



THE STATE OF THE SECTOR 2024

Queensland's Manufacturing Industry

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QUEENSLAND IS A MANUFACTURING POWERHOUSE

Attracting and engaging high quality, skilled labour is currently one of the most significant challenges faced by the manufacturing sector in Queensland. Our manufacturing capability is dynamic, and as the industry adapts, to changing technologies and innovation, a growing emphasis on sustainable operations, consumer demands and competition, so will the complex set of skills the workforce needs.

The pandemic highlighted that manufacturing matters to Queensland and Australia—domestic capability creates jobs, drives innovation, and adds value to the economy. Queensland's manufacturing performance following the pandemic has been impressive—generally outperforming other states on many measures. Changes to global supply chains, a growing focus on renewables and low carbon and defence-based investment have seen broad-based growth in Queensland's industry.

We need to embrace the opportunity this momentum has afforded us, particularly as we look to the next decade. There is uncertainty facing manufacturing—skilled labour, technical evolution (including automation and AI), the ongoing impact of supply chain disruption, impact of net zero discussions, and the advancement of competitor nations.

Now more than ever we need to collaborate to future-proof the industry—employers, peaks, unions, training organisations and all levels of government working together to ensure we build industry capability and secure manufacturing in Queensland.

Our manufacturing industry is unique. One of our strengths is our highly regionalised industry. A large portion of Queensland's manufacturing workforce is located outside of Greater Brisbane, deeply rooted in regional communities. This regional focus contributes to the resilience and diversity of the sector, allowing for sustainable growth and providing employment opportunities.

To support, and grow the workforce, we need to strengthen our focus on workforce planning and local solutions, improving visibility of Queensland's small and medium manufacturing and connecting them to state, national, and global supply chains.

In addition, we need to consider our long-term approaches to attraction and ongoing participation, particularly of priority groups, including of women. While we have seen some positive shifts in the gender composition of the workforce, there is still work to be done.

Manufacturing Skills Queensland (MSQ) has commissioned the Ai Group to provide an economic analysis and detail industry's performance—highlighting the current trends, challenges, and opportunities.

The insights shared in this State of the Sector report will inform future MSQ programs and research. This report also raises key questions to explore in collaboration with industry, including:

- How do we find and prepare high quality talent?
- How can we capitalise on our regional diversity?
- How do our training products keep pace with the dynamic technological evolution and product changes? And more.

Manufacturing plays a vital role in the Queensland economy. It is a core enabler that contributes to the success of every sector in the state. As we consider the role of manufacturing into the future, we have an unprecedented opportunity to solidify Queensland's reputation as a manufacturing powerhouse—but the world isn't waiting. Collaboration and action will ensure the right training, skills and workforce strategy is in place to ensure a strong and thriving manufacturing industry now and into the future. We look forward to engaging with you.



Rebecca Andrews

Chief Executive Officer
Manufacturing Skills Queensland

INTRODUCTION

Manufacturing Skills Queensland commissioned Ai Group to develop a State of the Sector report for manufacturing in Queensland. The report has been prepared by Ai Group's Research and Economics team.

This report is a broad analysis of national and state-based information, using the Australian Bureau of Statistics data. Ai Group's analysis provides insights into the industry across 12 broad areas.

Report highlights

- Queensland manufacturing performance has strongly rebounded during and following the pandemic—with material increases in industry value-add, employment and capex.
- Across most metrics, Queensland has generally outperformed Australian manufacturing since the pandemic.
- Queensland's recent manufacturing growth is broad based. Most industries have seen employment growth, with machinery and equipment leading. Food and beverage is the only subindustry with falling employment.
- Queensland has a highly regionalised manufacturing workforce.
- Labour supply is the most acute pressure on Queensland manufacturing today. Vacancies are at record rates, and wages are rapidly growing.
- The gender composition of Queensland manufacturing has improved in the last decade. However, the female share of the workforce is only 24.4%, and remains below the national average.

1.

VALUE-ADD IN THE QUEENSLAND MANUFACTURING INDUSTRY

Strong post-pandemic growth sees Queensland outperform Australia

The Queensland manufacturing industry generated \$24.3 billion of value-add in 2022-23, accounting for 5.25% of Gross State Product.

Queensland manufacturing has successfully recovered from the pandemic. Real manufacturing output fell steeply in 2019-20 as restrictions in response to COVID-19 were implemented, but in the following years output has quickly returned to pre-pandemic levels. This is consistent with the experience of the broader Australian manufacturing industry, which also recovered to pre-pandemic levels rapidly following 2020.

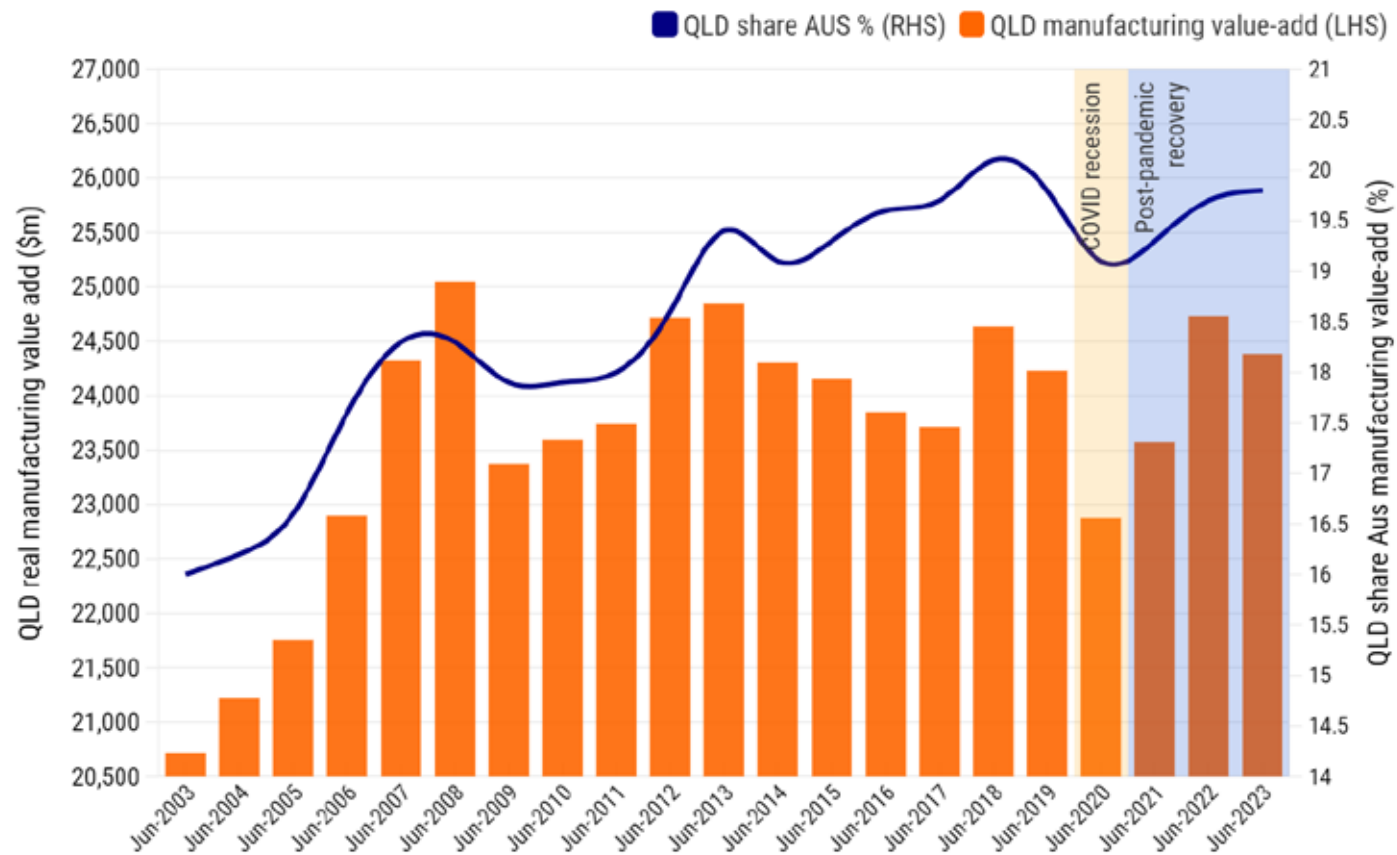
This national manufacturing recovery has been supported by strong national economic growth, as well as supply chain disruptions that have increased demand for locally manufactured goods. Queensland manufacturing has also benefited from strong demand from the resource sector during a period of high global energy prices.

Over the last two decades, Queensland has steadily increased its importance to national manufacturing capabilities. The state's share of real manufacturing value-add has grown from 16% in 2003, to around 20% in 2023. This strong manufacturing performance reflects the state's strong fundamentals—above-average economic, population and investment growth—as well as supply chain linkages to the Queensland energy sector.



