plan to implement price rises for their own goods and services in 2019 than in any of the previous six years. This suggests that more of the cost pressures from manufacturing inputs (and especially from their energy inputs) are finally being passed on to customers.

On a net balance basis, expectations of input price (72%) and selling price (43%) increased in 2019, relative to previous years, while expectations of energy price increases have eased from 82% in 2018 to 58% in 2019. The greater expectations for input price rises other than energy price rises could be explained, at least in part, by the drought. Food & beverage manufacturers in the Australian PMI® (the largest sector of manufacturing by output and employment) are reporting higher prices in 2019 for raw agricultural inputs because of the drought. Input prices also remain elevated for petroleum, coal, chemical & rubber products and metal products due to relatively elevated global commodity prices. These rises in raw materials prices and commodities were offset by a stabilization (albeit at problematic high levels) in energy input costs for gas and electricity.

CHART 2.3 EXPECTED MANUFACTURING BUSINESS PRICING INDICATORS*, 2013-2019



* 'Net balance' is the proportion of all survey respondents that improved minus the proportion that deteriorated. Aggregate results include respondents from all surveyed industries and are weighted by ABS estimates of output from each industry.

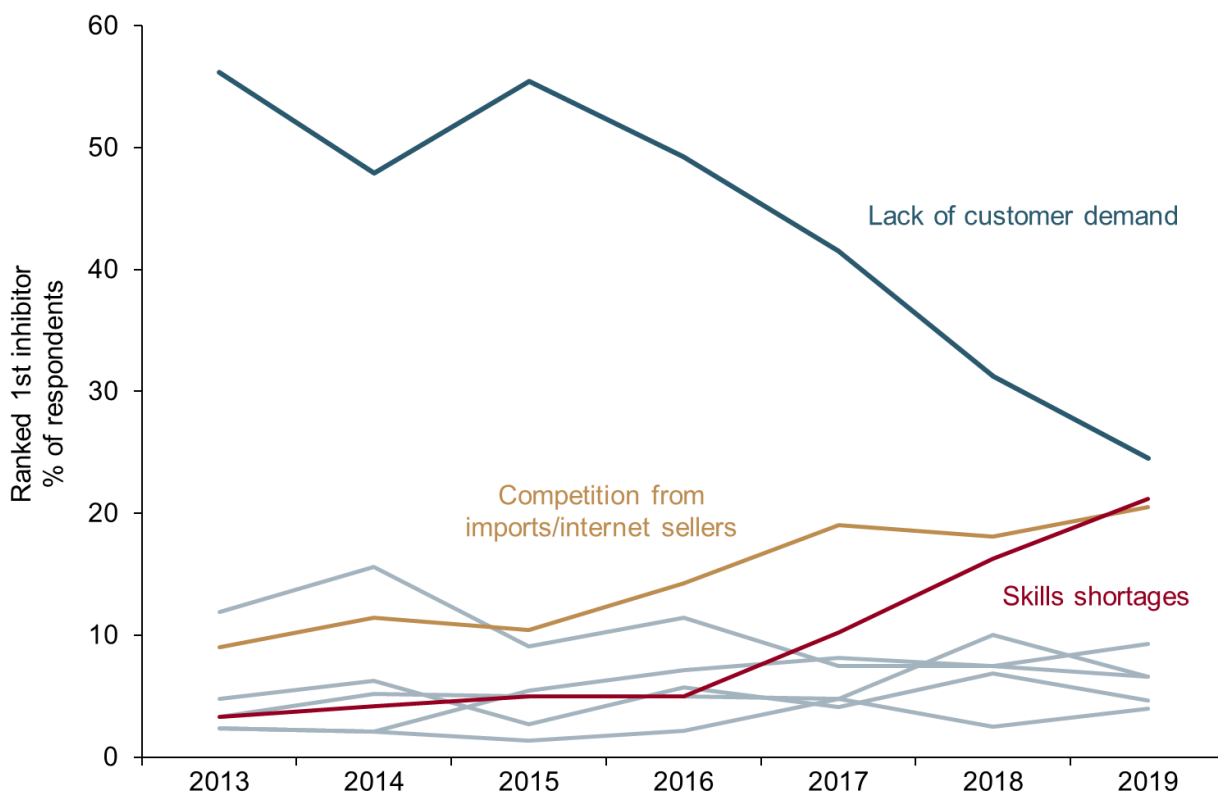
2.2 Global competition and the AUD

Challenges for Australian manufacturers can arise from global and local conditions, as well as external and internal factors in a business. When asked which factors would provide the largest threats to growth for their business in 2019, 25% of manufacturing CEOs identified a 'lack of customer demand' as their most significant constraint. This is down from the 31% of CEOs who identified this as their main inhibitor in 2018 and over half of CEOs in 2015.

Competition from imports and online sources increased to 21% of CEOs reporting it as a constraint for 2019. This factor has steadily increased since 2013. With the Australian dollar around the long-run average (and relatively safe) range of US 0.70-0.75 cents over the past year, respondents might be focusing more on the "online sources" part of this question than the "imports" part of the question. Skills shortages also featured prominently in 2019, rising to the second most common inhibitor to growth, with 21% of CEOs ranking it as their expected top inhibitor to growth in 2019 (see Section 2.3).

Other inhibitors such as a high and/or variable exchange rate, wage pressures, government regulatory burdens, flexibility of industrial relations and other factors did not feature prominently in 2019. Specific comments about other constraining factors for business in 2019 included: rising input costs due to higher energy prices (the most commonly cited 'other' factor); uncertainty about international trade; drought conditions across some of Australia; and tighter access to credit for operational or investment purposes.

CHART 2.4 EXPECTED INHIBITORS TO MANUFACTURING GROWTH*, 2013 TO 2019



* Percentage of respondents who ranked each factor first in each year, out of a list of possible inhibitors.

While there is no 'ideal' exchange rate that will benefit all Australian manufacturers, Ai Group survey data suggests that manufacturers selling their products into overseas markets (exports) generally prefer a lower exchange rate, with 85% of manufacturers reporting that they are competitive in global export markets up to US 80 cents, as of 2019 (see Table 2.1). Regarding their ability to compete against imported manufacturing goods in the Australian market, around 64% of manufacturers said they would be competitive up to USD/AUD trading range of US 80 cents.

The exchange rates at which manufacturers report themselves to be competitive appears to have lowered in the past five years (see Table 2.1). In 2014, over three quarters of manufacturers felt competitive in export markets and against overseas imports in the trading range of US 0.81-0.90 cents, compared to less than a

third in this range in 2019. In most cases, manufacturing exporters are also importing, and so the dollar is genuinely a double-edged sword. However, it appears that the “sweet-spot”, where over nine in ten manufacturers feel competitive in both export and domestic markets, has shifted down from a range of US 71 to 80 cents in 2014 to US 61 to 70 cents in 2019.

For export markets in 2019, 97% of manufacturers expect to be competitive when the Australian dollar is trading below US 70 cents and 85% expect to be competitive at or below US 80 cents. Above this exchange rate, most manufacturers expect to be uncompetitive in export markets, with only 35% expecting to be competitive in the range of US 81 to 90 cents and only 8% when the exchange rate is over US 91 cents.

Manufacturers competing with imports generally prefer a lower exchange rate as it makes overseas purchases more expensive for Australian businesses. Most manufacturers expect to be competitive with imports when the Australian dollar is trading up to US 80 cents. Just over a quarter expect to be competitive when the Australian dollar is in the range of US 0.81-0.91 cents. The proportion of manufacturers who feel they are competitive against imports in this range has fallen from over three-quarters in 2014 to about a quarter in 2019. Less than 7% of manufacturers expect their products to be competitive against imports if the dollar were to rise above parity in 2019 (that is, USD \$1.00+).

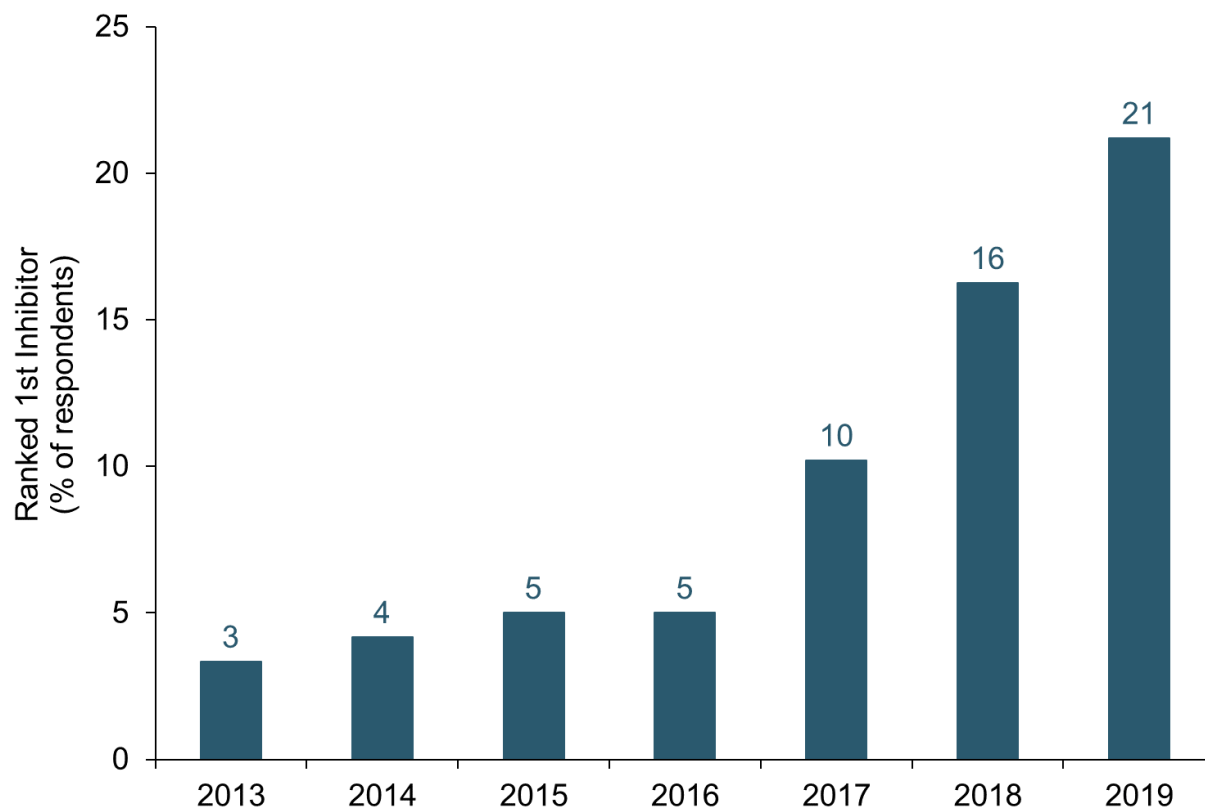
TABLE 2.1 COMPETITIVE EXCHANGE RATES FOR MANUFACTURERS, 2014 AND 2019

AUD:USD	Competitive in export markets, % of manufacturers		Competitive with imports in Australian market, % of manufacturers	
	2014	2019	2014	2019
<0.60	100.0	100.0	100.0	100.0
0.61-0.70	97.5	97.3	94.6	90.1
0.71-0.80	95.0	85.1	92.9	63.7
0.81-0.90	75.0	35.1	76.8	25.3
0.91-1.00+	35.0	8.1	44.6	6.6

2.3 Workplace skills and innovation

Labour market concerns feature prominently among manufacturing businesses in 2019. The second most pressing constraint for manufacturing CEOs in 2019 is skill shortages, with 21% of businesses nominating this as their top concern. This concern has been rising steadily since 2013 and is up from 16% of manufacturing that identified skill shortages as their primary impediment for 2018 (Chart 2.5).

