Australian Government
Department of Agriculture and Water Resources
ABARES

2018 OUTLOOK

Agricultural commodities

Research by the Australian Bureau of Agricultural and Resource Economics and Sciences

MARCH QUARTER 2018

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Economic overview

Economic overview

Outlook to 2022–23

Matthew Howden and Kirk Zammit

- World economic growth strengthened in 2017 and is assumed to be 3.7 per cent in 2018 and 2019. From 2020 to 2023 economic growth is assumed to average 3.6 per cent.
- Assumed strengthening in world growth will lift household incomes, supporting food demand growth in regions important to Australia's agricultural trade, such as emerging Asia.
- The Australian dollar is assumed to average US78 cents in 2017–18 before depreciating to US76 cents in 2018–19 and US74 cents in 2019–20. The exchange rate is assumed to average US74 cents over the remainder of the outlook period to 2022–23.

Global economic outlook

Global growth prospects to improve in 2018 and 2019

The world economy is recovering from relatively slow growth of 3.2 per cent in 2016. In 2017 global growth is estimated to have increased to 3.6 per cent, driven by a sharp increase in economic activity in advanced economies. World economic growth is assumed to accelerate further in 2018 to 3.7 per cent and maintain that momentum in 2019 as growth drivers shift from advanced to emerging and developing economies.

Economic growth in China, India and in some South-East Asian countries is expected to be underpinned by low interest rates and expansionary fiscal policy. Recoveries in Latin America, the Middle East and North Africa are also expected to continue. However, recovery will remain susceptible to the possibility of worsening security conditions and conflict, natural disasters and renewed weakness in commodity prices.

In major advanced economies, economic growth is assumed to remain above potential in 2018 and 2019. An expected increase in trade and investment activity and strong consumer and business confidence support these growth assumptions. Despite this favourable outlook, inflation remains low and is assumed to reach central bank targets only gradually. However, some central banks, such as the US Federal Reserve, have started lifting interest rates in anticipation of upward pressure on consumer prices.

Upside and downside risks to global growth in the short term appear to be broadly balanced. Low interest rates, elevated consumer and business sentiment and expansionary fiscal policy in some large economies present upside risks to global growth momentum. In particular, the implementation of US tax reforms in January 2018 could result in stronger than expected global growth in 2018 and 2019. Downside risks to the global growth assumptions include ongoing geopolitical tensions in the Middle East and Korean peninsula, which could reduce trade and investment. The possibility of more protectionist measures in advanced economies could also dampen global growth over the medium term.

Potential growth defined

Potential growth is related to the potential output of an economy. Potential output is the estimated maximum amount of goods and services an economy can produce while maintaining a constant rate of inflation (Jahan & Mahmud 2013).

An economy can grow at above or below its potential rate for a period. If an economy is growing above its potential rate, demand is strong and prices rise as capital and labour used to meet this demand become scarce. If an economy is growing below its potential rate, demand is weak and prices fall to reflect spare capacity in capital and labour.

Potential growth is an indicator of an economy's position in its business cycle—whether it is expanding, contracting or operating at capacity. This is important when considering an economy's future growth and the resulting implications for inflation, interest rates and exchange rates. A country's potential growth is also important for longer-term analysis because it has implications for income growth and trade.

References

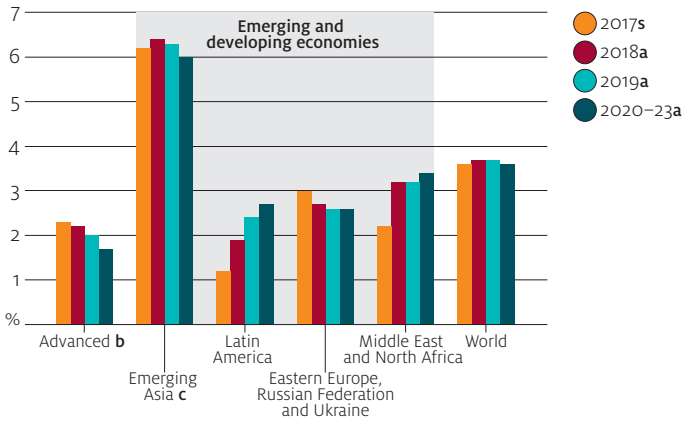
Jahan S & Mahmud AS 2013, 'Back to basics: What is the output gap?', *Finance and Development*, International Monetary Fund, Washington, DC, accessed 5 February 2018.

Stable medium-term outlook, but downside risks remain

Global economic growth is assumed to stabilise at 3.6 per cent a year by 2020, following the recovery from 2017 to 2019. In advanced economies, economic growth is assumed to average 1.7 per cent from 2020 to 2023 when growth in the United States, Japan and the eurozone slow to their potential. In emerging and developing economies, economic growth is expected to average 4.7 per cent over the outlook period. Economic growth in Latin America, the Middle East and North Africa is assumed to increase over the outlook period, but growth in China will continue to slow as the country transitions to a lower growth, consumption-led economy. The outlook for South-East Asia is also positive, with economic growth assumed to average around 5 per cent over the outlook period.

Over the medium term, there are a number of downside risks to global growth. China's transition to a sustainable, lower growth economic model will present challenges for the government's management of the country's high level of debt. In South-East Asia, a gradual increase in US interest rates will raise the cost of US-denominated debt and could stifle demand growth in the region and trigger financial market volatility. In the eurozone, financial markets remain fragile due to high debt-to-GDP ratios and significant non-performing loans in some member countries.

Regional economic growth, 2017 to 2023



a ABARES assumption. **b** Includes Japan and Hong Kong SAR. **c** Includes China. **s** ABARES estimate.
Sources: ABARES; International Monetary Fund

Changes to ABARES country classifications

As of *Agricultural commodities: March quarter 2018*, ABARES is aligning its country classifications with the International Monetary Fund (IMF 2018). Countries will be classified as either 'Advanced economies' (Table 1) or 'Emerging and developing economies'. Previously ABARES classified countries according to their membership of the Organisation for Economic Co-operation and Development.

ABARES has adopted IMF classifications to bring its country classifications in line with other international and national agencies.

TABLE 1 IMF country classification, 'Advanced economies'

Country		
Australia	Iceland	Portugal
Austria	Ireland	Puerto Rico
Belgium	Israel	Republic of Korea
Canada	Italy	San Marino
Cyprus	Japan	Singapore
Czech Republic	Latvia	Slovak Republic
Denmark	Lithuania	Slovenia
Estonia	Luxembourg	Spain
Finland	Macao SAR	Sweden
France	Malta	Switzerland
Germany	Netherlands	Taiwan
Greece	New Zealand	United Kingdom
Hong Kong SAR	Norway	United States

SAR Special administrative region.

Emerging and developing economies

Remaining countries will be grouped as 'Emerging and developing economies'. This includes economies from the Commonwealth of Independent States, emerging Asia, emerging Europe, Latin America, the Middle East, North Africa and Sub-Saharan Africa.

References

IMF 2018, *World Economic Outlook—groups and aggregate information*, International Monetary Fund, Washington, DC, accessed 23 January 2018.

Strengthening world growth to lift incomes and food demand

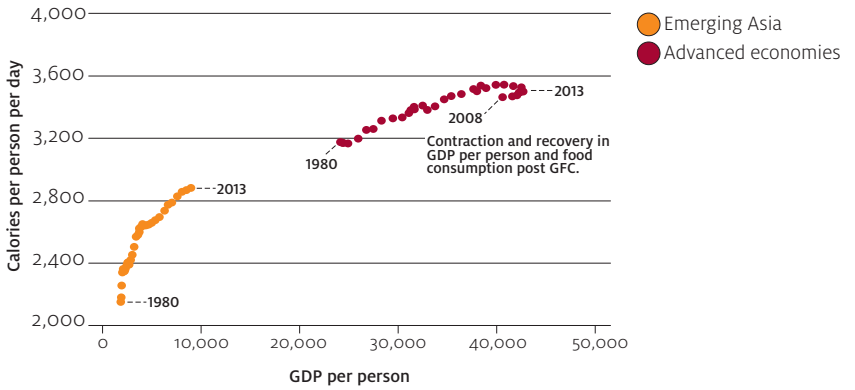
Gross domestic product (GDP) per person is an indicator of income and an important determinant of food demand, particularly for emerging and developing countries where a large proportion of household income is spent on food. The fastest increase in food consumption has been in countries where incomes have grown most rapidly.

In advanced economies, growth in GDP per person is assumed to slow from 1.8 per cent in 2017 to an average of 1.4 per cent between 2020 and 2023. In emerging and developing economies, it is assumed to accelerate from 3.3 per cent in 2017 to average 3.8 per cent between 2020 and 2023. The improving outlook for these lower-income economies is due largely to assumed strong growth in India and South-East Asia and economic recoveries in Latin America and the Middle East. Growth in China is also expected to remain robust over the outlook period.

GDP per person in emerging Asia increased fivefold between 1980 and 2013, driven by rapid development in China. Over the same period, food consumption (measured by calories per person per day) increased by 34 per cent. Although growth in GDP per person in emerging Asia has slowed in recent years, growth in food demand is expected to be maintained as incomes continue to rise. Moreover, the expansion of the Asian middle class over the past 30 years has provided a significant market opportunity for agricultural exporters.

Between 1980 and 2013 food consumption in advanced economies increased at a lower rate (10 per cent) than emerging Asia. This is consistent with the comparatively slower income growth over the same period and the smaller proportion of household income typically spent on food in higher-income countries. In 2008 and 2009 GDP per person contracted sharply following the global financial crisis (GFC), leading to reduced food consumption per person in advanced economies in those years.

Changes in calorie consumption and GDP per person, emerging Asia and advanced economies, 1980 to 2013



Note: GDP per person is measured in purchasing power parity (in 2011 international dollars).
Sources: ABARES; Food and Agriculture Organization of the United Nations; International Monetary Fund

Australian agriculture and food producers have benefited from rising food demand in Asia. Over the 10 years to 2016–17 the share of Australia's total farm exports shipped to Asia increased from 52 per cent to 69 per cent. The fastest growing export destinations over this period included China, India, Indonesia, the Philippines, the Republic of Korea and Vietnam. Prospects for ongoing export growth to Asia are favourable given assumed economic growth in emerging Asia over the outlook period.

Key macroeconomic assumptions, 2016 to 2023

	unit	2016	2017 a	2018 a	2019 a	2020 a	2021 a	2022 a	2023 a
Economic growth									
World b	%	3.2	3.6	3.7	3.7	3.6	3.6	3.5	3.5
Advanced economies	%	1.7	2.3	2.2	2.0	1.8	1.8	1.7	1.7
United States	%	1.5	2.3	2.5	2.3	2.1	2.0	2.0	1.8
Japan	%	1.0	1.7	1.2	0.8	0.2	0.7	0.6	0.6
Eurozone	%	1.8	2.5	2.0	1.8	1.6	1.5	1.5	1.5
Germany	%	1.9	2.5	2.3	2.0	1.7	1.5	1.5	1.5
France	%	1.2	1.8	1.7	1.6	1.5	1.5	1.4	1.3
Italy	%	0.9	1.5	1.1	1.0	1.0	0.9	0.9	0.7
United Kingdom	%	1.8	1.7	1.4	1.3	1.3	1.5	1.6	1.6
Korea, Rep. of	%	2.8	3.1	3.0	2.8	2.8	2.8	2.7	2.7
New Zealand	%	3.6	2.7	3.0	3.6	3.0	2.6	2.1	2.5
Emerging and developing economies	%	4.3	4.5	4.8	4.9	4.8	4.8	4.7	4.6
Emerging Asia	%	6.4	6.2	6.4	6.3	6.2	6.1	5.9	5.9
South-East Asia **c**	%	4.9	5.2	5.3	5.2	5.1	5.0	5.0	5.0
China **d**	%	6.7	6.9	6.6	6.4	6.2	6.0	5.8	5.6
India	%	7.9	6.3	7.5	7.8	7.9	7.8	7.5	7.5
Latin America	%	– 0.9	1.2	1.9	2.4	2.6	2.7	2.7	2.7
Middle East and North Africa	%	5.1	2.2	3.2	3.2	3.3	3.5	3.5	3.5
Eastern Europe	%	3.1	4.5	3.5	3.3	3.2	3.2	3.2	3.2
Russian Federation	%	– 0.2	1.8	1.6	1.5	1.5	1.5	1.5	1.5
Ukraine	%	2.3	2.0	3.2	3.5	3.7	4.0	4.0	4.0
GDP per person e									
Advanced economies	%	1.2	1.8	1.8	1.5	1.4	1.4	1.4	1.4
Emerging and developing economies	%	2.9	3.3	3.6	3.7	3.8	3.8	3.8	3.8
Emerging Asia	%	5.3	5.4	5.5	5.5	5.5	5.5	5.4	5.4
Inflation									
United States	%	1.3	2.1	2.0	2.0	2.0	2.0	2.0	2.0
Interest rates									
US prime rate **g**	% pa	3.5	4.1	4.8	5.5	5.9	5.9	5.9	5.9

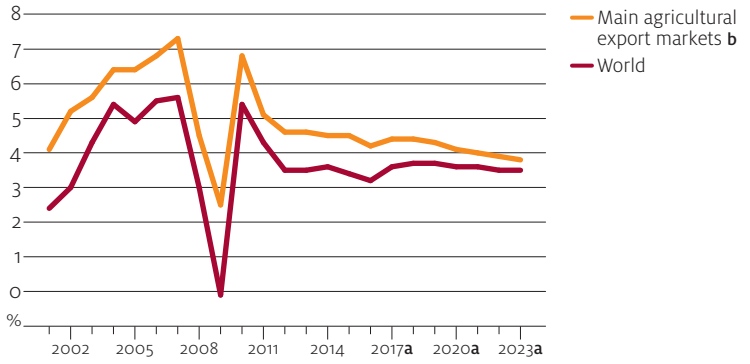
a ABARES assumption. **b** Weighted using 2016 purchasing power parity (PPP) valuation of country gross domestic product by the International Monetary Fund. **c** Indonesia, Malaysia, the Philippines, Thailand and Vietnam. **d** Excludes Hong Kong. **e** Expressed in purchasing power parity. **g** Commercial bank prime lending rates in the United States.

Sources: ABARES; Indian Ministry of Statistics and Programme Implementation; International Monetary Fund; United Nations Population Division; US Bureau of Labor Statistics; US Federal Reserve

Economic prospects for Australia's main agricultural export markets

In 2017 economic growth in Australia's 10 largest agricultural export markets increased by 4.4 per cent, in aggregate. Growth is expected to slow over the outlook period as advanced economies return to their potential growth and growth in China slows. However, growth in Australian export markets is assumed to remain above the global average.

Economic growth in Australia's main agricultural export markets, 2001 to 2023



a ABARES assumption. **b** Australia's 10 largest agricultural export markets, as determined by the value of exports in 2016–17 are China, the United States, Japan, Indonesia, the Republic of Korea, New Zealand, India, Vietnam, Malaysia and Hong Kong.
Source: ABARES; International Monetary Fund

Chinese economy continues to grow strongly

China's economy grew in 2017 (by 6.9 per cent) slightly faster than in the previous year, largely due to expansionary fiscal policy and accommodative financial conditions. Real economic growth is assumed to slow to 6.6 per cent in 2018 and 6.4 per cent in 2019 as infrastructure investment declines and authorities address financial sector risk by tightening lending conditions and reducing corporate debt.

The services sector remained the leading driver of growth in China, growing by 8.0 per cent year-on-year in 2017. The industrial sector grew by 6.1 per cent in the same period, driven by demand from increased residential construction and government infrastructure investment. In 2018 and 2019 the services sector is expected to continue to be the leading driver of economic growth as incomes rise. Growth in the industrial sector is expected to slow due to various reforms to reduce spare capacity and pollution.

Over the medium term, growth is expected to moderate to 5.9 per cent on average (in real terms), reflecting an ongoing transition from heavy industry and export-orientated growth to consumption and services-based growth. An important downside risk to China's outlook is its high corporate sector debt, which has the potential to reduce economic growth if loan defaults rise and lending is compromised. An economic slowdown in China would reduce global growth through a contraction in trade, lower commodity prices and weaker market and consumer confidence.

Upside risk to growth in the United States

Expansion in the US economy continued in 2017, with growth accelerating from 1.5 per cent in 2016 to 2.3 per cent. It is assumed that the economy will continue to perform strongly in 2018 and 2019 because of the tight labour market, accommodative monetary policy and fiscal stimulus from reductions in corporate and personal income taxes. Economic growth is assumed to return to potential growth of 1.8 per cent by 2023.

The fundamentals of the US economy continued to strengthen in 2017. In December 2017 the unemployment rate was the lowest in 17 years at 4.1 per cent. Tight labour market conditions are expected to continue in 2018 and 2019, maintaining upward pressure on wages and supporting household consumption growth. Reductions in personal income tax brackets introduced on 1 January 2018 could also provide additional support to household consumption in the short term.

Non-residential investment increased by 4.7 per cent in 2017. This improvement is in line with strengthening domestic demand, a sharp increase in global growth and generally higher prices for oil. These factors, along with rebuilding from Hurricane Harvey and a reduction in the federal corporate tax rate from 35 per cent to 21 per cent (effective 1 January 2018), are expected to stimulate investment in 2018 and 2019.

Against this backdrop of economic expansion, the US Federal Reserve is assumed to increase interest rates by 0.7 percentage points to 2.1 per cent in 2018 and a further 0.6 percentage points to 2.7 per cent in 2019. Despite these assumed increases, monetary policy should remain accommodative over the next two years, and support an assumed expansion in the economy and steady rise in inflation to 2 per cent by 2019.

Improved economic growth prospects for Japan and the Republic of Korea

In 2017 the Japanese economy is expected to grow by 1.7 per cent, and ease to an assumed 1.2 per cent in 2018 and to 0.8 per cent in 2019. By 2023 growth is expected to be 0.6 per cent, largely reflecting the declining output of Japan's ageing workforce.

Economic growth in Japan accelerated sharply in 2017, driven by broad-based growth. Exports grew by 6.3 per cent year-on-year in the September quarter 2017, mainly due to strong global demand for information technology and capital goods. Over the same period, private investment grew by 3.6 per cent. This was a result of supportive financial conditions and improving corporate profits, particularly in sectors exposed to trade. Exports and investment are assumed to continue to contribute positively to growth in 2018 and 2019—although not as strongly as in 2017.

In 2017 Japan's labour market continued to tighten, with the unemployment rate falling to 2.8 per cent year-on-year in December 2017. The tight labour market is expected to put upward pressure on wages, encouraging household consumption growth in the short term.

In 2017 the Republic of Korea also benefitted from increased global economic activity, with its economy growing by 3.1 per cent. In 2018 Korea's economic growth is assumed to be 3 per cent, reflecting strong global conditions. In 2019 economic growth is assumed to decline slightly to 2.8 per cent as demand from advanced economies begins to slow. Over the outlook period, economic growth is forecast to return to its potential growth of 2.7 per cent.

Broad-based growth in the eurozone

Economic growth in the eurozone increased by 2.5 per cent in 2017, well above its potential of 1.4 per cent. Growth is assumed to slow gradually over the outlook period but to remain above its potential in 2018 and 2019. Between 2020 and 2023 economic growth is assumed to increase by an average of 1.5 per cent per year.

Economic growth in the eurozone increased markedly in the second half of 2017. Growth was broad-based, with contributions from household consumption, investment and exports. Household consumption growth is expected to remain strong in the short term as a result of elevated consumer confidence. Steadily rising corporate profits and favourable lending conditions are expected to continue to stimulate growth in investment. Export growth strengthened sharply in 2017 and is expected to remain firm as the assumed acceleration in global growth in 2018 and 2019 stimulates global trade.

The outlook for the eurozone over the medium term is expected to be supported by a continued improvement in labour markets, accommodative monetary policy and recovery in the global economy.

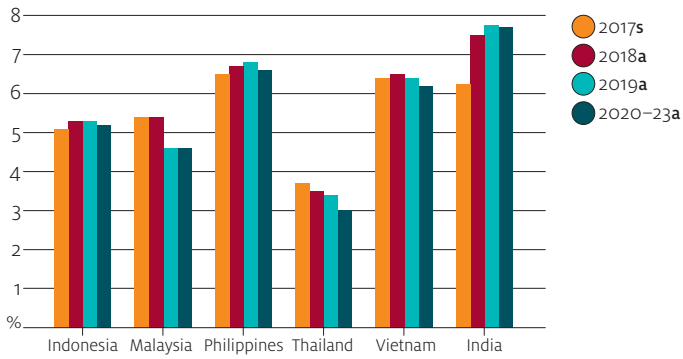
Limiting factors for economic growth include ongoing low productivity, structural rigidities in labour markets and an ageing population. Uncertainties over the outlook also exist. Despite improvements in the financial system, high debt-to-GDP ratios and significant non-performing loans in some member countries create vulnerabilities. Negotiations with the United Kingdom over its departure from the European Union could also reduce economic growth in the eurozone through disruptions to confidence and trade.

Growth in emerging Asia driven by increased export demand

South-East Asia

In 2017 economic growth in South-East Asia is expected to increase to 5.2 per cent, compared with 4.9 per cent in 2016. In 2018 growth is assumed to increase to 5.3 per cent, reflecting strong export demand and increased investment. By 2023 economic growth is assumed to ease to 5.0 per cent in line with global growth.

Economic growth, selected South-East Asian countries and India, 2017 to 2023



a ABARES assumption. **s** ABARES estimate.
Source: ABARES; Asian Development Bank; Indian Government Ministry of Statistics and Program Implementation; International Monetary Fund

Investment grew strongly in South-East Asia in 2017. Heightened business confidence stemming from increased global demand improved private investment across the region. Government spending also increased with commencement of major infrastructure works in countries such as Indonesia, the Philippines and Thailand. These projects are large scale and are expected to contribute positively to growth over 2018 and 2019.

Risks to the outlook for South-East Asia stem from the timing of interest rate increases in the United States and the pace of global growth. Faster than expected interest rate increases could slow growth across the region through reduced foreign direct investment and increased uncertainty in financial markets. Slower than expected growth in major global economies, particularly China, could reduce economic growth in trade-exposed countries in the region.

India

In 2017 India's economy slowed to an estimated 6.3 per cent because of the lingering effects of demonetisation in November 2016 and the introduction of a goods and services tax in July 2017. In 2018 economic growth is assumed to rebound to 7.5 per cent, reflecting an adjustment by consumers and businesses to the reforms. Over the medium term, economic growth is assumed to accelerate further, assuming that rising tax revenue enables increased government expenditure and structural reforms improve business conditions.

Australian economy

Economic growth in Australia is assumed to be 2.5 per cent in 2017–18 and 3.0 per cent in 2018–19, driven by stronger business investment. Government consumption and investment, and household consumption are also assumed to contribute to growth.

These growth assumptions for Australia have upside and downside risks. In 2017–18 and 2018–19 upside risks include stronger than expected growth in investment. Economic indicators suggest that conditions for non-mining investment are favourable. This includes above average business conditions, improved profits for non-mining businesses and an upward revision to investment intentions in 2017, particularly in the services sector. An important downside risk to the outlook is the uncertainty around household consumption. Ongoing weak income growth and high household debt could slow household consumption growth because savings have already fallen substantially to supplement current consumption.

Between 2019–20 and 2022–23 the Australian economy is assumed to grow by 3 per cent a year, 0.25 percentage points higher than its potential growth.

Inflation to gradually rise over outlook period

Inflationary pressures remain weak as a result of low wage growth, vigorous competition in the retail sector and subdued rental costs. In 2017–18 inflation is assumed to be 2 per cent, before rising to 2.3 per cent in 2018–19 in line with a strengthening economy. From 2019–20 to 2022–23 inflation is expected to rise further to 2.5 per cent, as spare capacity in the economy is slowly absorbed with above-potential growth.

Australian dollar to average US78 cents in 2017–18

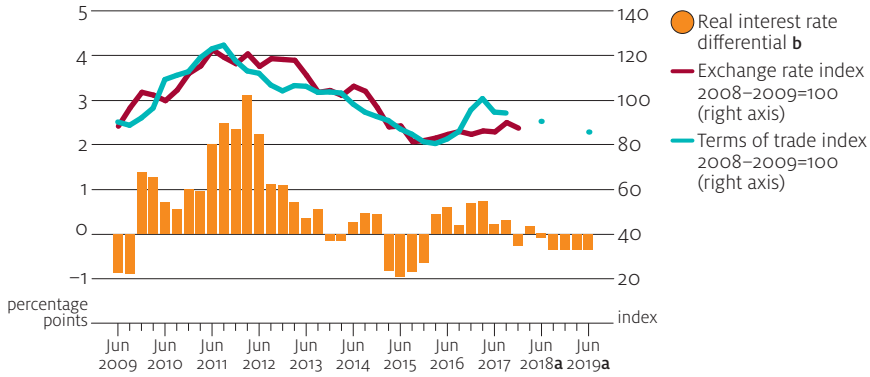
In 2017–18 the Australian dollar is assumed to average US78 cents and to have a trade-weighted index value of 66. In 2018–19 the Australian dollar is assumed to depreciate and average US76 cents and have a trade-weighted value of 65. Over the medium term, the dollar is assumed to average US74 cents and have a trade-weighted value of 64.

These exchange rate assumptions are based on the historical relationship between the Australian dollar, Australian terms of trade and prevailing interest rates in other major economies, particularly the United States. It is assumed that the Australian terms of trade will decline gradually between 2017–18 and 2018–19, driven mainly by falling prices for iron ore and metallurgical coal in response to increased global supply and weaker Chinese demand growth. This is expected to exert downward pressure on the Australian dollar.

Additional downward pressure on the Australian dollar is assumed to come from a contraction and subsequent reversal of interest rate differentials. US GDP growth is assumed to remain above potential over the outlook period, encouraging the US Federal Reserve to increase interest rates. In Australia, economic growth was sub-par in 2016–17 at 2.0 per cent and is only expected to exceed potential growth in 2018–19. As a result, interest rates in the United States are expected to rise at a faster rate than in Australia over this period, exerting downward pressure on the Australian dollar.

Upside risks to the exchange rate assumptions include stronger than expected global demand for Australian bulk commodities (particularly iron ore and metallurgical coal), disruptions to global supply due to natural disasters, or policy changes aimed at reducing capacity in producing nations such as China. These factors could increase the average prices received for Australian exports, improve Australia's terms of trade and exert upward pressure on the Australian dollar.