Queensland manufacturing value-added

Steep decline during COVID-19 recovered with strong bounce-back in 2022



Source: ABS State Accounts, Ai Group Research & Economics



2.

THE SHIFTING GEOGRAPHY OF AUSTRALIAN MANUFACTURING

Queensland and Western Australia have grown as Australia's traditional manufacturing bases have declined

In the years following the Global Financial Crisis (GFC), there was a notable decline in the output of the Australian manufacturing industry. Real (inflation adjusted) manufacturing value-added fell 6% between 2008 and 2015, during a period associated with the closure of the Australian automotive industry.

However, the national decline between 2008 and 2015 obscures quite different dynamics across the states.

Australia's traditional manufacturing states all reported significant declines during that period: 13% in Victoria, 14% in New South Wales and 21% in South Australia. South Australia was especially affected due to the closure of the automotive industry, which was a mainstay of the state's manufacturing base.

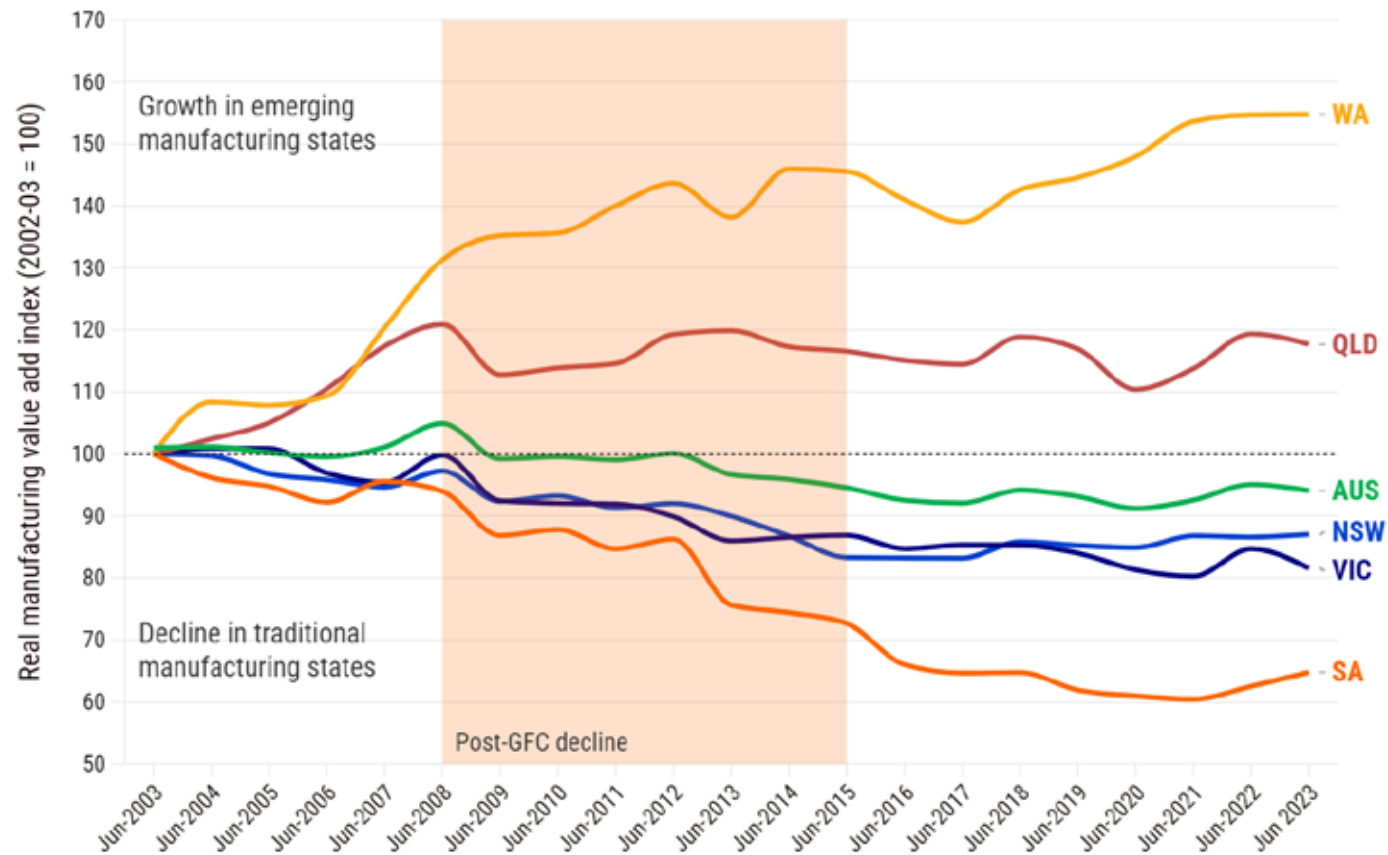
However, Australia's emerging manufacturing states—Queensland and Western Australia—were largely unaffected. Queensland's real manufacturing output has held steady since 2008,

while Western Australia saw output growth of 18%. The decline in Australian manufacturing is not national but confined to the south-eastern states only.

The factor explaining the resilience of Queensland's and Western Australia's manufacturing lies within the state's resources sectors. These have broad supply chain linkages which support a number of manufacturing sub-industries: particularly petrochemicals, metals and machinery. The resources sector has also supported above-average economic performance in these states, providing for stronger industrial growth, population growth and infrastructure development.

Manufacturing output of Australian states

Decline in traditional manufacturing states but growth in emerging states



Source: ABS State Accounts, Ai Group Research & Economics

3.

EMPLOYMENT IN THE QUEENSLAND MANUFACTURING INDUSTRY

Employment hits record levels during the post-pandemic rebound

There were 187,000 employees in Queensland manufacturing in November 2023. The manufacturing industry now accounts for 5.6% of Queensland's total employment.

Employment in the industry has been subject to cycles of expansion and contraction. In the years following the GFC, the industry saw a reduction in its workforce by approximately 15%. As Queensland's real manufacturing output was relatively constant during this period, this contraction reflected an increasing labour efficiency in a more competitive industry environment.

The post-pandemic expansion in Queensland manufacturing output also saw a rapid period of growth in the workforce: from 160,000 employees in February 2020 to 205,000 in August 2021. This sudden growth—of 28% in a period of just 18 months—drove Queensland manufacturing employment to its highest level on record.

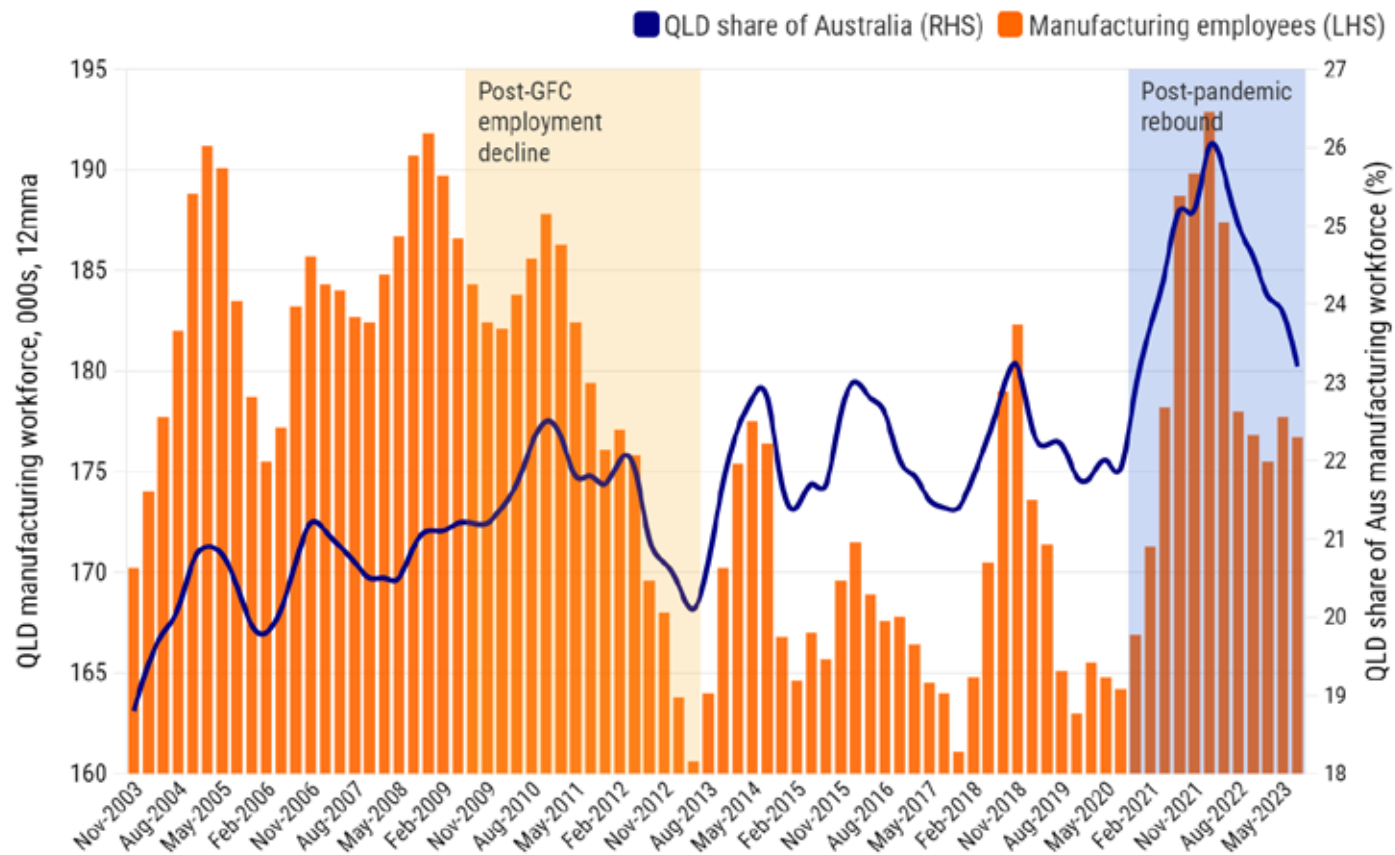
Interestingly, this rapid increase in the manufacturing workforce did not occur at a national level, with the Australian workforce decreasing slightly during the pandemic. This likely reflects a partial relocation of national manufacturing to Queensland during the pandemic, as the state was less impacted by lockdowns and restrictions than Victoria and New South Wales. As a result, Queensland's share of the national workforce rose significantly, from 22% pre-pandemic to a peak of 26% in mid-2021.