CHART 2.5 CEOs WHO RANK SKILL SHORTAGES AS THEIR TOP RISK TO GROWTH*, 2013 TO 2019



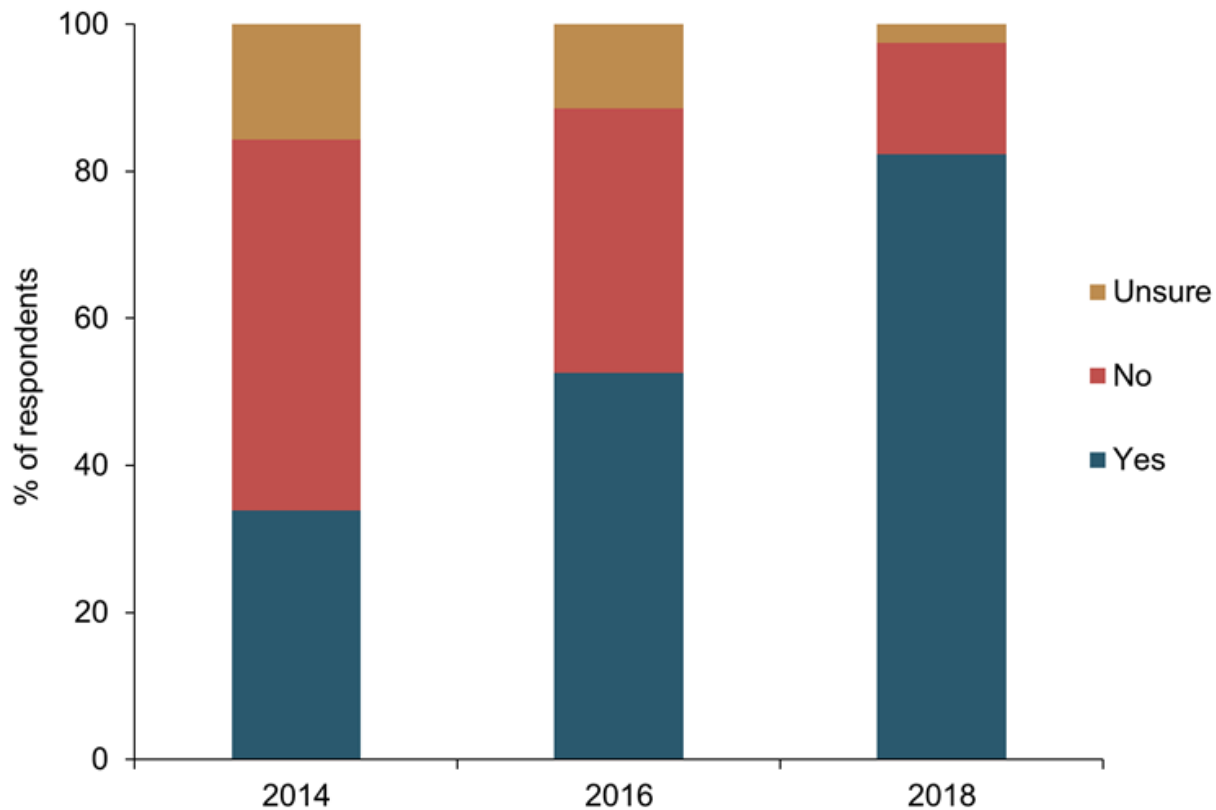
* Percentage of respondents who ranked skill shortages first in each year, out of a list of possible inhibitors.

These concerns reflect rising demand for labour during 2017 and early 2018, as indicated across a range of data sources including the monthly ABS Labour Force surveys and Ai Group's Australian PMI®. After a sustained period of expansionary activity in 2017 and 2018, more manufacturers were becoming confident enough to employ more staff. Some manufacturers are reporting difficulty finding skilled tradespeople to carry out an increased work load.

In Ai Group's latest Workforce Development Survey conducted in 2018, 82% of manufacturers expected to experience skill shortages within the next 12 months, up 53% in 2016 and 34% in 2014 (see Chart 2.6).

Wage pressures are also emerging for skilled workers in some locations and specialisations after a sustained period of relatively flat wages (and declining manufacturing employment) from 2010 to 2016. There is some anecdotal evidence that some manufacturers are increasingly finding it difficult to attract skilled trades people because they are competing with large infrastructure projects, particularly in Sydney and Melbourne.

CHART 2.6 MANUFACTURERS EXPECTING TO EXPERIENCE SKILL SHORTAGES IN THE NEXT 12 MONTHS



Source: Ai Group, *Workplace Development Survey*, 2018.

Skill shortages in manufacturing are being reported globally at present and are especially acute for advanced technical roles. A recent study by Deloitte in the United States estimates that 2.4 million manufacturing positions could remain unfilled globally between 2018 and 2028, with a potential economic impact of US\$2.5 trillion⁷. The study suggests that positions relating to digital services, skilled production, and operational management may be three times as difficult to fill in the next three years. The main causes of this potential shortage are:

- Shifting skills needed within manufacturing to adopt advanced technologies and automation.
- The misperception (reputation) of manufacturing as a shrinking or limited career option for professionals.
- Retirement of highly skilled, specialised and experienced ‘baby boomers’ within the industry.

With Australian manufacturing employment projected to increase by over 50,000 in the next five years, many Australian manufacturers fear their growth plans may be constrained by skill shortages. ‘Skill-shortages’ appears to be an overarching term for a more complex problem that can be sourced to a range of demographic and economic changes in recent decades including: older school leaving ages; reduced commitments and funding of trade training; imbalances between the perceptions of university and vocational education and training as career enablers; and unduly pessimistic perceptions of careers in the industry.

In Australia, there is anecdotal evidence that misplaced or outdated public perceptions of manufacturing could be acting as a barrier to attracting skilled young people into the sector. Although there is limited evidence to suggest that young people change jobs more frequently than in the past, there is evidence that when people do change jobs, they are more likely to move across industries and occupations than in the past. The Productivity Commission has found that across the entire Australian workforce, there has been a 40% increase in the frequency of workers moving across occupations and a 50% increase in the frequency of workers moving across industries⁸. This suggests that manufacturers are competing with other industries

⁷ Deloitte and The Manufacturing Institute, *2018 skills gap in manufacturing study*, 2018, available [here](#).

⁸ Speech by Karen Chester, Deputy Chair at the Productivity Commission, *The future of work: is it something completely different*, CEDA WA: The future of work series, Luncheon Address, available [here](#).

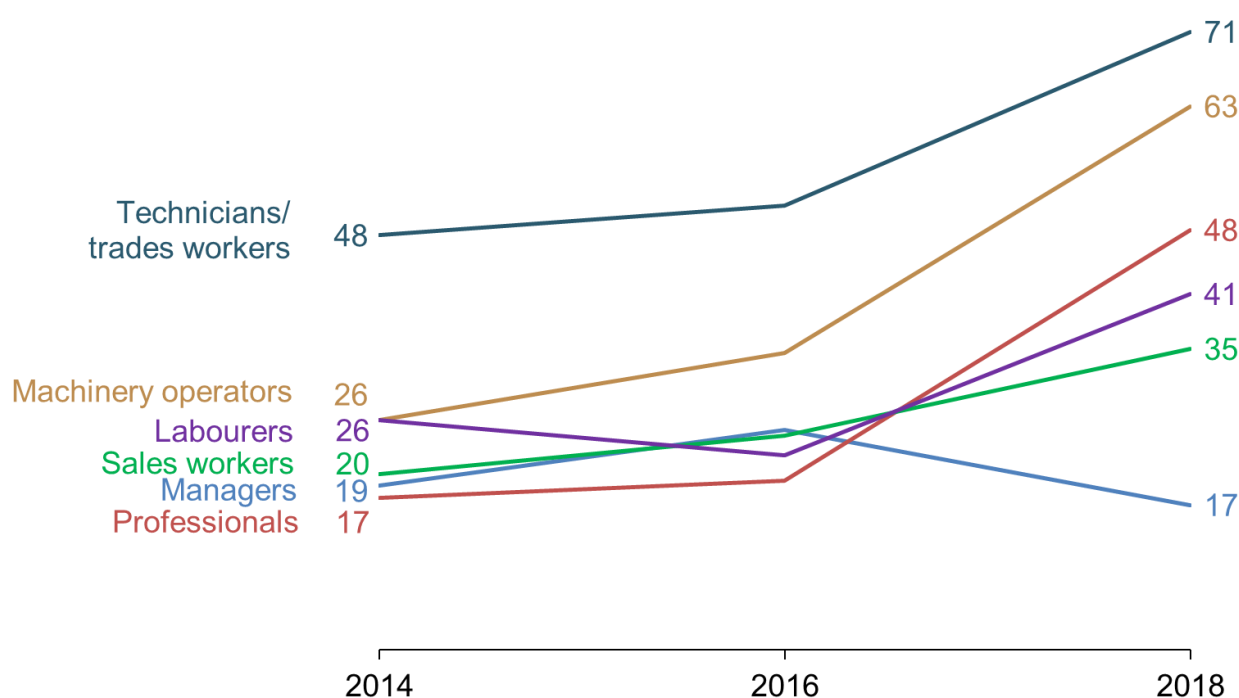
for suitable skilled workers more than in the past, and possibly more than they realise. In this broad labour market context, poor public perceptions of manufacturing (particularly among younger skilled workers) could be placing the industry at a disadvantage in attracting workers away from other more popular sectors.

Against this background, more were manufacturers expecting difficulty in recruiting workers with STEM skills in the coming year across several occupations in 2018 than in previous years of the same Ai Group Workforce Development Survey (see Chart 2.7). Most manufacturers were expecting difficulty recruiting technicians/trades workers (71%) and machinery operators (63%) with STEM skills in the next year (survey conducted in 2018). Manufacturers have also reported a sharp rise since 2016 in the difficulty of obtaining professionals, labourers and sales workers with STEM skills.

For Australian manufacturers to embrace Industry 4.0 – the integration of digital technology, manufacturing and consumer life (see Section 3.2) – skilled engineers, tradesmen and women, and professionals will need to be attracted to the manufacturing industry.

CHART 2.7 MANUFACTURERS EXPECTING DIFFICULTY RECRUITING WORKERS WITH STEM SKILL IN THE NEXT 12 MONTHS BY OCCUPATION

% of respondents (out of 100)



Source: Ai Group, *Workplace Development Survey*, 2018.

In Ai Group’s 2018 Workforce Development Survey, Australian manufacturers reported that the most important factors when recruiting both VET and university graduates are ‘teamwork and problem-solving skills’ (see Chart 2.8). For VET graduates, this was followed by relevant work experience and contribution to business culture. For university graduates, the next important factor was contribution to business culture and then relevant work experience. The contemporary manufacturing workplace increasingly relies on a more complex operational and organisational structure. This means there are significantly higher demands placed on all members of the workforce in terms of managing complexity and higher levels of abstraction and problem solving.

CHART 2.8 MANUFACTURERS MOST IMPORTANT FACTOR WHEN RECRUITING GRADUATES OF VET AND UNIVERSITY, 2018



Source: Ai Group, *Workplace Development Survey*, 2018.

Almost half of manufacturing respondents in the Ai Group Workforce Development survey in 2018 intended to increase their number of apprentices and trainees over the next twelve months. To gain work-ready entrants for the workforce, companies are starting to look to new modes of engagement with local schools and with vocational and university level education. In 2018, 40% of manufacturers were planning to increase their engagement or establish new links with universities over the next 12 months.