Terms of trade and exchange rate indexes and real interest rate differential, Australia, June 2009 to June 2019



a ABARES assumption. **b** The spread between the Australian and the US two-year government bond yields.
Sources: Australian Bureau of Statistics; Reserve Bank of Australia; The Treasury

Key macroeconomic assumptions for Australia

	unit	2015–16	2016–17	2017–18 a	2018–19 a	2019–20 a	2020–21 a	2021–22 a	2022–23 a
Economic growth	%	2.8	2.0	2.5	3.0	3.0	3.0	3.0	3.0
Inflation	%	1.4	1.7	2.0	2.3	2.5	2.5	2.5	2.5
Interest rates **b**	% pa	4.0	3.7	3.7	4.2	4.9	5.4	5.8	6.0
Nominal exchange rates									
A$/US$	US$	0.73	0.75	0.78	0.76	0.74	0.74	0.74	0.74
Trade-weighted index									
for A$ **c**	index	61.9	64.8	65.6	65.0	64.0	64.0	64.0	64.0

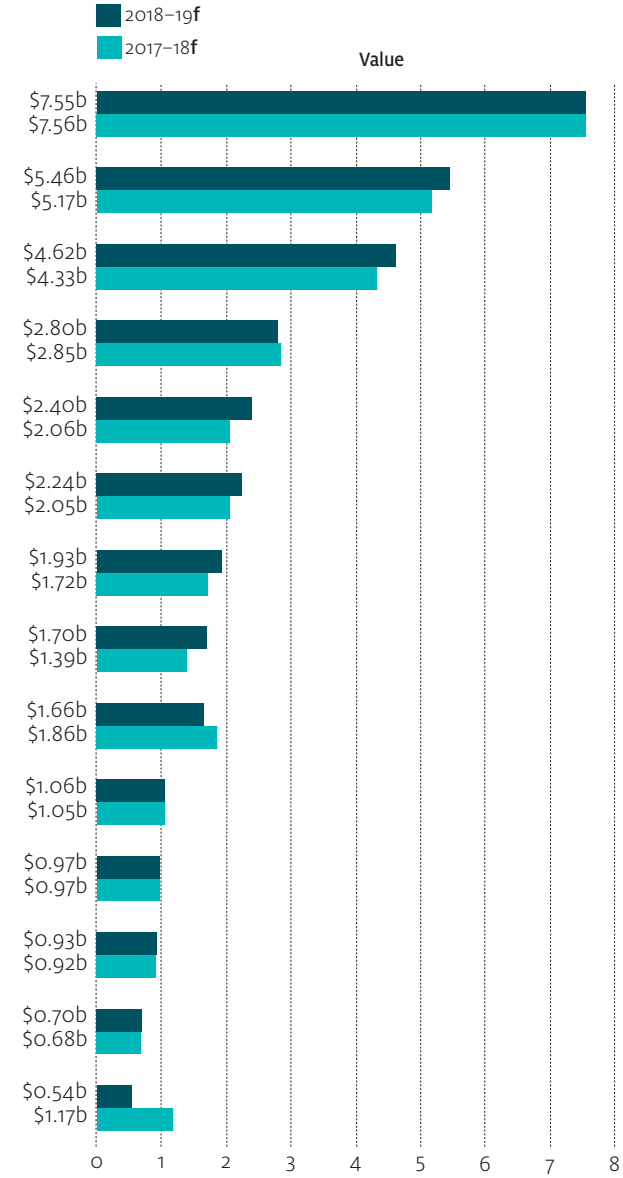
a ABARES assumption. **b** Large business weighted-average variable rate on credit outstanding. **c** Base: May 1970 = 100.
Sources: ABARES; Australian Bureau of Statistics; Reserve Bank of Australia

Major indicators of Australia's agriculture and natural resources based sector

		2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Exchange rate	US$/A$	0.73	0.75	0.78	0.76	0.74	0.74	0.74	0.74
Australian export unit returns a									
Farm	index	100.0	100.1	102.0	103.5	105.6	107.9	110.1	112.8
real **b**	index	100.0	98.4	98.4	97.7	97.1	96.8	96.4	96.4
Value of exports									
Farm	A$m	44,794	48,993	47,225	48,479	50,184	51,400	53,525	56,028
real **b**	A$m	46,451	49,952	47,225	47,412	47,883	47,846	48,610	49,642
Crops	A$m	22,529	27,988	24,445	25,069	25,698	26,033	27,059	28,472
real **b**	A$m	23,362	28,536	24,445	24,517	24,519	24,233	24,574	25,226
Livestock	A$m	22,265	21,004	22,780	23,410	24,486	25,367	26,466	27,556
real **b**	A$m	23,089	21,416	22,780	22,895	23,363	23,614	24,036	24,415
Fisheries products	A$m	1,542	1,435	1,503	1,520	1,557	1,594	1,634	1,674
real **b**	A$m	1,599	1,463	1,503	1,487	1,486	1,484	1,484	1,484
Gross value of production c									
Farm	A$m	56,643	62,331	58,999	60,687	62,494	64,496	67,120	70,544
real **b**	A$m	58,738	63,551	58,999	59,351	59,628	60,037	60,956	62,503
Crops	A$m	27,880	33,993	30,196	31,104	31,844	33,058	34,244	36,078
real **b**	A$m	28,911	34,659	30,196	30,419	30,384	30,772	31,100	31,966
Livestock	A$m	28,763	28,337	28,804	29,583	30,650	31,438	32,876	34,466
real **b**	A$m	29,827	28,892	28,804	28,932	29,244	29,265	29,857	30,538
Fisheries products	A$m	3,026	2,910	2,904	2,999	3,116	3,229	3,342	3,458
real **b**	A$m	3,138	2,967	2,904	2,933	2,973	3,006	3,035	3,064
Forestry products	A$m	2,270	2,539	2,442	2,352	2,271	2,242	2,216	2,192
real **b**	A$m	2,354	2,588	2,442	2,301	2,167	2,087	2,013	1,942
Volume of production d									
Farm	index	120.8	132.6	122.2	124.9	126.6	128.4	131.0	135.9
Crops	index	130.2	167.1	133.4	141.4	142.5	143.7	145.6	154.9
Livestock	index	111.1	103.7	110.9	108.7	110.8	113.0	116.0	118.5
Forestry	index	142.2	155.1	147.7	140.9	134.6	132.2	129.9	127.8
Production area and livestock numbers									
Crop area									
grains and oilseeds	'000 ha	21,337	23,696	23,429	23,073	22,643	22,693	22,782	23,006
Sheep	million	67.5	70.2	70.5	72.3	73.5	74.2	74.7	75.0
Cattle	million	25.0	25.9	26.4	26.9	27.2	27.3	27.3	27.5
Farm sector									
Net cash income e	A$m	23,653	27,808	24,261	23,431	22,615	23,038	22,121	26,335
real **b**	A$m	24,528	28,352	24,261	22,915	21,578	21,445	20,090	23,333
Net value of farm production g	A$m	18,127	22,186	18,526	17,567	16,605	16,877	15,807	19,867
real **b**	A$m	18,797	22,620	18,526	17,180	15,844	15,711	14,355	17,602
Farmers' terms of trade h	index	109.2	110.3	108.9	106.1	103.9	102.2	101.6	101.7

a Base: 2015–16 = 100. **b** In 2017–18 Australian dollars. **c** For a definition of the gross value of farm production see Table 13. **d** Chain-weighted basis using Fisher's ideal index with a reference year of 1997–98 = 100. **e** Gross value of farm production less total cash costs. **f** ABARES forecast. **g** Gross value of farm production less total farm costs. **h** Ratio of index of prices received by farmers and index of prices paid by farmers, with a reference year of 1997–98 = 100. **s** ABARES estimate. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics; Reserve Bank of Australia

Major Australian agricultural commodity exports



	2018–19f		
	Volume	Price **a**	Value
Beef and veal	3%	–3%	0%
Wheat	–3%	9%	6%
Wool	2%	4%	7%
Wine	0%	–2%	–2%
Cotton	5%	11%	17%
Lamb	7%	2%	9%
Barley	7%	4%	12%
Canola	23%	–1%	22%
Sugar	1%	–11%	–11%
Live feeder/ slaughter cattle	4%	–3%	1%
Cheese	0%	1%	0%
Mutton	–4%	4%	0%
Rock lobster	0%	3%	4%
Chickpeas	–37%	–27%	–54%

a All commodities are export unit returns in A$. **f** ABARES forecast.

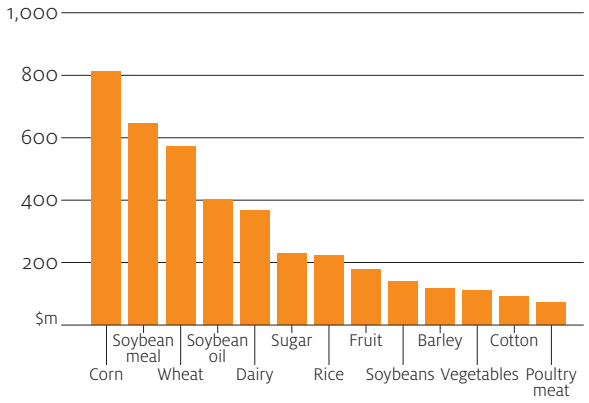
Peru–Australia Free Trade Agreement

James Fell

Australia and Peru concluded the Peru–Australia Free Trade Agreement (PAFTA) on 10 November 2017. The agreement will enter into force when both countries complete their domestic treaty-making processes. PAFTA could provide opportunities to Australian agricultural producers of beef, dairy, kangaroo, sheep, sugar cane, wheat and wine grapes.

Peru is a new market for Australian agricultural exporters. In 2016 Peru's total agricultural imports were valued at $5.7 billion. Its major agricultural imports were coarse grains, soybean meal and wheat. Peru also imports dairy products (mostly infant formula and milk powders), sugar, rice, fruit, vegetables and cotton. In 2016–17 Australia's agricultural exports to Peru were valued at $4.1 million and are expected to grow once PAFTA enters into force. Australia's top three agricultural exports to Peru were dairy at $2.8 million, nursery at $0.4 million and cocoa powder at $0.3 million.

Agricultural imports, Peru, 2016



Note: Values converted from US dollars to Australian dollars using average exchange rate for 2016.
Source: UN Statistics Division

Consistent with Australia's other free trade agreements, the low tariffs on Australia's imports from Peru will be eliminated. In 2016–17 Australian imports of agricultural products from Peru totalled $55.8 million, including vegetables at $17.0 million (mostly asparagus), fruit and nuts at $12.7 million (mostly frozen varieties), coffee at $9.0 million and quinoa at $4.1 million.

Key outcomes for agricultural exports to Peru

PAFTA provides guaranteed duty-free quotas for Australian dairy, sugar, grain sorghum and rice. These quotas will exempt Australian exports from the variable tariffs that Peru applies under its domestic price band system. A component of these variable tariffs can be up to 20 per cent, which is largely prohibitive for the import of some commodities.

continued ...

Peru–Australia Free Trade Agreement continued

When the agreement enters into force, Australian dairy farmers will gain a duty-free quota of 7,000 tonnes. This quota will grow to 10,000 tonnes after ten years. Australia's dairy product exports to Peru in 2016–17 were 677 tonnes, valued at $2.8 million.

Sugarcane growers were granted a duty-free quota of 30,000 tonnes. This will grow to 60,000 tonnes after five years and 90,000 tonnes after 18 years. For grain sorghum, the initial duty-free quota of 15,000 tonnes will increase to 20,000 tonnes after five years. Australian rice will have a duty-free quota of 9,000 tonnes, growing to 14,000 tonnes after five years.

Peru's tariffs on imported Australian beef will be eliminated within five years of PAFTA entering into force. This will put Australian beef farmers on equal footing with the United States, a major competitor that gained duty-free access under the 2009 United States–Peru Free Trade Agreement. Peru's most favoured nation tariffs for fresh and frozen beef are currently up to 17 per cent.

When PAFTA enters into force, duty-free access will be granted immediately to Australian almonds, kangaroo meat, seafood, sheep meat, wheat and wine.

Seasonal conditions in Australia

Nicholas Perndt and Katherina Ng

Rainfall at the start of summer 2017–18 was well above average in Western Australia and parts of south-eastern Australia. Since then, above average rainfall has been recorded across western and northern Australia, but prolonged high temperatures and drier than normal conditions have prevailed across eastern Australia. These conditions have been unfavourable for soil moisture levels and on-farm water supplies.

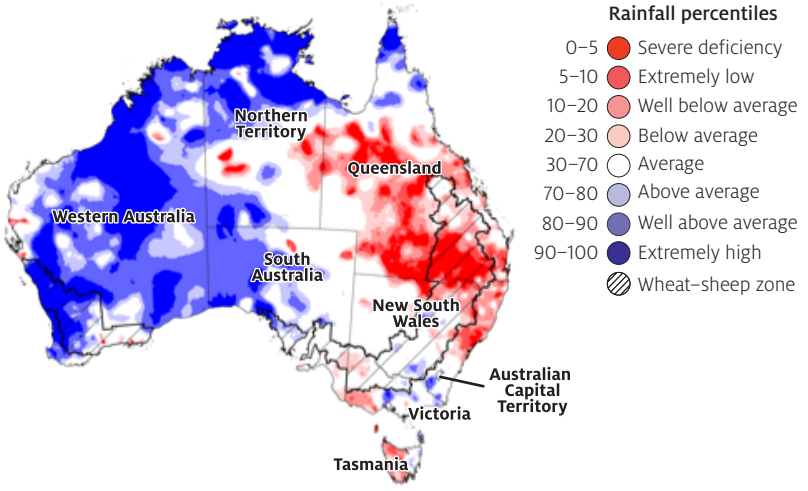
Modelled pasture growth was above average in large parts of western, northern and south-eastern Australia for the November to January period and below average in northern and central Queensland, and Tasmania—reflecting summer rainfall and temperature patterns. If drier and warmer than normal conditions continue, soil moisture available for crops and pastures may be limited ahead of the winter cropping season.

Recent climatic conditions

Rainfall in January 2018 was generally well above average in western and northern parts of the country and well below average across the east (Map 1). Severely deficient to below average rainfall was recorded throughout most of Queensland, north-eastern New South Wales, western Victoria and western Tasmania. In contrast, above average to extremely high rainfall was recorded in western parts of Western Australia and northern parts of the Northern Territory. Much of the rainfall in Western Australia was associated with Tropical Cyclone Joyce, following its landfall in early January 2018. The system weakened to a tropical low and brought heavy rainfall from north-western to south-western Australia.

January rainfall in cropping regions was generally below average in Queensland, northern New South Wales, western Victoria and eastern South Australia, and above average in Western Australia.

MAP 1 Rainfall percentiles, Australia, 1 to 31 January 2018



Note: Rainfall for January 2018 compared with rainfall recorded for that period during the historical record (1900 to present).
Source: Bureau of Meteorology

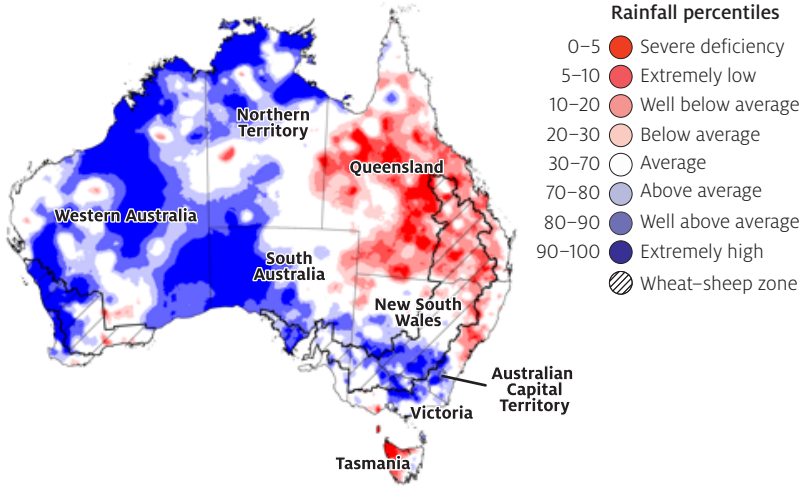
continued ...

Seasonal conditions in Australia continued

For the three months to January 2018 rainfall was well above average in western, northern and south-eastern Australia and well below average in large parts of Queensland and western Tasmania (Map 2)

In the cropping regions, rainfall from 1 November 2017 to 31 January 2018 was well below average in Queensland and above average in Western Australia, South Australia, eastern Victoria and southern New South Wales.

MAP 2 Rainfall percentiles, Australia, 1 November 2017 to 31 January 2018



Note: Rainfall for November 2017 to January 2018 compared with rainfall recorded for that period during the historical record (1900 to present).
Source: Bureau of Meteorology

Unseasonal January heat

January was an exceptionally warm month for Australia as a whole. The monthly mean temperature was the third-warmest on record for January. The mean maximum temperature was equal eighth-warmest and the mean minimum temperature was equal fifth-warmest. Across much of southern and eastern Australia, severe heatwaves resulted in prolonged periods of temperatures ranging between 39 °C and 45 °C. These temperatures were in excess of 10 degrees above average for this time of year, and have resulted in significantly higher than average mean temperatures across southern Queensland, New South Wales, Victoria, Tasmania and eastern South Australia (Map 3). Mean maximum temperatures for January 2018 were in excess of 33 °C across much of the country.

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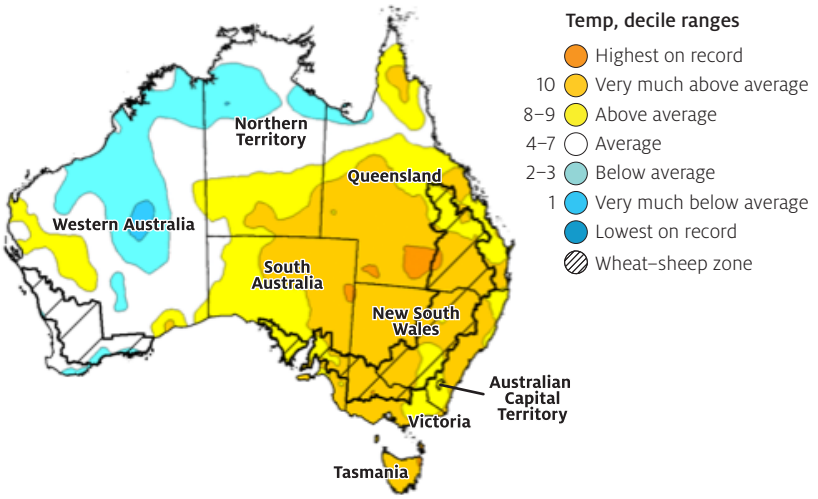
Seasonal conditions in Australia continued

MAP 3 Mean temperature deciles, Australia, 1 to 31 January 2018



Note: Mean temperature deciles for January 2018 compared with mean temperature for that period during the historical record (1911 to present).
Source: Bureau of Meteorology

Above average temperatures and rainfall deficiencies across much of southern Australia have increased soil moisture deficiencies in some areas. These factors are likely to have increased moisture stress in dryland crops, such as grain sorghum, pasture and horticultural crops. The January heat is also expected to increase water demand for irrigated pastures and crops such as cotton. Hotter and drier than average conditions may also force livestock producers to purchase feed or sell stock.

Recent soil moisture levels

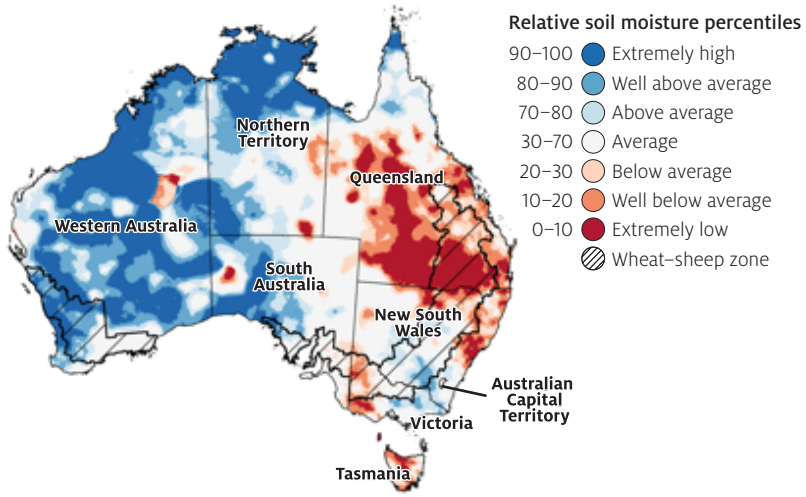
In January 2018 relative upper layer soil moisture was well below average to extremely low across large areas of Queensland and adjacent parts of north-east New South Wales, and parts of western Victoria and Tasmania (Map 4). It was well above average across parts of southern New South Wales, eastern Victoria and much of the western half of Australia, and close to average across the remainder of the country.

In summer cropping regions, upper layer soil moisture was extremely low in southern Queensland and below average to average in northern New South Wales. In contrast, it was average or above average in southern New South Wales.

continued ...

Seasonal conditions in Australia continued

MAP 4 Modelled upper layer soil moisture, Australia, 1 to 31 January 2018



Note: Soil moisture estimates are relative to the long-term record and ranked in percentiles. Estimates are used to compare root zone soil moisture from January 2018 and ranked by percentiles for each January in the 1911–2015 historical reference period. Upper layer soil moisture is defined as the soil surface to 0.1 metres in depth.
Source: Bureau of Meteorology (Australian Water Resources Assessment Landscape model)

Relative lower layer soil moisture for January 2018 was extremely low to well below average across much of Queensland, northern New South Wales, western Victoria, parts of eastern South Australia, eastern Northern Territory and much of Tasmania (Map 5). It was average to extremely high across most of Western Australia, the Northern Territory and much of South Australia.

In cropping regions, lower layer soil moisture was extremely low to well below average in Queensland and northern New South Wales, and below average in Victoria and eastern South Australia. It was average to well above average in cropping regions in southern New South Wales, western South Australia and Western Australia.

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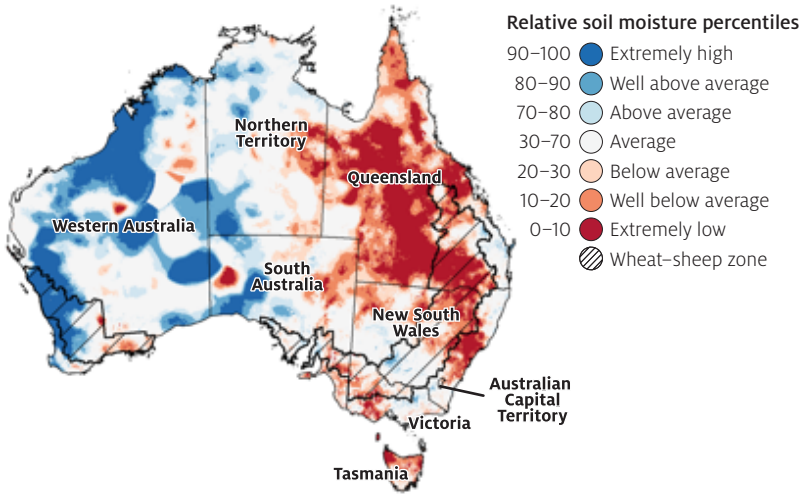
Seasonal conditions in Australia continued

MAP 5 Modelled lower layer soil moisture, Australia, 1 to 31 January 2018



Note: Soil moisture estimates are relative to the long-term record and ranked in percentiles. Estimates are used to compare lower layer soil moisture from January 2018 and ranked according to percentiles for each January in the 1911–2015 historical reference period. Lower layer soil moisture is defined as 0.1 to 1.0 metres in depth.
Source: Bureau of Meteorology (Australian Water Resources Assessment Landscape model)

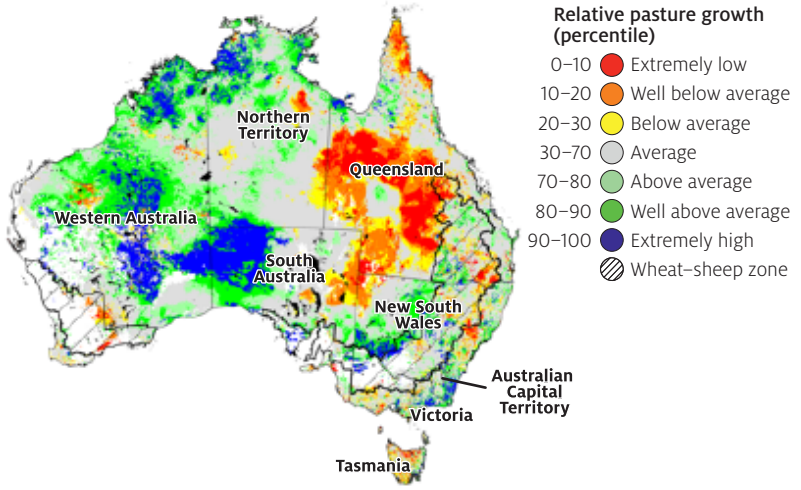
Recent pasture growth

For the three months to January 2018 modelled pasture growth was well above average to extremely high across large parts of northern and central Western Australia, western South Australia, northern and southern areas of the Northern Territory, and central and coastal areas of New South Wales. In contrast, modelled pasture growth was well below average to extremely low in most of northern and central Queensland, much of Tasmania and isolated areas in eastern South Australia and western New South Wales (Map 6).

continued ...

Seasonal conditions in Australia continued

MAP 6 Relative pasture growth, Australia, 1 November 2017 to 31 January 2018



Note: AussieGRASS pasture growth estimates are relative to the long-term record and shown in percentiles. Percentiles rank data on a scale of zero to 100. This analysis ranks the pasture growth for the selected period against the average pasture growth for the long-term record (1957 to 2016). Pasture growth is modelled at 5 km² grid cells.
Source: Queensland Department of Science, Information Technology and Innovation

Climate outlook

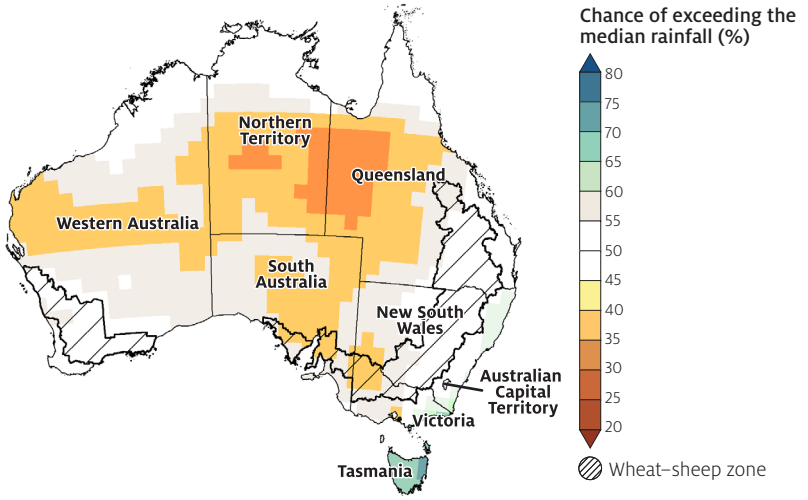
The Bureau of Meteorology's mid-month climate outlook for March to May 2018 indicates a lower than normal chance of exceeding the median rainfall across large areas of central Australia, including parts of Western Australia, southern parts of the Northern Territory, western Queensland, eastern South Australia, and parts of western Victoria (Map 7). In contrast, Tasmania is more likely to have above average rainfall during the next three months.

The mid-month March to May 2018 outlook is showing little influence from Australia's typical climate drivers, with most in a neutral phase. Other ocean and atmosphere patterns are therefore likely to determine the likely rainfall/temperature outcome. Weak La Niña conditions in the tropical Pacific Ocean has had a correspondingly weak impact on the Australian climate.

continued ...

Seasonal conditions in Australia continued

MAP 7 Rainfall outlook, Australia, March to May 2018



Note: Rainfall climate outlook maps show the likelihood, as a percentage, of exceeding the 1981–2010 median rainfall for the upcoming three months. Median rainfall is defined as the 50th percentile calculated from the 1981–2010 reference period.
Source: Bureau of Meteorology

The La Niña continues to decline and is expected to end by early autumn. The breakdown of several weak La Niña events in the past (e.g., 1907, 1925, 1930, 1943, and 2009) have also led to dry conditions in some areas during the autumn period.

Seasonal conditions during the coming months will be crucial for winter crop planting for the 2018–19 season. Without sufficient rainfall across some key growing regions in eastern Australia, the area planted to winter crops in these regions could be well below average. Similarly, insufficient rainfall would also affect herd and flock rebuilding.

Australian agriculture overview

Matthew Howden, Peter Martin, Rohan Nelson and Kirk Zammit

- Gross value of farm production is expected to decline by 5 per cent to $59 billion in 2017–18, reflecting an assumed return to average seasonal conditions, before increasing by 3 per cent to $61 billion in 2018–19.
- In 2017–18 farm incomes are forecast to fall but are expected to remain high in historical terms.
- Over the outlook period, farm incomes for livestock operations are forecast to grow faster than for cropping farms, reflecting a more favourable outlook for livestock prices.
- Gross value of production is forecast to grow steadily over the outlook period to reach $63 billion by 2022–23 (in 2017–18 dollars). Strong demand for livestock and some horticultural products, and improved productivity in cropping, are expected to support growth.

Australian farm production forecast to be $59 billion in 2017–18

The gross value of farm production is expected to decline by 5 per cent in 2017–18 to $59 billion. This is largely due to a forecast 11 per cent fall in the gross value of crops, following record production in 2016–17. This is mainly a result of lower production of wheat, following a return to less favourable seasonal conditions in 2017. In 2017 closer to average seasonal conditions globally are expected to result in a decline in world production and exports of most cereal crops. This is expected to result in modestly higher prices from historically low levels.