In the first half of 2022, with the removal of pandemic-era restrictions, we've seen normalisation in the industry, with the workforce subsequently stabilising.



Queensland manufacturing employment

Workforce grows to record size during post-pandemic rebound



Source: ABS LFS Detailed, Table 5, Ai Group Research & Economics

4.

THE CHANGING COMPOSITION OF THE QUEENSLAND MANUFACTURING INDUSTRY

The machinery and equipment sector leads recent employment growth

Employment indicators reveal how the internal composition of the Queensland manufacturing industry is changing.

Since 2015-16, the machinery and equipment sector is Queensland's fastest growing manufacturing subindustry . We've seen workforce growth of 20% to 36,000, accounting for half of all manufacturing employment growth during this time. The machinery and equipment sector is now 20% of Queensland manufacturing, making it the second largest subindustry behind the food, beverage and tobacco subindustry (at 28%).

The two other upstream branches of manufacturing have also grown strongly in Queensland. The petroleum and chemicals subindustry has seen growth in its employment by 8%, while the metal products subindustry has grown by 6%, over the same period. This dynamic speaks to Queensland's emerging strength in branches of manufacturing which leverage the state's energy and raw materials endowments.

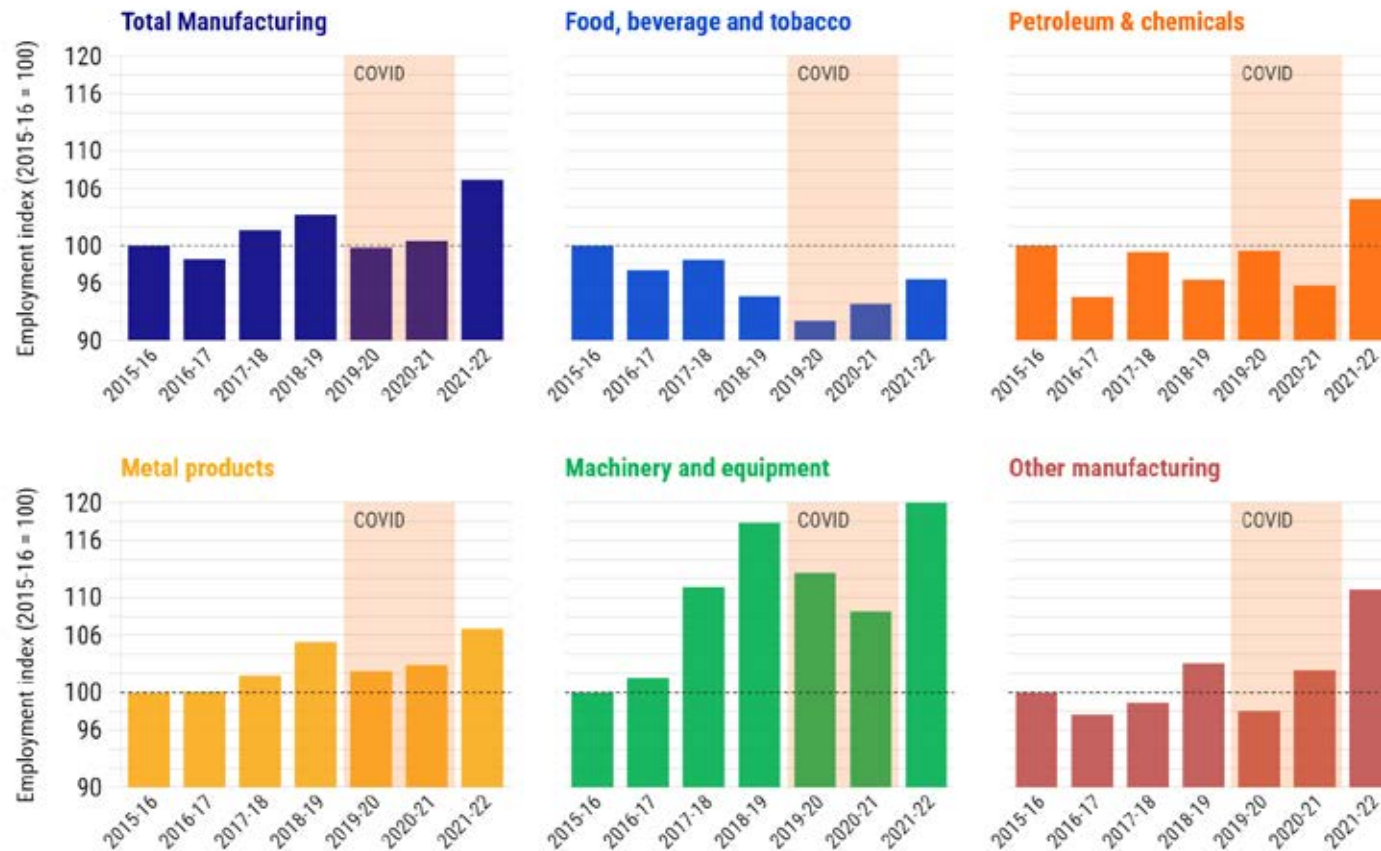
By contrast, food, beverage and tobacco manufacturing has seen a small amount of employment decline. Since 2015-16, the subindustry has seen a workforce contraction of 3% falling to 49,000 employees. While food, beverage and tobacco remains the largest subindustry of manufacturing, it has not been a contributor to recent manufacturing employment growth in the state.

This data indicates that the internal composition of Queensland manufacturing is changing to reflect the state's strengths in primary commodities. Those upstream branches of manufacturing where primary commodities are a key determinant of competitiveness have seen strong growth, while more consumer-oriented downstream manufacturing has been relatively stable.

It also points to a change in the state's manufacturing skills needs. These include a greater supply of upstream-related manufacturing skillsets, as well as a need to deliver skills and training provision in the geographic centres where commodity-based manufacturing is located.

Queensland manufacturing employment by subindustry

Upstream manufacturing leads to recent growth



Source: ABS Australian Industry, Ai Group Research & Economics

5.

FINANCIAL PERFORMANCE OF AUSTRALIAN MANUFACTURING

Manufacturer margins have improved strongly after the pandemic

Estimates of operating margins—an industry-level proxy measure for profitability—show the performance of the Australian manufacturing industry has improved since the pandemic.

Manufacturer margins in Australia fell precipitously in the years following the GFC—from around 10.5% to 7.5%. This corresponded with a period of decline in Australian manufacturing, associated with closure of the automotive industry and increasing import competition during the resource boom due to a strong currency.

Manufacturer margins began to recover from around 2015, and by 2018 had returned to around 10%. While a significant improvement, they remained below the all-industry average.