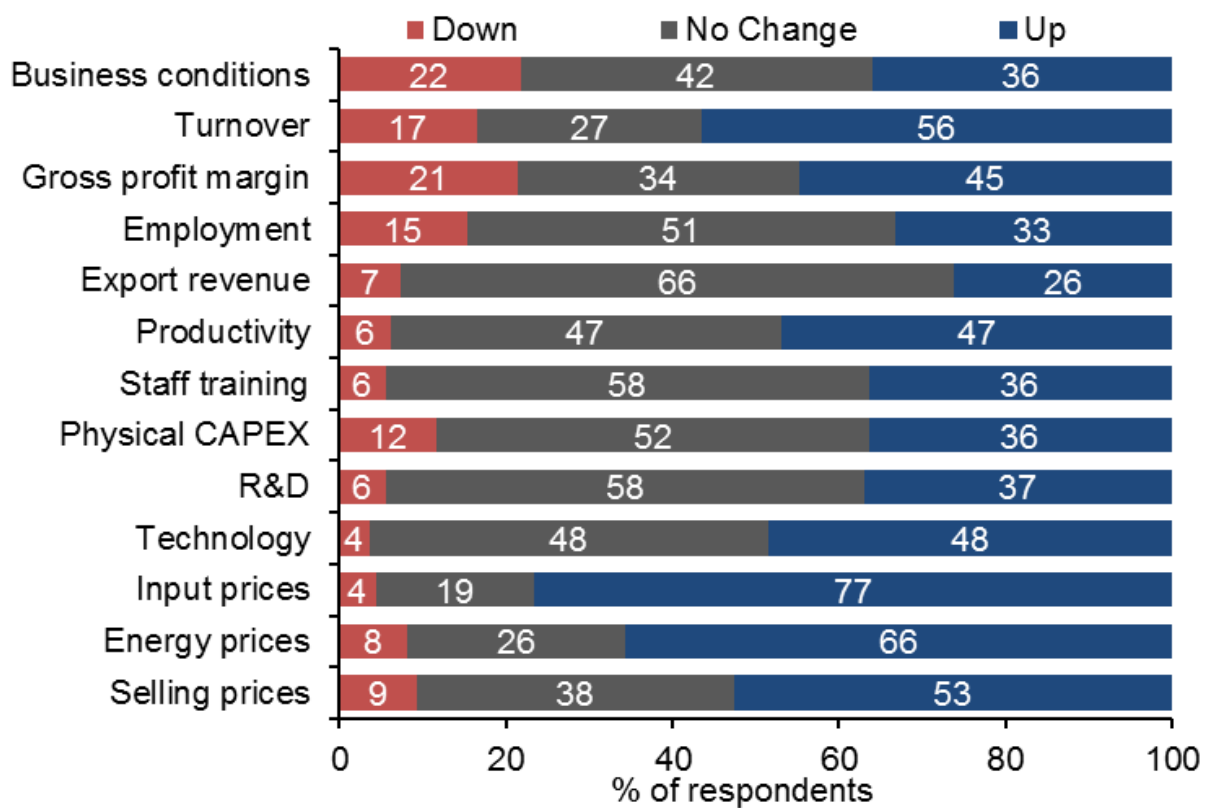
Anecdotal evidence suggests that more manufacturers are reframing their recruitment practices, the way they describe the careers they offer, and are exploring rapid cycles of learning and work based on specific skill sets, higher apprenticeships and other forms of work-integrated learning. Internship programs as well as other innovative models of student-industry activity are growing as a way to obtain new thinking into a workplace as well as attract potential future employees.

3. Opportunities

3.1 CEO strategies in 2019

Manufacturers are generally positive about 2019, according to the Ai Group CEO Survey, with 56% of CEOs expecting an increase in turnover compared to 17% of CEOs expecting a decrease in turnover (+39% net balance). Gross profit margin is expected to improve for 45% of CEOs while 21% expect their gross profit margin to shrink (+24% net balance). The lower proportion of margin growth relative to expectations of sales growth is related to anticipated rises in input prices, especially energy input prices (see Section 2.1). Half of manufacturers expect no change in employee numbers in 2019. More positively, 47% of manufacturers expect productivity to increase and 48% expect to increase their spending on technology.

CHART 3.1 MANUFACTURING EXPECTATIONS IN 2019: PERFORMANCE, INVESTMENT AND PRICING



In response to these expectations (and their concerns for growth), the top-ranking strategies outlined by Australian manufacturing CEOs for 2019 were more diverse than in previous years. The most popular strategy for 2019 was ‘introducing new products/services’ with 30% of CEOs ranking this as their first choice (Table 3.1). This overtook ‘improving sales of current products’ (23% in 2019) which was the top-ranking strategy in 2018 (35% of CEOs ranking it as their first choice in 2018). Together, these two strategies account for over half of the growth plans for manufacturers in 2019.

A diverse range of other strategies including ‘downsizing/reducing operational costs’, ‘increasing advertising’, ‘developing new overseas’ and ‘increasing online presence’ all increased as the top strategy in 2019, albeit off lower bases.

In 2019, 12% of manufacturing CEOs ranked downsizing and/or reducing operational costs as their top strategy in 2019, up from 8% in 2018. Many other CEOs listed cost reductions as one of the many strategies they will utilise in each year, but did not rank it as their number one strategy.

TABLE 3.1 TOP STRATEGIES FOR MANUFACTURING GROWTH, 2013 TO 2019, RANKED BY 2019 ORDER, PERCENTAGE OF RESPONDENTS

Percentage of respondents	2013	2014	2015	2016	2017	2018	2019
Introduce new products/services	22	32	33	39	25	32	30
Improve sales of current products	33	22	29	34	42	35	23
Downsize/reduce operational costs	10	17	14	10	9	8	12
Develop new overseas markets	3	7	4	6	7	8	11
Increase advertising/marketing	4	0	2	1	3	1	9
Develop new domestic markets	13	12	8	6	10	10	7
Increase online presence/capability*	0	0	0	1	2	4	5
Other	1	2	0	1	3	3	2
Total	100	100	100	100	100	100	100

* Option added in 2016 survey

Note: Percentage of respondents who ranked each factor first in each year, out of a list of possible strategies.

3.2 Industry 4.0

The term Industry 4.0 originates from Germany, when a project to digitalize manufacturing was launched under the name ‘Industrie 4.0’ at the Hanover Trade Fair in 2011. The term reflects the assertion that digitally-assisted manufacturing is set to become a fourth ‘industrial revolution’. It refers to the integration of digital technology, manufacturing and consumer life. Industry 4.0 technologies make it possible to gather and analyse data across machines enabling faster, more flexible, and more efficient processes to produce higher quality goods at reduced costs.

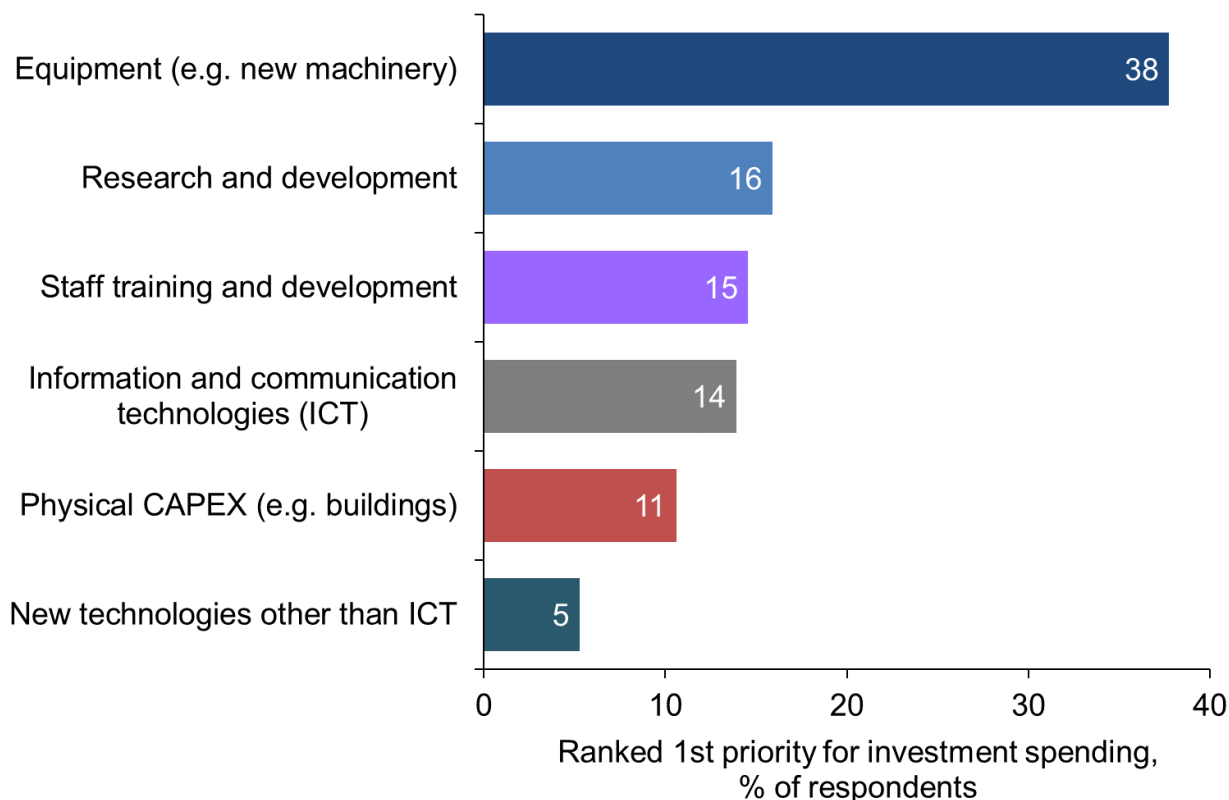
Industry 4.0 is the latest (of many) Australian industry responses to the global opportunities arising from digital technologies. Manufacturing workplaces increasingly rely on complex operational and organisational structures relating to design, decision-making, coordination, stock control, quality control, distribution, sales and support services. Significantly higher demands are being placed on the workforce in terms of managing high-level complexity, abstraction, connectivity and problem solving.

Manufacturing CEOs investment priorities for 2019

In 2019, the top investment priority for manufacturing businesses is spending on machinery & equipment. More than a third of manufacturing businesses (38%) plan to concentrate their investment spending on machinery & equipment (Chart 3.2).

The next investment priority for 2019 is almost equally split between spending on Research & Development (16%), staff training and development (15%) and information and communication technologies (14%). Physical CAPEX (e.g. buildings) is important to 11% of CEOs reporting on their investment intentions for 2019, while just 5% of businesses plan to focus on new technologies other than ICT.

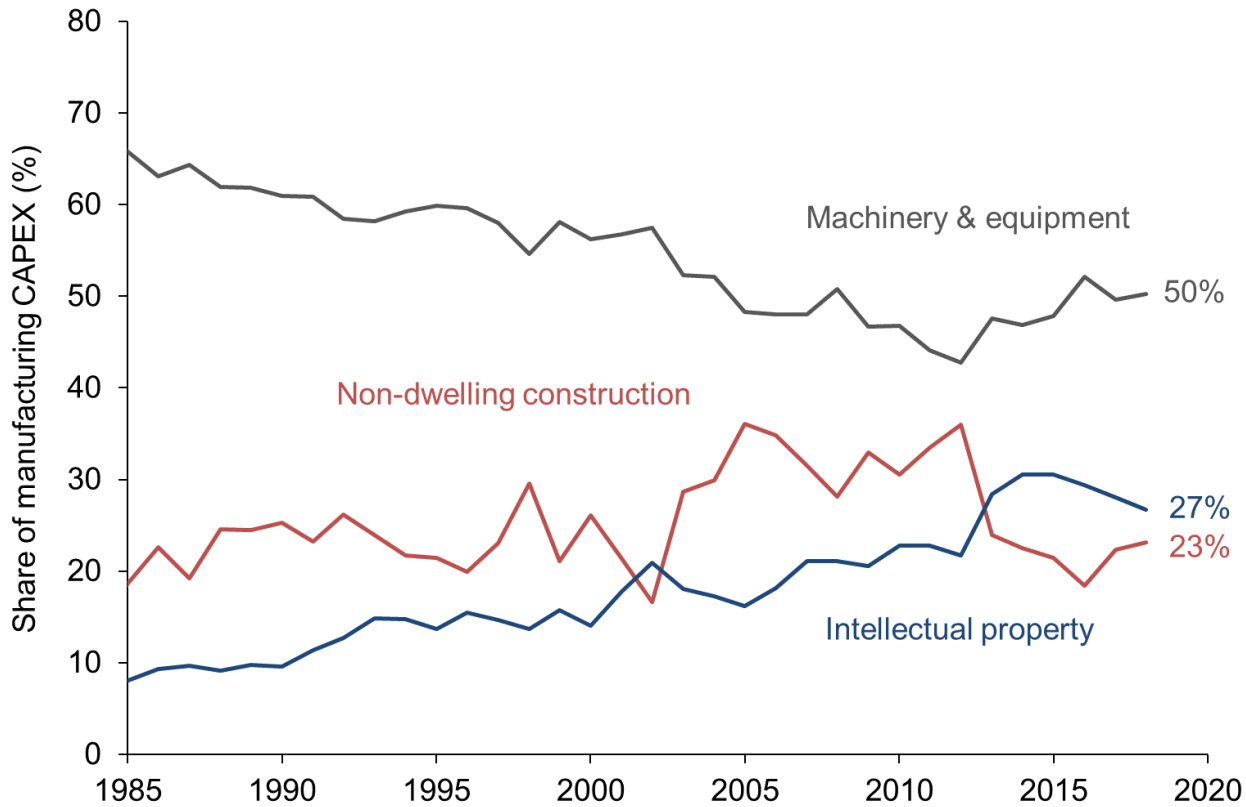
CHART 3.2 INVESTMENT PRIORITIES* FOR MANUFACTURERS IN 2019



* Percentage of respondents who ranked each category first, out of a list of possible types of business investment spending.