The gross value of livestock production is expected to increase by 2 per cent in 2017–18. This will be driven by growth in the production of sheep and lamb, wool and dairy, following several years of herd and flock rebuilding and generally favourable prices. A resurgent US beef industry is competing strongly in Australia's major export markets, causing prices to fall while remaining at profitable levels. Strong demand in Asia, particularly China, is forecast to continue to support higher export prices for lamb, wool and dairy products.

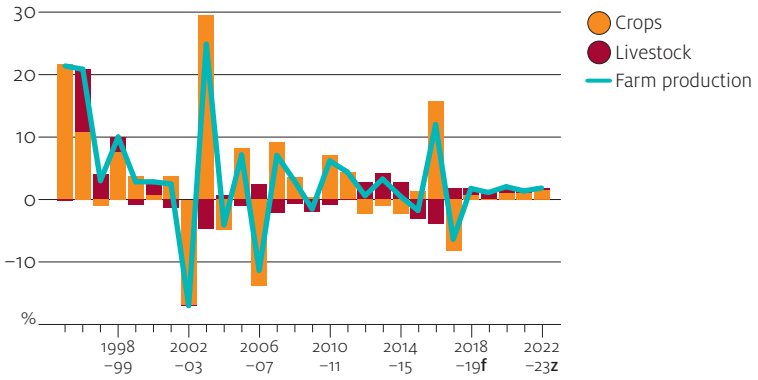
In 2018–19 the gross value of farm production is forecast to increase by 3 per cent to $61 billion. Assuming seasonal conditions remain closer to the long-term average, winter crop production is forecast to improve compared with 2017–18. The gross value of livestock production is also forecast to be higher, assuming increased production more than offsets declining beef prices, and export demand for wool and dairy products continues to grow.

Steady growth in farm production over the medium term

From 2018–19 to 2022–23 the gross value of farm production is forecast to increase by an average of around 1.2 per cent per year, reaching $63 billion (in 2017–18 dollars). The steady rise is based on a set of demand and supply assumptions. On the demand side, we assume recovery in world economic growth will translate into higher per person incomes in most of Australia's main export markets, supporting stronger demand. On the supply side, we assume production consistent with average seasonal conditions in Australia and globally.

These assumptions result in relatively smooth production forecasts that can be thought of as trend, but do not capture the historical year-on-year variability of agricultural production in Australia. Variability in production largely reflects changing seasonal conditions that are difficult to predict accurately beyond the current season. Seasonal conditions have significant implications for crop yields and livestock production cycles. Other uncertainties over the outlook period include natural disasters, disease outbreaks and potential major policy shifts.

Change in production volume, crop and livestock sectors, 1995–96 to 2022–23

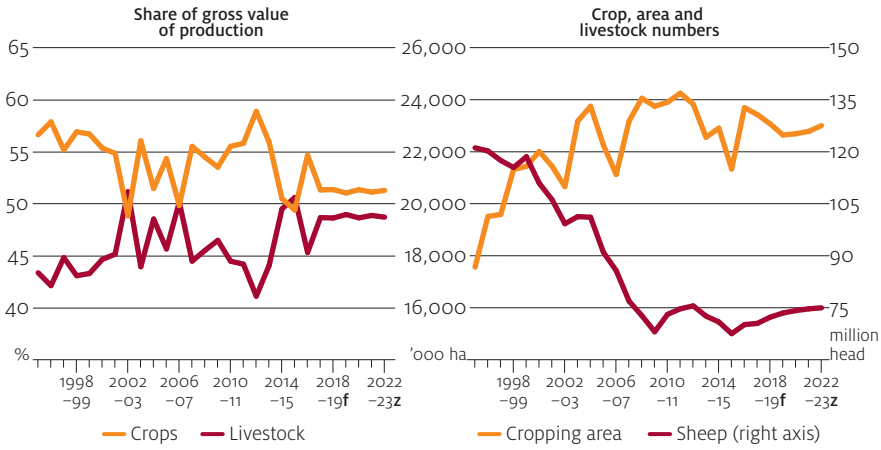


f ABARES forecast. **z** ABARES projection.
Note: Changes in production by commodity group are calculated on a chain-weighted basis using Fisher's ideal index with a reference year of 2017–18=100.
Sources: ABARES; Australian Bureau of Statistics

Livestock increasing its share of the value of farm production

The gross value of farm production is estimated to have increased at an average annual rate of 2 per cent over the six years to 2017–18 (in 2017–18 dollars). This period of growth coincided with strong demand for Australia's exports, favourable global market prices for livestock and a depreciating Australian dollar relative to the US dollar. Over this period, faster growth in the livestock sector led to an increase in the sector's share of the gross value of farm production, from 41 per cent in 2012–13 to around 49 per cent in 2017–18. This was mainly the result of increases in the volume and price of beef exported. Drought induced turn-off of cattle coincided with a period of strong demand from the United States and China, causing beef prices to increase rapidly. Returns to producers were further supported by a weaker Australian dollar. Export demand for high-quality meat and dairy products has also grown because of rising incomes, changing consumer preferences and increasing urbanisation in emerging and developing economies. In contrast, strong competition from low-cost exporters such as those in the Black Sea region has resulted in persistently low prices for Australian wheat and coarse grains. These trends are forecast to continue over the outlook period. Despite the strong rise in crop production in 2016–17, growth has been generally weak over the six years to 2017–18.

Australian production mix, 1995–96 to 2022–23



f ABARES forecast. **z** ABARES projection.
Source: ABARES; Australian Bureau of Statistics

Over the six years to 2016–17 producers have responded to high livestock prices by turning off stock. The number of sheep and cattle have since stabilised and are expected to rise with livestock prices forecast to remain relatively strong over the outlook period. However, the rate of herd and flock expansion is expected to be constrained by relatively high turn-off.

Strong financial performance by Australian broadacre farms

ABARES uses preliminary farm survey data to project farm income for 2017–18. For around half of Australian broadacre farms, farm cash income in this period is expected to decline from very high levels as a result of reduced grain production in most regions and lower prices for beef cattle. Farm cash income for broadacre farms is forecast to average $191,000 per farm nationally. This would be a decline from the 2016–17 average of $212,600, which was the highest farm cash income recorded over the past 20 years.

In 2017–18 the overall financial performance of Australian broadacre farms is expected to remain high in historical terms. Farm cash income for beef industry farms is forecast to decline from a national average of $150,600 per farm in 2016–17 to $132,000 in 2017–18, but remain 60 per cent above the 10-year average to 2016–17. Farm cash income for wheat and other crop farms is forecast to decline, reflecting a fall in production volumes, from a national average of $426,500 per farm in 2016–17 to $266,000 per farm in 2017–18. This is around 5 per cent below the 10-year average to 2016–17 (in real terms).

Sheep and dairy farm incomes are expected to increase in 2017–18. Higher wool, sheep and lamb prices are forecast to result in a 35 per cent increase to $170,000 in average farm cash income for sheep industry farms. This would be the highest farm cash income recorded for the sheep industry in more than 20 years. Nationally, dairy farm cash income is forecast to increase from an average of $89,600 per farm in 2016–17 to average $137,000 per farm in 2017–18. Farm cash income for dairy farms is forecast to increase in Victoria, South Australia and Tasmania as a result of higher milk prices and increased milk production. In New South Wales, Queensland and Western Australia, farm cash income is forecast to decline slightly as drier seasonal conditions result in increased fodder expenditure and reduced milk production.

ABARES medium-term projections for farm incomes are generally positive, assuming a major drought or other shock does not occur. ABARES medium-term projections suggest that the incomes of livestock farms are likely to grow faster than those of cropping farms. Beef export prices are forecast to remain high in historical terms and support farm profitability. Crop prices are forecast to stay low in historical terms, but incomes are likely to be bolstered by productivity gains resulting from the re-investment of recent high returns in land, machinery and infrastructure. Sheep prices are forecast to remain around historic highs. Increased wool and dairy prices are likely to support the profitability of these industries out to 2022–23.

Value of agricultural exports to rise

In 2017–18 the nominal value of farm exports is expected to decline by 4 per cent to $47 billion, in line with a return to more average winter crop production volumes. In 2018–19 the value of farm exports is forecast to increase by 3 per cent to $48 billion. From 2019–20 to 2022–23 the value of exports is forecast to increase by an average of 1.2 per cent per year, reaching $50 billion by 2022–23 (in 2017–18 dollars). These forecasts reflect a steady rise in productivity, assuming average seasonal conditions and ongoing favourable prices for livestock products. However, exports remain vulnerable to the same uncertainties associated with production. Risks to the outlook for exports include supply shocks in Australian or international markets, or unexpected economic events that affect economic growth, input costs or exchange rates.

Introduction of chain volume measures of farm exports

As of *Agricultural commodities: March quarter 2018*, ABARES is using chain volume measures (CVMs) to provide an estimate of Australian farm exports that is free of the direct effect of price changes. CVMs can therefore be thought of as a measure of quantity or 'volume'. CVMs are expressed in the dollars of a reference year.

CVMs allow the aggregation of many different types of commodities into broad groupings, such as total exports, crop exports and livestock exports. This is otherwise impossible because commodities have different physical measurements (for example, dairy products can be measured as fluid litres or solid kilograms). Aggregation allows a top-down view of economic activity, informs users of the performance of different commodity groups and shows to what extent changes in quantities and prices drive the nominal value of export growth.

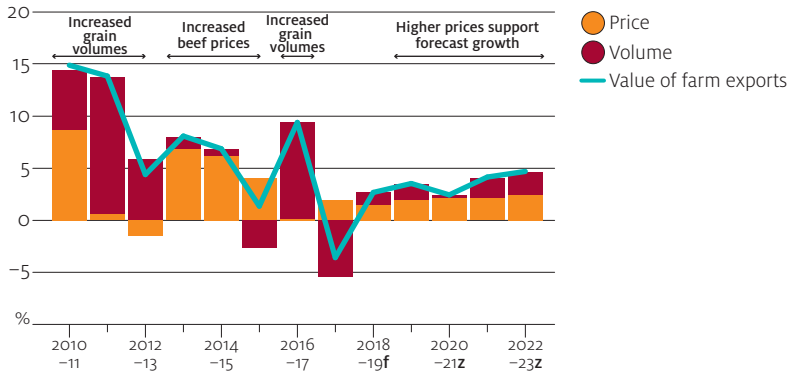
CVMs enable users to compare aggregates with other macroeconomic phenomena. This is because these and many other economic activity indicators are measured in dollars.

Recent contributions to farm export growth varied

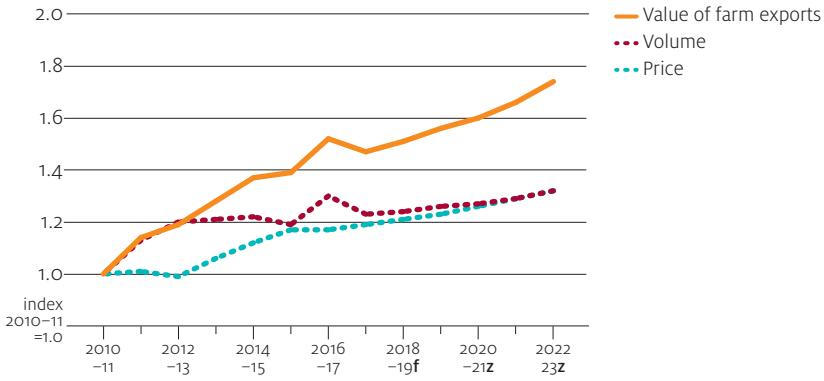
The value of farm exports was generally low throughout the 2000s due to prolonged drought. However, from 2010–11 to 2016–17 export growth recovered after a return to more favourable seasonal conditions allowed Australia's agricultural sector to respond to increased global demand. From 2012 demand for Australian agricultural exports was also bolstered by successive global supply shocks (reduced production by competing suppliers) and a lower Australian dollar.

From 2010–11 to 2012–13 increased exports of wheat and other grains contributed strongly to overall growth in the value of exports. In 2010–11 there was also a strong increase in agricultural commodity prices in response to recovery in global incomes, particularly in developing countries, following the adverse impact of the global financial crisis in 2008–09. From 2013–14 to 2015–16 the value of Australian exports continued to rise because of strong increases in the price of beef resulting from supply shortages in the United States. In 2016–17 grains were again the main contributor to the value of exports, illustrating the effect that positive supply shocks can have on export returns when prevailing prices are low. Over the projection period—assuming there are no supply shocks—grains and livestock are projected to make a more balanced contribution to growth in the value of exports.

Growth in nominal value of farm exports, contributions from price and volume, 2010–11 to 2022–23

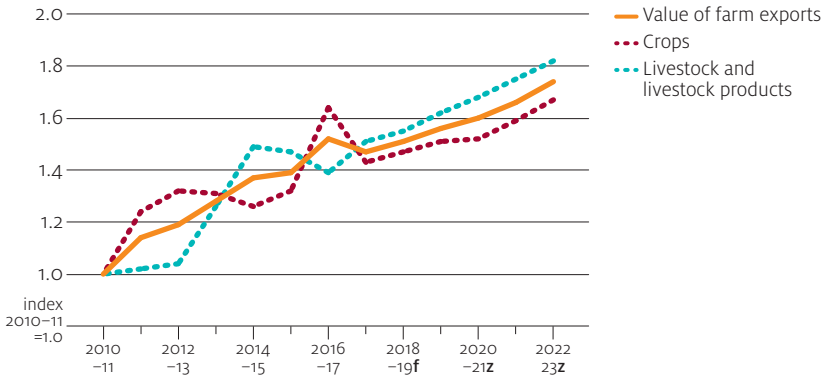


Growth in nominal value of farm exports, cumulative change in price and volume, 2010–11 to 2022–23



f ABARES forecast. **z** ABARES projection.
Note: The volume and price indexes are calculated on a chain-weighted basis using Fisher's ideal index.
Sources: ABARES; Australian Bureau of Statistics

Growth in nominal value of farm exports, cumulative change in the value of crops and livestock exported, 2010–11 to 2022–23



f ABARES forecast. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics

Agriculture

Crops

CROPS

↑6%
to **US$234/t**[a]
in 2018–19

Wheat

World wheat prices to recover slightly, from low levels due to lower tradeable supplies.

↑6%
to **US$189/t**[b]
in 2018–19

Coarse grains

World barley prices to rise due to low stocks and strong demand for feed and industrial-use coarse grains.

↓4%
to **US$410/t**[c]
in 2018–19

Oilseeds

World canola prices to fall due to abundant oilseed supplies.

↓9%
to **USc 13/lb**[d]
in 2018–19

Sugar

World sugar prices to fall due to world sugar supply growing faster than demand.

↑5%
to **USc 85/lb**[e]
in 2018–19

Cotton

World cotton prices to rise due to strengthening demand driven by consumer income growth.

a US no. 2 hard red winter, fob Gulf. **b** France feed barley, fob Rouen. **c** Europe rapeseed, fob Hamburg. **d** Intercontinental Exchange, nearby futures, no. 11 contract (October to September). **e** Cotlook 'A' index.

Wheat

Outlook to 2022–23

Tim Whitnall

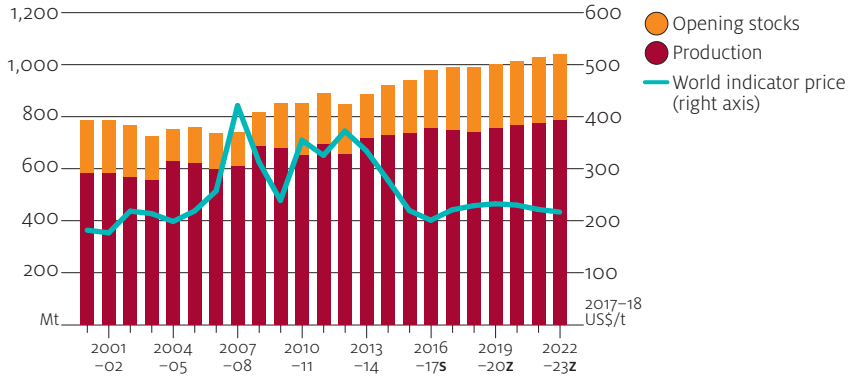
- In 2018–19 world wheat prices are projected to rise modestly from low levels and then fall from 2020–2021 for the rest of the projection period (in real terms).
- World wheat production is forecast to grow over the medium term, driven by productivity gains, particularly in the Black Sea region.
- Australian wheat production and exports are projected to grow over the medium term.

Prices to rise from historic lows

The world wheat indicator price (US no. 2 hard red winter, fob Gulf) is forecast to average US$234 per tonne in 2018–19—a 6 per cent rise from the forecast average of US$221 per tonne in 2017–18. Overall, production in the major wheat-exporting countries is forecast to fall (from very high levels) for the second consecutive year. This would reduce tradeable supplies and lead to some recovery in prices.

Prices are projected to rise in 2019–20 (in real terms). Exportable supplies in major exporting countries are expected to continue contracting as producers respond to low prices by planting less area to wheat. World wheat import demand is also expected to continue increasing due to population growth, changing diets and rising incomes. Prices are projected to then ease (in real terms) in each subsequent year to 2022–23, when productivity improvements in the Black Sea region cause supply to grow faster than demand and competition for export markets increases.

World wheat supply and price, 2000–01 to 2022–23



s ABARES estimate. z ABARES projection.

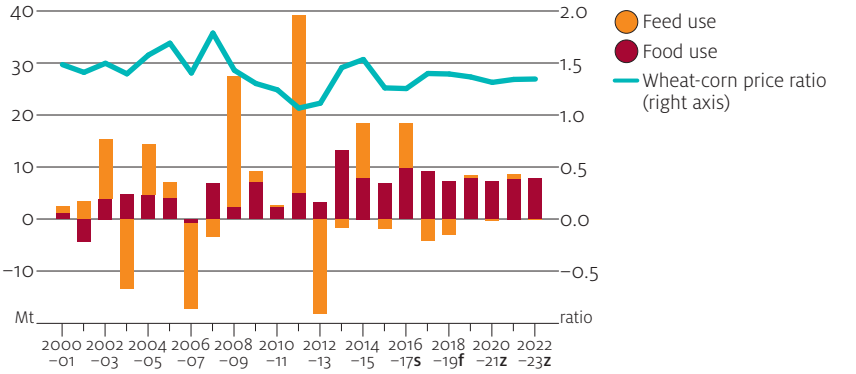
Wheat demand projected to rise

World wheat consumption is forecast to remain largely unchanged in 2018–19. An increase in human consumption of wheat is forecast to offset a 2 per cent fall in wheat for feed use because of strong competition from substitute feed grains.

Over the medium term, world wheat demand is expected to continue to grow. Demand for milling wheat is projected to increase as a result of population growth, changing diets and rising incomes in Asia. These factors are expected to more than offset falling per person consumption of wheat in western countries, including the United States and the European Union.

Milling wheat has few substitutes and the quantity demanded is relatively unresponsive to price changes. In contrast, demand for feed wheat is much more price sensitive, making consumption of feed wheat more volatile than milling wheat. Demand for all feed grains is projected to rise in the medium term because of projected higher meat and dairy production. However, consumption of feed wheat is expected to rise only marginally due to strong competition from low-cost substitute coarse grains, especially corn.

Year-on-year change in wheat consumption and wheat-corn price ratio, 2000–01 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

World production to fall in the short term but increase over the outlook period

In 2018–19 world wheat production is forecast to fall to 742 million tonnes, reflecting a slight fall in area planted and relatively unchanged average yields. Lower production is forecast in the Black Sea region and the European Union. This is expected to be driven by a decline from the above-average yields achieved in 2017–18 that resulted from exceptional seasonal conditions, particularly in the Russian Federation. This fall is expected to more than offset a slight recovery in production in Australia and the United States, following poor conditions in 2017–18.

Area planted globally to wheat is expected to fall by 1 per cent in 2018–19. Declines are expected in high-cost countries such as Australia, the United States and the European Union in response to ongoing low world prices. However, area is expected to continue to expand in Argentina and China, where producers are still adjusting to relatively recent government initiatives that have made wheat production more appealing. For example, in 2015 the Argentinian Government eliminated wheat export taxes and allowed the peso to devalue, and in 2016 the Chinese Government abolished the corn minimum support price.

Over the outlook period, production is expected to increase to 786 million tonnes in 2022–23. This rise is expected to stem from productivity improvements, including the adoption of higher-yielding varieties of wheat and improved farm practices that will increase average yields. Only a marginal rise in planted area is projected because relatively low world wheat prices provide little incentive for producers to expand.

World wheat trade to increase over the medium term

The volume of wheat exports is forecast to rise by 1 per cent in 2018–19 to a record 180 million tonnes. This mainly reflects increased milling wheat imports by the Middle East and North Africa, following a drawdown of stocks in 2017–18.

Over the medium term, projected higher production of wheat is expected to increase exports from most major exporting countries, especially in the Black Sea region. Black Sea wheat is generally more affordable than wheat from western countries because of relative costs of production. A depreciation of the Russian rouble in 2014 has also kept exchange rates favourable for exporters. The Russian Government has committed to investing in port capacity and export infrastructure, anticipating an expansion of wheat exports to North Africa and Asia.

For production of noodles and high-end bakery products, Asian processors generally see Black Sea wheat as inferior to hard, high-protein milling wheat from countries such as Australia, Canada and the United States. The Russian Federation also has a history of putting sudden export restrictions in place in times of drought, decreasing the reliability of supply. Recent export trends and local reports indicate that Black Sea wheat is gaining acceptance in more price-conscious Asian markets such as Indonesia, but it is unlikely to be considered fully substitutable in markets that value quality milling wheats. Future improvements in the quality and stability of Black Sea wheat exports could displace exports from higher-cost producers, including Australia.

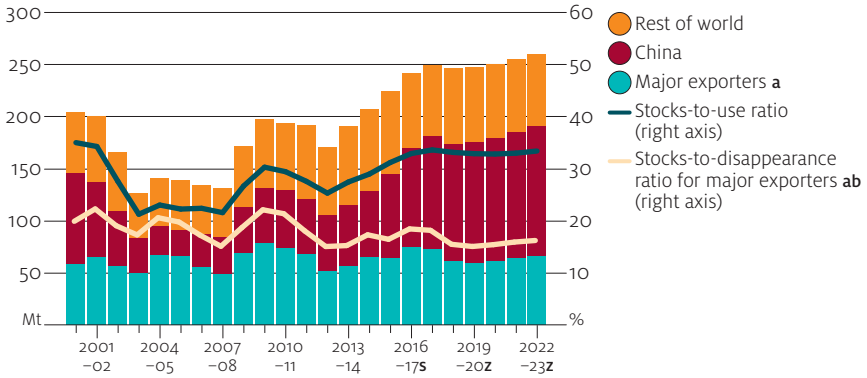
Chinese stocks to grow, but major exporter stocks to fall

World wheat stocks are projected to rise over the outlook period. However, almost all of this accumulation is expected in China. The Chinese Government operates a minimum price support scheme that buys domestically produced wheat at a higher price than current world prices to encourage domestic production. This support price is based on weight, providing producers with an incentive to prioritise quantity over quality when making growing decisions. This means much of the wheat entering stocks is likely to be of feed grade rather than high-quality milling wheat. Demand in China for feed wheat is currently low because domestic corn is much more affordable as a result of high stocks accumulating under a similar support price that was removed in 2016. The Chinese Government is considered likely to continue stockpiling wheat to maintain domestic prices over the outlook period.

By 2022–23 China is projected to hold almost half of the world's wheat stocks. This assumes that the Chinese Government will continue its domestic price support scheme in its current form, in line with its 2016–2020 five-year plan. Increasing wheat stocks could result in a government review of the scheme or its settings. For example, in October 2017 the government lowered the minimum support price by 2.5 per cent, from 2,360 to 2,300 yuan. This may indicate that the government is testing the effects of a lower price in preparation for further alterations to the scheme. If the government abolished or reduced the minimum wheat price, domestic prices and production would fall and marketing of China's large wheat stocks would be likely to increase. This would put downward pressure on world prices, particularly for feed wheat. For more information on China's grains support policies, see box *China's grain policies—an update*.

Stocks in major exporting countries are projected to fall over the first half of the outlook period when domestic consumption and exports outpace domestic production. The stocks-to-disappearance ratio for major exporters is projected to fall to 15 per cent in 2019–20—the lowest level since 2012–13. A falling stocks-to-disappearance ratio indicates a fall in availability of exportable supplies for the global market (typically occurring with rising prices or significant supply shocks). This means that world prices are expected to react more sharply in the event that poor seasonal conditions adversely affect crop development—representing an upside risk to the world indicator price projection.

World wheat closing stocks, 2000–01 to 2022–23



a Argentina, Australia, Canada, the European Union, Kazakhstan, the Russian Federation, Ukraine and the United States. **b** Disappearance defined as domestic consumption plus exports. **s** ABARES estimate. **z** ABARES projection.

Outlook for Australian wheat to 2022–23

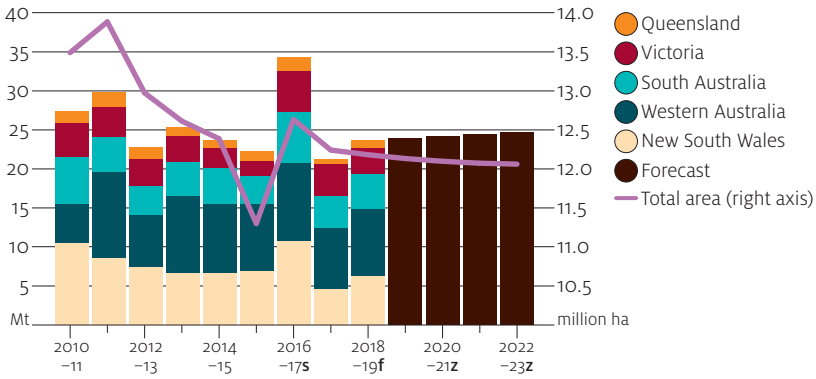
Wheat production to rise but area to fall

In 2018–19 area planted to wheat is forecast to remain relatively unchanged at 12 million hectares in response to low world prices. This will depend on climatic conditions leading into planting (March to June).

Assuming average seasonal conditions, wheat production is forecast to rise to 24 million tonnes in 2018–19. This reflects yields returning to trend after frosts, above average temperatures and dry conditions during the winter of 2017. These factors resulted in below average yields in Western Australia, New South Wales and Queensland in 2017–18.

Over the medium term, area planted to wheat is projected to fall because world prices are projected to remain near historic lows in real terms. However, wheat production is projected to continue to rise modestly, reaching 25 million tonnes in 2022–23 due to productivity improvements increasing yields.

Wheat production and area, Australia, 2010–11 to 2022–23



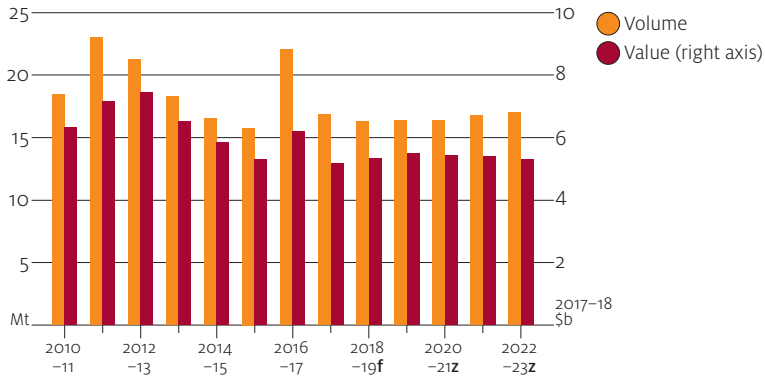
f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Wheat export shipments to fall in 2018–19 but rise over the medium term

Wheat exports are forecast to fall by 3 per cent to 16 million tonnes in 2018–19 despite higher production. In the first three months of 2017–18 exports were high, boosted by ample supplies from a record harvest the previous year. However, the lower volume of exports in 2018–19 is expected to be more than offset by higher average world prices and result in the value of exports rising to $5.5 billion.

Over the medium term, the volume of wheat exports is projected to rise in response to higher domestic production and increased import demand from Asia. The value of exports in nominal terms is projected to rise each year to 2022–23 but remain largely unchanged in real terms. This reflects higher export shipments and an assumed depreciation of the Australian dollar against the US dollar. However, other major exporters (particularly Canada, the Black Sea region and the United States) are expected to provide increased competition for Australian exports to key markets in South-East Asia.