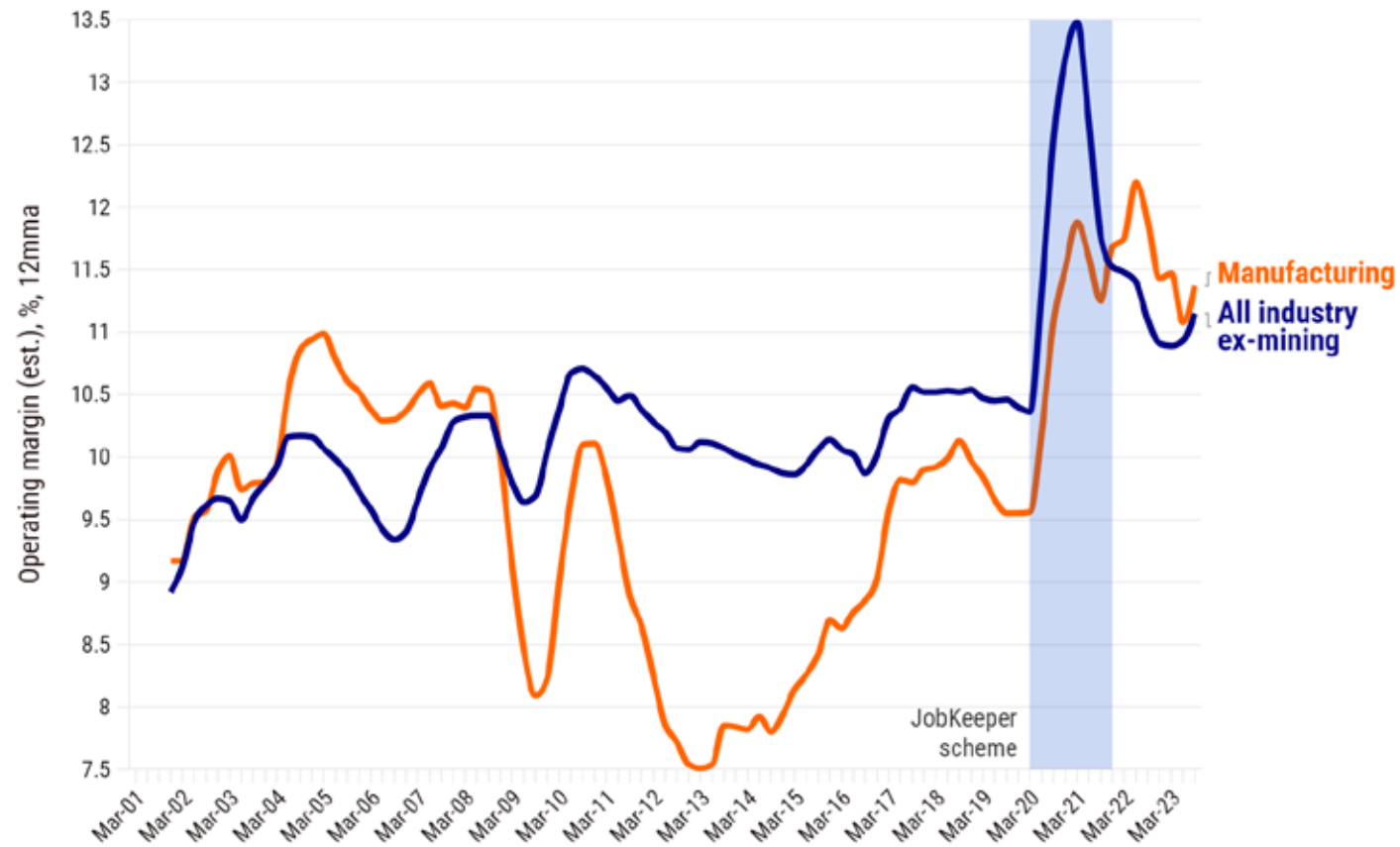
Since the pandemic, manufacturing margins have grown again, peaking at 12.2% in June 2022. The operating margins indicator has eased slightly in 2023 but remains well above even the pre-GFC levels. Manufacturing margins have also outperformed the all-industry average from 2022—the first time this has occurred since the GFC.

The post-pandemic improvement in manufacturer margins partially reflects economy-wide dynamics, with strong growth in the Australian economy improving margins across all industries since 2021. But manufacturing's above-average performance reflects industry-specific factors, particularly global supply chain disruptions. These have seen customers seek local suppliers for previously imported manufacturers, allowing Australian manufacturers some reprieve against import competition.

Data on manufacturing margins is unfortunately not currently available at the subindustry or state level. However, the outperformance of the Queensland manufacturing industry relative to the national average since the pandemic might suggest an equal or better margin performance in Queensland.

Manufacturing margins in Australia

Strong margin recovery since the pandemic, exceeds all-industry again



Source: ABS Business Indicators, Ai Group Research & Economics
"Operating margin" is estimated as operating profit before tax as share of sales income

6.

CAPITAL EXPENDITURE IN THE QUEENSLAND MANUFACTURING INDUSTRY

Despite strong post-pandemic capex growth the state lags national performance

The Queensland manufacturing industry undertook \$2.5 billion of capex in the 2022-23 financial year.

Queensland's manufacturing capex has had two growth phases since 2020. Capex initially surged during the early phase of the pandemic, bucking a fall in national capex. This was a time when Australia's two other manufacturing intensive states—New South Wales and Victoria—were heavily affected by lockdowns.

The second phase of growth occurred during the 2022-23 financial year, when capex in Queensland manufacturing surged again. This coincided with the intensification of supply chain disruptions, resulting in a nation-wide increase in manufacturing capex.

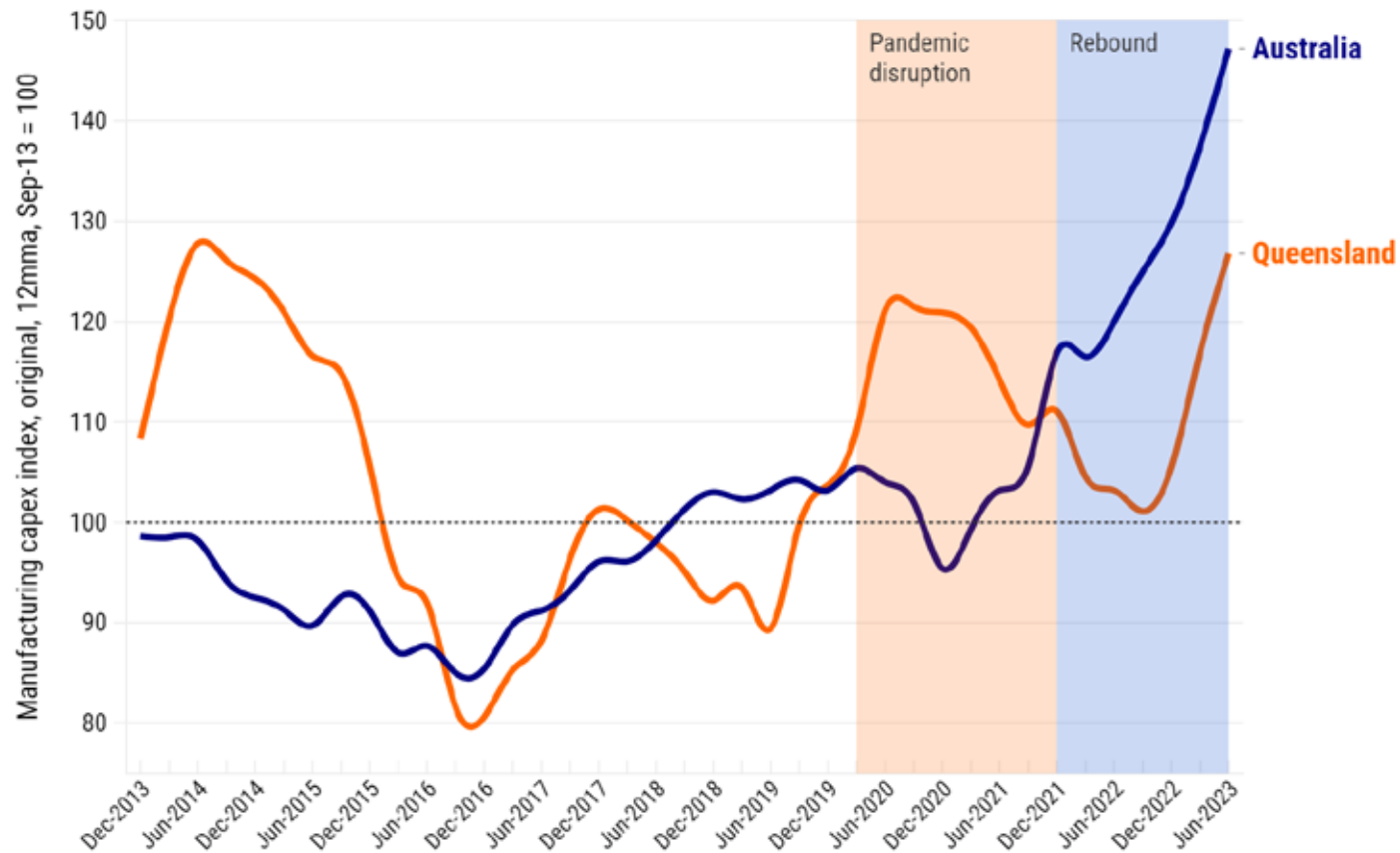
In the post-pandemic cycle, Queensland has underperformed against the national average. In the 2022-23 financial year, Queensland manufacturing capex was 16% above the pre-pandemic (2019-20) level, compared to a 40% increase for Australia as a whole. This reflects lower economic growth in Queensland (2.3%) compared to Australia (3.0%) during 2022-23.