This preference for machinery and equipment has been evident in the composition of manufacturing capital expenditure investment (CAPEX) in recent years, with rising spending on new machinery & equipment. Up until 2013-14, manufacturers were increasingly investing in intellectual property rather than physical capital and machinery and equipment (Chart 3.3). Since 2013 investment in machinery & equipment has rebounded as a share of investment and was back to 50% of total manufacturing investment in 2017-18.

CHART 3.3 COMPOSITION OF MANUFACTURING INVESTMENT (CAPEX)



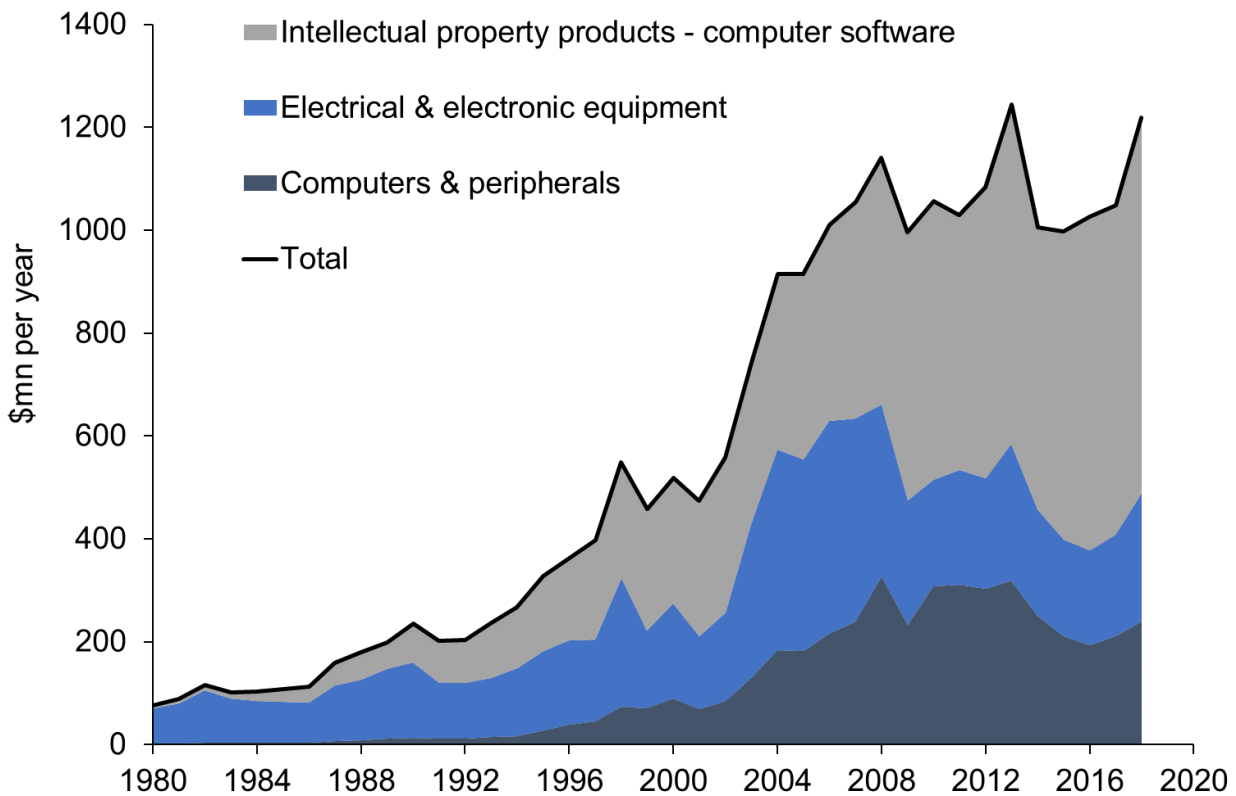
Source: ABS, *System of National Accounts*, 2017-18.

Nominal spending on information technology in the manufacturing sector peaked in 1997-98, however, many information technology products have experienced price deflation (that is, falling prices). In volume terms (adjusting for price changes), investment in information technology from manufacturers was close to its highest level on record in 2017-18. This steady rise in investment in information technology is mostly for computer software, which now accounts for 60% of manufacturing investment on information technology (see Chart 3.4).

Key opportunities and advantages are arising for Australian manufacturing from increasing investment in digital technologies but also from the integration of these new technologies into an increasing range of manufacturing processes and supply chains. According to the World Economic Forum’s *Readiness for the Future of Production Report*⁹, Australia is a “high potential” country for this type of future production. Although Australia currently has a less advanced structure of industrial production compared to other high-income countries, the WEF report notes that Australia is in a strong position to embrace the new digital production paradigm. This is because Australia has the right resources and potentially the right combination of other capabilities (such as workforce skills) to capitalise on advanced manufacturing; Australia performed well across 31 indicators of ‘future production’ in the WEF report and was ranked in the top 15 countries for technology & innovation, human capital, global trade & investment and institutional framework.

⁹ World Economic Forum in collaboration with A.T. Kearney, *Readiness for the Future of Production Report 2018*, available [here](#).

CHART 3.4 MANUFACTURING INFORMATION TECHNOLOGY INVESTMENT



Source: ABS, *System of National Accounts*, 2017-18.

Value-added manufacturing

Rapid economic globalization has led to the rise of increasingly complex Global Value Chains (GVCs). Instead of each firm making whole products primarily in one country, finished products are increasingly the result of R&D, manufacturing and assembly, and marketing activities across multiple countries. As a result, manufacturing and services activities are becoming more interwoven.

Manufacturers are offering more services to enhance their products (e.g. offering phone installation, maintenance and subscription services as well as a phone), while ‘services’ businesses are offering more access to related products (e.g. offering a greater range of phones and other devices to use with their telecommunications subscriptions).

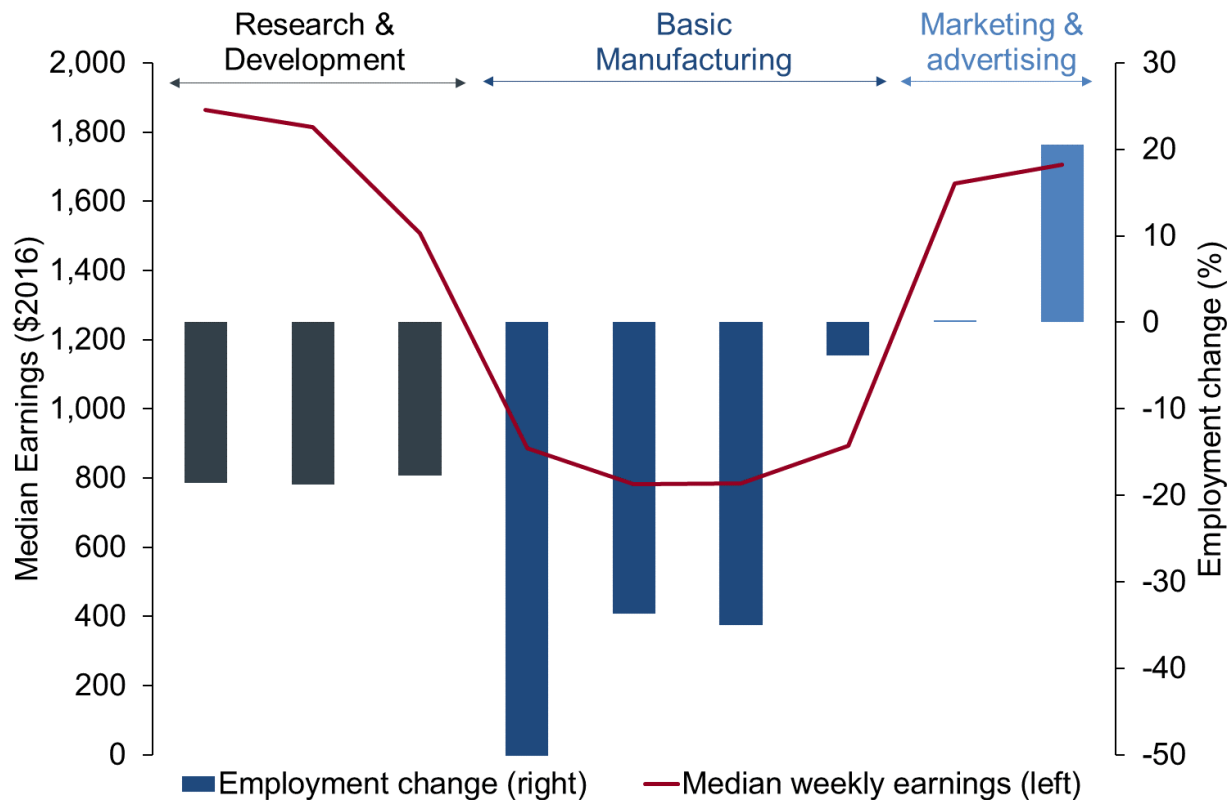
This relationship is exemplified by the ‘smile curve’¹⁰ – a visual representation of value-added content along the production cycle (see Chart 3.5). Along the horizontal axis is the various productions activities, listed in order of the basic flow of production for new technology: from research and development; to production and assembly; and ending with advertising, marketing and after-market services. The vertical axis is the value-added contribution from each stage of production.

The value-chain starts with the research and then development of new technology and high-tech components. This is followed by the production and assembly directly related to the product. These activities are routine in nature and have greater scope for automation and offshoring. Finally, the finished product is marketed and sold to consumers, together with certain kinds of after-market services. The most lucrative value-added area focuses on both ends of the production cycle – R&D and marketing and sales, with less economic gain collected in the middle (low tech components and labour-intensive manufacturing).

¹⁰ The term was originally coined in 1992 by Acer’s founder Stan Shih to illustrate the problems of information technology (IT) manufacturers in Chinese Taipei, which found itself along the bottom of the curve.

The Department of Industry, Innovation and Science *Globalising Australia Report* of 2018¹¹, used a new approach to visualise smile curves within the Australian manufacturing industry. The smile curves presented in Chart 3.5 uses employee wage information from the 2016 Census and other national surveys as an approximate measure of value-added contributions. Wages alone do not approximate all of the value-added contribution as it does not include the return on capital. However, employee wages are typically the largest component within value-added contributions and the data are more readily available.