Wheat exports, Australia, 2010–11 to 2022–23



f ABARES forecast. **z** ABARES projection.

Outlook for wheat

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World									
Area	million ha	225	222	221	220	222	223	224	224
Yield	t/ha	3.3	3.4	3.4	3.4	3.4	3.4	3.5	3.5
Production	Mt	736	754	750	742	755	766	776	786
Consumption	Mt	719	736	742	744	754	763	772	780
Closing stocks	Mt	224	242	250	248	250	252	256	262
Trade	Mt	166	176	178	180	182	184	188	191
Stocks-to-use ratio	%	31.2	32.9	33.8	33.4	33.1	33.0	33.2	33.6
Price **a**									
nominal	US$/t	211	197	221	234	242	244	241	240
real **b**	US$/t	220	201	221	229	233	230	222	217
Australia									
Area	’000 ha	11,282	12,634	12,237	12,176	12,127	12,091	12,066	12,054
Yield	t/ha	2.0	2.7	1.7	2.0	2.0	2.0	2.0	2.0
Production	kt	22,275	34,369	21,244	23,742	23,890	24,146	24,431	24,697
Export volume **c**	kt	15,777	22,057	16,828	16,287	16,379	16,363	16,467	16,552
Export value **c**									
nominal	A$m	5,120	6,094	5,174	5,462	5,765	5,843	5,813	5,814
real **d**	A$m	5,309	6,213	5,174	5,342	5,501	5,439	5,279	5,151
APW 10 net pool return									
nominal	A$/t	303	268	309	317	346	350	344	343
real **d**	A$/t	314	273	309	310	330	325	313	304

a US no. 2 hard red winter wheat, fob Gulf, July–June. **b** In 2017–18 US dollars. **c** July–June years. **d** In 2017–18 Australian dollars. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; International Grains Council; US Department of Agriculture

Coarse grains

Outlook to 2022–23

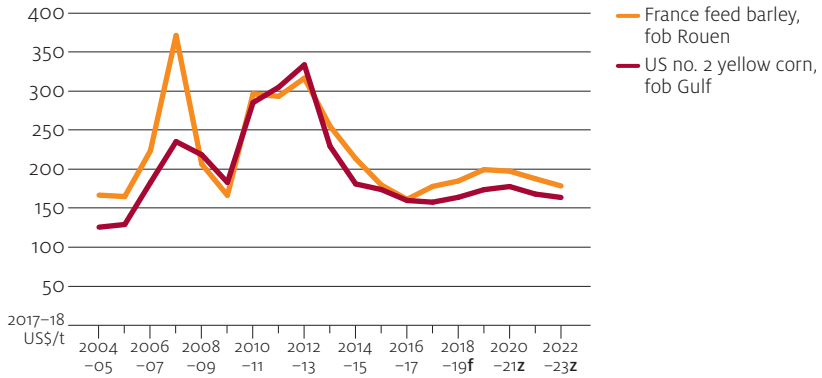
Amelia Brown

- World coarse grain indicator prices are forecast to increase in 2018–19. This trend will continue to 2020–21, reflecting a tightening of world grain stocks.
- Industrial use of corn to increase as China strives to meet policy goals for greater use of biofuels.
- Australian coarse grain production and exports forecast to increase in 2018–19 and continue to do so over the medium term to meet growing global demand.

Feed and industrial demand to increase prices

The 2018–19 world coarse grain indicator price (US no. 2 yellow corn, fob Gulf) is forecast to be US$167 per tonne. This is historically low but 6 per cent higher than the forecast for 2017–18. In 2018–19 the world indicator price for barley (France feed barley, fob Rouen) is also forecast to average 6 per cent higher at US$190 per tonne. This increase in prices reflects a fall from the very high world coarse grain supplies of 2016–17 and strong demand for coarse grains for feed and industrial use.

World coarse grains indicator prices, 2004–05 to 2022–23



f ABARES forecast. z ABARES projection.

Consecutive years of increasing global production were the result of favourable growing conditions in most major producing countries. Record corn yields in 2016–17 and 2017–18 in Brazil, China, Ukraine and the United States resulted in record world stocks and low prices.

In September 2017 China announced plans to set a nationwide ethanol blending mandate for the inclusion of E10 (10 per cent fuel ethanol and 90 per cent gasoline) in motor fuels by 2020 (see box *China's grain policies—an update*). If this ambitious target is reached, an estimated additional 40 million tonnes of corn per year (around 19 per cent of current global corn stocks) would be required to produce an additional 12 million tonnes of ethanol. This would have a significant impact on world coarse grain supplies.

China is currently the third-largest producer of ethanol after the United States and Brazil. If China's increased demand for ethanol cannot be met by domestic production, import demand will increase. In addition, it is unclear where these additional imports will be sourced because the US ethanol industry is close to capacity and Brazil, despite being a major producer, is currently a net importer of ethanol. The capacity for the US ethanol industry to expand to meet increased demand from China is expected to be limited over the projection period as a result of US biofuel policies and consumption mandates. However, if China relaxes import restrictions, the US industry may respond by increasing production capacity and exports, which would increase demand for corn.

Increasing demand for livestock products is expected to drive demand for coarse grains for livestock feed in developing countries. Demand for grain for human consumption is also expected to increase over the medium term in line with population growth and rising incomes in developing countries, particularly in Africa, Latin America and Asia.

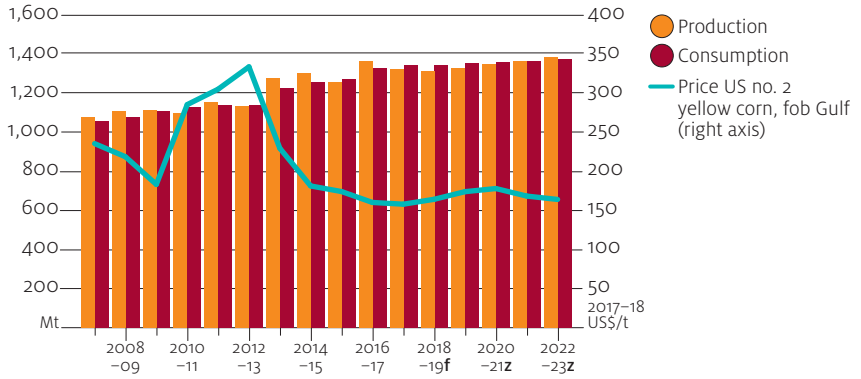
World coarse grain prices are forecast to increase in 2018–19 and continue to increase until 2020–21 (while remaining at historically low levels) as growth in supply is not expected to meet growing demand. Prices are expected to stabilise and then fall towards the end of the medium term as supply responds to higher prices.

World coarse grain stocks are projected to fall from very high levels in the short term—providing some support for prices—but to start to recover towards the end of the outlook period to 2022–23.

Production

In 2018–19 world production of coarse grains is forecast to fall marginally to 1.3 billion tonnes from the record highs reached in 2016–17 and 2017–18. Despite a 1 per cent increase in the area planted, yields are expected to return to trend after consecutive years of being above average. Over the remainder of the outlook period, growth is projected to resume and production to reach around 1.4 billion tonnes.

World coarse grain use, 2007–08 to 2022–23



f ABARES forecast. **z** ABARES projection.

Corn

World corn production is forecast to fall by 2 per cent in 2018–19 to just over 1 billion tonnes. Area planted to corn is expected to remain largely unchanged, but average yields are expected to be lower than the historically high yields achieved in the previous two seasons, particularly in Brazil, the United States and Ukraine. In 2018–19 US corn production is forecast to fall by 4 per cent to 357 million tonnes. This fall reflects an assumption that yields will be closer to the long-term average after successive records in 2016–17 and 2017–18.

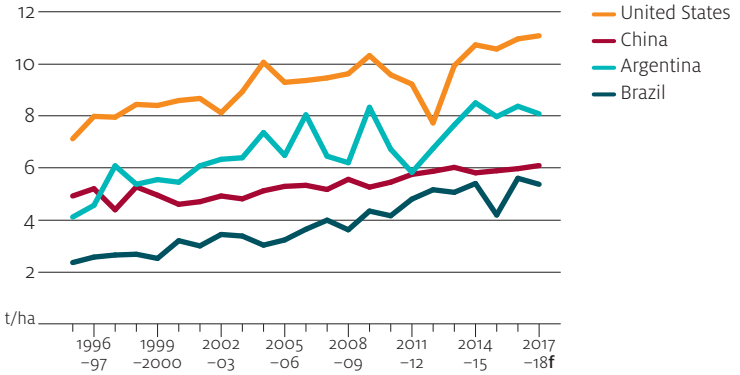
In Argentina, area planted to corn in 2018–19 is forecast to increase by 2 per cent to 5.3 million hectares. This reflects a continuation of the Argentine Government's policies to support corn production, including the removal of export restrictions and taxes on corn. Yields in Argentina are assumed to be around the five-year average, resulting in a 9 per cent increase in production to around 43 million tonnes.

Corn production in Brazil is forecast to fall by 4 per cent in 2018–19 to around 91 million tonnes. Yields lower than the previous season are expected to be partly offset by a 2 per cent increase in area planted. Brazilian corn production continues to trend upwards due to a significant production increase from its safrinha (second-season) crop. Second-season crop yields have been trending upwards but are more susceptible to production risks because the crops are planted after soybeans are harvested. If planting is delayed, the risk of reduced growing-season rainfall increases. Safrinha planted area is expected to continue to increase over the projection period.

In 2018–19 production of corn in China is forecast to fall for the third consecutive year to around 212 million tonnes, assuming yields will fall to around the five-year average. The area planted to corn is expected to be similar to the previous year, when it fell in response to the Chinese Government's March 2016 removal of the corn price support scheme.

From 2019–20 onwards, world corn production is projected to increase—reaching around 1.1 billion tonnes in 2022–23. Production increases are expected to come mainly from yield improvements. This is because limited land is available to expand crop production in developed countries. In developing and emerging countries where area expansion is possible, competition with soybeans is likely to limit the expansion of corn.

Average corn yields, 1995–96 to 2017–18



f ABARES forecast.

Barley

In 2018–19 world barley production is forecast to increase by 4 per cent to around 148 million tonnes. This will be driven by producers responding to higher prices by increasing the area planted by an estimated 3 per cent. This would be the highest production since 2015–16 and around 4 per cent above the five-year average. The area planted to barley is forecast to increase in all major producing countries.

EU production is forecast to increase by 5 per cent in 2018–19 to just over 61 million tonnes, following two consecutive years of falling production. Area planted to barley is forecast to increase marginally from 2017–18 in response to higher prices. Yields are assumed to return to average (with assumed average seasonal conditions) after a below average season the previous year.

Despite a 4 per cent assumed increase in the area planted to barley in the Russian Federation in 2018–19, production is forecast to fall by 9 per cent to around 18 million tonnes, reflecting lower average yields than the record achieved in 2017–18.

World barley production over the medium term is projected to rise as the area planted to barley increases moderately and average yields continue to trend upwards. After increasing in 2018–19, the area planted to barley in Australia, Canada and the European Union is expected to remain fairly flat, reflecting limited arable land. Area planted in Argentina and the Black Sea region is expected to increase moderately over the medium term, reflecting supportive government policies and an improved outlook for prices.

Consumption

In 2018–19 world coarse grain consumption is forecast to increase to just under 1.4 billion tonnes and continue to grow over the medium term. This mainly reflects increasing demand for feed grains from livestock production industries and continued increases in industrial demand, particularly for corn-based ethanol. Industrial use of barley is also expected to grow but at a slower rate than industrial-use corn, as demand for malting barley for beer production continues to grow.

Corn

Despite lower world production, consumption of corn in 2018–19 is forecast to increase by 1 per cent to just under 1.1 billion tonnes, reflecting ongoing increases in both feed and industrial demand.

In 2018–19 US corn consumption is forecast to reach a record high of around 320 million tonnes. This is due to low prices and strong demand for both feed use and industrial use. Growth in US corn consumption over the medium term is expected to be driven primarily by feed demand to increase the production of beef, pork and broiler meat. After growing rapidly over the last 10 years, demand for corn for ethanol production is expected to decrease from 2018–19. According to the US Department of Agriculture, falling domestic demand reflects a declining trend in US gasoline consumption due to factors including the adoption of more fuel-efficient vehicles. As ethanol production drops, production of distillers dried grains with solubles (DDGS), a co-product used as animal feed, will also drop, possibly resulting in increased demand for feed corn.

Corn consumption in China is forecast to increase to a record 229 million tonnes in 2018–19 due to increased feed and industrial use. The proposed ethanol blending mandate is expected to boost industrial use. Consumption of an additional 40 million tonnes of corn per year for ethanol production would rapidly deplete China's stocks. A domestic supply response to increasing prices can be reasonably expected, but China may supplement domestic production through imports of corn or ethanol. The result is likely to be lower world corn stocks and higher prices in the second half of the projection period.

Increased ethanol production in China would result in a rise in the co-production of DDGS, used as livestock feed. Increased availability of DDGS may reduce demand for other feed grains and feed supplements. DDGS is considered a lower-cost feed supplement compared with soymeal. However, DDGS has a higher protein, fat and fibre content than corn. This limits the amounts that can be used, depending on the animal.

World consumption of corn is projected to increase to over 1.1 billion tonnes by 2022–23. This will be driven by growth in world livestock production as a result of growing world population, evolving diets, higher incomes—especially in developing countries—and demand for corn-based ethanol.

Barley

In 2018–19 world barley consumption is forecast to increase slightly as production increases to meet strong demand for feed barley in China. Demand for malting barley is forecast to remain strong as beer consumption continues to increase, particularly in Asia.

Consumption of barley is projected to reach 157 million tonnes in 2022–23. Feed demand is expected to continue to increase, as a result of population growth and rising incomes in developing countries increasing demand for meat and providing price incentives to intensify livestock production. Increasing incomes will also lead to strong growth in world beer demand over the medium term, particularly in Asia, resulting in increased demand for malting barley.

Trade

In 2018–19 world trade in coarse grains is forecast to increase to 188 million tonnes. In countries such as Mexico and South-East Asia, livestock production continues to expand and increased import demand for feed corn and barley is expected. Exports of malting barley to Asia are also expected to increase from major producing countries like Australia, Canada and the European Union.

World trade in corn is projected to increase to 155 million tonnes by 2022–23. This primarily reflects increased demand for livestock feed. China is likely to import corn or ethanol, depending on the strategy used to meet its fuel ethanol mandate. An increase in China's ethanol imports will likely result in the United States diverting corn from feed export markets.

World trade in barley is projected to grow to 32 million tonnes in 2022–23. This reflects expected growth in world demand for feed and malting barley.

Stocks

In 2018–19 world coarse grain closing stocks are forecast to fall by 20 per cent to 187 million tonnes with reductions in corn stocks outweighing increases in barley stocks as continued growth in world coarse grain consumption outpaces production.

World closing stocks of corn are forecast to fall in 2018–19 by 23 per cent to 155 million tonnes. This fall mainly reflects a drawdown of stocks in China, the European Union and the United States as consumption continues to increase and production falls. In 2018–19 world closing stocks of barley are forecast to increase by 3 per cent to 19 million tonnes, the second-lowest level of stocks since 1983–84.

Outlook for Australian coarse grains to 2022–23

Area planted to coarse grains in 2018–19 is forecast to increase by 6 per cent to 5.6 million hectares. Area planted to barley and oats is expected to increase as the price of these crops rises from low levels, increasing their profitability relative to pulse crops. Rotational constraints are also likely to encourage planting of cereal crops after consecutive years of high pulse plantings. Increased demand for livestock feed and historically low global stocks are expected to continue to support barley prices.

Assuming average seasonal conditions, area planted to grain sorghum is forecast to increase by 23 per cent to around 618,000 hectares in 2018–19. This follows two consecutive years of below average plantings due to the greater profitability of cotton and low soil moisture at planting. Continued demand for ethanol production and livestock feed combined with low supply are expected to make grain sorghum production a profitable summer cropping option.

Area planted to coarse grains is projected to increase slowly, reaching around 5.7 million hectares by 2022–23. From 2019–20, area planted to barley is expected to remain relatively flat as the profitability of pulse, oilseed and livestock production limits planting. Assuming yields continue to increase modestly through productivity gains, total barley production is projected to reach 9.5 million tonnes by 2022–23.

Over the medium term grain sorghum area planted and yields are projected to increase, resulting in production reaching just over 2.0 million tonnes in 2022–23. Demand for feed grain from the domestic livestock sector is forecast to increase as is the number of grain-fed cattle in feedlots close to grain-producing regions in northern New South Wales and southern Queensland. The Dalby Bio-Refinery in southern Queensland will provide steady demand for grain sorghum.

Exports to increase

Australian coarse grain exports are forecast to be around 14 per cent higher in 2018–19, mainly reflecting a forecast increase in barley supply—which makes up the vast majority of coarse grain exports. Assuming continued growth in global demand, Australia is forecast to continue to be one of the biggest global exporters of barley. Grain sorghum exports are forecast to rise in 2018–19, assuming increased production. This follows two consecutive years of below average production due to adverse seasonal conditions.

By 2022–23 Australian coarse grain exports are projected to increase to around 9.1 million tonnes to meet growing world demand for feed grain. Demand for malting barley is projected to continue growing over the medium term to meet increasing demand for beer, particularly in Asia. Demand for grain sorghum for distilling baijiu (a Chinese alcoholic beverage made from grain sorghum) is expected to remain strong.

China's grain policies—an update

James Fell

ABARES published an overview of China's grain policies in *Agricultural commodities: June quarter 2017*. This box provides an update on significant changes since June 2017.

Between mid 2017 and January 2018 the Chinese Government announced several changes to its grain policies. China is a major producer, consumer and importer of coarse grains. Changes to its grain policies can therefore influence demand and supply on international grain markets and affect international prices.

Revision of wheat minimum purchase price

In late October 2017 China cut the commonly-quoted minimum purchase price for third-class wheat from 2,360 yuan per tonne to 2,300 yuan per tonne. The announcement came near the close of the winter wheat planting window, and is unlikely to result in reduced March to April spring wheat crop plantings. The relatively higher producer price of wheat continues to make it a significantly more attractive production option than alternatives such as barley, corn and soybeans. The relatively small reduction in the wheat minimum purchase price is not expected to affect China's domestic wheat production or import demand for Australian wheat.

Ethanol blend mandate

In September 2017 the Chinese Government announced a program to increase production and consumption of ethanol as a biofuel. The government indicated that the program is aimed at resolving the problem of high government stocks of corn, consistent with the 2017 No. 1 Central Document policy goal of reducing corn stocks. The announcement followed the abandonment of the corn minimum purchase price and the introduction of a market system for corn producers in 2016 after significant growth in corn stocks over several years. These stocks had imposed a growing financial burden on the government because of the estimated high proportion of publicly-held stocks in the total. The US Department of Agriculture estimates that total corn stocks nearly doubled between 2011–12 and 2015–16 to 111 million tonnes.

State media reported that the ethanol program would introduce a 10 per cent ethanol and 90 per cent petrol blend in motor fuel across the country. Once in place, it is estimated the program will result in consumption of around 12 million tonnes of ethanol, a calculation based on 2016 Chinese petrol consumption levels. This volume of ethanol would require around 40 million tonnes of corn per year, depending on ethanol yields. As a result, China's stocks of corn are projected to fall significantly over the medium term.

continued ...

China's grain policies—an update continued

In the September announcement, the Chinese Government also announced that it would promote ethanol production to ensure that increased demand for ethanol is filled solely by domestic production. To achieve this, China increased its most favoured nation (MFN) tariff for denatured ethanol from 5 per cent to 30 per cent on 1 January 2017—effectively raising the cost of imported ethanol for fuel vendors. The MFN tariff for undenatured ethanol remains unchanged at 40 per cent.

The by-product of producing ethanol from corn is dried distillers grains with solubles (DDGS), which is used as livestock feed. The production of 12 million tonnes of ethanol would result in additional supplies of around 12 million tonnes of DDGS, which is likely to compete with the 191 million tonnes of grain used as feed in China. The increased supplies of DDGS are expected to compete with Australia's exports of feed grains (mostly barley and grain sorghum). As a result, the ethanol blend mandate is likely to put downward pressure on demand for imported feed grains from Australia.

Value-added tax exemption for dried distillers grains with solubles

In mid November 2017, China announced that imports of corn DDGS would be exempt from the 11 per cent value-added tax (VAT), effective from 20 December 2017. The VAT exemption improves the price-competitiveness of DDGS relative to feed grains such as corn, barley and grain sorghum, and may put downward pressure on demand for imported Australian feed grains.

Outlook for coarse grains

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World									
Area	million ha	324	326	324	328	333	335	339	342
Yield	t/ha	3.9	4.2	4.1	4.0	4.0	4.1	4.1	4.2
Production	Mt	1,260	1,366	1,324	1,317	1,344	1,373	1,402	1,427
corn	Mt	973	1,076	1,045	1,026	1,046	1,067	1,088	1,106
barley	Mt	150	146	142	148	153	157	162	166
Consumption	Mt	1,273	1,328	1,347	1,364	1,377	1,388	1,398	1,408
corn	Mt	988	1,035	1,061	1,074	1,083	1,090	1,096	1,103
barley	Mt	146	149	146	148	150	152	154	157
Closing stocks	Mt	252	262	234	187	154	140	144	162
Trade	Mt	163	202	189	188	190	194	197	200
Stocks-to-use ratio	%	19.8	19.7	17.4	13.7	11.2	10.1	10.3	11.5
Corn price **a**									
nominal	US$/t	168	157	158	167	173	182	175	174
real **b**	US$/t	174	160	158	164	166	172	162	158
Barley price **c**									
nominal	US$/t	173	158	180	190	200	202	196	190
real **b**	US$/t	180	162	180	187	192	190	181	172
Australia									
Area									
barley	’000 ha	4,108	4,035	3,878	4,000	4,010	4,020	4,030	4,040
oats	’000 ha	821	914	742	818	825	828	830	831
triticale	’000 ha	78.4	99.4	77.4	85.0	87.0	89.0	91.0	93.0
grain sorghum	’000 ha	521	396	501	618	620	625	627	629
corn	’000 ha	53.3	62.9	56.1	62.0	62.5	63.0	64.0	65.0
total	’000 ha	5,581	5,507	5,254	5,583	5,605	5,625	5,642	5,658
Production									
barley	kt	8,992	13,414	8,928	9,000	9,100	9,300	9,400	9,500
oats	kt	1,300	1,873	1,119	1,305	1,330	1,348	1,365	1,380
triticale	kt	127	255	114	156	165	178	191	205
grain sorghum	kt	1,791	1,017	1,465	1,941	1,953	1,981	2,000	2,019
corn	kt	400	514	383	461	470	475	480	485
total	kt	12,610	17,073	12,008	12,863	13,018	13,282	13,436	13,589
Export volume	kt	6,845	10,708	6,960	7,900	8,522	8,690	8,907	9,053
Export value									
nominal	A$m	2,280	2,797	1,963	2,287	2,523	2,596	2,694	2,837
real **b**	A$m	2,364	2,851	1,963	2,237	2,407	2,416	2,446	2,514
Price – nominal									
feed barley **e**	A$/t	237	174	236	238	243	248	246	243
malting barley **g**	A$/t	274	188	250	257	262	267	265	262
grain sorghum **h**	A$/t	275	239	298	306	311	315	313	300
Price – real **d**									
feed barley **e**	A$/t	246	177	236	233	232	231	223	215
malting barley **g**	A$/t	284	192	250	251	250	249	241	232
grain sorghum **h**	A$/t	285	243	298	300	297	293	284	266

a US no. 2 yellow corn, fob Gulf, July–June. **b** In 2017–18 US dollars. **c** France feed barley, fob Rouen, July–June. **d** In 2017–18 Australian dollars. **e** Feed 1, delivered Geelong. **f** ABARES forecast. **g** Gairdner Malt 1, delivered Geelong. **h** Gross unit value of production. **s** ABARES forecast. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; FranceAgriMer; UN Commodity Trade Statistics Database (UN Comtrade); US Department of Agriculture

Oilseeds

Outlook to 2022–23

Nathan Pitts

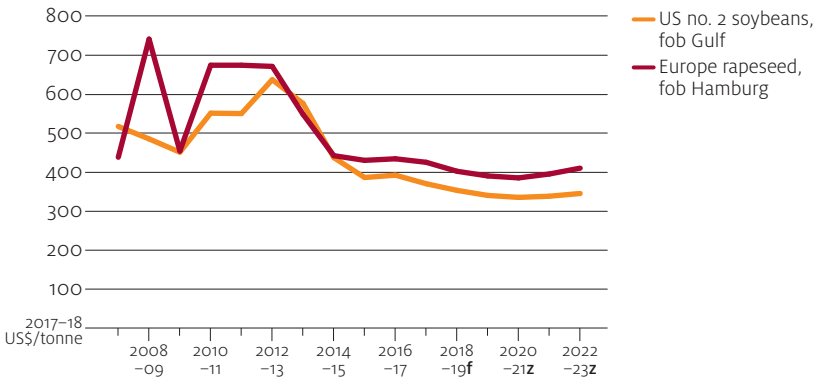
- Canola prices are forecast to fall in 2018–19 due to an increase in global oilseed supplies partly driven by increased Australian production.
- Oilseed prices are projected to continue falling in real terms over the medium term as a result of growth in supply from South America.
- Australian canola production to grow over the medium term.

Prices to fall over the medium term

In 2018–19 the world canola indicator price (Europe rapeseed, fob Hamburg) is forecast to fall by 4 per cent to average US$410 per tonne. This is due to increased global supply, including from Australia (assuming average seasonal conditions). The world oilseed indicator price (US no. 2 soybeans, fob Gulf) is forecast to decrease by 3 per cent in 2018–19 to average US$360 per tonne. High opening stocks and forecast high production in 2018–19 are expected to lead to ample exportable supplies of soybeans and reduced prices.

In real terms, from 2018–19 to 2020–21 both indicator prices are forecast to fall before increasing slightly between 2021–22 and 2022–23. South American soybean production is projected to keep supplies near historical highs, exerting downward pressure on prices until 2020–21. Prices are projected to rise slightly in 2021–22 and 2022–23 in response to growth in demand exceeding growth in supply. The canola indicator price is projected to increase by more than the soybean indicator price because low rapeseed and canola stocks are expected to dissipate more rapidly. Agronomic constraints and low stocks expose world canola supplies to significant fluctuations in the event of a disease or negative climatic conditions. This represents an upside risk to prices over the outlook period.

Oilseed indicator prices, 2007–08 to 2022–23



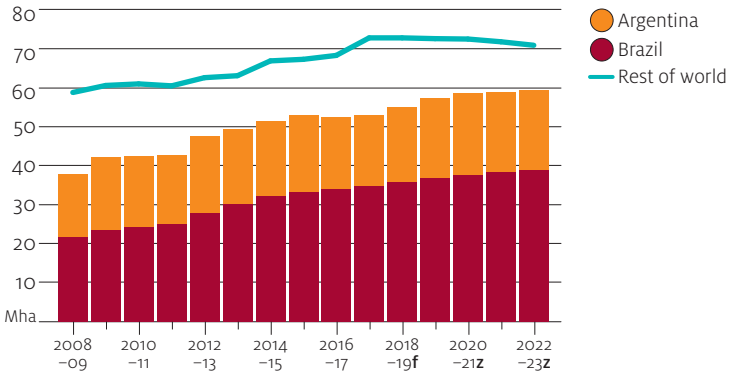
f ABARES forecast. **z** ABARES projection.

Production to grow

World oilseed production is forecast to rise by 2 per cent to 585 million tonnes in 2018–19 as a result of favourable expected returns leading to an increase in area planted to oilseeds. Global production of rapeseed and canola is forecast to increase by 4 per cent to 77 million tonnes. Canadian canola production is forecast to increase slightly in 2018–19 to 22 million tonnes as a result of harvested area for canola increasing to around 9.7 million hectares.

Over the five years to 2022–23 world oilseed production is forecast to grow by 6 per cent to 621 million tonnes, mostly due to an expansion in area harvested in Argentina and Brazil. Soybean area harvested in Brazil is projected to increase by 9 per cent and in Argentina by 7 per cent. A continuing reduction in soybean export taxes in Argentina will increase the profitability of producing soybeans relative to corn or wheat and is expected to result in increased soybean plantings early in the projection period. World harvested area is expected to stabilise late in the period when farmers begin shifting back to corn and wheat in response to falling soybean prices.