Nonetheless, Queensland manufacturing capex remains high by historical standards. Capex in the 2022-23 financial year (\$2.49 billion) was the highest figure on record for the state.

The most recent macroeconomic forecasts by the Reserve Bank of Australia expect business investment to significantly slow in the months ahead—from 8.0% p.a. growth in 2022-23 to only 1.6% in 2023-24. It is likely that manufacturing capex growth in both Australia and Queensland will slow along with slowing business investment levels.

Capital expenditure in Queensland manufacturing

Post-pandemic capex growth slower than national performance



Source: ABS Private New Capital Expenditure and Expected Expenditure (Table 20), Ai Group Research & Economics

7.

REGIONALISATION IN THE QUEENSLAND MANUFACTURING INDUSTRY

Queensland has a highly regionalised manufacturing base

Employment indicators allow us to examine the degree of regionalisation in the Australian manufacturing industry.

Interestingly, just under half (45%) of the Queensland manufacturing workforce is located outside of the Greater Brisbane area. This rate of regionalisation has been broadly consistent (between 44% to 47%) over the last decade.

The regionalisation of Queensland manufacturing is significantly higher than the rest of Australia. The national rate is 32%, with Victoria, South Australia and Western Australia sitting around 25%. While there has been a small (1.5%) change in the national rate over the last decade, Queensland still leads the country in its regional diversity.

Queensland's highly regionalised manufacturing base reflects the industry's orientation toward the resource and energy sector. Typically located in the state's north, manufacturing clusters have developed alongside the resource sector to reduce

costs, increase supply chain proximity, and exploit workforce synergies.

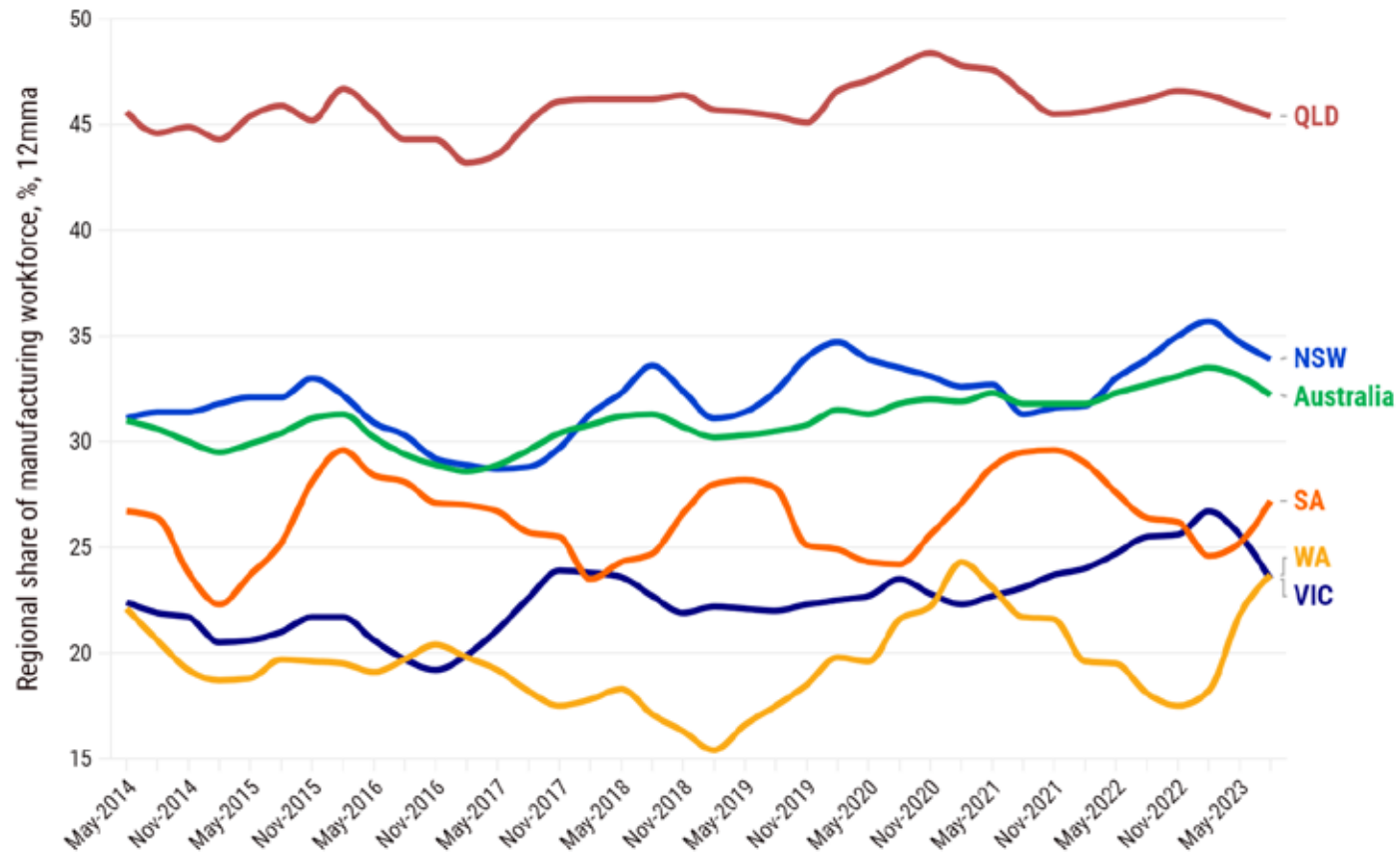
The strong growth in Queensland's upstream manufacturing (including petrochemicals, metals and machinery) over the last decade similarly reflects this link to the resource sector. These upstream branches of manufacturing all benefit from co-location with their resource-sector partners.

Interestingly, Western Australia's manufacturing industry has a very low level of regionalisation, despite the state also having a large resource sector. This suggests that Queensland's manufacturing industry is more geographically connected to its resource sector partners than counterparts in Western Australia.



Regional share of Australian manufacturing workforce

Queensland has a highly regionalised manufacturing base



Source: ABS LFS Detailed, Datacube EQ03, Ai Group Research & Economics



8.

JOB VACANCIES IN AUSTRALIAN AND QUEENSLAND MANUFACTURING

Job vacancies are easing, but remain double their long-run rates

In the June quarter of 2023, there were 22,600 job vacancies in Australian manufacturing—equivalent to 2.4% of all jobs.

The extremely tight labour market during Australia's post-pandemic recovery has seen the number of vacant jobs grow across all industries—manufacturing has been similarly impacted. Manufacturing vacancies started to rise in late 2020, and by March 2022 peaked, at almost triple their normal level.

Australian manufacturing vacancies have eased slightly through 2022 and 2023 but remain at nearly double their normal pre-pandemic level. The industry's current 2.4% vacancy rate compares poorly to a long-run average of between 1.0% and 1.5%. Approximately one in three manufacturers reported active vacancies in the months of August 2023.