CHART 3.5 AUSTRALIAN MANUFACTURING ‘SMILE CURVE’ 2006 TO 2016



Notes: The three segments are comprised of occupation from left to right. Research and Development includes 1. Business & systems analysts and programmers 2. Engineering professionals and 3. Natural & physical science professionals. Basic manufacturing includes 1. Miscellaneous Factory Process Workers 2. Packers and product assemblers 3. Factory process workers not further defined and 4. Food process workers. Market & advertising includes 1. Sales & marketing and 2. Public relations; information and organisation professionals. The values occupations within each category are plotted and ordered by each occupation’s average weekly earnings (FTE, \$ 2016) as per the left vertical axis. The shaded bars represent employment growth (right vertical axis) for each of these same occupations between 2006 and 2016.

Source: Department of Industry, Innovation and Science, *Globalising Australia*, 2018; using data from the ABS Census of Population and Housing 2006 and 2016.

The characteristic ‘smile’ shape emerges when occupations within each type of activity (research & development, basic manufacturing and marketing and advertising) are ordered by average income. Value-added contributions (in terms of employee wages) and employment growth are plotted along these same types of occupations. From 2006 to 2016, the manufacturing industry experienced declines in employment across most (but not all) types of employment. Chart 3.5 indicates there has been greater value-added contributions (in terms of employee wages) from occupations aligned with R&D, marketing and advertising than from then basic manufacturing stages. These occupations experienced more modest employment losses than the ‘basic manufacturing’ stages and, in the case of higher-income marketing and advertising occupations, gained employment.

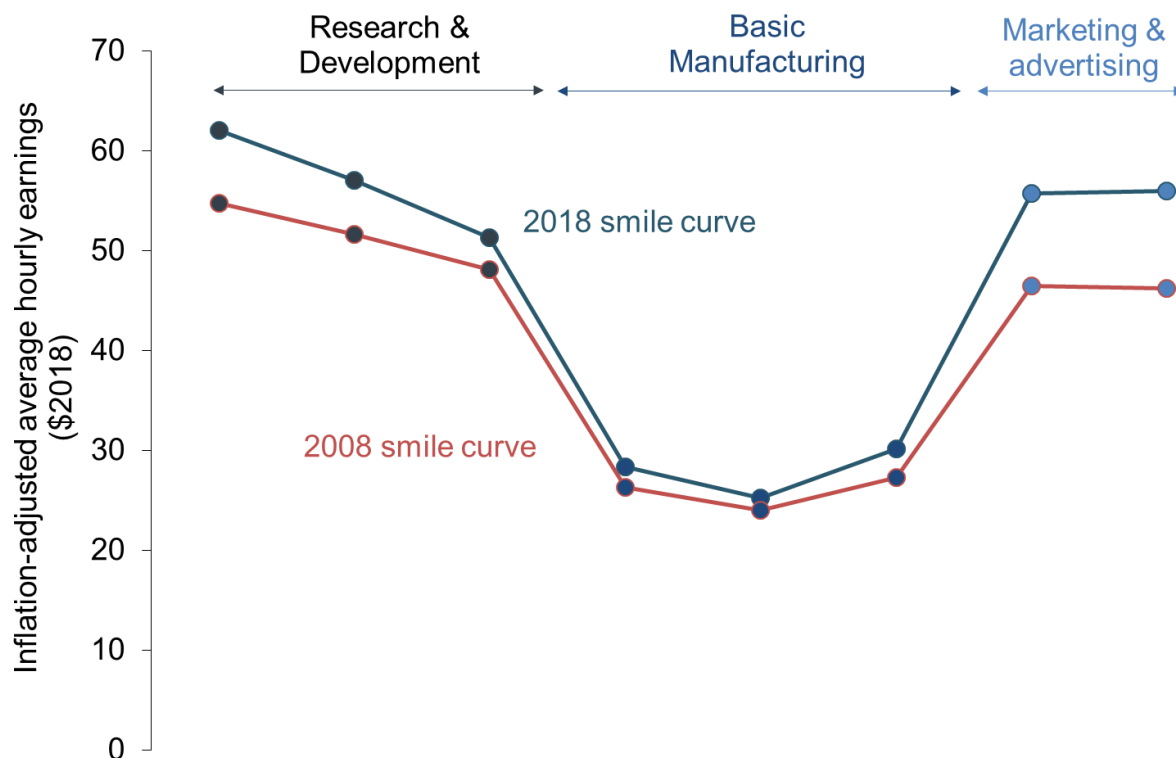
Many manufacturing firms have adjusted the structure of their businesses by outsourcing production-specific activities and focusing their efforts on the high value activities in the smile curve outlined above. This might be related to a tendency observed in OECD countries for the ‘smile curve’ to deepen, moving from being relatively flat (meaning value-added contributions are more evenly spread along the production chain) to a deeper U-shape¹².

¹¹ Department of Industry, Innovation and Science, *Globalising Australia*, 2018, available [here](#).

¹² OCED Observer, *Who’s smiling now*, Q3 2013, available [here](#).

When this methodology is applied to more recent occupational earnings data for Australia, there is evidence that the 'smile curve' has become steeper in Australia over the decade to 2018. Chart 3.6 indicates there has been more growth in value-added contributions (in terms of employee wages) in research & development and marketing & advertising activities compared to basic manufacturing activities in Australia over this period. The emergence of Global Value Chains have increased the interlinkages of activities related to basic manufacturing and assembly into lower labour cost economies. Offsetting this change, there has been a greater level of focus on R&D and marketing, sales and after-market activities.

CHART 3.6 AUSTRALIAN MANUFACTURING 'SMILE CURVE' 2008 AND 2018



Notes: The three segments are comprised of occupation from left to right. Research and Development includes 1. Engineering professionals 2. Business & systems analysts and programmers and 3. Natural & physical science professionals. Basic manufacturing includes 1. Miscellaneous Factory Process Workers 2. Packers and product assemblers and 3. Food process workers. Market & advertising includes 1. Information and organisation professionals 2. Sales, marketing and public relations professions. The values occupations within each category are plotted and ordered by each occupation's average hourly earnings in 2018 dollars (inflation-adjusted) as per the left vertical axis.

Source: ABS, *Employee Earnings and Hours*, Aug 2008 and May 2018; ABS, *Consumer Price Index*, Mar 2019.

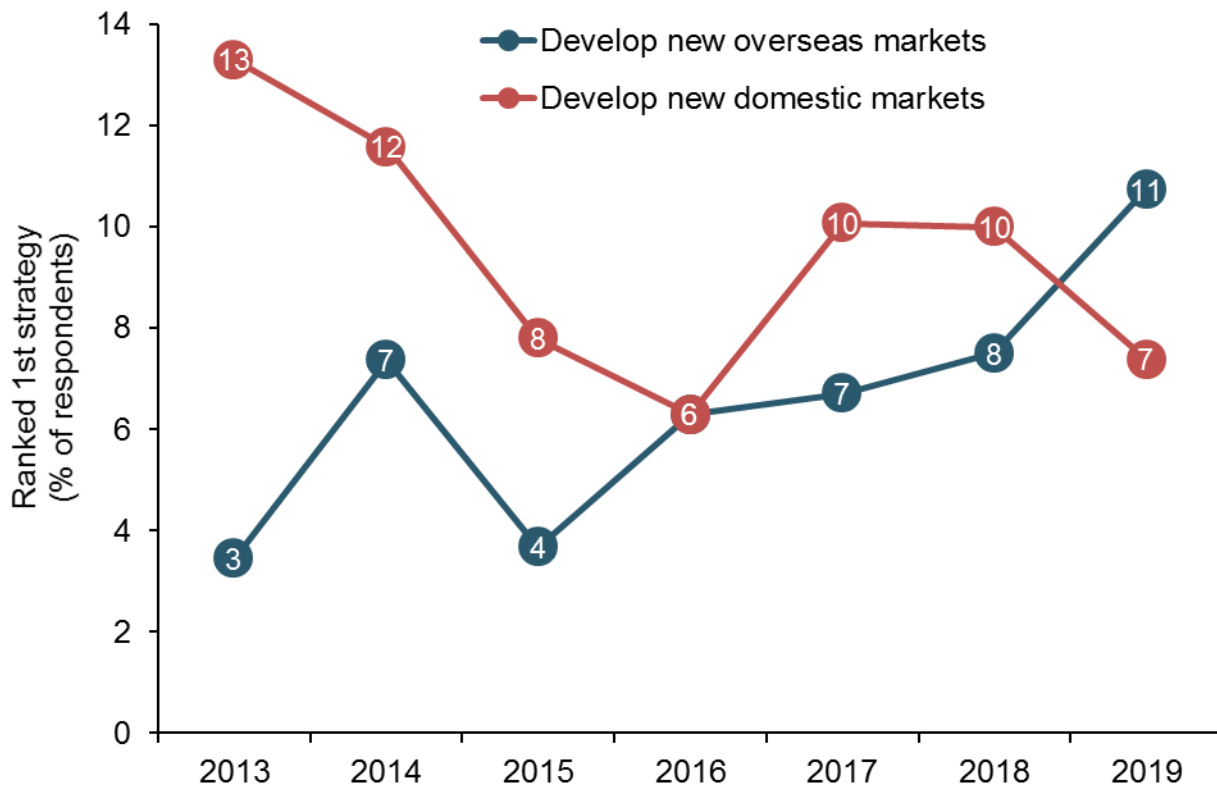
3.3 Selling to the world

Australia’s manufacturing sector is diverse and comprised of multiple sectors that are continuing to adapt to changes in their operating environments. Intense pressure from global competition, a high Australian dollar during the mining investment boom, high labour costs and disruptive technological change have meant that manufacturing firms have had to innovate and invest, with many looking to sell highly-skilled and technology-intensive products on the global stage. Over the past two decades, manufacturing has become more integrated with other sectors locally and globally as production processes have become more specialised.

CEO strategies to develop new markets in 2019

In the 2019 Ai Group CEO Survey, the top-ranking strategies outlined by Australian manufacturing CEOs for 2019 were more diverse than in previous years (as noted above). As a top priority growth strategy, developing overseas markets has increased in almost every year (except in 2015), with 11% of manufacturing CEOs ranking it as their top priority in 2019. At the same time, the proportion of growth strategies that prioritise ‘developing new domestic markets’ has fallen or stayed stable, with only 7% of manufacturing CEOs ranking this as their top priority in 2019. Australian manufacturers are very aware of Australia’s small local market and geographic isolation; more manufacturing CEOs are looking to sell into global instead of just local markets, supply chains and value chains.

CHART 3.7 TOP STRATEGIES* FOR MANUFACTURING GROWTH, 2013 TO 2019



* Percentage of respondents who ranked each factor first in each year, out of a list of possible strategies.

Although more manufacturing CEOs are looking to develop new overseas markets, fewer CEOs are expecting their revenues from exports to increase in 2019; 26% of manufacturing CEOs expect an increase in their annual export revenue from their 2018 levels, while 7% expect a decrease and the majority (66%) expect no change. This results in a net balance of +19%, which is the lowest expected annual export revenue increase since 2013. This anomaly probably reflects competitive pricing pressures, falling global demand and/or recent movements in the Australian dollar.

On a ‘net balance’ basis, manufacturing CEOs have tended to overestimate their expected export revenue growth in each year (see Chart 3.9). Even so, reported export revenues have improved in every year of the Ai Group CEO survey since 2013. More CEOs reported falling export revenues than growing export revenues in 2013 and 2014, when the Australian dollar was well above its historical average trading range.

Since then, actual export revenue growth has slowly improved, with 31% of manufacturing respondents reporting increased export revenue in 2018, compared to 2017. For those reporting an increase in exports in 2018, the average size of the increase was 25%. Only 8% of manufacturing CEOs reported falling export revenues in 2018, while the majority (61%) reported no change in their export revenues.