Soybean harvested area, Argentina, Brazil and rest of world, 2008–09 to 2022–23



f ABARES forecast. **z** ABARES projection.

World rapeseed and canola production is projected to increase slowly to 78 million tonnes over the medium term. Production in Canada is projected to fall by 4 per cent when higher milling wheat prices increase grain production at the expense of canola.

From 2021 demand for canola in the European Union is expected to increase, assuming EU ratification of RED II —an updated legislative framework for renewable energy. European lawmakers (European Parliament and European Council) have announced their respective negotiating positions for this framework.

The parliament proposes restricting biodiesel produced using palm oil from being counted towards renewable transport fuel targets. It also proposes limiting the contribution of first-generation biofuels, such as those made from rapeseed (including canola) oil and palm oil, to 2017 levels or 7 per cent of transport fuel, whichever is lower. The council has not proposed any restrictions on the use of palm oil, but it has proposed maintaining the current 7 per cent cap on first-generation biofuels.

Negotiations between parliament and the council will determine the EU's final position. EU first-generation biodiesel production is assumed to increase slightly over the projection period while negotiations are underway. This outlook assumes that from 2021 proposed restrictions on the use of palm oil will be enacted.

Consumption to grow

In 2018–19 global oilseed consumption is forecast to increase to 580 million tonnes, driven by low prices that encourage consumers to switch from higher-priced alternative sources of feed and oil. Rapeseed and canola consumption is forecast to increase by 4 per cent to 74 million tonnes in response to higher supplies and relatively low prices.

World oilseed consumption (mainly crush) is projected to grow over the medium term by 8 per cent to 627 million tonnes in 2022–23. Oilseed crush is expected to grow to meet strong demand for oilseed meal for use as livestock feed and vegetable oil for human consumption.

Over the medium term, global oilseed meal consumption is projected to grow by 8 per cent to 364 million tonnes, driven by expected growth in livestock production increasing demand for feed. Chinese soymeal consumption will remain the primary driver of world demand for oilseed meal despite slower economic growth. Chinese soymeal consumption growth is projected to ease to an annual average of 3 per cent over the projection period to reach 85 million tonnes. This projected growth is lower than the annual average of 6 per cent growth over the four years to 2017–18.

Vegetable oil consumption is forecast to grow over the medium term by 9 per cent to reach 217 million tonnes in 2022–23. Increasing food demand is expected to be driven by rising incomes in developing nations and moderate global population growth. Over these four years the use of vegetable oil in food production is projected to grow by 12 per cent to 168 million tonnes and industrial use of vegetable oils is projected to increase by 3 per cent to 48 million tonnes. This reflects a shift towards advanced biofuels in the European Union and the United States and constrained growth in the industrial use of vegetable oils.

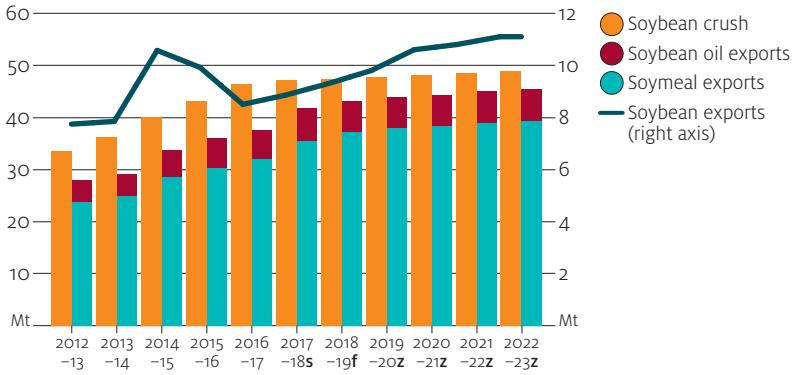
Exports to rise over the medium term

In 2018–19 world oilseed exports are forecast to increase by 3 per cent to around 181 million tonnes. This is a result of abundant supplies being traded at low prices to meet high levels of consumption. World exports of rapeseed and canola are expected to increase by 4 per cent to 18 million tonnes, mainly reflecting increased export of Australian production to Europe.

Global oilseed exports are projected to grow by 8 per cent over the medium term, mainly as a result of increased South American soybean production. By 2022–2023 Brazilian exports are projected to increase by 13 per cent to 74 million tonnes.

Reductions in taxes on exports of soybeans and soybean products from Argentina are expected to increase exports. In January 2018 the Argentine Government began reducing soybean export taxes by 0.5 percentage points each month for a planned 24 months, starting at 30 per cent for soybeans and 27 per cent for soymeal and soybean oil. An upside risk to production and exports of Argentine soybeans is the possibility that export taxes will be removed entirely rather than reduced gradually.

Argentine soybean crush and exports, 2012–13 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

World rapeseed and canola exports are projected to fall by 8 per cent over the outlook period due to decreased exports from Canada. Assuming that biodiesel produced from palm oil is excluded from counting towards EU renewable energy targets as voted on by the European Parliament, the European Union may significantly increase its industrial use of rapeseed and canola oil over the medium term. Demand is expected to be partially met through increased imports from Australia and Ukraine.

Stocks to fall from record highs

In 2018–19 world oilseed closing stocks are forecast to increase by 4 per cent to 107 million tonnes from the estimated record high of 102 million tonnes in 2017–18. This is the third consecutive year where oilseed stocks are expected to set a new record.

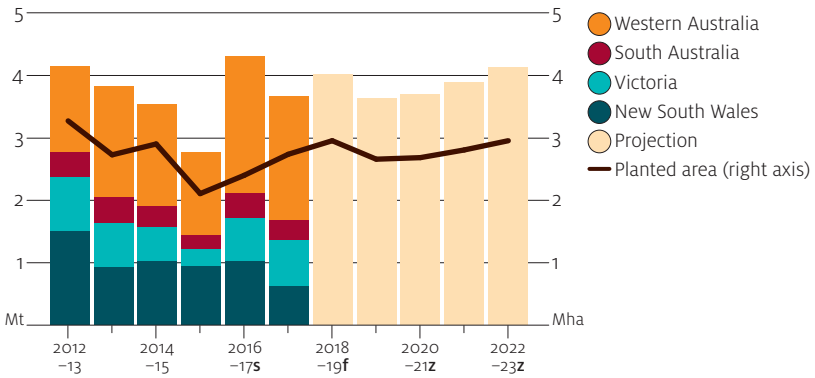
Record high global oilseed stocks are projected to continue in the period to 2020–21 due largely to growth in South American production. However, stocks are forecast to fall from 2021–22 until the end of the projection period when production stabilises and consumption increases.

Outlook for Australian oilseeds to 2022–23

In 2018–19 area planted to canola is forecast to increase by 8 per cent to 3.0 million hectares. This will be driven by low grain and falling pulse prices providing economic incentives to increase canola production. However, area planted to canola will depend on climatic conditions in autumn, and timely and sufficient rainfall will be needed to support plantings. Assuming an average yield of 1.4 tonnes per hectare, production is forecast to increase by 9 per cent to 4.0 million tonnes.

Area planted to canola is projected to fall in 2019–20 due to grain prices recovering and farmers shifting back to grain production to balance rotational constraints. However, between 2020–21 and 2022–23 area planted is expected to increase again if strong EU demand for GM-free canola provides incentives for increased Australian plantings. Assuming modest yield improvements are consistent with historical trends, production is projected to reach 4.1 million tonnes in 2022–23.

Canola area and production, Australia, 2012–13 to 2022–23



f ABARES forecast. s ABARES estimate. z ABARES projection.

In 2017–18, 23 per cent of Australia's canola production is forecast to be consumed domestically and imports are expected to be insignificant. Australian consumption of canola is expected to increase marginally over the medium term. Domestic crush is expected to remain constrained by the high cost of crushing canola compared with importing low-cost soybean meal. This is despite strong feed demand for oilseed meal from livestock industries.

In 2018–19 the value of canola exports is forecast to increase by 22 per cent to $1.7 billion and higher export volumes will more than offset lower prices. The value of Australian canola exports is projected to reach $1.8 billion in 2022–23 (in 2017–18 dollars). Low prices throughout the projection period mean that the value of exports will grow at a slower rate than the quantity of exports.

Outlook for oilseeds

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World									
Oilseeds									
Production	Mt	520	564	574	585	597	609	617	621
Consumption	Mt	526	551	573	580	594	608	620	627
Exports	Mt	153	167	176	181	184	187	192	195
Closing stocks	Mt	88.6	102	102	107	110	110	107	101
Oilseed indicator price **a**	US$/t	373	384	370	360	354	356	366	381
real **b**	US$/t	387	392	370	353	340	335	338	345
Canola indicator price **c**	US$/t	415	425	425	410	406	409	428	453
real **b**	US$/t	431	434	425	402	390	385	395	410
Protein meals									
Production	Mt	306	319	333	337	346	354	360	364
Consumption	Mt	305	321	330	338	347	356	361	364
Exports	Mt	87.3	89.5	96.5	98.5	101	102	103	105
Closing stocks	Mt	16.7	15.1	18.5	17.5	16.1	14.0	13.7	13.7
Indicator price **d**	US$/t	345	348	325	316	312	313	325	340
real **b**	US$/t	359	355	325	310	300	295	300	308
Vegetables oils									
Production	Mt	176	184	194	197	203	209	213	216
Consumption	Mt	178	184	191	199	204	209	212	217
Exports	Mt	74.8	75.6	79.5	83.8	85.4	87.8	89.4	92.1
Closing stocks	Mt	18.7	18.0	21.2	19.5	18.3	18.5	18.9	18.1
Indicator price **e**	US$/t	742	837	850	836	832	854	898	950
real **b**	US$/t	771	854	850	820	800	805	830	860
Australia									
Production	kt	3,750	5,684	5,200	5,297	4,747	4,951	5,209	5,658
Exports	kt	2,102	3,925	2,795	3,624	3,148	2,969	3,244	3,534
Canola									
Area	'000 ha	2,091	2,388	2,729	2,950	2,650	2,675	2,800	2,950
Production	kt	2,775	4,309	3,669	4,012	3,631	3,692	3,892	4,130
Export volume **g**	kt	1,946	3,599	2,530	3,123	2,797	2,799	2,988	3,209
Export value **g**									
nominal	A$m	1,097	2,128	1,388	1,697	1,544	1,556	1,739	1,977
real **h**	A$m	1,138	2,169	1,388	1,659	1,473	1,449	1,579	1,752
Price **i**	A$/t	542	530	513	508	516	519	544	576
real **h**	A$/t	562	540	513	496	492	484	494	510

a US no.2 soybeans, fob Gulf. **b** In 2017–18 US dollars. **c** Rapeseed, Europe, fob Hamburg, July–June. **d** Soybean meal, cif, Rotterdam, 45 per cent protein. **e** Soybean oil, Dutch, fob ex-mill. **f** ABARES forecast. **g** July–June. **h** In 2017–18 Australian dollars. **i** Delivered Melbourne, July–June. **s** ABARES estimate. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; US Department of Agriculture

Sugar

Outlook to 2022–23

Benjamin K Agbenyegah

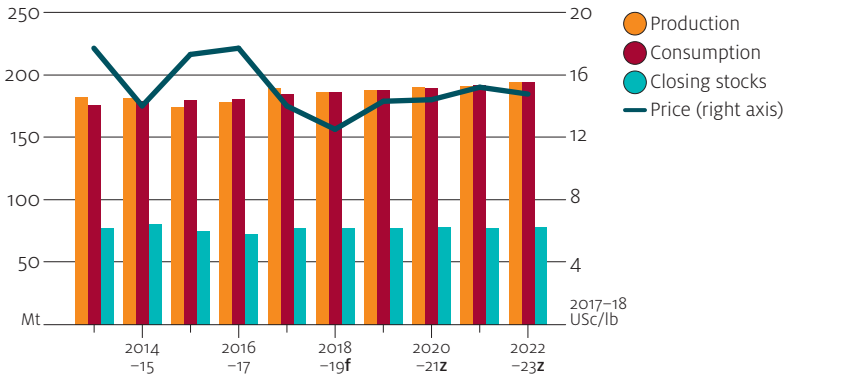
- Growth in world production is expected to keep sugar prices low.
- World sugar consumption is expected to grow at a moderate rate because of increasing health awareness.
- Returns to Australian growers are projected to remain low over the medium term.

Sugar prices low in the short term

The world indicator price for raw sugar (Intercontinental Exchange, nearby futures, no. 11 contract) is forecast to fall by 19 per cent to average US14 cents per pound in 2017–18 (October to September marketing year). In 2018–19 the price is forecast to decline by a further 9 per cent to average US13 cents per pound. World supply of sugar is growing faster than demand in the short term following record production in 2017–18.

The world sugar price is projected to reach US15 cents per pound (in real terms) in 2022–23. World demand is expected to grow slowly as population increases but health awareness reduces the rate of increase in per person consumption. As a result, the world price of sugar in 2022–23 is expected to be 30 per cent lower than the 10-year average to 2016–17. Despite growing populations and incomes in emerging economies, health awareness is expected to moderate demand for sugar and reduce the likelihood of per person consumption reaching current levels in developed nations.

World sugar indicators, 2013–14 to 2022–23 **ab**



a October to September. **b** Volumes are in raw equivalent. **f** ABARES forecast. **z** ABARES projection.

World sugar production capacity increases

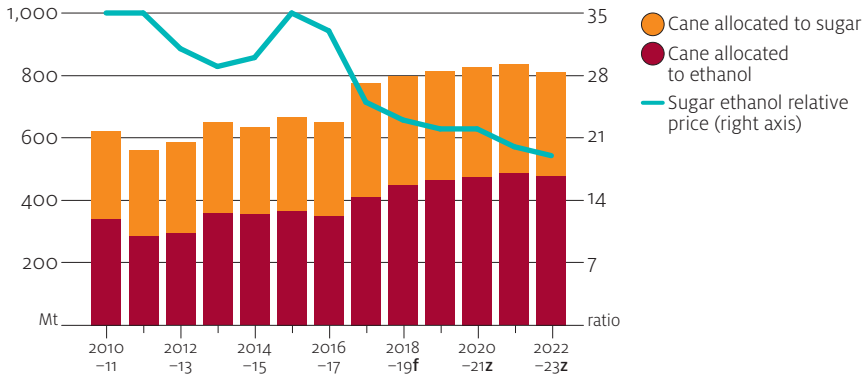
World sugar production in 2017–18 is forecast to increase by 6 per cent to around 190 million tonnes due to an expected expansion in cane and beet area harvested in India, China, the European Union, Thailand and the United States. The expansion in area harvested is in response to relatively high sugar prices in 2016–17, and the October 2017 abolition of EU production quotas increasing the area of sugar beet planted in some European countries.

In 2018–19 world sugar production is forecast to fall by 2 per cent to 186 million tonnes, largely reflecting a decline in production in Brazil—the world's largest sugar producer. Falling sugar prices relative to those for ethanol are providing an incentive for Brazilian sugar mills to divert cane to ethanol production.

Over the medium term to 2022–23, world sugar production is projected to grow steadily around 195 million tonnes. This assumes average seasonal conditions in major producing countries and continued expansion of global cane and beet planting. Producers such as Brazil, India, the European Union, Pakistan, Thailand and the Russian Federation have large production capabilities that can be redirected to sugar from other crops when sugar prices are favourable.

Sugar production in Brazil is projected to remain largely unchanged at between 36 million and 38 million tonnes over the medium term despite an expected increase in cane production. The share of cane used for sugar rather than ethanol production is expected be constrained by the Government's Renovabio program—aimed at reducing the country's carbon emissions by 43 per cent by 2030. According to the US Department of Agriculture, world ethanol prices are projected to rise by 17 per cent over the projection period. These factors are expected to contribute to a reduction in Brazil's allocation of cane to sugar production from 47 per cent in 2017–18 to 42 per cent by 2022–23.

Sugarcane allocation and sugar ethanol relative price, Brazil, 2010–11 to 2022–23 a



a March to April. f ABARES forecast. z ABARES projection.
Note: US Department of Agriculture projections for ethanol prices are in wholesale US Omaha prices.

Sugar production in India is projected to grow over the medium term driven by continued government price support, export subsidies and loan facilities. The net effect of these support policies is likely to be significant increases in sugarcane production.

EU sugar production is projected to reach 24 million tonnes in 2022–23, compared with 21 million tonnes in 2017–18. This projection is based on the abolition of the EU production quota in October 2017 and the assumption that the European Union will continue to support beet growers. Based on pre-quota production levels, the European Union is projected to harvest around 2.1 million hectares of beet per year over the medium term.

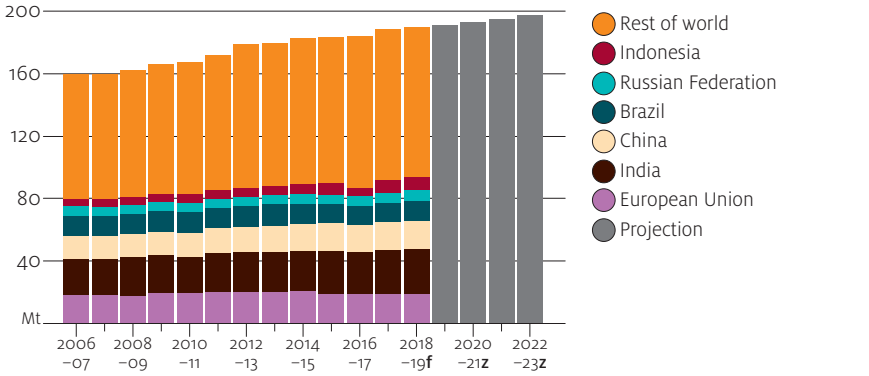
In Thailand continued government support for sugar production is expected to increase cane area and yields, leading to increased production over the medium term. Since 2005–06 the Thai Government has provided domestic price support for cane and sugar production, instituted revenue sharing between cane growers and millers, provided low-interest loans, and invested in technology and farm development to support cane growers. These policies have contributed to a significant rise in cane and sugar production. In 2017–18 sugar production in Thailand is expected to be 12 million tonnes.

Moderate growth in world sugar consumption

In 2018–19 world sugar consumption is forecast to be around 186 million tonnes. Growth in demand in advanced economies is expected to be constrained by a slowdown in population growth, dietary changes based on greater health awareness and nutritional policies—particularly the European Union, Japan and the United States. Demand in these countries is being further constrained as a result of consumers switching to alternatives such as high-intensity sweeteners and isoglucose. The EU isoglucose supply quota imposed in 2006 was abolished in October 2017.

World sugar consumption is projected to grow slowly to reach 194 million tonnes in 2022–23. This projection assumes that demand for sugar in emerging and developing economies will be tempered by consumer preferences and the health lessons learnt in developed countries. Increasing consumer incomes, growing populations and urbanisation in emerging and developing economies are expected to support expansion in food-processing and beverage industries. Growth in consumption is projected for Brazil, China, India, Indonesia, the Russian Federation and other emerging and developing countries.

World sugar consumption, by country, 2006–07 to 2022–23 **a**



a Raw equivalent. **f** ABARES forecast. **z** ABARES projection.

World sugar exports to fall and then grow from 2020–21

World sugar exports are forecast to fall by 3 per cent to 67 million tonnes in 2017–18. This is despite an expected increase in production in Australia, Brazil, India, Pakistan, Mexico and Thailand. The forecast decline is due to weak import demand for sugar by China, the European Union and the Russian Federation as a result of increased domestic production displacing imports. In 2018–19 world sugar exports are forecast to remain largely unchanged.

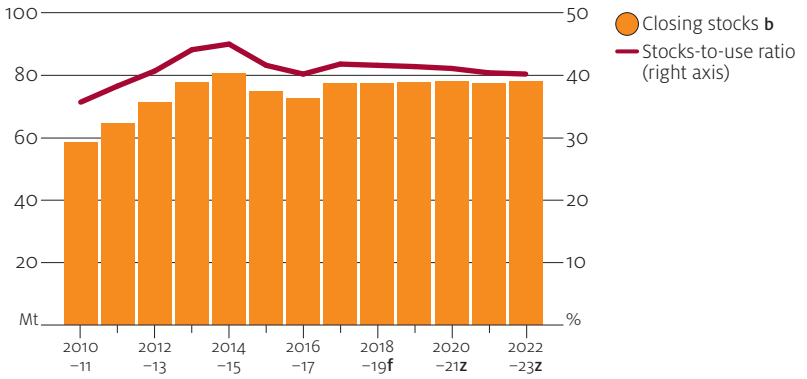
World exports are projected to decline further to 65 million tonnes in 2019–20 before growing to 69 million tonnes in 2022–23. Supplies available for export are projected to increase from Thailand and other emerging exporters.

World sugar stocks largely unchanged in 2022–23

In 2017–18 world closing stocks of sugar are forecast to rise by 7 per cent to around 77 million tonnes and to remain at around the same level in 2018–19. World production is expected to outpace consumption in 2017–18 due to increased cane and beet production driven by high sugar prices in 2016–17 and the abolition of the EU production quota. In 2017–18 the world stocks-to-use ratio is forecast to increase by around 2 percentage points to 42 per cent. The ratio is forecast to remain the same in 2018–19.

World sugar stocks are projected to remain largely unchanged at around 78 million tonnes to 2022–23. World consumption growth is expected to match production growth over the medium term. The world stocks-to-use ratio for sugar is projected to fall to around 40 per cent in 2022–23.

World sugar stocks, 2010–11 to 2022–23 a



a October to September. b Raw equivalent. f ABARES forecast. z ABARES projection.

Outlook for Australian sugar to 2022–23

Returns to Australian cane growers to remain low

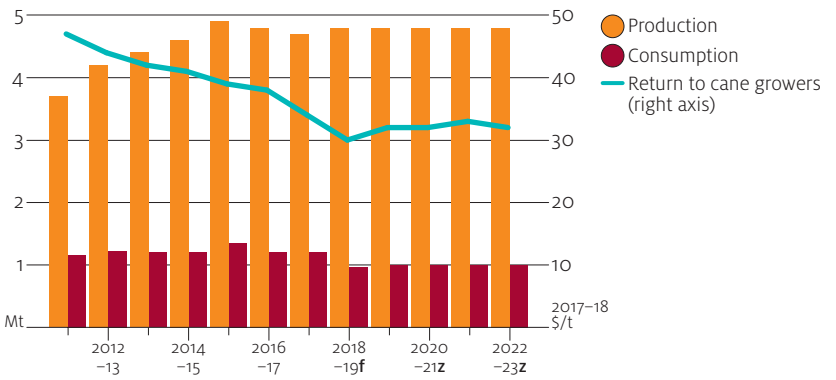
In 2017–18 returns to Australian cane growers are forecast to fall by 8 per cent to average $34 per tonne of cane cut for crushing, largely due to a forecast decline in the world sugar price. Returns to growers are forecast to fall again in 2018–19 to $32 per tonne (in nominal terms) and to remain at $32 (in 2017–18 dollars) per tonne until 2022–23.

Sugar production maintained despite a decline in cane crush

In 2017–18 Australian sugar production is forecast to be 4.7 million tonnes. This is despite a 10 per cent decline in cane crush due to dry conditions and damage to Queensland cane caused by Tropical Cyclone Debbie. In 2018–19 Australian sugar production is forecast to reach 4.8 million tonnes and to stay around this level to 2022–23.

Area of sugar cane harvested in Australia over the medium term is projected to remain largely unchanged at around 385,000 hectares—compared with 380,000 hectares in 2017–18. Limited suitable land close to sugar mills and Queensland farmers' increasing interest in horticulture are leading to increased competition for land use. Cane yields are assumed to remain around the 15-year average to 2016–17 of 88 tonnes per hectare.

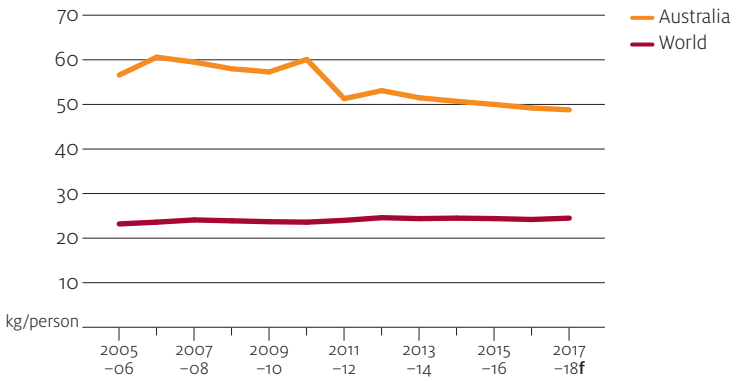
Sugar production, consumption and returns to cane growers, Australia, 2011–12 to 2022–23 a



a Production and exports are raw equivalents. f ABARES forecast. z ABARES projection.
Source: US Department of Agriculture

Australian per person sugar consumption is expected to fall over the medium term as dietary preferences change in response to health concerns. Over the 10 years to 2016–17 Australia's sugar consumption averaged 54 kilograms per person, more than double the world average of 24 kilograms per person. Australian sugar consumption is forecast to remain unchanged at 1.2 million tonnes in 2017–18 and 2018–19 because population growth is expected to offset falling per person consumption. By 2022–23 Australian sugar consumption is projected to fall to 1 million tonnes, 15 per cent lower than the forecast for 2017–18.

Sugar consumption, Australia and world, 2005–06 to 2017–18

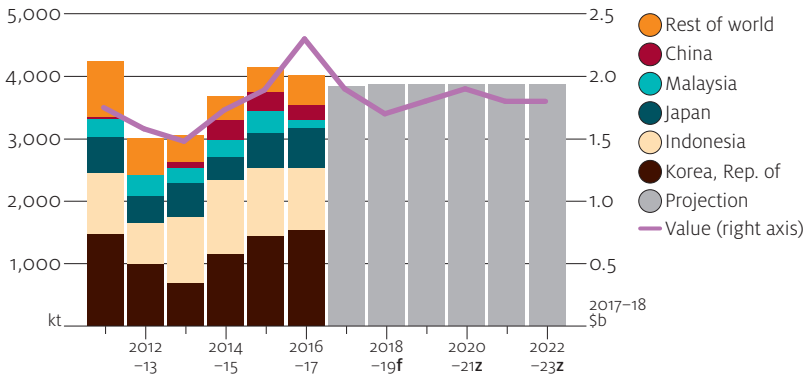


f ABARES forecast.

Exports

Australian sugar exports are forecast to fall by 3 per cent to around 3.8 million tonnes in 2017–18 and to remain largely unchanged in 2018–19. Lower prices are expected to reduce the value of these exports in 2017–18 by 23 per cent to around $1.9 billion and in 2018–19 by a further 11 per cent to $1.7 billion (in nominal terms). Australian sugar exports are projected to remain largely unchanged at around 3.9 million tonnes per year to 2022–23, when they are projected to be worth around $1.8 billion (in real terms).

Australian sugar exports, 2011–12 to 2022–23 a



a Exports are raw equivalents; years are from July to June. f ABARES forecast. z ABARES projection.
Source: Australian Bureau of Statistics

Outlook for sugar [a]

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World [b]									
Production	Mt	174	178	190	186	188	190	191	195
Brazil	Mt	38.1	41.1	37.9	37.0	36.6	36.8	37.2	38.0
Consumption	Mt	180	181	185	186	188	190	192	194
Exports	Mt	58.5	68.8	66.7	66.7	65.0	66.0	68.2	69.2
Closing stocks	Mt	74.8	72.5	77.3	77.4	77.7	78.0	77.4	78.0
Stocks-to-use ratio	%	41.6	40.2	41.8	41.6	41.4	41.1	40.4	40.2
Price [c]									
nominal	USc/lb	16.7	17.3	14.0	12.7	14.9	15.3	16.4	16.3
real [d]	USc/lb	17.3	17.7	14.0	12.5	14.3	14.4	15.2	14.8
Australia [e]									
Production	kt	4,920	4,804	4,700	4,830	4,830	4,830	4,830	4,830
Export volume	kt	4,140	3,970	3,843	3,863	3,870	3,870	3,870	3,870
Export value									
nominal	A$m	1,823	2,424	1,861	1,663	1,759	1,886	2,019	2,021
real [g]	A$m	1,891	2,472	1,861	1,626	1,678	1,756	1,833	1,790
Return to cane growers									
nominal	A$/t	37.3	37.2	34.3	31.7	33.1	34.7	36.0	36.5
real [g]	A$/t	38.7	37.9	34.3	31.0	31.6	32.3	32.7	32.4

a Volumes in raw equivalent. **b** October–September years. **c** Nearby futures price, Intercontinental Exchange, New York, no. 11 contract. **d** In 2017–18 US dollars. **e** July–June years. **f** ABARES forecast. **g** In 2017–18 Australian dollars. **s** ABARES estimate. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; International Sugar Organization

Cotton

Outlook to 2022–23

Benjamin K Agbenyegah

- Growing world demand for cotton is forecast to increase prices in 2018–19.
- World cotton prices are projected to increase in real terms to average US85 cents per pound in 2022–23.
- World cotton stocks are projected to fall over the medium term to the lowest level since 2011–12 due to world consumption growing faster than production.
- Returns to Australian cotton growers are projected to rise in real terms to $630 per bale in 2022–23.