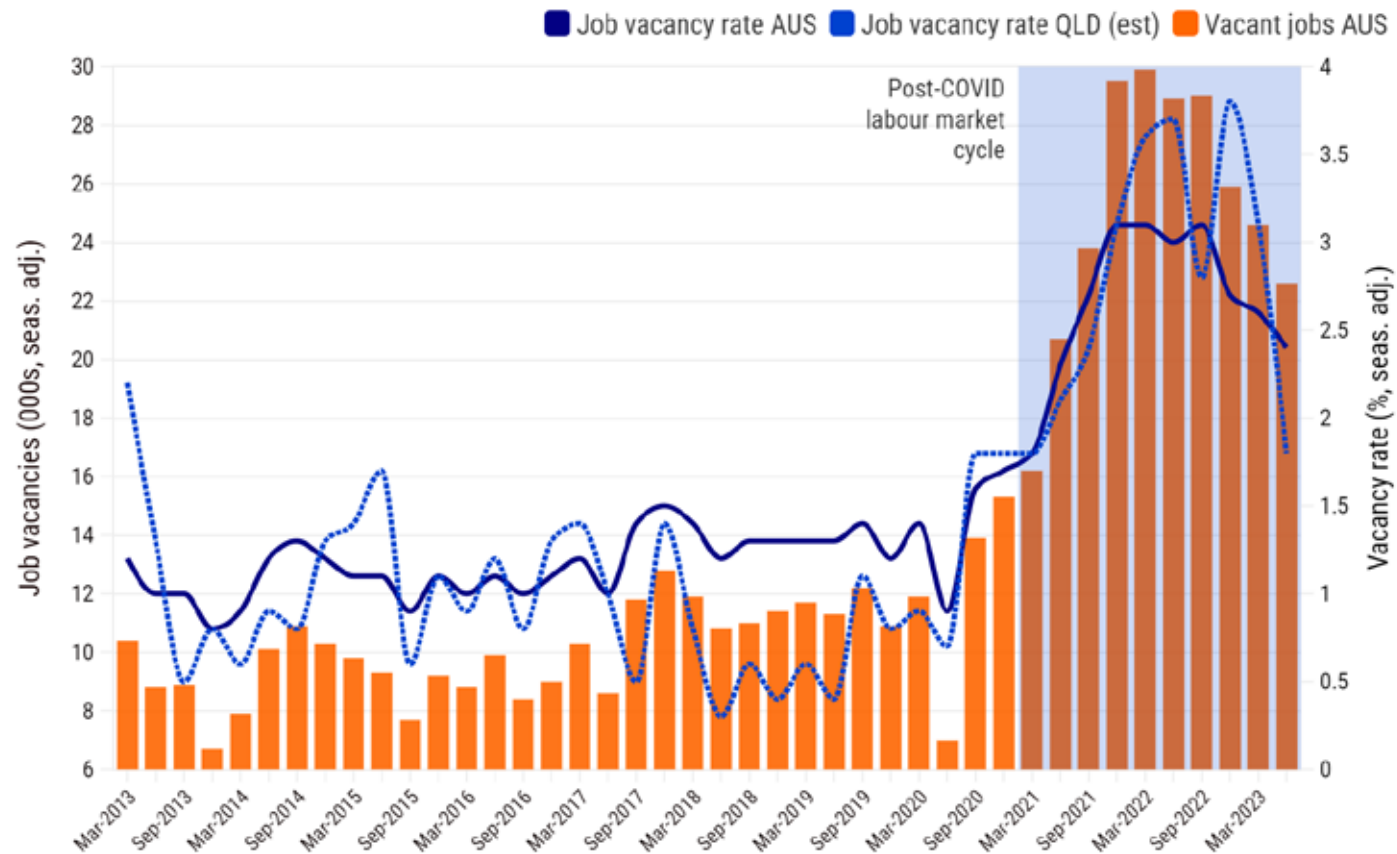
Unfortunately, systematic vacancy data at an industry and state level is not presently available from official statistics. However, using modelled

indicative data we have calculated a set of estimates for the Queensland manufacturing job vacancy rate (see chart on next page).

During the pandemic, the estimated Queensland vacancy was higher than the national average, reflecting the state's stronger manufacturing employment growth during this period. Since the middle of 2023, the estimated Queensland rate has fallen below the national average to 1.8%. This remains elevated compared to the state's long-run average of approximately 1.0%, pointing to ongoing labour shortages for the industry.

Australian manufacturing job vacancies

Despite easing in 2023, vacancies remain at double normal levels



Source: ABS Labour Account, Table 4, ABS Modelled indicative state and territory level industry jobs and hours work estimates, Ai Group Research & Economics



9.

MANUFACTURING WAGES IN QUEENSLAND

Higher wage growth in Queensland manufacturing closes gap with rest of country

Median earnings for a permanent full-time employee in Queensland manufacturing were \$39.30 per hour in August 2023. This was approximately the same as national manufacturing earnings (\$39.50). However, it is below the equivalent average measure for all industries of \$42.20.

As job vacancies surged following the pandemic, manufacturing wages began to grow. Australian manufacturing wages grew at an annual rate of 4.4% in the September quarter of 2023, the fastest rate since 2007. Nationally, the manufacturing industry currently has the third highest rate of wages growth, behind healthcare and social assistance (4.9%) and, arts and recreation (4.6%).

Impressively, Queensland manufacturing wages are presently growing even faster than the national rate. Queensland manufacturing employee earnings grew by 8.0% in the year to August 2022, and 11.1% in the year to August 2023. This was significantly faster than the national growth

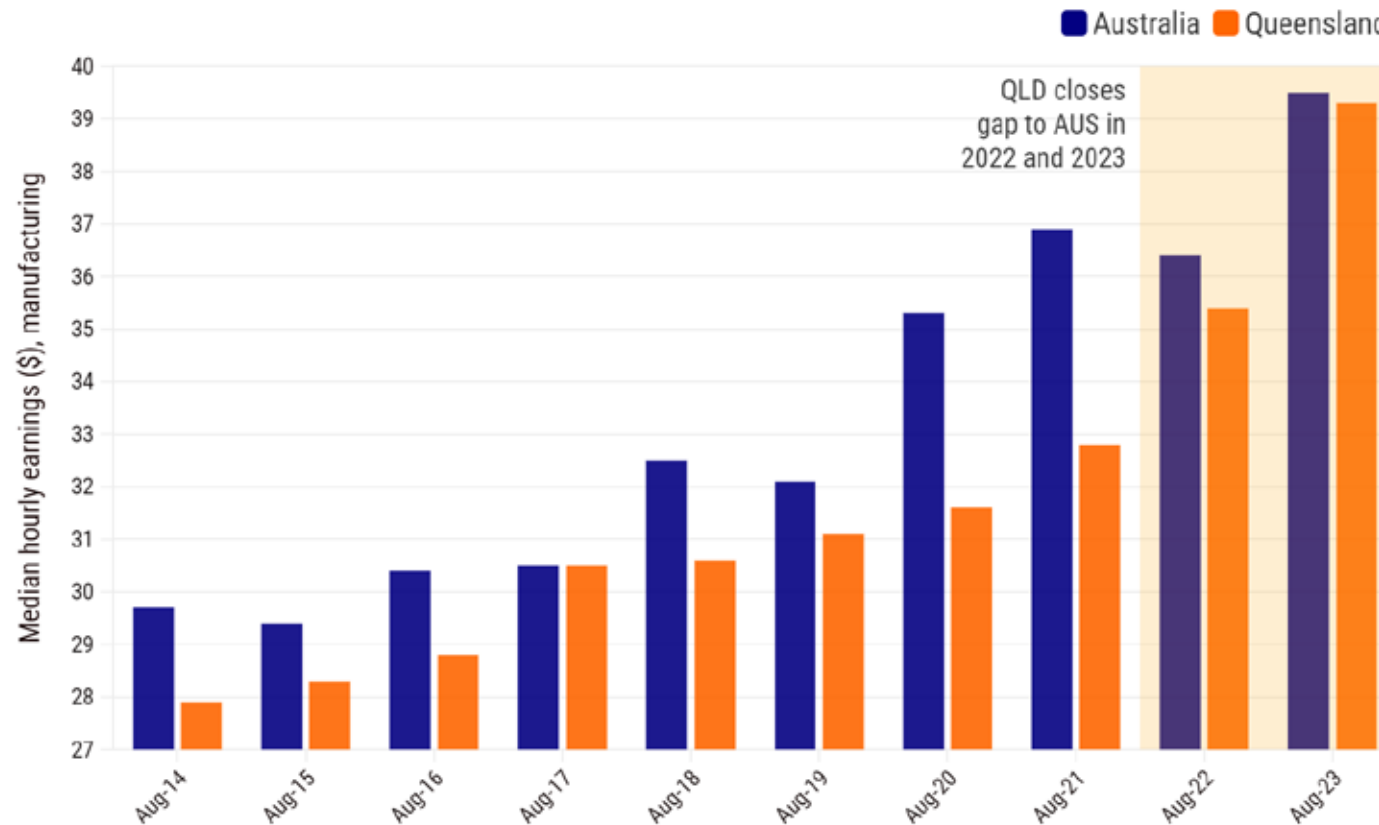
rates (of -14% in 2022 and 8.5% in 2023). It saw Queensland close an 11% gap to nearly achieve parity with national manufacturing earnings.

The growth of employee earnings in Queensland's manufacturing industry reflects the fact that the state has experienced stronger employment growth and higher job vacancies than the national average during the post-pandemic years.

Closing the earnings gap to meet the national average has mixed effects on the Queensland manufacturing industry—it reduces a labour cost advantage relative to other states but allows the state to be more competitive in terms of recruitment in a period of labour and skills shortages.

Employee earnings in Queensland manufacturing

Strong post-pandemic growth closes gap with rest of Australia



Source: ABS Employee Earnings, Table 3, Ai Group Research & Economics
To control for compositional effects, presents median hourly earning for permanent full-time employees only.