CHART 3.8 MANUFACTURING EXPECTATIONS FOR ANNUAL EXPORT REVENUE, 2013 TO 2019

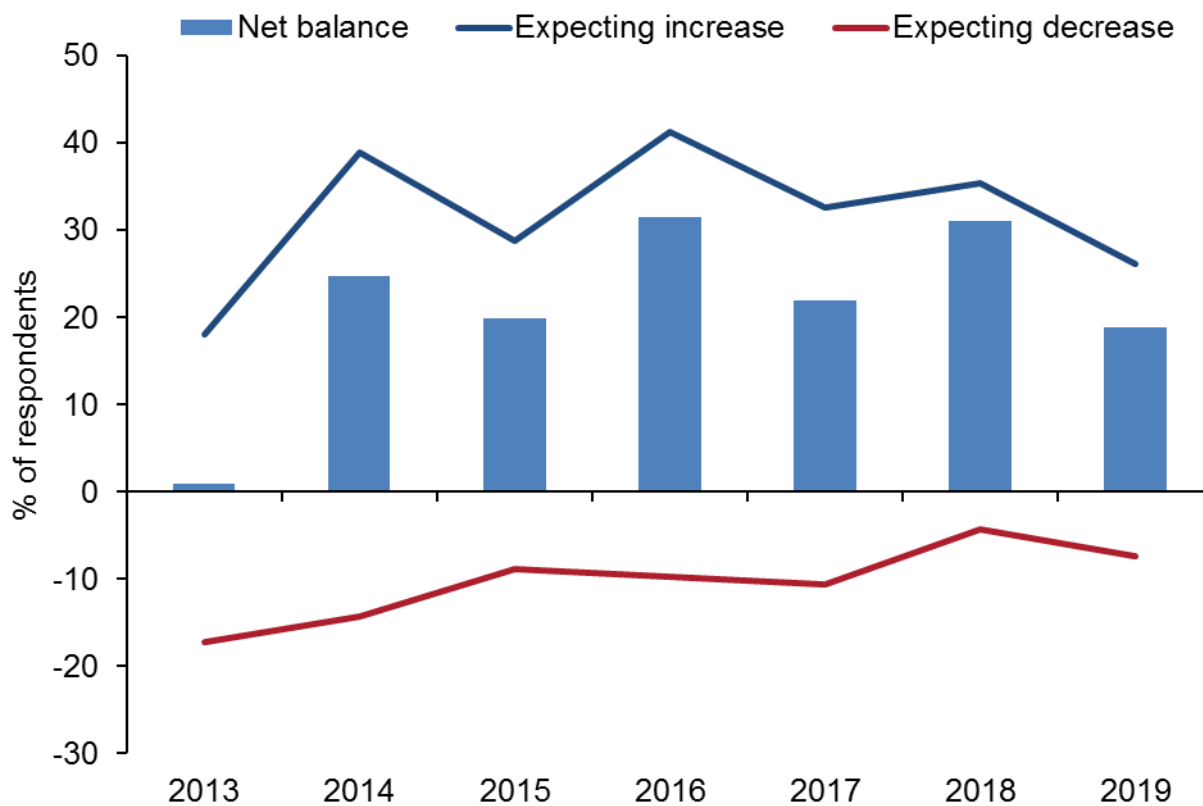
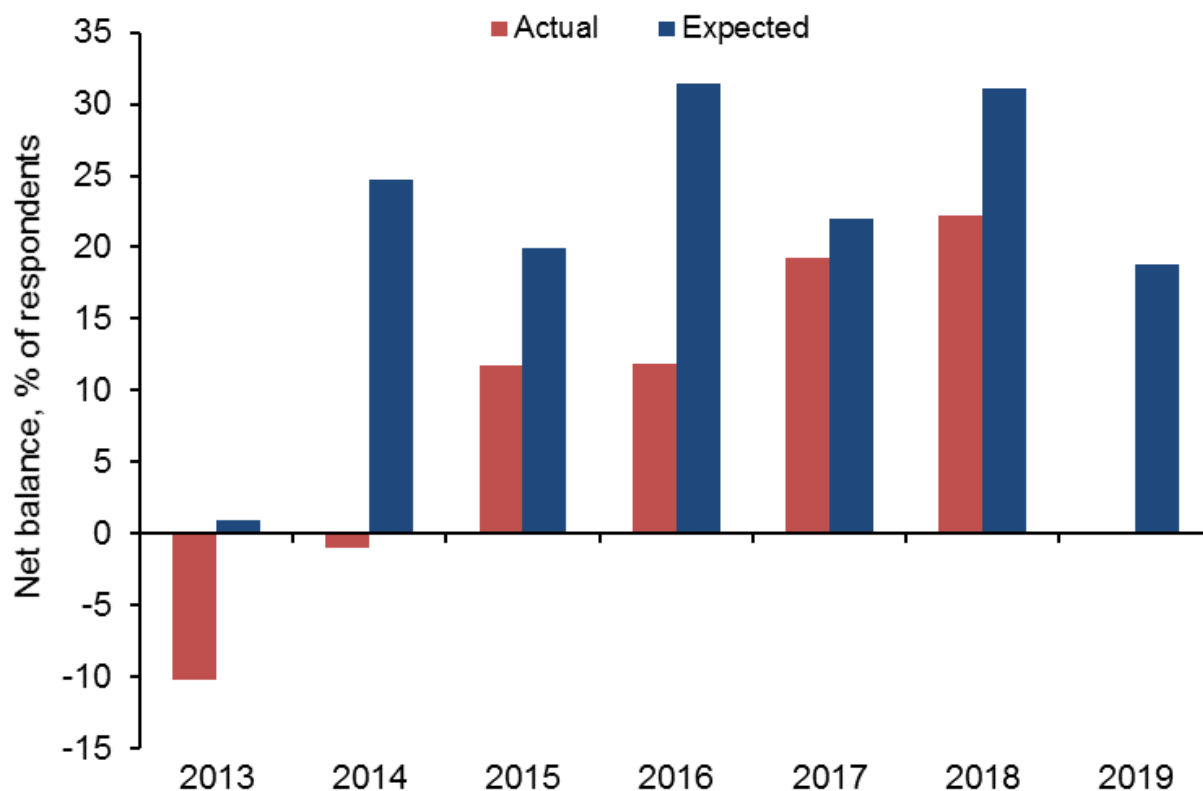


CHART 3.9 EXPORT REVENUE CHANGES, ACTUAL VS EXPECTED, 2013 TO 2019



Manufacturing export values depend on the way exports are classified

The value of manufacturing exports from Australia are highly susceptible to the trade classifications that are utilized to identify ‘manufactured’ goods. Depending on the type of classification that is applied, manufactured goods exports were worth between \$38bn and \$118bn in 2018.

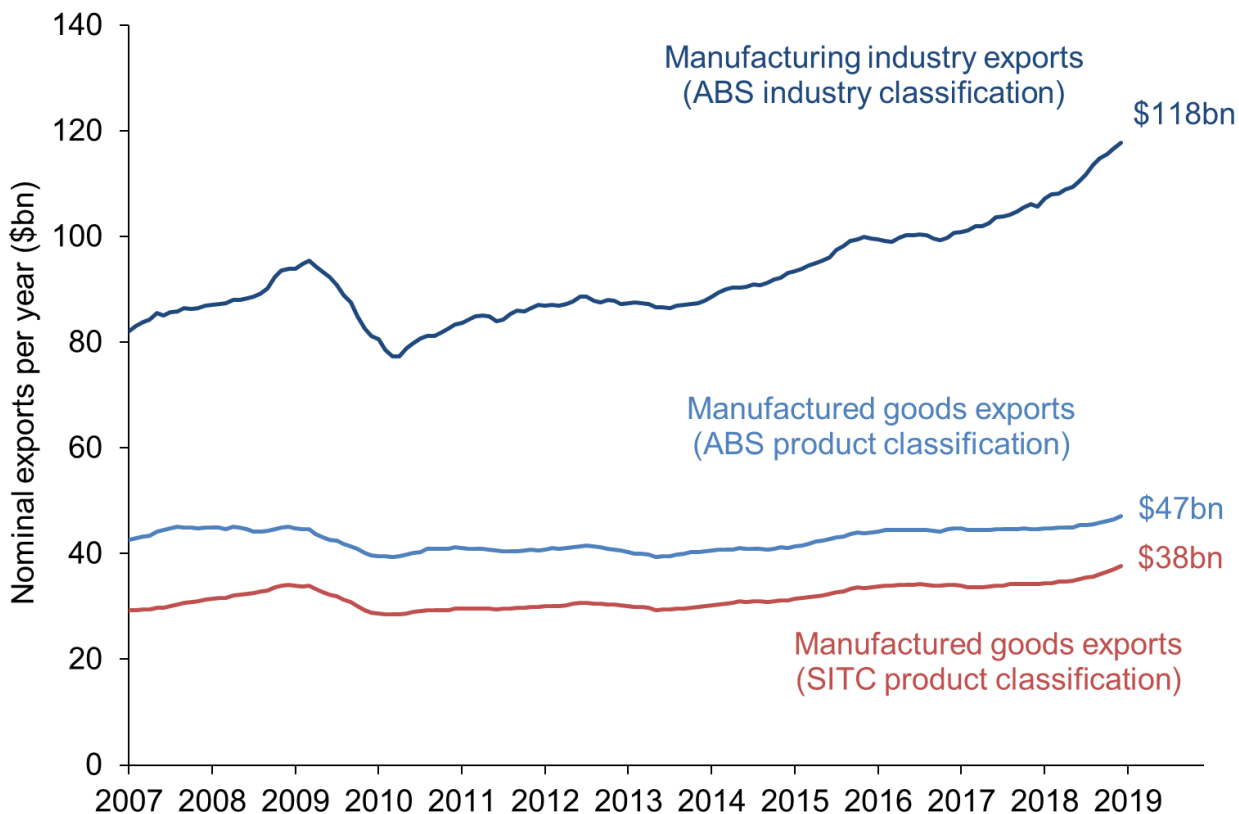
The variance in manufacturing export values comes from the difference between using an industry classification (ANZSIC coding) and a product classification (ABS or UN SITC coding). This difference arises because Australia’s international merchandise trade data are compiled by the ABS from customs records that are based on the commodities being traded rather than the industry which produced the goods.

However, the ABS also compiles industry trade data by allocating customs data to each industry. That is, commodity codes are assigned to each industry by matching individual products to the primary activities of each industry. For example: ‘milk-based infant formula’ exports (using the product classification) are assigned to ‘cheese and other dairy product manufacturing’ (using the industry classification) and is therefore a manufacturing industry export. But if only the product classification is utilized, then it can be classed as an ‘agricultural’ goods exports.

Utilising these different classifications and measurements from the ABS International Trade in Goods and Services data, ‘manufacturing’ exports can be counted and reported in at least three ways (see Charts 3.10, 3.11, 3.12 and Table 3.2):

1. Exports from the manufacturing industry were worth \$118bn in 2018 using the ABS industry classification for manufacturing (matched to ANZSIC coding).
2. Exports of manufacturing goods were worth \$47bn in 2018 using the ABS product classification.
3. Exports of manufactured goods were worth \$38bn in 2018 using the United Nations Standard International Trade Classification (SITC rev. 4).

CHART 3.10 MANUFACTURING EXPORTS BY CLASSIFICATION



Source: ABS, *International Trade in Goods and Services*, Feb 2019.

TABLE 3.2 MANUFACTURING EXPORTS BY CLASSIFICATION IN 2018

Industry/ product classification	Nominal value	Share	10 year growth 2008-18
	\$bn	%	%
Manufacturing exports (ABS industry classification)	117.7	100.0	25.4
Food & beverages	29.8	25.3	65.3
Machinery & equipment	19.9	16.9	8.1
Metal products	46.0	39.1	20.4
Petroleum, chemical & rubber products	14.2	12.1	12.2
Building materials, furniture and other	4.2	3.6	34.9
TCF, paper and printing	3.6	3.1	5.0
Manufacturing exports (ABS product classification)	47.2	100.0	5.0
Machinery	10.7	22.7	18.6
Transport equipment	4.6	9.8	-25.3
Other manufactures	22.0	46.5	24.6
Other non-rural (incl. sugar & beverages)	9.9	21.0	-18.1
Manufacturing exports (UN product classification)	37.7	100.0	10.5
High skill and technology-intensive	20.7	54.8	33.2
Medium-skill and technology-intensive	10.0	26.6	-18.8
Low-skill and technology-intensive	4.4	11.6	11.6
Labour-intensive and resource-intensive	2.6	7.0	13.1

ABS, *International Trade in Goods and Services*, Feb 2019; UNCTAD Product Classification, *Manufactured goods by degree of manufacturing groups (SITC Rev. 3)*.