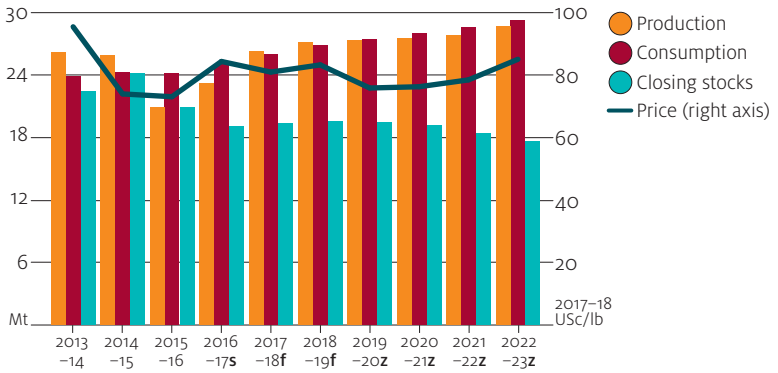
Growing demand to support cotton prices

The world indicator price for cotton (Cotlook 'A' index) is forecast to fall by 2 per cent to average US81 cents per pound in 2017–18 (August to July marketing year). This forecast is driven by an increase in world cotton supplies in response to favourable cotton prices and seasonal conditions in 2016–17.

In 2018–19 world cotton prices are forecast to rise by 5 per cent to average US85 cents per pound. This assumes strengthening world demand for cotton as the world economy improves and consumer incomes continue to grow, particularly in countries with large textile and clothing markets.

World cotton prices are projected to decline to around US76 cents per pound (in real terms) in 2019–20 due to a projected rise in world supply during 2018–19. Prices are projected to then gradually recover, rising by 3.9 per cent per year to average US85 cents per pound (in real terms) in 2022–23 due to strengthening world demand.

World cotton indicators, 2013–14 to 2022–23

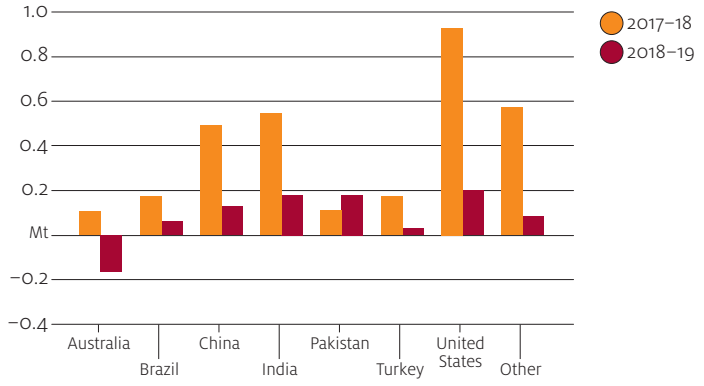


f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Expansion in area planted to drive world production growth

World cotton production is forecast to increase by 13 per cent to around 26 million tonnes in 2017–18 and by a further 3 per cent in 2018–19 (assuming average seasonal conditions). Production is forecast to increase in all major producing countries, including China, largely due to an expansion in area planted to cotton. Chinese Government price support policies encourage cotton production in China. The Xinjiang region accounts for around 50 per cent of total Chinese cotton production, and its producers receive a subsidy equivalent to the difference between the market price and a set target price. The government has set the target price for 2016–17 to 2018–19 at 18,600 yuan per tonne (US$1.22 per pound). Cotton growers in the nine major producing provinces outside Xinjiang region received a fixed subsidy of 2,000 yuan per tonne (around US15 cents per pound).

Forecast changes in world cotton production, by country, 2017–18 and 2018–19



Over the medium term to 2022–23, world cotton production is projected to grow at an average rate of 1.5 per cent per year to around 29 million tonnes. This is largely due to an expected increase in world cotton area in response to strong cotton prices relative to alternative crops, especially grains. Area planted to cotton globally is projected to grow by an average of 1.4 per cent per year to reach around 36 million hectares in 2022–23. World lint yields are assumed to be stable at an average around 0.8 tonnes per hectare—the average in the 10 years to 2015–16. Production is projected to rise in China, India, Pakistan, the United States and other smaller producing countries.

In China, cotton production is projected to increase to 8 million tonnes in 2022–23. The Chinese Government is expected to restrengthen its price support policy over the medium term to offset rising costs of production and maintain the profitability of producing cotton relative to alternative crops such as maize, rice and cassava.

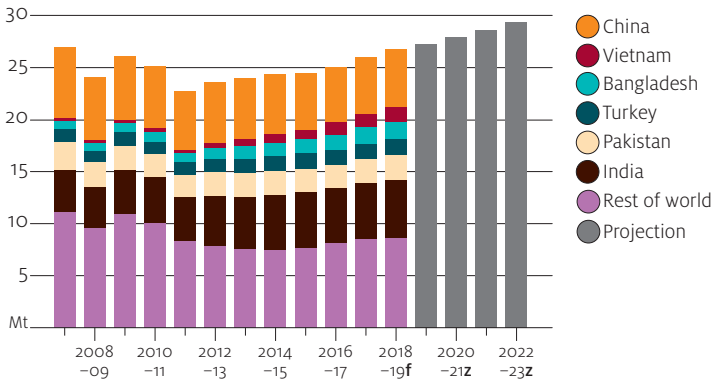
Cotton production in India—the world's largest producer—is projected to grow over the medium term through improved yields and quality. Improvements in yield are expected to come from investments in irrigation and more efficient use of chemicals. In the 10 years to 2017–18 India accounted for around 35 per cent of global area planted to cotton but contributed only 24 per cent of global production. Production in Pakistan is projected to grow over the medium term, largely driven by improvements in lint yields through increased use of genetically modified cotton varieties.

In the United States, cotton production is projected to grow gradually over the medium term. Dry weather restricted production to an annual average of 3 million tonnes for the nine years to 2016–17, compared with 4.7 million tonnes for the four years to 2007–08. Over the medium term, average seasonal conditions (for the production period 1991–92 to 2007–08) are assumed to prevail in the major upland cotton-growing regions in the United States.

In 2017–18 world raw cotton consumption is forecast to rise by 4 per cent to 26 million tonnes and then to increase further to 27 million tonnes in 2018–19. In 2016–17 mill consumption was constrained by high cotton prices relative to those for synthetics and weak economic growth. Increasing world demand for textiles and clothing is leading to strengthened demand for raw cotton from spinning industries in emerging and developing economies (Bangladesh, China, India, Pakistan, Turkey and Vietnam). Moderate growth in the world economy during 2017–18 and into 2018–19 is expected to increase consumer incomes and demand for cotton products. Synthetic fibre prices are also expected to increase because of rising crude oil prices, resulting in strengthened competitiveness of cotton with polyester. If realised, world cotton consumption in 2018–19 will be at its highest since 2007–08.

Over the medium term, world cotton consumption is projected to grow at an annual rate of 2.2 per cent, reaching 29 million tonnes in 2022–23. This would be 13 per cent higher than the forecast for 2017–18. Demand is expected to be constrained by competition from synthetic fibres (including polyester), reflecting lower assumed oil prices over this period. Despite this, ongoing demand for raw cotton from spinning industries in emerging economies is forecast to drive some increases in consumption. The textile and garment industries in these countries are expanding rapidly in response to increased world demand. Average world gross domestic product per person is expected to grow at 2.7 per cent per year over the medium term, leading to a rise in consumer incomes and greater demand for textiles and clothing.

World cotton consumption, by country, 2007–08 to 2022–23



f ABARES forecast. **z** ABARES projection.

World cotton trade to continue to grow

World cotton exports are forecast to increase by 2 per cent to 8.4 million tonnes in 2017–18 and by a further 8 per cent to around 9.1 million tonnes in 2018–19. In 2017–18 increased exports from the United States, Australia, Brazil and smaller exporters (including Burkina Faso, Mali and Greece) are expected to more than offset forecast declines from India, Uzbekistan and Turkmenistan. In 2018–19 exports from the United States—the world's largest exporter—are forecast to remain stable at around 3.2 million tonnes.

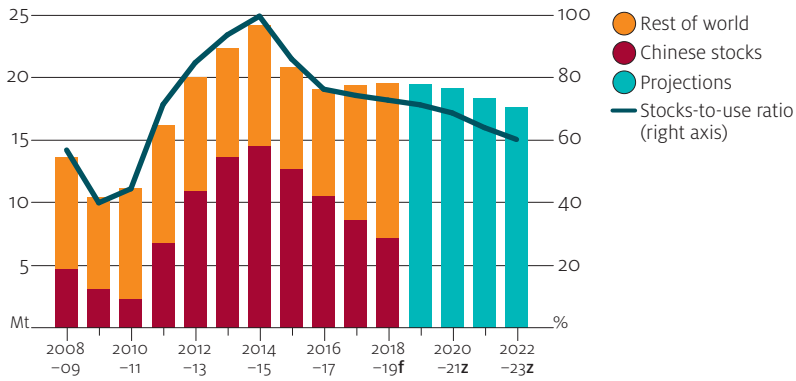
From 2018–19 world cotton exports are projected to grow annually at 1.1 per cent, to reach 9.5 million tonnes in 2022–23. China—the world's largest cotton consumer—is projected to decrease imports to 894,000 tonnes per year (the minimum specified under its World Trade Organization obligations). Reduced import demand from China is expected to be more than offset by growing import demand—particularly for high quality cotton— from Bangladesh, Cambodia, Pakistan, Thailand, Turkey and Vietnam.

World cotton stocks to fall to lowest level since 2011–12

In 2017–18 world cotton stocks are forecast to rise by 2 per cent to around 19 million tonnes before increasing by a further 1 per cent in 2018–19. For most of the world, production is expected to grow faster than consumption. In China, demand for cotton is forecast to grow faster than supply and stocks are forecast to decline by 18 per cent to around 7 million tonnes in 2018–19. Stocks in the rest of the world are forecast to increase by 26 per cent to around 12 million tonnes in 2018–19. The world stocks-to-use ratio is forecast to fall by 2 percentage points to 74 per cent in 2017–18 and to 73 per cent in 2018–19.

Over the medium term world cotton stocks (including China) are projected to fall to be just below 18 million tonnes in 2022–23, as world consumption grows faster than production. If realised, world stocks are projected to be at the lowest level since 2011–12. The world cotton stocks-to-use ratio is projected to decline further to around 60 per cent in 2022–23.

World cotton stocks and stocks-to-use ratio, 2008–09 to 2022–23



f ABARES forecast. **z** ABARES projection.

Outlook for Australian Cotton to 2022–23

Returns to Australian cotton growers to recover

Australian cotton prices are expected to continue to follow trends in world prices. In 2017–18 returns to Australian cotton growers at the gin-gate are forecast to fall by 1 per cent to average $600 per bale (227 kilograms) of lint, including the value of cottonseed and net of ginning costs. In 2018–19 returns to growers are forecast to remain at similar levels in real terms due to abundant world production capacity keeping prices low.

Returns to Australian cotton growers are projected to average $630 per bale in real terms in 2022–23, driven by rising world cotton prices.

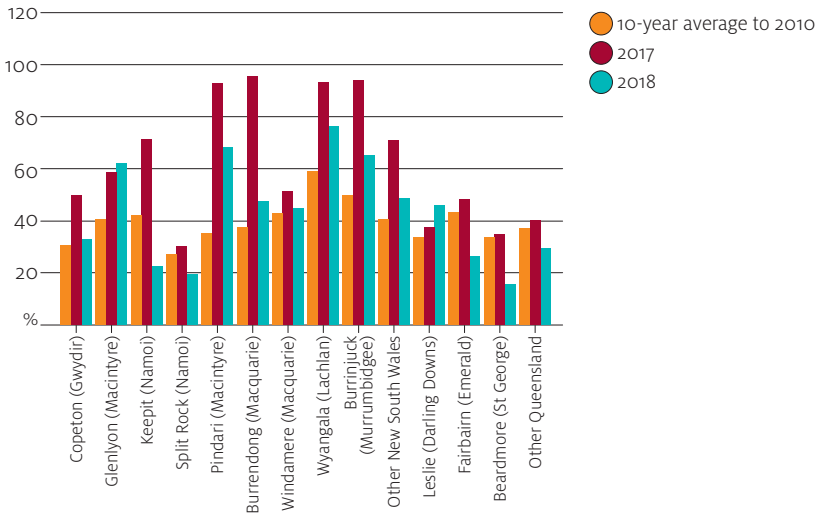
Australian cotton production to fall before recovering

In 2017–18 Australian cotton production is forecast to increase by 12 per cent to 995,000 tonnes, despite a fall in area planted to cotton. A 24 per cent rise in irrigated cotton yields is expected to more than offset a 10 per cent fall in area planted. In 2016–17 extreme heat during the critical flowering period negatively affected crop development, resulting in yields averaging 1.6 tonnes per hectare—the lowest in six years. Average yields are expected to recover to around 2 tonnes per hectare in 2017–18.

Planting in 2017–18 was reduced to 500,000 hectares because availability of irrigation water during the 2017 planting window (August to December) was lower than the same period in 2016 while still above average. On 29 January 2018 the average storage level of public irrigation dams serving cotton-growing regions was around 43 per cent. This was lower than the levels of 63 per cent in 2017 but above the average of 39 per cent for the same date over the 10 years to 2010.

Near median streamflow up to the next planting window (August to December) would provide sufficient irrigation water for another large cotton crop in 2018–19 with Australian cotton production forecast to be 830,000 tonnes, 17 per cent lower than in 2017–18. However, unforeseen adverse seasonal conditions are a downside risk to this forecast.

Storage levels of main irrigation dams, at 29 January

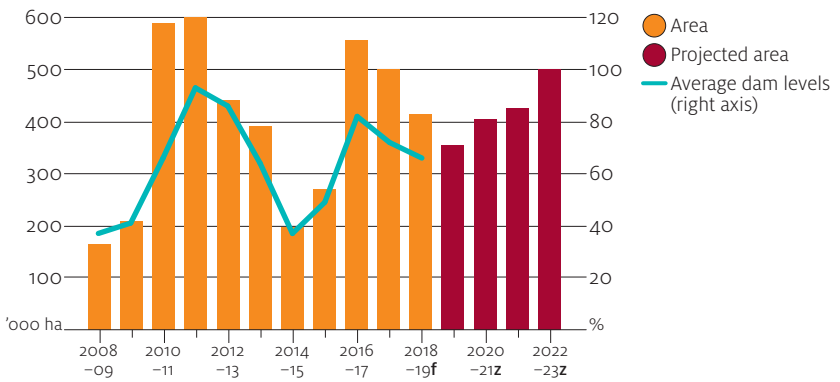


Source: Bureau of Meteorology; water information

In 2019–20 Australian cotton production is expected to decline to 710,000 tonnes due to an assumed return to average storage levels in irrigation dams. From 2020–21 Australian cotton production is projected to grow annually by 12 per cent to reach 1.0 million tonnes in 2022–23. Increased cotton plantings are projected late in the outlook period in response to growing demand and higher world prices. Much of this expansion is expected to take place in southern New South Wales due to cotton displacing rice in irrigated farming systems (see box *Shift from rice to cotton production in NSW Murrumbidgee region*).

Over the medium term, cotton lint yields are assumed to remain at a long-term average of 2 tonnes per hectare. The uptake of the current generation of genetically modified cotton varieties is largely complete in Australia, so future gains will require development of new varieties. A return of dry seasonal conditions at any stage during the outlook period is a significant downside risk to this forecast.

Cotton planted area and average dam levels, Australia, 2008–09 to 2022–23



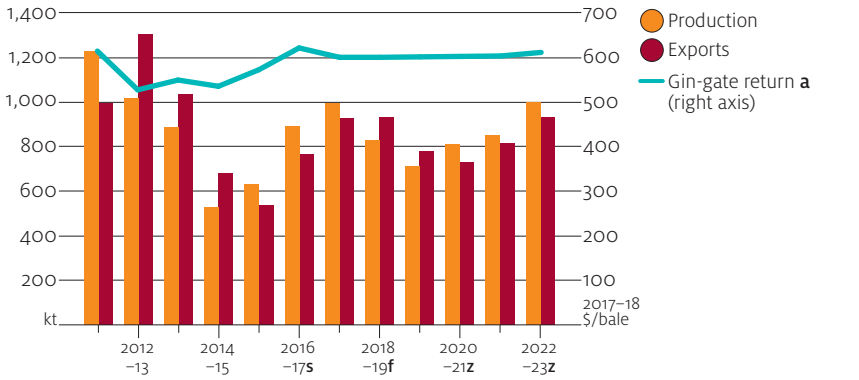
f ABARES forecast. **z** ABARES projection.

Australian cotton exports to grow to meet increased demand

In 2017–18 cotton exports from Australia are forecast to rise by 16 per cent to 887,000 tonnes. This forecast is based on increased cotton production in 2016–17 and 2017–18 and a growing demand for high-quality Australian cotton in Asia. The value of Australian cotton exports is forecast to be around $2.1 billion, up from around $1.8 million the previous year.

Australian cotton exports are projected to be 930,000 tonnes in 2022–23. The value is forecast to be around $2.3 billion in real terms.

Cotton production, exports and gin-gate returns, Australia, 2011–12 to 2022–23



a Value of lint and cottonseed, less ginning costs. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

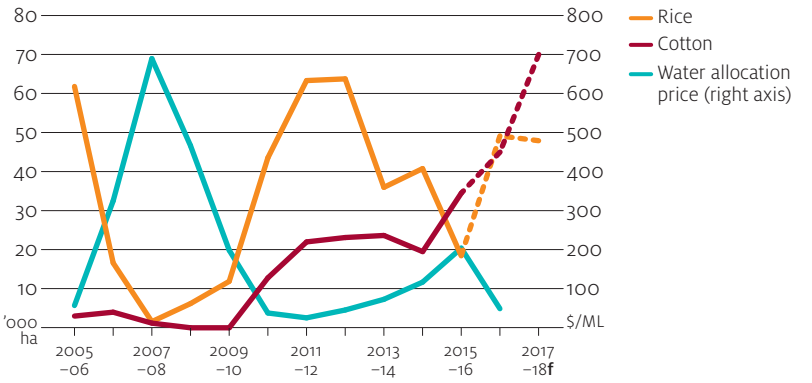
Shift from rice to cotton production in NSW Murrumbidgee region

Mihir Gupta and Neal Hughes

In recent years, cotton growing has expanded significantly in the NSW Murrumbidgee region. The area planted to irrigated cotton in the region increased from less than 5,000 hectares prior to 2010-11 to around 35,000 hectares in 2015–16 (Figure 1). During this period, rice plantings decreased from a peak of 64,000 hectares in 2012–13 to around 18,000 hectares in 2015–16.

The NSW Murrumbidgee has traditionally been a rice-growing region. However, in 2016–17 and 2017–18 record levels of cotton production are expected as a result of financial returns to cotton farming exceeding those from alternative crops, including rice (Figure 2), and improvements in technology and genetics increasing yields, particularly in cooler climates (GRDC 2018). In 2017–18 area planted to cotton is forecast to double to around 70,000 hectares. After increasing in 2016–17, area planted to rice is expected to plateau at around 48,000 hectares.

FIGURE 1 Area planted to irrigated cotton and rice, and water allocation price, NSW Murrumbidgee, 2005–06 to 2017–18



f ABARES forecast.

Expanding cotton production has implications for water demand in the Murrumbidgee region and for the water market in the southern Murray–Darling Basin. The volume of irrigation water used to grow cotton in the Murrumbidgee increased from 26 gigalitres in 2005–06 to 320 gigalitres in 2015–16. However, assessing the effect of expanding cotton production on water demand is complex given fluctuations in seasonal conditions, water prices and changes in water demand for other irrigation activities.

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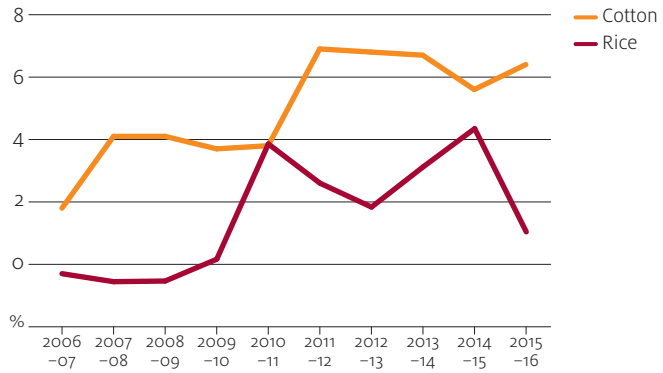
Shift from rice to cotton production in NSW Murrumbidgee region

continued

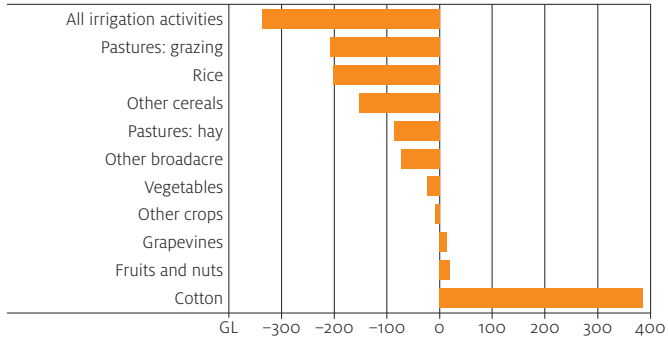
FIGURE 2 Rate of return for irrigated cotton and rice farms, Murray–Darling Basin, 2006–07 to 2015–16



ABARES applied an economic model of the southern Murray–Darling Basin, described in Gupta, Hughes and Wakerman Powell 2018, to estimate changes in water demand between 2002–03 and 2016–17. The model was applied to the NSW Murrumbidgee region with prices, rainfall and water allocation fixed for comparison. For the notional water price of $100 per megalitre, the model indicates that the volume of water used for cotton production was 385 gigalitres higher in 2016–17 compared with 2002–03. However, this was more than offset by decreases in the volume of water used for rice (203 gigalitres) and other irrigation activities in the region (519 gigalitres). Decreases in water demand in these sectors reflect reductions in area planted along with any improvements in water use efficiency achieved over the period.

Overall, the results show that at a water price of $100 per megalitre, total demand for irrigation water in the Murrumbidgee decreased between 2016–17 and 2002–03. The results suggest that the recent shift towards cotton production is unlikely to have an upward effect on water market prices in this region.

FIGURE 3 Modelled change in water use, NSW Murrumbidgee, 2002–03 to 2016–17



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Shift from rice to cotton production in NSW Murrumbidgee region

continued

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GRDC 2018, *Growing cotton in SNSW—considerations and information*, Grains Research and Development Corporation.

Gupta, M, Hughes, N & Wakerman Powell, K 2018, 'A model of water trade and irrigation activity in the southern Murray–Darling Basin', Australian Agricultural and Resource Economics Society Conference, Adelaide, 6–9 February 2018.

Outlook for cotton

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World a									
Production	Mt	20.9	23.2	26.3	27.1	27.3	27.5	27.9	28.7
Consumption	Mt	24.2	25.0	26.0	26.9	27.4	27.9	28.6	29.3
Exports	Mt	7.6	8.2	8.4	9.1	9.2	9.2	9.2	9.5
Closing stocks	Mt	20.8	19.1	19.4	19.6	19.5	19.2	18.4	17.7
Stocks-to-use ratio	%	86	76.4	74.4	72.9	71.4	68.7	64.1	60.3
Cotlook 'A' index									
nominal	USc/lb	70.4	82.8	81.0	85.0	79.0	81.0	85.0	94.0
real **b**	USc/lb	73.1	84.4	81.0	83.3	75.9	76.3	78.5	85.1
Australia c									
Area harvested **d**	'000 ha	270	557	500	415	355	405	425	500
Lint production	kt	629	891	995	830	710	810	850	1,000
Export volume	kt	536	763	887	930	777	730	814	930
Export value									
nominal	A$m	1,269	1,788	2,058	2,400	1,918	1,834	2,110	2,563
real **e**	A$m	1,316	1,823	2,058	2,347	1,830	1,708	1,916	2,270
Gin-gate return **g**									
nominal	A$/bale	552	609	600	614	618	630	653	711
real **e**	A$/bale	572	621	600	600	590	587	593	630

a August–July years. **b** In 2017–18 US dollars. **c** July–June years. **d** Area measured on a broadacre basis. **e** In 2017–18 Australian dollars. **g** Value of lint and cottonseed less ginning costs. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics; US Department of Agriculture

Horticulture

Outlook to 2022–23

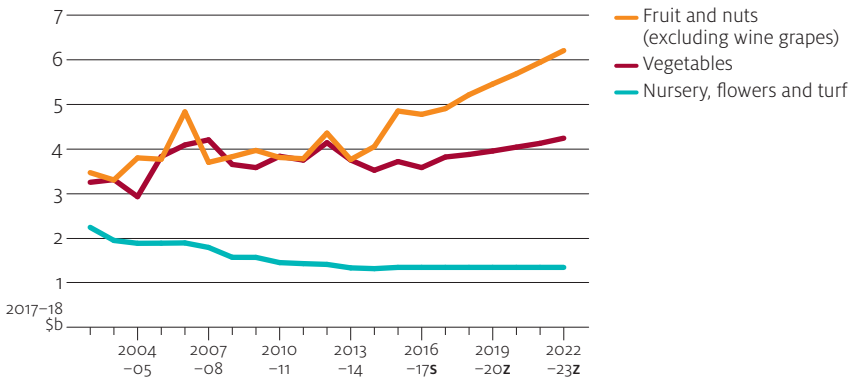
Charley Xia

- The gross value of Australian horticultural production is projected to increase to $13.6 billion in 2022–23, largely driven by increased fruit and nut production.
- Australian fruit production is expected to increase in response to rising demand from China, but domestic prices are forecast to fall as competition in the Australian market intensifies.
- Australian tree nut production is expected to increase, but world prices are expected to fall (in real terms) as global nut supply growth outpaces demand growth.
- Australian vegetable production is expected to increase over the medium term in response to export opportunities and domestic population growth.

Outlook for fruit

Over the medium term, the gross value of Australia's fruit and nut industries is projected to grow strongly compared with other horticultural industries. The real gross value of fruit production is projected to increase from $3.9 billion in 2017–18 to $4.6 billion in 2022–23. Australia exported only 29 per cent of fruit production by value in 2015–16, but emerging export markets and a depreciating dollar have been driving industry expansion. Moderate growth is anticipated in the domestic fruit market as an increasing supply and diversity of fruit drives greater price competition.

Gross value of horticultural production, by industry, Australia, 2002–03 to 2022–23

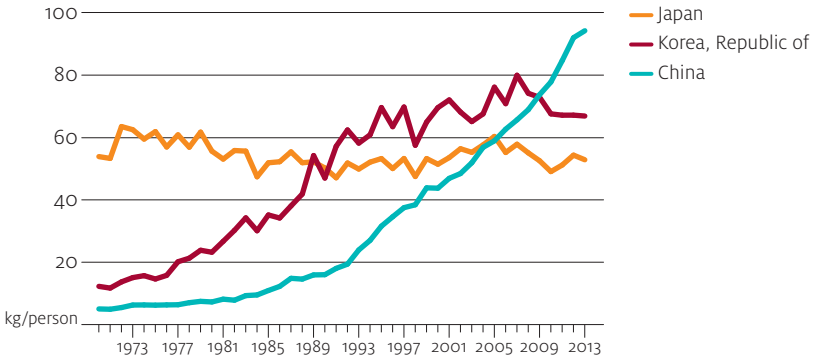


s ABARES estimate. z ABARES projection.