10.

THE GENDER COMPOSITION OF QUEENSLAND MANUFACTURING

Steady improvement in women's participation closes with rest of Australia

Given its status as a traditionally male-dominated industry, manufacturing employment remains dominated by males. Queensland has historically lagged Australia, with a lower female share of the manufacturing workforce. However, this pattern is beginning to change.

In August 2023, 40,200 women worked in the Queensland manufacturing industry, accounting for 24.4% of the workforce.

We've seen the gender composition of the manufacturing workforce in Queensland change steadily, with an increase in the number of female workers from around 23% to as high as 28% in mid-2022. Most of this growth occurred during the rapid expansion of the Queensland workforce in 2021 and 2022. As a result, the gap between Queensland and Australia closed considerably, with the state nearly reaching the national average in mid-2022.

By the middle of 2023, Queensland female employment fell back to around 25%. This is likely

explained by the patterns of overall growth and contraction in the size of the workforce.

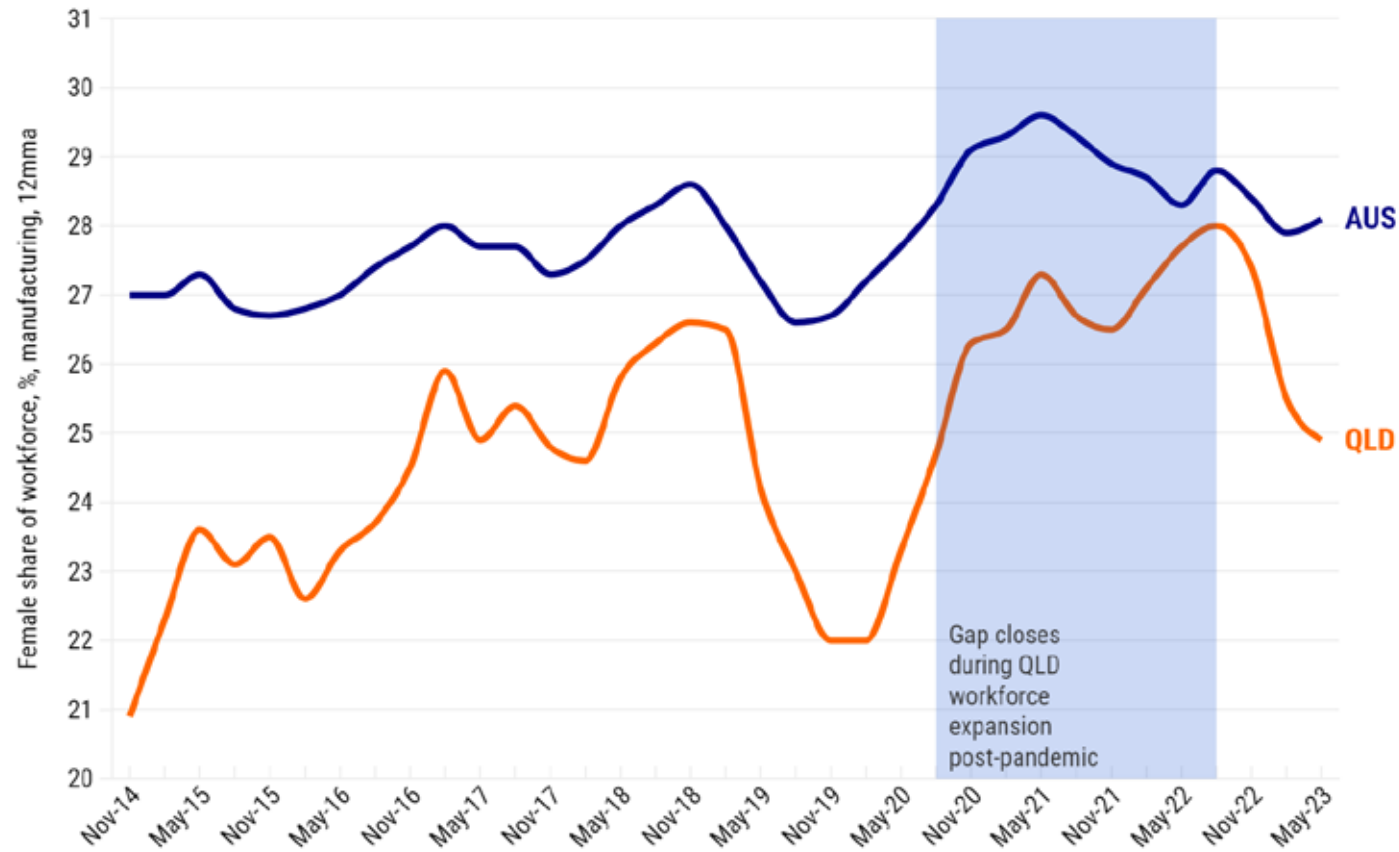
In traditionally male-dominated industries, it is common for sudden improvements in female participation to occur during periods of rapid workforce expansion, which necessitate that employers target less-traditional employee types. During workforce contraction, the less-traditional employees with looser ties to the industry will then depart.

This dynamic explains why Queensland saw a spike and fall in the female workforce share while Australia did not: Queensland's manufacturing workforce expanded and contracted between 2020 and 2023, while Australia's was relatively constant. It also reveals the importance of employment growth to leverage faster change in traditionally male-dominated industries, but demonstrates an opportunity for intervention that creates systemic, long-term change.



Gender composition of Queensland manufacturing workforce

Improvement in women's participation closes gap with Australia



Source: ABS LFS Detailed, (EQ6 Datacube), Ai Group Research & Economics

11.

BUSINESS STRUCTURE INSIGHTS

Small and medium businesses dominate manufacturing

Small businesses constitute the bulk of the Queensland manufacturing industry, in the Greater Brisbane region, and regionally.

In June 2023, there was 9,176 employing businesses in the Queensland manufacturing sector. On a geographic basis, these were slightly skewed towards the regions (4,862, 53%) over Greater Brisbane (4,173, 45%).

This geography reflects the character of Queensland's manufacturing industry, which as previously noted is unique in being relatively evenly split between metro and regional bases.

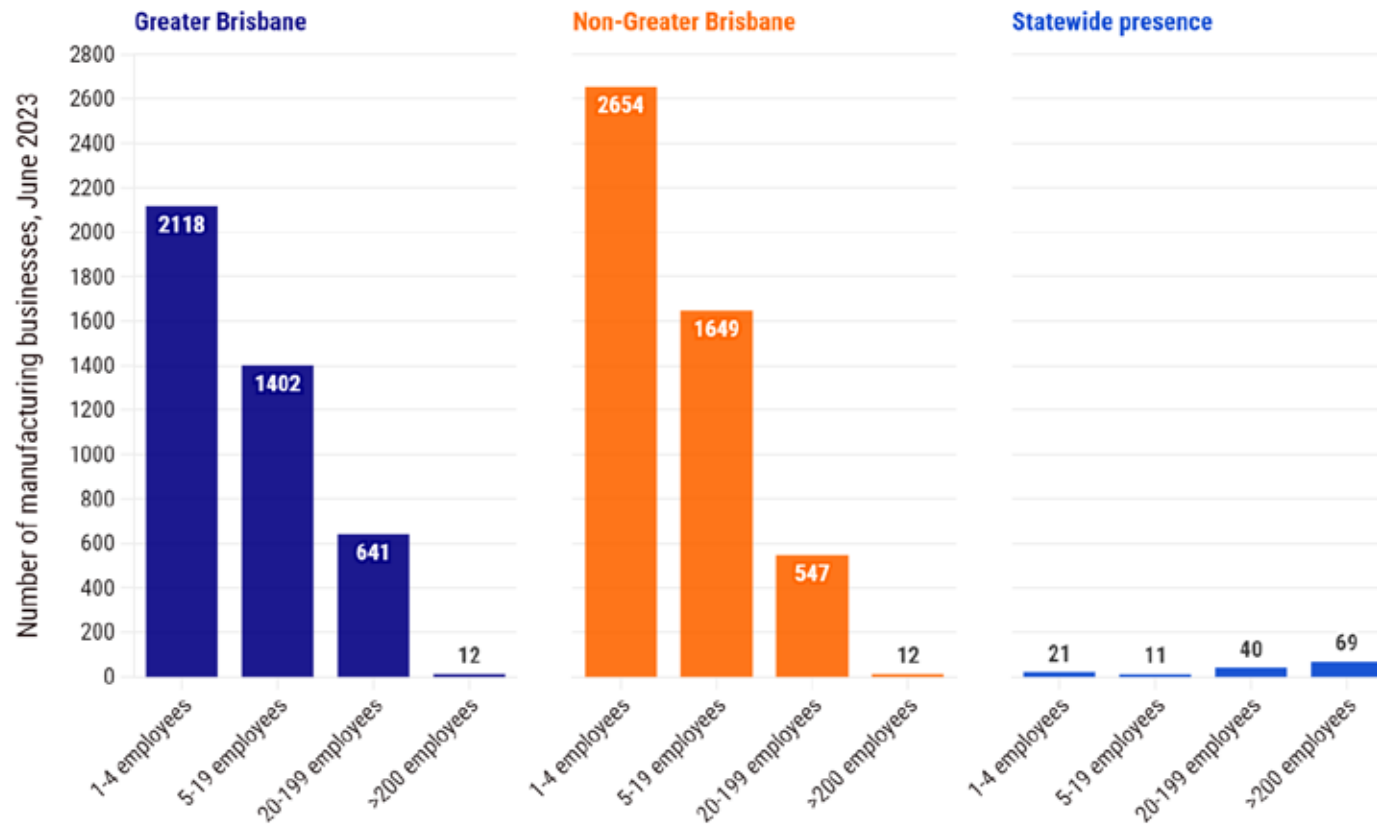
86% of Queensland's employing manufacturing businesses are classified as micro or small businesses. 'Micro' businesses with 1-4 employees make up around half (52%) of the total, and another third (33%) are 'small' with between 4 and 19 employees. Manufacturing businesses at this size typically have limited skills development or training capabilities and rely on labour markets to supply the skills they need.