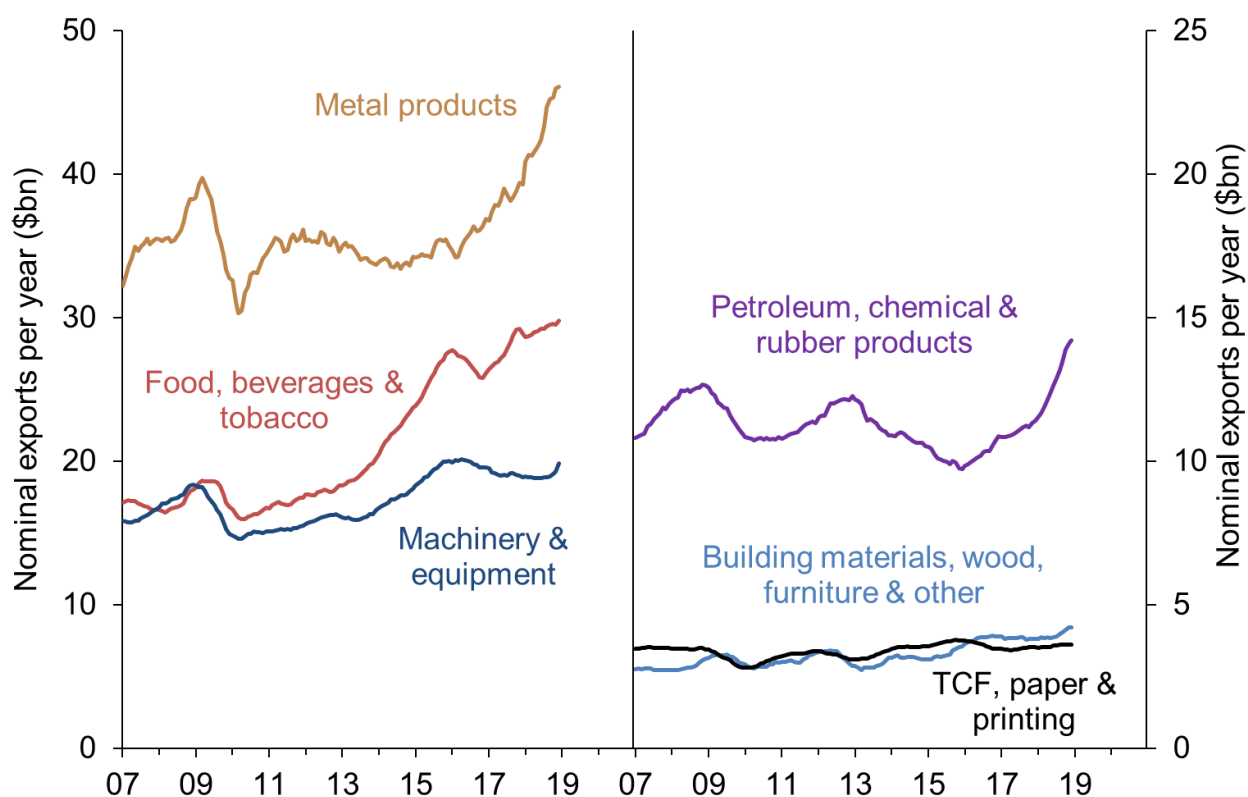
Manufacturing exports (ABS industry classification). Based on industry coding matched to export product coding, exports from the manufacturing industry were worth \$118bn in 2018, accounting for 27% of total exports and about a third of manufacturing turnover (see Table 3.2 and Chart 3.11). By value, Australia's exports of manufactured goods were mainly metal products (\$46bn), followed by food and beverages (\$30bn) and machinery and equipment (\$20bn). In the past ten years, nominal earnings from exports have increased in all sectors. Exports have been particularly strong for Australian-made food & beverage products in recent years, most likely due to the lower Australian dollar and increased regional demand for Australian food & beverage products. Overseas demand for 'petroleum, coal & chemicals' also increased over the decade to 2018. This extremely diverse sector includes fertilisers, pharmaceuticals, toiletries and health supplements, as well as construction-related products such as paints, adhesives and surface treatments. It has a relative high share of imported intermediate products. Export earnings from this sector surged from \$11.4bn in 2017 to \$14.2bn in 2018, driven by higher demand for Australian made pharmaceutical and medicinal products such as vitamins and skin-care products.

At the other end of exports performance, textiles, clothing, footwear, paper & printing manufacturing has (collectively) had the slowest exports growth of any manufacturing sector, with nominal export earnings increasing by just 5.0% to \$3.6bn over the 10 years to 2018. After adjusting for inflation, this sector has experienced falling real exports over this decade due to intense competition, radical technology changes and falling consumer prices. The other weak spot for exports in Australian manufacturing over the 10 years to 2018 was machinery & equipment, which grew its export earnings by only 8.1% to \$20bn over the decade. This sector includes transport equipment, whose export earnings fell from \$6.8bn in 2008 to \$5.0bn in 2018, as whole passenger car assembly and exports from Australia ceased. In contrast, the rest of the machinery & equipment sector experienced a steady increase in nominal export earnings over the 10 years to 2018.

Manufacturing exports (ABS product classification). Based on the ABS product classifications, exports of manufactured goods were worth \$47bn in 2018 and accounted for 11% of total exports (see Chart 3.12). Machinery exports (excluding transport equipment) grew by 18.6% to \$11bn over the decade to 2018, while

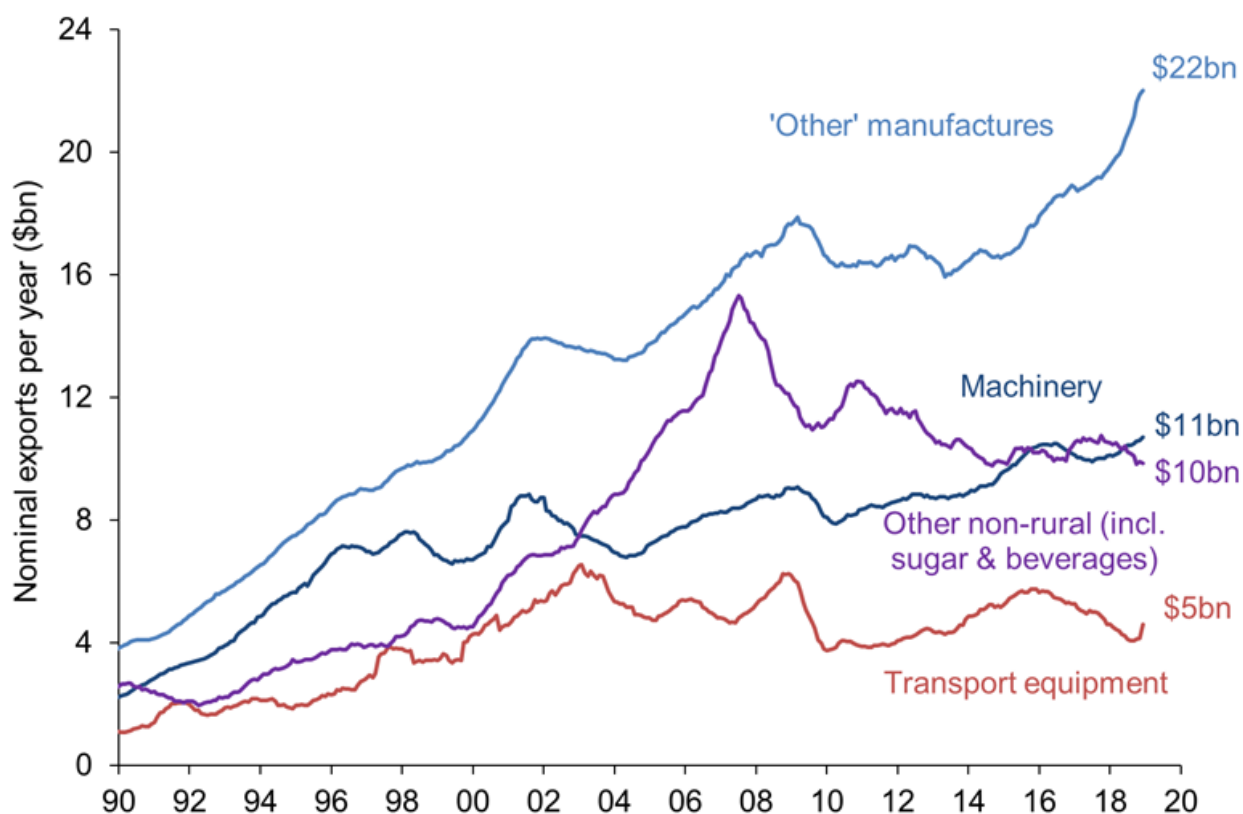
transport equipment exports fell by 25% to \$5bn, as exports of passenger cars ended. Exports of manufactured goods other than machinery (e.g. health products, building materials) grew to \$22bn in 2018, while exports of other non-rural items (including sugar and beverages) fell to \$10bn in 2018.

CHART 3.11 MANUFACTURING EXPORTS BY ABS INDUSTRY CLASSIFICATION



Note: Scale of left-hand side is double that of the right-hand side. Source: ABS, *International Trade in Goods and Services*, Feb 2019.

CHART 3.12 MANUFACTURING EXPORTS BY ABS PRODUCT CLASSIFICATION



Source: ABS, *International Trade in Goods and Services*, Feb 2019.

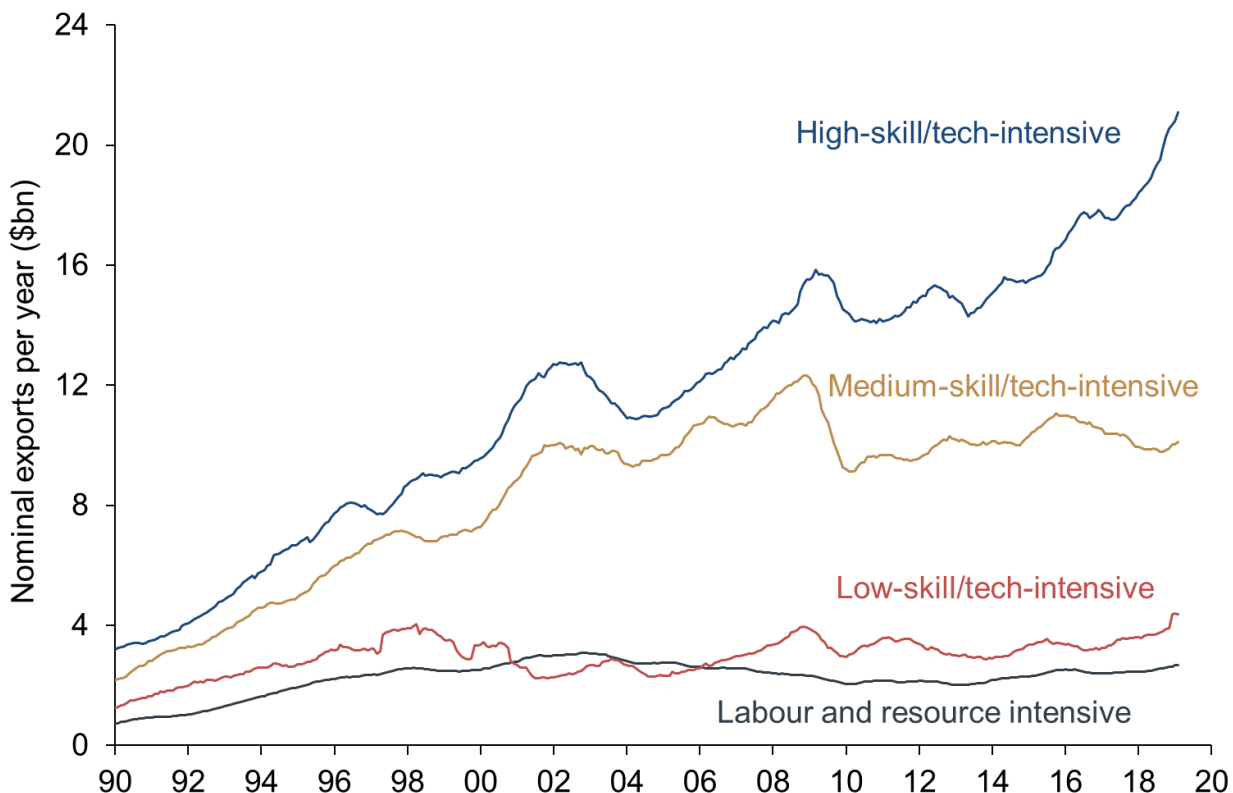
Manufacturing exports (UN SITC product classification). Based on the UN SITC codes, Australia's exports of manufactured goods were worth only \$38bn in 2018 and accounted for 9% of total exports. This measure takes into account the level of skill and 'technology intensity' required to produce each product. The United Nations Conference on Trade and Development (UNCTAD) splits exports of manufactured goods into four categories, based on their level of skill and technology intensity:

- labour-intensive and resource-intensive manufactures;
- low-skill and technology-intensive manufactures;
- medium-skill and technology-intensive manufacturers; and
- high skill and technology-intensive manufactures.

Applying this UNCTAD classification to ABS data suggests that in 2018, 55% of Australia's exports of manufactured goods can be classified as 'high skill and technology intensive' and 27% can be classified as 'medium-skill and technology-intensive'. Only 18% of manufactured goods exports were 'labour and resource intensive' or 'low skill and technology intensive' in 2018.

Over the past two decades, export earnings from labour intensive and low-skill exports have been relatively flat (see Chart 3.13). This likely reflects intense global competition for these types of products and the progressive relocation of production to emerging and developing economies with lower labour costs. High labour costs in Australia result in a comparative disadvantage in producing these types of homogenous, labour-intensive goods. Medium-skill and technology-intensive exports rose from 1998 to 2008 but have fallen since 2008. The sharp decline in early 2009 reflects declining exports of passenger cars, which are included by UNCTAD in this category. In contrast, export earnings from high-skill and technology-intensive manufactured goods have more than doubled over the past two decades. Between 2008 and 2015 high-skill and technology-intensive export earnings were relatively flat, probably reflecting the high Australian dollar during the mining investment boom. Since 2015 however, exports earnings from these goods have risen sharply, increasing by 7.3% in 2018 alone. Australia's high-skill and technology-intensive exports in 2018 included medicaments, medicinal & pharmaceutical products, aircraft parts and aircraft equipment.

CHART 3.13 MANUFACTURING EXPORTS BY SKILL LEVEL AND TECHNOLOGY INTENSITY



Source: ABS, *International Trade in Goods and Services*, Feb 2019; UNCTAD Product Classification, *Manufactured goods by degree of manufacturing groups (SITC Rev. 3)*.

Value-added contribution of manufacturing exports. In addition to the industry and product based classifications of exports discussed above, a ‘value-added’ approach to trade provides an estimate of the value-added contribution that is made at each stage of production. This is particularly useful in assessing the relative contributions of activity along global supply chains. It is calculated by taking the last price of each product sold and deducting the price that the producer business paid to other businesses for all its inputs.

Based on this methodology, the Department of Industry, Innovation and Science¹³ has estimated that manufacturing accounted for 24.9% of gross export earnings but only 11.6% of Australia’s value-added export earnings in 2014. The difference between these two measures represents the value of the imported materials and components that went into those exported goods (see Table 3.3). In contrast, services contributed 44.5% of Australia’s value-added contracts but represented just over a quarter of gross exports. This illustrates how industries are interdependent on each other to produce exported goods and services. Increasing trade between sectors and between complex international supply chains has the potential to increase the productivity - and export earnings - of Australian businesses.

TABLE 3.3 INDUSTRY SHARES OF AUSTRALIAN EXPORTS, 2014

Industry	Gross exports (%)	Value-added exports (%)	Difference (p.p)	Value-Added Exports (VAX) ratio
Resources	48.3	39.1	-9.1	0.65
<i>Agriculture</i>	4.3	5.2	0.9	0.96
<i>Mining</i>	43.9	33.9	-10	0.62
Manufacturing	24.9	11.6	-13.3	0.37
Construction/Utilities	0.5	4.8	4.3	8.23
Services	26.4	44.5	18.1	1.32
Total	100.0	100.0	0.0	0.80

Source: World Input-Output Database (2016) Input-Output Tables cited in Department of Industry, Innovation and Science, *Globalising Australia*, 2018.

¹³ Department of Industry, Innovation and Science, *Globalising Australia*, 2018, available [here](#).

APPENDIX: CEO BUSINESS PROSPECTS SURVEY 2019 PARTICIPANTS AND QUESTIONNAIRE



Responses were received from the CEOs of 252 private-sector businesses across Australia in October and November 2018. Together, these businesses employed around 87,000 people (357 people each on average) and had an aggregate annual turnover of around \$72 billion in 2018.

All Australian states and all major non-farm private-sector industries are represented in this year's CEO survey. The manufacturing sector contributed the highest proportion of respondents (65%). Manufacturing's share of this sample is higher than its share of national production (5.8%). Victoria was somewhat over-represented in the sample, relative to other states.

The services sectors represented in this year's sample include: IT, communications and media services; transport, post and storage services; wholesale trade; retail trade; finance and insurance; real estate and property services; professional services; administrative services; health and welfare services; education; hospitality (food and accommodation services); arts and recreation services; and personal services.

Industry	CEO Survey: Business Prospects 2019		ABS data (2017-18)
	Number of respondents	% of respondents	Value-added output, % of GDP
Manufacturing	164	65.1	5.8
Services	55	21.8	53.5
Construction and mining services	33	13.1	8.2
Total	252	100.0	67.5

**only includes construction value-added output. ** These industries do not sum to GDP due to the exclusion of utilities (2.4% of GDP), public administration and safety services (5.5%), agriculture (2.4%), mining other than mining services (5.8% of GDP), ownership of dwellings (8.7% of GDP) and other additional statistical items that are included in GDP.*

CEO Survey of Business Prospects 2019, Questionnaire

1. Business name:			
2. Postcode:			
3. In which industry does your business mainly operate? Please tick one box only, for your main activity			
<input type="checkbox"/> Mining and/or mining services (e.g. exploration, mining engineering or mining processing)			
<input type="checkbox"/> Manufacturing (e.g. making food, beverages, chemicals, equipment, building materials, metals, textiles, furniture)			
<input type="checkbox"/> Construction (e.g. engineering, infrastructure, commercial, residential construction or contracting)			
<input type="checkbox"/> Services (e.g. retail, wholesale, transport, professions, real estate, IT, media, health, education, cafes, hotels)			
<input type="checkbox"/> Other industry (please specify): _____			
4. What was your approximate annual turnover in 2018?			\$ _____
5. How many fulltime equivalent (FTE) people did you employ in 2018?			_____ FTE people
6. By what percentage did the following factors change in your business in 2018, compared to 2017?			
<i>Please complete one box only for each of:</i>	Down (write in %)	No change (tick if applicable)	Up (write in %)
Annual turnover	_____ %	<input type="checkbox"/>	_____ %
Gross profit margin	_____ %	<input type="checkbox"/>	_____ %
Number of employees	_____ %	<input type="checkbox"/>	_____ %
Spending on staff training & development	_____ %	<input type="checkbox"/>	_____ %
Spending on physical capital (e.g. buildings)	_____ %	<input type="checkbox"/>	_____ %
Spending on research & development	_____ %	<input type="checkbox"/>	_____ %
Spending on new technology	_____ %	<input type="checkbox"/>	_____ %
Export income	_____ %	<input type="checkbox"/>	_____ %
Input prices	_____ %	<input type="checkbox"/>	_____ %
Energy prices (inputs)	_____ %	<input type="checkbox"/>	_____ %
Selling prices	_____ %	<input type="checkbox"/>	_____ %
Labour productivity (output per hour worked)	_____ %	<input type="checkbox"/>	_____ %
General business conditions in your sector	<input type="checkbox"/> Worse	<input type="checkbox"/> No change	<input type="checkbox"/> Better
7. Did you change any parts of your business model, plan or strategies in 2018 due to business conditions?			
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> we don't have a formal business model, plan or strategy			
If yes, what did you change in 2018? _____			
8. If exporting, what was the total value of exports for your business in 2018?			\$ _____
9. Approximately what percentage of all your inputs (by value) were imported in 2018?			_____ %
10. IF your business was EXPORTING in 2018 or planning to export in 2019, at what AUD/USD exchange rate do your exports become uncompetitive with products from other countries? _____ US cents			
11. IF your business was competing with IMPORTS in the Australian market in 2018 or expecting to compete against imports in 2019, at what AUD/USD exchange rate do your products become uncompetitive with imported products from other countries? _____ US cents			
12. How did your business use the internet in 2018? Please tick all uses that are applicable to your business			
<input type="checkbox"/> Business website	<input type="checkbox"/> Ordering / buying from suppliers	<input type="checkbox"/> Online applications (e.g. payroll)	
<input type="checkbox"/> Advertising / marketing	<input type="checkbox"/> Data storage and / or analysis	<input type="checkbox"/> No internet used in the business	
<input type="checkbox"/> Orders / sales from customers	<input type="checkbox"/> Other: _____		

13. Did your business experience any internet security problems in 2018?
 Yes No Don't know Not applicable to my business

 If yes, please briefly describe your internet security problem(s) and your response to it?

14. Did your business invest in any internet security measures in 2018?
 Yes No Don't know Not applicable to my business

 If yes, please briefly describe your internet security investment?

15. Did your business use any internet security assistance or advice from Government in 2018?
 Yes No Don't know Not applicable to my business

 If yes, please briefly describe the Government assistance or advice on internet security used by your business?

16. Do you expect the following factors to change in your business in 2019, compared to 2018?

<i>Please tick one box only for each of:</i>	Down	No change	Up
Annual turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross profit margin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spending on staff training & development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spending on physical capital (e.g. buildings)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spending on research & development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spending on new technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Export income	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Input prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy prices (inputs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Selling prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labour productivity (output per hour worked)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General business conditions in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. What factors do you expect will inhibit your business growth in 2019?
Please rank all factors that will inhibit your business in 2019, starting with 1 as your most important inhibiting factor

Lack of customer demand _____	Government regulatory burden _____
High and/or variable exchange rate _____	Competition from imports / internet sellers _____
Flexibility of industrial relations _____	Wage pressures or high wage costs _____
Skills shortages _____	Other (please specify): _____

18. What key growth strategies do you plan to implement in your business during 2019?
Please rank all relevant strategies for 2019, starting with 1 as your most important strategy

Introduce new products/services _____	Downsize / reduce operational costs _____
Improve sales of current products/services _____	Increase online presence / capability _____
Develop new domestic markets _____	Increase advertising / marketing _____
Develop new overseas markets _____	Other (please specify): _____

19. What are your highest priorities for your business investment spending in 2019? Please rank all types of investment that you are considering for 2019, starting with 1 as your most important area of investment

Staff training and development _____	Research and development _____
Physical capital (e.g. buildings) _____	Information and communication technologies (ICT) _____
Equipment (e.g. new machinery) _____	New technologies other than ICT _____
Other (please specify): _____	