Strong growth in exports to China

Australia's price competitiveness in Asian import markets is expected to improve over the medium term as a result of an assumed depreciation of the Australian dollar and tariff reductions under free trade agreements with China, Japan and the Republic of Korea. Most of the growth in Australian fruit exports is expected because of strengthening demand in China. The Chinese fruit industry is not expected to produce sufficient quality fruit to displace imports from Australia over the medium term.

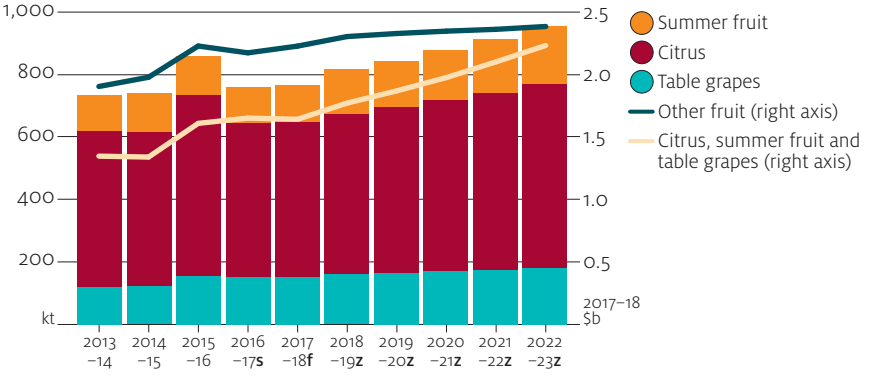
Annual per person fruit consumption, selected Asian countries, 1970 to 2013



Source: FAOSTAT (2017)

In 2017 new agreements between Australia and China resulted in additional market access for some Australian fruit, including peaches, plums and apricots. The agreements revised fumigation and cold-treatment protocols for table grapes and recognised Australia's pest-free regions for citrus and cherries. Industries that benefit from improved market access are expected to grow at a faster rate than those that are more reliant on the domestic market. Growth is expected to be driven by increasing profitability from export returns, which will allow for on-farm investments to improve productivity and expand production.

Volume and gross value of fruit production, Australia, 2013–14 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.
Note: Summer fruit includes apricots, cherries, nectarines, plums, peaches.

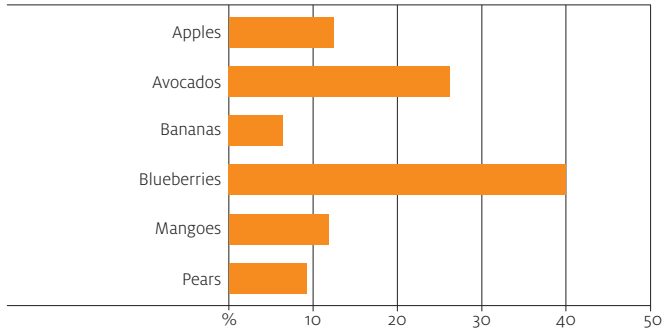
Competition in domestic fruit markets to intensify

Over the medium term, production from emerging industries and productivity gains in established industries are expected to drive greater supply and diversity of fruit in domestic markets. Domestic fruit demand is expected to increase gradually as Australia's population grows, but per person fruit consumption is not expected to increase significantly. As a result, increases in the supply of fruit are expected to outpace demand, leading to falling prices in real terms and intensifying competition between industries for a share of the retail market. Intense competition is expected to drive innovation in marketing to help farmers differentiate their products based on quality and convenience.

Emerging industries, such as the avocado and blueberry industries, have increased their production capacity in recent years and made significant investments in future capacity. Lags between establishment and fruit production can result in fruit prices at harvest that are well below the prices at time of establishment.

In the five years to 2015–16, a 64 per cent increase in fruit-bearing avocado trees contributed to a doubling of Australian avocado production to 67,600 tonnes. A further 347,000 young trees—equivalent to 26 per cent of the total number of fruit-bearing trees in 2015–16—are approaching maturity in 2017–18. These are projected to contribute to Australian avocado production reaching 100,000 tonnes by 2022–23, more than double the production volume a decade earlier, placing downward pressure on prices and profitability. Competition with NZ imports is expected to intensify beyond the 24,000 tonnes imported in 2016–17. This is because the NZ industry is investing in research and development, primarily into new cultivars better suited to local climate and finding solutions to irregular fruit-bearing.

Ratio of non-bearing to fruit-bearing assets, Australia, 2015–16



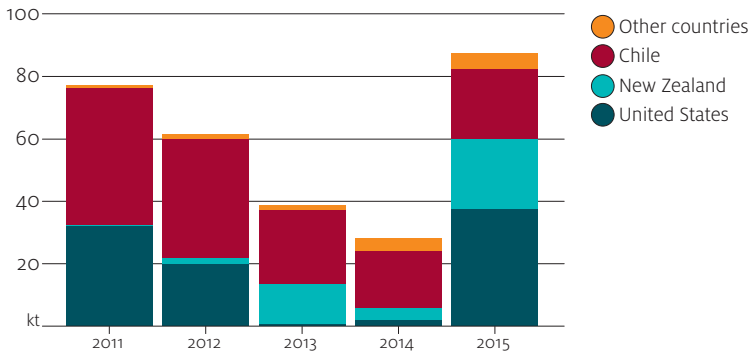
Note: Calculations based on farms with an estimated value of agricultural operations greater than $40,000.

In the five years to 2015–16 blueberry production in Australia more than doubled to 6,800 tonnes, due in part to a twofold increase in bearing area. Production is projected to increase to 8,100 tonnes by 2022–23, assuming a further 565 hectares of previously non-bearing area (equivalent to 40 per cent of 2015–16 bearing area) reaching maturity. Australian blueberries have been given priority for future horticultural market access negotiations with China. Chile is the dominant source of imported blueberries in China. Peru also gained market access to China and sent its first shipment in February 2017.

In 2015–16 the Australian pineapple industry reported having 1,176 hectares of non-bearing area to contribute to future production (equivalent to 73 per cent of 2015–16 bearing area). Pineapples are produced mostly in Queensland and around 40 per cent of production is processed into canned fruit or juice. Australian pineapple products compete in domestic markets with imports from Thailand, the Philippines and Vietnam. In recent years, an appreciating Australian dollar against the Thai baht and the Philippine peso has made imports cheaper than domestic products. Greater collaboration between Australian pineapple value chain participants to reduce costs and offer more innovative products would assist to improve competitiveness in domestic markets.

Productivity growth in Australia's established industries (such as the apple and banana industries) has occurred mainly due to investment in new production systems. Consolidation has also increased scale and reduced costs. In the five years to 2015–16 a move to high-density planting in the apple industry has contributed to a 30 per cent increase in fruit-bearing trees. By 2022–23 apple production is projected to increase to 325,000 tonnes compared with a forecast of 305,000 tonnes in 2017–18. Australian apples are the current priority for horticultural market access negotiations with China. China's import market for fresh apples has been dominated by imports from Chile, New Zealand and the United States.

Chinese imports of fresh apples, by country, 2011 to 2015



Source: UN Statistics Division (2017)

In the five years to 2015–16 the number of Australian banana farms decreased by 33 per cent and the banana-bearing area increased by 41 per cent. Increasing competition in the domestic market over the projection period will continue to shift production of bananas towards a reduced number of larger and more efficient farms. Banana production is projected to increase to 335,000 tonnes by 2022–23, up from a forecast 315,000 tonnes in 2017–18.

Outlook for nuts

The real gross value of Australian tree nut production is projected to increase from just over $1.0 billion in 2017–18 to $1.5 billion in 2022–23. Almonds and macadamia nuts account for most of this growth, followed by walnuts and hazelnuts. The prices of these nuts (in real terms) are expected to fall over the medium term as production increases in China, South Africa, Turkey and the United States outpace growth in demand.

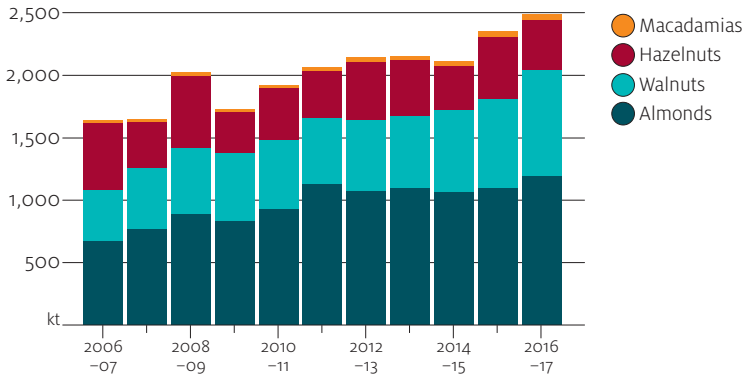
In the six years to 2016–17 the Australian almond and macadamia industries capitalised on increasing global demand for nuts, greater price competitiveness resulting from a lower Australian dollar, and improved market access via free trade agreements. They have also benefited from temporary production constraints in competing countries. During this period, Australian almond plantings increased significantly, particularly in the Victorian Sunraysia district (see box *Trends in horticulture activity in the Victorian Murray region*). Macadamia plantings also increased in the Queensland Bundaberg region.

In 2016–17 Australian almonds were exported to more than 30 countries and macadamias to more than 20 countries. Area expansion over the five years to 2022–23 is estimated to average 3 per cent annually for almonds and 4 per cent for macadamias. Almond production (shelled) is projected to reach 115,000 tonnes by 2022–23 and macadamia production (in-shell) to reach 60,000 tonnes.

Over the medium term, increasing production of walnuts and hazelnuts will lead to further diversity in tree nuts produced in Australia. Production in both industries is expected to rise due to expansion in area planted and improvements in yields as orchards reach maturity. Walnut production (in-shell) is projected to increase from 6,500 tonnes in 2015–16 to 17,000 tonnes in 2022–23. Hazelnut production (shelled) is projected to increase from 170 tonnes in 2015–16 to 2,800 tonnes in 2022–23.

A challenge for Australia's tree nut industries is maintaining international competitiveness. The International Nut and Dried Fruit Council estimates that global production of nuts increased significantly over the last 10 years. Annual production of almonds increased by 6.3 per cent, hazelnuts by 2.1 per cent, macadamias by 5.9 per cent and walnuts by 7.9 per cent. Increased global supply is expected to result in falling real prices for Australian tree nuts, and the cost of irrigation water is expected to raise production costs. This makes ongoing productivity improvements essential through investment in research and development, supply-chain efficiencies and value-adding opportunities in global value chains.

Global tree nut production, selected nuts, 2006–07 to 2016–17



Note: Production numbers are reported for shelled nuts.
Source: International Nut and Dried Fruit Council (2017)

Outlook for vegetables

In 2016–17 the real value of Australian vegetable production is estimated to have decreased to $3.6 billion, a 2 per cent fall from the previous year. This was mainly due to the impact of Cyclone Debbie on Queensland production of beans, capsicums, tomatoes and other vegetables. Price increases resulting from scarce supply were insufficient to outweigh falls in production, leading to a lower gross value of production.

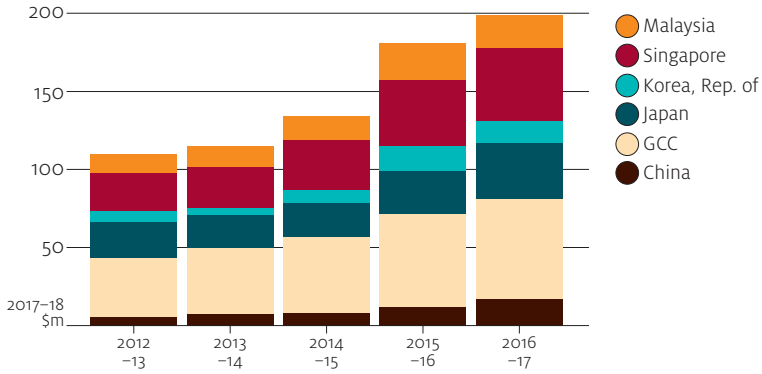
In 2017–18 the value of vegetable production is forecast to increase to $3.8 billion, mostly due to increases in the quantity of carrots, capsicums and tomatoes produced in Queensland, and bumper spring harvests along Australia's east coast. An appreciating Australian dollar (assumed to average US78 cents in 2017–18) is expected to reduce vegetable exports and increase domestic supply, leading to falls in average prices.

Over the medium term, increased production is expected from under-cover farming operations and expansion into new varieties of leafy and easy-to-process vegetables. Expanding export markets and processing improvements that enhance quality are expected to increase average prices. Australian potato production is projected to increase through productivity gains, rising from 1.2 million tonnes in 2017–18 to 1.3 million tonnes in 2022–23. Tomato production is projected to increase from 405,000 tonnes in 2017–18 to 425,000 tonnes in 2022–23, driven by a shift towards greater greenhouse production. Quality improvements and increasing popularity of snacking varieties of tomatoes is expected to contribute to higher average prices over the medium term.

Vegetable exports to grow

Over the medium term, Australian vegetable exports are expected to grow due to an assumed favourable exchange rate (falling from US78 cents in 2017–18 to US74 cents in 2019–20), increased access to Asian markets, and greater demand from Gulf countries. Large-scale efficient domestic producers are expected to diversify into export markets. Existing upward trends in exports of asparagus, carrots and potatoes are expected to be replicated for broccoli, brussels sprouts, cauliflower, celery, lettuce, mushrooms, pumpkins and spinach. Target markets are likely to include China, Japan, Malaysia, the Republic of Korea, Singapore and member states of the Gulf Cooperation Council.

Value of Australian vegetable exports to selected markets, 2012–13 to 2016–17



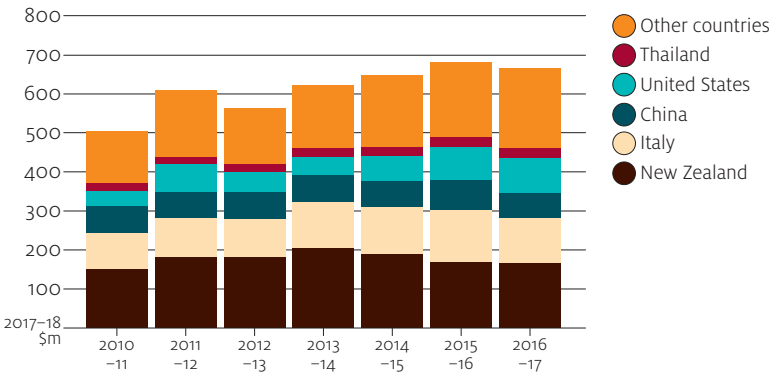
GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau.

Value-adding for vegetables

Australian horticultural value chains have moved towards post-harvest processing and packaging to meet consumer demand for convenience, variety and longer shelf life. For example, Australian vegetables are washed, cut, mixed and packaged for sale at premium prices in domestic supermarkets and frozen vegetables such as green peas, carrots and sweet corn are packaged for convenience.

Over the medium term, the Australian vegetable industry is expected to seek more value-adding opportunities for fresh and easy-to-process vegetables. These Australian products are expected to compete in the domestic market with imports from countries such as China, Italy, New Zealand, Thailand and the United States. The price competitiveness of Australian products is expected to be boosted by an assumed lower Australian dollar but processing costs, including labour, energy and other costs, will likely to remain a challenge (Nguyen & Terrill 2016).

Australian imports of vegetable products, selected countries, 2010–11 to 2016–17



Note: Vegetable products include frozen, mixed, prepared and preserved vegetables across several categories.

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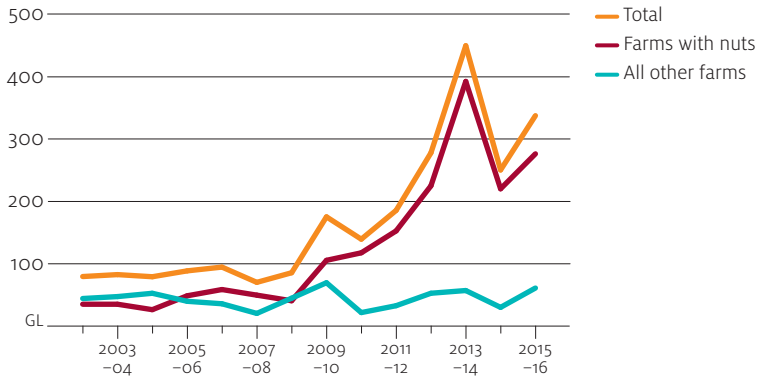
Trends in horticulture activity in the Victorian Murray region

Mihir Gupta and Neal Hughes

Since 2010–11 irrigation water used for horticultural production in the lower Victorian Murray region has increased significantly. Water use for fruit and nut production in the Victorian Murray (below Barmah Choke) region has increased from around 142 gigalitres in 2010–11 to around 324 gigalitres in 2015–16 (Figure 1). This increase has largely been driven by an expansion in nut farming, particularly of almonds. Water demand in this region is expected to increase further as recent plantings mature.

FIGURE 1 Irrigation water use in fruit and nut production, Victorian Murray (below Barmah Choke) region, 2005–06 to 2016–17



Source: ABARES estimate; ABS (2017)

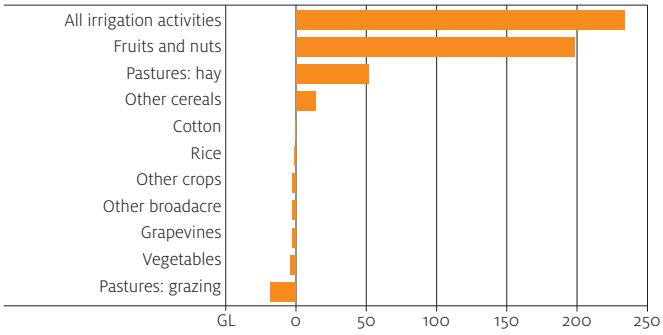
ABARES used an economic model, described in Gupta, Hughes and Wakerman Powell 2018, of the southern Murray–Darling Basin (MDB) to estimate changes in water demand between 2002–03 and 2016–17. The model was applied to the Victorian Murray region with prices, rainfall and water allocations fixed for comparison. For the notional water price of $100 per megalitre, the model indicates that the volume of total water demand in the lower Victorian Murray region increased by more than 200 gigalitres between 2002–03 and 2016–17. This was mostly due to an expansion in fruit and nut production (Figure 2).

Increased water demand has resulted in large volumes of water being consistently traded into the Victorian Murray region from other parts of the southern MDB, including the Murrumbidgee and NSW Murray regions (Figure 3).

continued ...

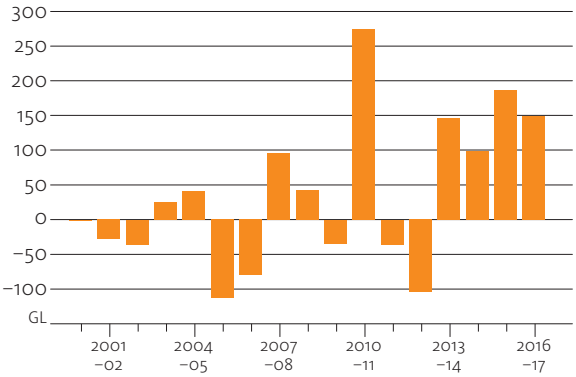
Trends in horticulture activity in the Victorian Murray region continued

FIGURE 2 Modelled change in water use, Victorian Murray (below Barmah Choke), 2002–03 to 2016–17



Source: ABARES estimate

FIGURE 3 Net annual water allocation trade (GL), Victorian Murray region, 2000–01 to 2016–17



Source: Murray–Darling Basin Authority

References

ABS 2017, *Water use on Australian farms*, cat. no. 4618.0, Australian Bureau of Statistics, Canberra, accessed 7 July 2017.

Gupta, M, Hughes, N & Wakerman Powell, K 2018, 'A model of water trade and irrigation activity in the southern Murray–Darling Basin', AARES annual conference, Adelaide, 6–9 February.

Outlook for horticulture

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Gross value									
nominal	$m	9,801	9,762	10,319	10,928	11,535	12,163	12,843	13,593
real **a**	$m	10,163	9,953	10,319	10,687	11,006	11,322	11,664	12,044
Fruit and tree nuts (excl. grapes)									
nominal	$m	4,225	4,194	4,439	4,820	5,162	5,504	5,888	6,295
real **a**	$m	4,381	4,276	4,439	4,714	4,926	5,124	5,348	5,578
Table and dried grapes									
nominal	$m	453	490	466	513	557	604	656	711
real **a**	$m	470	500	466	502	532	563	595	630
Vegetables									
nominal	$m	3,585	3,514	3,820	3,964	4,144	4,342	4,544	4,788
real **a**	$m	3,718	3,582	3,820	3,877	3,954	4,042	4,126	4,242
Nursery, cut flowers and turf									
nominal	$m	1,296	1,318	1,344	1,374	1,409	1,444	1,480	1,517
real **a**	$m	1,344	1,344	1,344	1,344	1,344	1,344	1,344	1,344
Other horticulture **nei b**									
nominal	$m	241	245	250	256	262	268	275	282
real **a**	$m	250	250	250	250	250	250	250	250
Exports									
nominal	$m	2,609	2,561	2,694	3,034	3,385	3,724	4,105	4,511
real **a**	$m	2,705	2,611	2,694	2,967	3,229	3,467	3,728	3,997
Fruit									
nominal	$m	1,072	1,086	1,083	1,239	1,387	1,542	1,716	1,912
real **a**	$m	1,112	1,108	1,083	1,212	1,324	1,435	1,559	1,694
Tree nuts									
nominal	$m	930	820	903	1,022	1,159	1,287	1,436	1,583
real **a**	$m	964	836	903	999	1,106	1,198	1,304	1,403
Vegetables									
nominal	$m	340	354	402	459	517	567	615	670
real **a**	$m	353	361	402	449	493	527	559	594
Nursery									
nominal	$m	14.8	19.2	19.6	20.0	20.5	21.0	21.6	22.1
real **a**	$m	15.4	19.6	19.6	19.6	19.6	19.6	19.6	19.6
Other horticulture **b**									
nominal	$m	252	281	287	293	301	308	316	324
real **a**	$m	261	287	287	287	287	287	287	287

a In 2017–18 Australian dollars. **b** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics

Australian wine exports

Outlook to 2022–23

Andrew Cameron

- Chinese demand to boost Australian wine exports to $2.8 billion in 2017–18.
- Competition to constrain growth in export value over the medium term.

Value of exports forecast to reach almost $2.8 billion

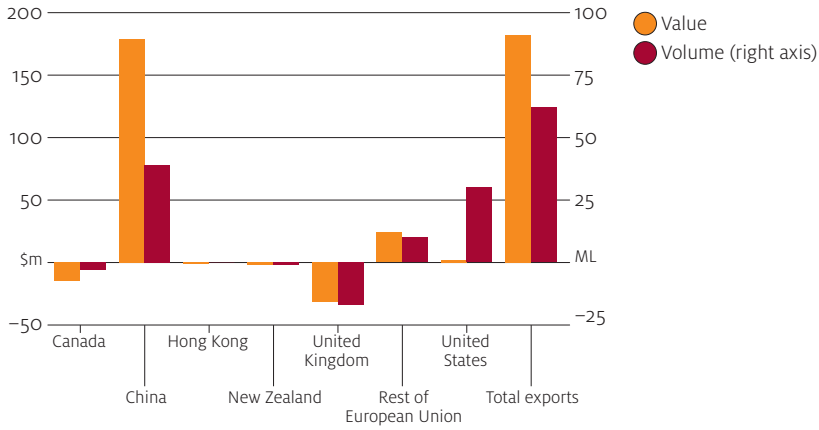
The value of Australian wine exports is forecast to reach almost $2.8 billion in 2017–18, supported by strong Chinese demand and supply shocks to international competitors.

Over the medium term, exports to China are projected to grow further, but continued competition in other export markets is expected to largely offset this growth. As a result, from 2016–17 to 2022–23 the value of wine exports in real terms is projected to be largely unchanged.

In 2016–17 the value of Australia's wine exports recorded a third consecutive year of growth, increasing by 8 per cent to $2.4 billion. This was almost entirely due to very strong demand from China, which overtook the United States to become Australia's most valuable export market. Average unit values were unchanged overall from the previous year, with bottled wine unit values falling and sparkling wine values rising.

Exports to Canada, New Zealand and the United Kingdom fell in both value and volume terms. In contrast, strong demand for bottled white wine in the European Union (excluding the United Kingdom) resulted in export values increasing more than volumes. Exports to Hong Kong and the United States changed little in value terms, but bulk export volumes to the United States increased significantly.

Change in Australian wine exports to major markets, 2016–17



Wine exports to China to approach $900 million in 2017–18

In 2016–17 China continued to grow in importance for Australian wine exporters. Exports increased by 43 per cent to just under $600 million, as China surpassed the United States to become Australia's most important export market. China accounted for 25 per cent of Australia's wine exports by value in 2016–17, and is projected to account for 40 per cent by 2022–23 (see box *Market diversity for Australian wine*).

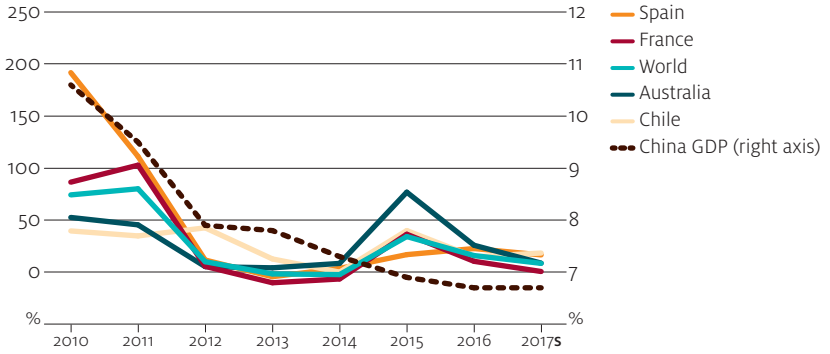
In 2017–18 the value of wine exports to China is forecast to reach around $900 million. Growth accelerated in the first half of the financial year, with export values up by around 75 per cent compared with the same period the previous year. Under the China–Australia Free Trade Agreement, wine import tariffs halved from 1 January 2018 and will be eliminated by 2019, boosting Australia's competitiveness in the Chinese market.

The Chinese wine market has been expanding quickly as a result of changes in the drinking preferences of China's growing middle class. Between 2010 and 2016 the volume of wine imported by China more than doubled and value nearly tripled in nominal terms. The pace of import growth has moderated in recent years along with the broader Chinese economy, but remains brisk at above 6 per cent per year. Slower than expected economic growth in China poses a downside risk to Australian wine exporters.

Shiraz and cabernet sauvignon dominate Australian exports to China. Strong production growth in both varieties in the 2016 and 2017 vintages is expected to lead to an increase in export volumes from 2017–18. Export unit values for both varieties (including blends) increased in the first half of 2017–18 demonstrating strong demand from Chinese importers. Over the medium term, Australian producers and exporters are expected to respond to these price signals by either diverting additional volumes to China or further increasing production of these varieties.

The volume of bulk wine exports to China increased significantly in 2016–17, and is forecast to continue to grow in 2017–18 and over the medium term. Bulk wine has traditionally accounted for only a small share of Australia's exports to China, although China does import large volumes of bulk wine from other countries. Growth in bulk wine exports over the medium term is likely as Australian exporters take advantage of low bottling costs in China.