A final 141 manufacturing businesses have a state-wide presence—a group which makes up two thirds (69) of Queensland's 93 large manufacturing businesses. This reflects the fact that large industrial manufacturers usually have multiple sites and employ across a diverse array of local labour markets. These businesses typically have some capacity for in-house training and make regular use of apprenticeships.



Manufacturing businesses in Queensland by size and location

Predominantly small businesses, evenly split between Brisbane and regions



Source: ABS Counts of Australian Businesses, Ai Group Research & Economics

12.

SECONDARY AND VET QUALIFICATIONS DOMINATE

But there is room for improvement

Secondary education and vocational education and training (VET) qualifications are the main qualifications of the Queensland manufacturing workforce, but significant differences exist between different age cohorts.

Secondary education (year 12 or lower) is the most common form of qualification, accounting for 41.1% across the workforce. Post-secondary qualifications—Certificate III/IV, Diploma or Advanced Diploma—account for another 39.5% of the workforce. Less than 20% hold a higher education qualification.

However, these industry-wide figures obscure major differences in the qualification attributed of different age cohorts within Queensland manufacturing.

Amongst the youth cohort (15-24 years), secondary education accounts for two-thirds the workforce, and post-secondary another third. However, this is explained by life course effects: many youth manufacturing employees either just completed their VET training or are still undertaking it.

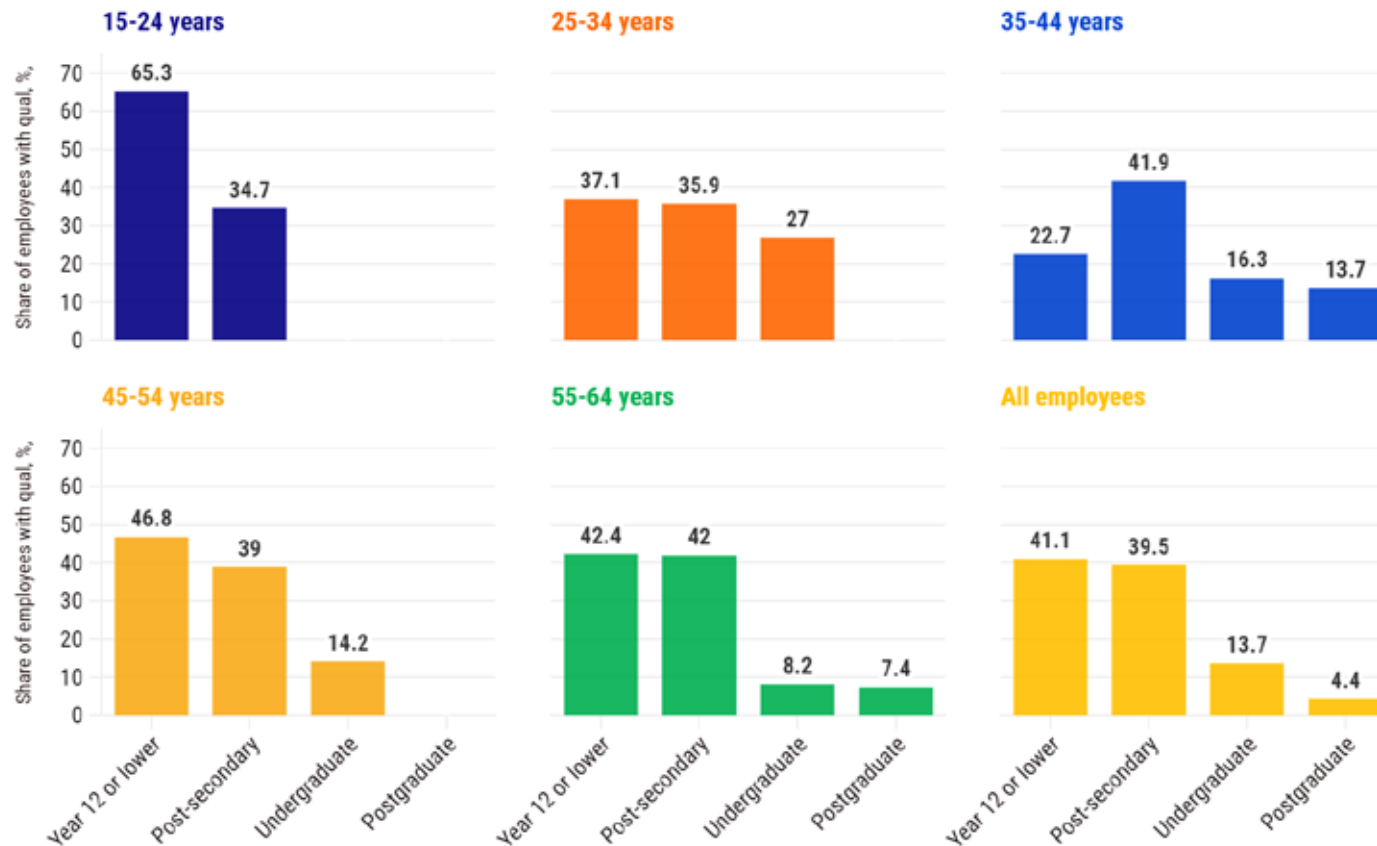
At middle-aged cohorts (25-34 and 35-44 years) the share of the workforce with higher education significantly rises to 27% and 30% respectively. Postgraduate qualifications also become relevant in the 35-44-year-old cohort. This reflects these groups' greater life course opportunity to complete qualifications; as well as structural change requiring greater levels of qualification in the industry.

At the senior cohorts (45-54 and 55-64 years), the qualification level of the workforce reduces again, with secondary education again dominant and only one-in-six holding a tertiary qualification. This likely reflects structural change dynamics. At the time these workers entered the labour force (1980s and 1990s), post-secondary and tertiary qualifications were less common in manufacturing.

The advancement of age cohorts—youth into middle-aged, and middle-aged into senior—in future years is likely to produce a cohort effect that increases the qualification level of the manufacturing industry.

Qualifications of Queensland manufacturing workforce

Dominance of secondary and VET qualifications, with large cohort differences



Source: ABS Characteristics of Employment Survey microdata, Ai Group Research & Economics



ABOUT MANUFACTURING SKILLS QUEENSLAND

Manufacturing Skills Queensland (MSQ) is building a sustainably skilled workforce for a future-proofed manufacturing industry. We're here to connect and support employers and the wider industry with the skills, opportunities, and information to build a thriving sector. Established as part of the Queensland Government's *Making it in Queensland: Building a Stronger Manufacturing Sector* policy, our vision is to create the skills pathways for the future of manufacturing in Queensland.





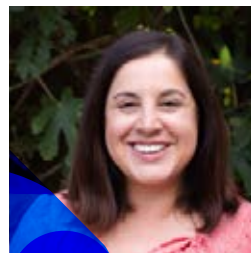
AI GROUP **RESEARCH &** **ECONOMICS**

Ai Group monitors and analyses developments across the Australian economy. The Ai Group Research & Economics team specialise in business, industrial and labour market economics issues affecting Australian industry. They work with businesses from across the industrial ecosystem—manufacturing, construction, engineering, supply chain and technology—to understand and analyse the challenges and opportunities for Australian industrial development.

Ai Group Research & Economics publish business surveys, industry analyses, policy reports and economic briefs so business leaders can understand the changing national and global economic settings.



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