Change in value of wine imports, by supplier, and economic growth, China, 2010 to 2017



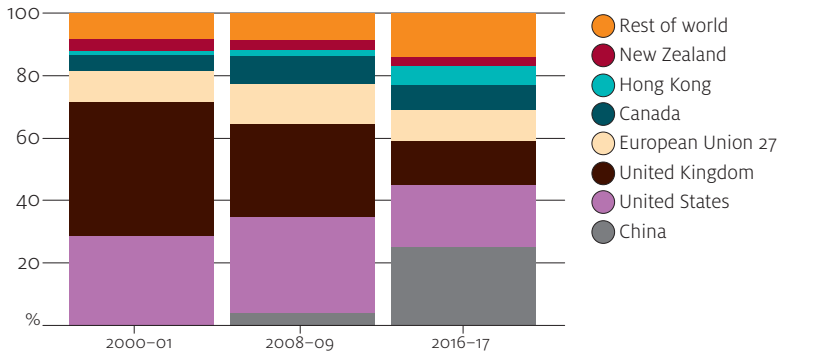
s ABARES estimate.
Sources: ABARES; ITC Trademap

Market diversity for Australian wine

Heavy reliance on a single export market presents a systemic risk to many Australian agricultural industries, including wine, wool and live cattle exports. The ongoing expansion of the Chinese market for Australian wine—from less than 1 per cent of export value in 2000–01 to 25 per cent in 2016–17—raises questions about whether market concentration is a future risk for the Australian wine industry.

Market diversity for Australian wine exports has increased in recent years. Between 2000–01 and 2008–09 Australia's five major export markets were the United Kingdom, the rest of the European Union, the United States, Canada and New Zealand, each worth more than $100 million in real terms. In this context, expansion of markets in China (worth $100 million by 2008–09) and Hong Kong ($100 million by 2013–14) represents a valuable diversification opportunity for the Australian wine industry rather than an increase in concentration risk.

Share of Australian wine export value, by destination, 2000–01 to 2016–17



Increased recognition of the quality of Australian wine has resulted in the emergence of several other important markets. In 2000–01 Australia had 12 export markets valued in excess of $5 million in real terms. By 2016–17 this had grown to 20 markets. Countries such as the United Arab Emirates, Taiwan, the Republic of Korea and the Philippines emerged as important destinations for Australian wine.

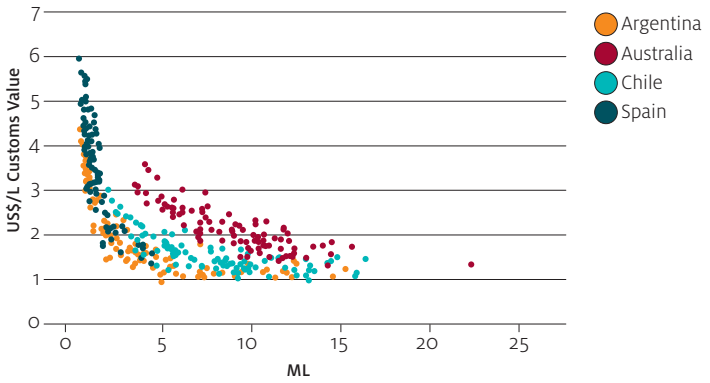
Perfect storm on global bulk markets boosts exports to the United States

In 2016–17 export volumes to the United States increased by almost 20 per cent, but the value remained static. Total export value was largely unchanged owing to a fall in prices per litre driven by a compositional shift towards bulk wine and a fall in prices per litre for bottled wines (including sparkling wine). Many Australian brands ship in bulk and then bottle the wine in the United States.

Australia competes with Argentina, Chile and Spain in a highly price-sensitive segment of the US bulk wine market. Relatively poor harvests in Chile and Argentina in 2016 and 2017 led to tighter inventories and higher bulk wine prices, eroding their competiveness against Australian and Spanish wines in the United States. The 2017 European harvest is expected to be well below average and 2017–18 bulk wine prices are expected to be high, reflecting tighter global supplies. This will benefit Australian exporters who have plentiful supplies following a bumper 2017 harvest. Australian wine export volumes to the United States are forecast to increase in 2017–18 and 2018–19, driven by higher bulk wine exports, but value is forecast to remain unchanged.

Over the medium term, European and South American wine production is expected to recover, leading to higher supply and lower prices in the bulk wine market. This would lead to price sensitive US importers transitioning back to wine from Chile, Argentina and Spain.

Price and volume characteristics of US bulk wine imports, selected countries, January 2010 to October 2017



Source: United States Census Bureau (n = 94 per country)

Modest growth in UK bottled exports forecast over medium term

In 2016–17 Australian exports to the United Kingdom fell by 9 per cent in value terms and 7 per cent in volume terms, driven by greater competition from other countries. The shortage of bulk wine on world markets is expected to contribute to a moderate increase in Australian exports in 2017–18, before resuming a downward trend. Australian bulk wine exports to the United Kingdom have been falling since 2014–15 and are not expected to grow over the medium term due to competition from other exporters.

New Zealand and the United States have both increased their share of the UK bulk wine import market at the expense of Australian wine. This signals growing demand for 'semi-premium' bulk product in the United Kingdom. Import unit values show that New Zealand's bulk wine is priced at more than double Australia's and US bulk wine opened a premium of up to 30 per cent in 2016–17 and in the first months of 2017–18.

In 2016–17 the value of Australian bottled wine exports to the United Kingdom rose by 5 per cent. Exports of bottled wine exhibit some price responsiveness in the UK market, indicating that Australia is competing in a value-conscious market segment. Lower unit values in the first half of 2017–18 coincided with strong volume growth, and are forecast to result in the value of bottled wine exports increasing by around 10 per cent in 2017–18.

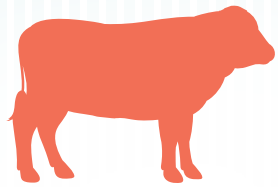
Over the medium term, Australian exporters are expected to place more emphasis on bottled wine exports to the United Kingdom, with marketing focused on higher-value wines and regional differentiation. Unit values for bottled wine are projected to stabilise or increase modestly over the outlook period to 2022–23. Export value is expected to increase by 4 per cent in real terms compared with 2016–17. The uncertain impact of Brexit on UK consumer incomes and the value of the pound presents a considerable downside risk to Australian bottled wine exports over the medium term.

Agriculture

Livestock

LIVESTOCK

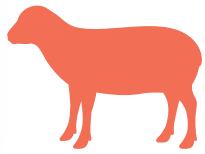
↓4%
to **439 Ac/kg**[a]
in 2018–19



Beef and veal

Australian cattle prices to fall due to higher production and strong competition in export markets.

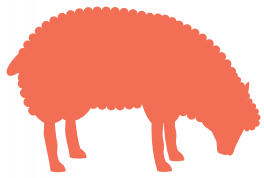
↑3%
to **645 Ac/kg**[b]
in 2018–19



Sheep meat

Strong competition from processors and restockers to drive lamb prices higher.

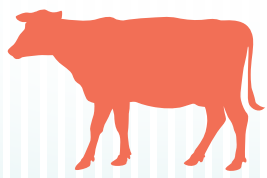
↑4%
to **1,700 Ac/kg**[c]
in 2018–19



Wool

Strong demand for superfine wool and limited supply growth to drive wool prices higher.

↑3%
to **48 Ac/L**[d]
in 2018–19



Dairy

Milk prices to rise due to a falling Australian dollar and increased competition for milk.

a Australian weighted average saleyard price of beef cattle. **b** Australian weighted average saleyard price of lamb. **c** Eastern Market Indicator price, clean equivalent. **d** Australian average farmgate milk price.

Beef and veal

Outlook to 2022–23

Jack Mullumby

- Saleyard prices are expected to fall to 2020–21 but partially recover over the latter part of the projection period.
- Strong competition in major export markets is expected to put downward pressure on export prices over the medium term.
- Australian beef production and export volumes are projected to stabilise in the short term, before contracting in 2021–22 and 2022–23.

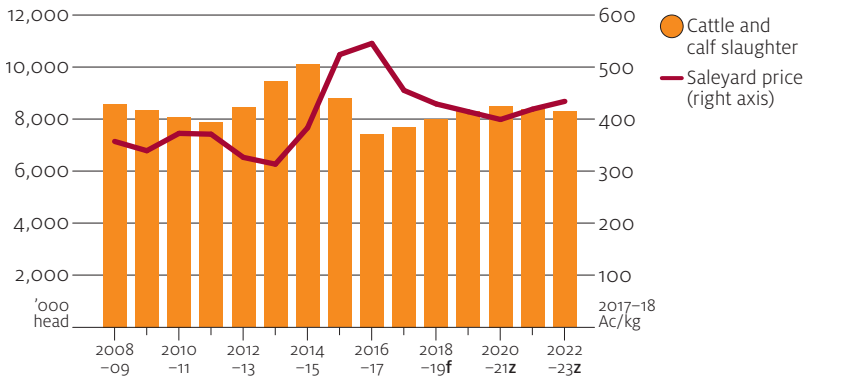
Cattle prices to fall but remain high

In 2017–18 the weighted average saleyard price of beef cattle is forecast to fall by 15 per cent to average 455 cents per kilogram. This mainly reflects lower prices in major export markets, particularly Japan and the United States where Australian beef continues to face increased competition. The forecast decline also reflects increased cattle supply, following improved seasonal conditions that have driven herd rebuilding in recent years, mainly in parts of southern Australia.

Between 2018–19 and 2020–21 strong competition in major export markets and, assuming average seasonal conditions, an expansion in Australian cattle supply are expected to exert downward pressure on Australian saleyard prices. Prices are expected to rise in 2021–22 and 2022–23 when growth in world supplies slows, particularly in the United States, placing upward pressure on world beef prices.

In 2022–23 the weighted average saleyard price of beef cattle is projected to average 434 cents per kilogram (in 2017–18 dollars), 5 per cent below the average forecast for 2017–18, but 12 per cent above the 10-year average to 2016–17 of 389 cents per kilogram.

Cattle and calf slaughter and weighted average saleyard price, Australia, 2008–09 to 2022–23



f ABARES forecast. **z** ABARES projection.

Expansion of cattle herd to slow over the medium term

Over the medium term to 2022–23 the Australian beef cattle herd is projected to expand by 4 per cent to around 25 million head. Assumed average seasonal conditions are expected to provide producers with an opportunity to expand herds. However, high beef prices relative to long-term averages are expected to provide producers with an incentive to maintain a high rate of turn-off. This is expected to constrain growth in cattle numbers, particularly in northern Australia, where seasonal conditions have also restricted rebuilding in recent years.

Medium-term beef cattle slaughter to rise and then fall

In 2017–18 Australian beef production is forecast to rise by 8 per cent to 2.2 million tonnes (carcase weight), driven by a 4 per cent increase in cattle slaughter. Most of this increase is expected to be from female cattle as falling average prices for manufacturing beef provide producers with an incentive to consolidate breeding inventories.

Manufacturing beef prices are projected to continue to decline to 2020–21. This is expected to provide producers with an incentive to turn off cows and heifers that would otherwise be retained for herd expansion. This projected increase in turn-off is expected to drive beef production to a peak of around 2.4 million tonnes in 2020–21.

In 2021–22 and 2022–23 support for manufacturing beef prices is expected to reduce cow and heifer turn-off. However, this is projected to be offset by rising carcase weights, driven by low feed costs and a large number of cattle on feed. As a result, Australian beef production is projected to remain at around 2.4 million tonnes to 2022–23.

Value of exports to rise

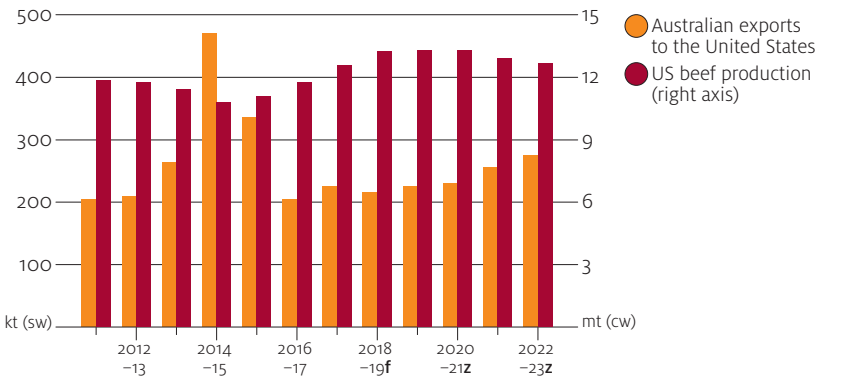
The value of Australian beef exports is projected to fall from $7.6 billion in 2017–18 to $7.3 billion (in 2017–18 dollars) in 2022–23, despite rising export volumes. Export prices are projected to decline over the medium term, mainly as a result of strong competition from US beef in major export markets. Competition is also expected to increase from South American beef exports to China, but animal disease issues are likely to continue to restrict their entry to the high-value markets of Japan and the Republic of Korea.

US import demand to remain weak

Feed costs are projected to remain low over the medium term and provide US producers with an incentive to increase the number of cattle on feed. Between 2017–18 and 2019–20 this is expected to result in rising US beef production and place downward pressure on US beef prices. The profitability of placing cattle on feed is projected to decline from 2020–21 onwards, resulting in US beef production contracting over the three years to 2022–23.

Reflecting the projected expansion and subsequent contraction in US beef production over the medium term, US demand for imported beef is expected to remain weak to 2019–20 before rising. Australian beef exports to the United States are projected to reach 275,000 tonnes in 2022–23, 28 per cent higher than the 215,000 tonnes forecast in 2018–19.

US beef production and Australian exports to the United States, 2011–12 to 2022–23



f ABARES forecast. **z** ABARES projection.

Between 2017–18 and 2022–23 US beef exports are expected to rise despite projected lower production in the latter half of the projection period. Domestic beef demand is expected to be relatively weak as a result of consumers substituting beef with chicken and pig meat. US exports are expected to account for an increasing share of production as a result of strong demand in export markets. In 2017 US exports accounted for a record 11 per cent of production (around 900,000 tonnes)—of this, 50 per cent was shipped to Japan and the Republic of Korea.

Lower prices drive Japanese imports higher

In 2017–18 Australian beef exports to Japan are forecast to increase by 6 per cent to 290,000 tonnes. Forecast lower world beef prices are expected to support an increase in Japanese beef imports, mostly of US chilled beef. In the first half of 2017–18 the chilled beef indicator price (chilled grassfed fullset Japan cf) was 8 per cent lower year-on-year while Japanese imports of US beef were 20 per cent higher.

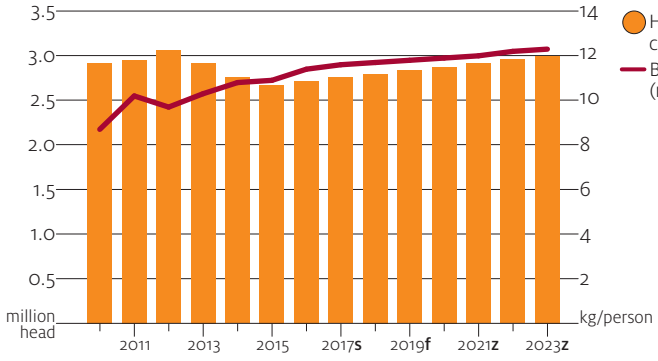
Over the medium term, Japanese demand for imported beef is projected to remain relatively weak due to slowing income growth and an ageing and declining population. Strong competition from US exports is expected to limit growth in Australian exports of chilled beef. As a result, total beef exports to Japan are projected to reach 310,000 tonnes in 2022–23, due to increased Australian exports of frozen beef. Total beef exports to Japan are expected to increase gradually at an annual average rate of around 1 per cent a year from 2018–19.

Korean import demand projected to be weak

In 2017–18 Australian beef exports to the Republic of Korea are forecast to decline by 7 per cent to 167,000 tonnes. This reflects increased competition from the United States in the chilled beef market and reduced demand for imported beef as a result of strong competition from pig meat.

Over the medium term, Korean demand for Australian beef is expected to remain weak. Relatively slow income growth is expected to reduce average growth in per person beef consumption to around 1 per cent a year, down from the five-year average to 2017 of 2.2 per cent. Most of the projected increase in Korean beef consumption is expected to be supplied by local production as a result of the Korean cattle herd expanding by 8 per cent to around 3 million head. This is expected to reduce Korean demand for imported beef for which Australia will be facing increased competition from US exports. From 2018–19 Australian beef exports to Korea are projected to increase annually by around 1 per cent per year to reach 180,000 tonnes in 2022–23.

Beef consumption and cattle herd, Republic of Korea, 2010 to 2023



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Chinese import demand to remain strong

In 2017–18 Australian beef exports to China are forecast to increase by around 17 per cent to 122,000 tonnes. This reflects strong growth in demand for beef in China, which continues to outpace growth in supply. Chinese import demand is expected to be supported by relatively strong income growth and urbanisation despite higher average import prices. In the first half of 2017–18 Chinese beef imports were 29 per cent higher year-on-year and average import prices rose by 5 per cent.

Between 2018–19 and 2022–23 Australian beef exports to China are projected to grow strongly at 5 per cent per year to reach 158,000 tonnes. This is mainly the result of strong Chinese demand for imported beef and an increase in exportable supplies from Australia.

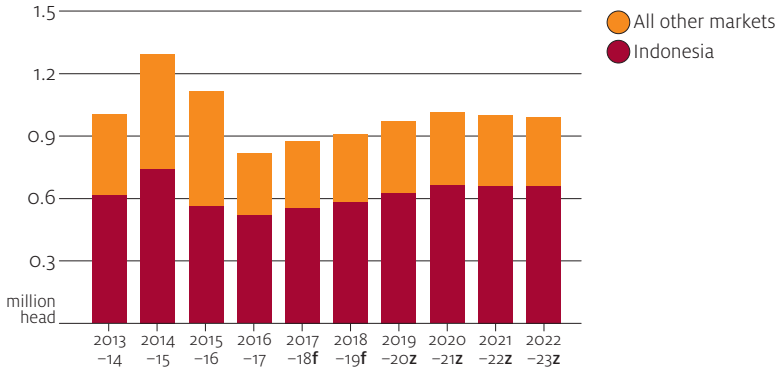
Export prices for Australian beef to China are projected to decline over the medium term as a result of lower world beef prices and increased competition from other exporters. China is expected to expand the number of suppliers from which it imports beef and increase imports from already established suppliers such as Brazil. In 2016 China imported beef from 13 markets, double the number five years earlier. The United States was the most recent addition, after trade resumed with small volumes in June 2017.

Demand for Australian live cattle to drive exports

In 2018–19 Australian live feeder and slaughter cattle exports are forecast to increase by 4 per cent to 910,000 head, following a 7 per cent increase in 2017–18. Almost all of the forecast increase is expected to go to Indonesia, Australia's largest market for live cattle. Import demand in Indonesia is strong, supported by growth in incomes, population and urbanisation, as well as a growing preference for diversified diets. Constrained growth in Indonesian beef production is also supporting import demand because strong prices provide local producers with an incentive to maintain a high rate of turn-off, restricting growth in the Indonesian herd.

Over the medium term, Australian exports are projected to remain at around 900,000 head. Exports are expected to increase to markets other than Indonesia, including Vietnam and China. This will help Australia's live export industry to diversify away from single market dependency, and related exchange rate and market access risks. Despite diversification, Indonesia is projected to remain the largest market for Australia live feeder slaughter exports and account for around two-thirds of exports in 2022–23.

Live cattle exports to Indonesia and all other markets, Australia, 2013–14 to 2022–23



f ABARES forecast. z ABARES projection.

Indonesian import regulations pose a key downside risk for the Australian live export industry. The Indonesian Government introduced policy measures in September 2016 aimed at reducing domestic beef prices. This includes a policy requiring one breeding cow to be imported for every five feeder cattle in the two years to 2018, equivalent to around 18 per cent of live cattle imports. Importers unable to comply with the policy may have licenses suspended for one year.

According to the Australian Department of Agriculture and Water Resources, breeding cattle accounted for just 2.9 per cent of live exports to Indonesia in 2017. To meet the current Indonesian requirements, Indonesian feedlots would have to import a large number of breeding cattle in 2018. Live exporters would be required to compete with relatively strong restocker demand in Northern Australia. This would provide strong support for live cattle prices and place upward pressure on beef prices in Indonesia.

Outlook for beef and veal

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Saleyard price									
nominal	c/kg (cw)	505	535	455	439	434	429	461	490
real **a**	c/kg (cw)	524	545	455	429	414	399	419	434
Cattle numbers **bc**	million	25.0	25.9	26.4	26.9	27.2	27.3	27.3	27.5
beef cattle	million	22.3	23.3	23.8	24.2	24.5	24.6	24.6	24.8
Slaughterings	’000	8,796	7,423	7,755	8,000	8,300	8,500	8,400	8,300
Production	kt (cw)	2,344	2,069	2,227	2,278	2,328	2,348	2,368	2,388
Consumption per person	kg (cw)	24.6	25.4	26.5	26.1	25.7	25.2	24.8	24.4
Export volume	kt (sw)	1,196	991	1,080	1,110	1,140	1,150	1,160	1,170
to China	kt (sw)	129	104	122	132	140	146	152	158
to Japan	kt (sw)	265	274	290	298	301	304	307	310
to Korea, Rep. of	kt (sw)	189	179	167	172	174	176	178	180
to United States	kt (sw)	336	204	232	215	225	230	255	275
Export value									
nominal	$m	8,495	7,115	7,560	7,550	7,580	7,650	7,890	8,190
real **a**	$m	8,809	7,254	7,560	7,384	7,232	7,121	7,165	7,256
Live feeder/slaughter cattle exports	’000	1,114	817	875	910	930	930	900	890
nominal	$m	1,280	1,031	1,050	1,055	1,100	1,151	1,160	1,182
real **a**	$m	1,328	1,051	1,050	1,032	1,050	1,072	1,053	1,047

a In 2017–18 Australian dollars. **b** At 30 June. **c** Includes dairy cattle. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics; Meat & Livestock Australia

Sheep meat

Outlook to 2022–23

Conrad Rees and Peter Berry

- Saleyard lamb and sheep prices are forecast to rise in 2018–19 before falling over the medium term.
- Growth in the national sheep flock is expected to slow over the medium term despite historically high prices, with producers to take advantage of prices through high turnoff rates.
- Demand for Australian sheep meat is expected to remain strong, supported by strong income growth in major export markets.

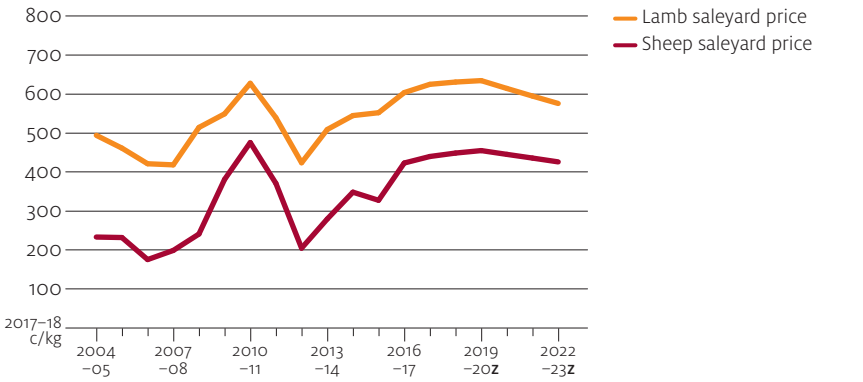
Saleyard prices to rise

In 2017–18 Australian saleyard prices are forecast to increase by around 6 per cent to average 625 cents per kilogram for lamb and 440 cents per kilogram for sheep. This reflects strong competition at saleyards from restockers and processors, driven by strong demand in major export markets, particularly China.

Demand for Australian sheep meat exports is expected to remain relatively strong in 2018–19, driven mainly by income growth in China and an assumed lower Australian dollar. These factors and strong restocker demand are forecast to place upward pressure on saleyard prices, assuming a return to average seasonal conditions. As a result, saleyard prices for lamb and sheep are forecast to be higher in 2018–19.

Over the medium term to 2022–23 growth in demand is expected to slow in the United States and the Middle East as income growth drives increased substitution of sheep meat with beef and chicken. Changing consumer preferences and a projected increase in exportable supplies from Australia and New Zealand are expected to place downward pressure on Australian saleyard prices. As a result, Australian lamb prices are projected to decline steadily to average around 576 cents per kilogram (in 2017–18 dollars). Despite the decline, lamb prices are expected to remain around 9 per cent higher than the 527 cents per kilogram averaged over the five years to 2017–18. Saleyard sheep prices are projected to average 426 cents per kilogram by 2022–23.

Saleyard prices for lamb and sheep, Australia, 2004–05 to 2022–23



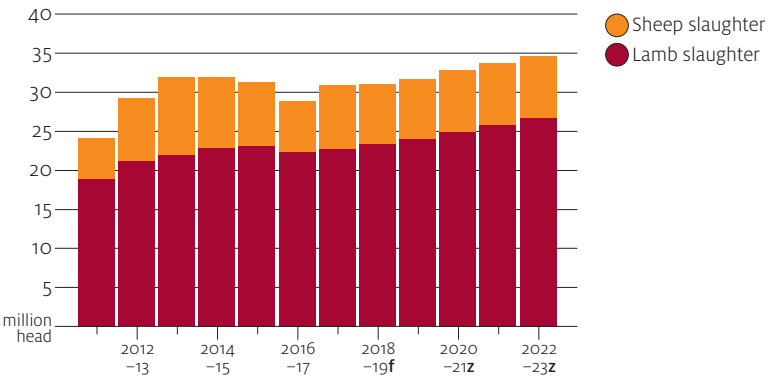
z ABARES projection.

Sheep meat production to rise over the medium term

In 2017–18 Australian sheep meat production is estimated to increase by around 6 per cent to 711,000 tonnes (carcase weight), mainly reflecting increased mutton production. The increase is due to widespread dry conditions through winter and spring 2017 which are expected to have delayed flock rebuilding. Seasonal conditions during this period are also expected to reduce lamb carcase weights, partially offsetting higher lamb slaughter.

Over the medium term, continued high prices are expected to provide producers with an incentive to maintain a high rate of lamb turn-off. Assumed average seasonal conditions are expected to result in higher lamb carcase weights and reduced mutton production as producers expand flocks. Australian sheep meat production is projected to increase between 2018–19 and 2022–23 by around 3 per cent per year to 827,000 tonnes.

Lamb and sheep slaughter, Australia, 2011–12 to 2022–23



f ABARES forecast. z ABARES projection.

Flock expansion to slow

In 2017–18 the national flock is forecast to increase by around 0.5 per cent to 70.5 million head. Strong lamb prices and below average seasonal conditions in the first half of the year provided producers with an incentive to maintain a high rate of turn-off, delaying growth in the national flock.

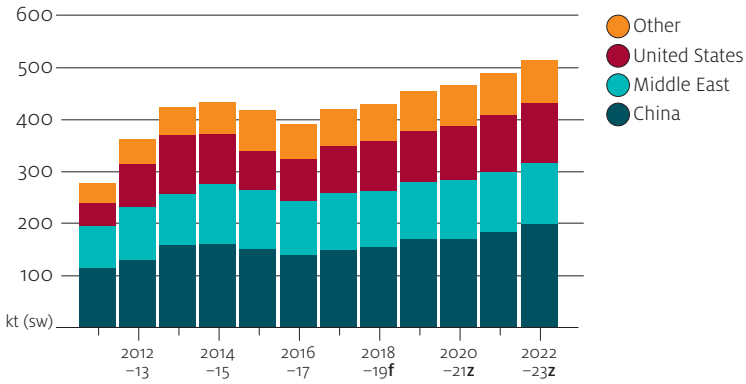
Over the medium term, high lamb prices and assumed average seasonal conditions are expected to provide producers with an opportunity to increase flock numbers. National flock expansion is expected to be driven by meat-producing enterprises, but high turn-off will restrict the rate of growth. In 2022–23 sheep numbers are projected to reach 75 million head, expanding gradually by around 1 per cent per year from 2018–19.

Sheep meat exports to rise over the medium term

In 2017–18 the value of Australian sheep meat exports is estimated to increase by around 12 per cent to $3.0 billion. This reflects higher unit export values for lamb and mutton and an 7 per cent increase in export volume to 419,000 tonnes (shipped weight). Australia's three largest export markets for sheep meat—the United States, the Middle East and China—are expected to account for 65 per cent of trade.

Over the medium term, sustained flock expansion is projected to increase Australian sheep meat exports by 20 per cent from 430,000 tonnes in 2018–19 to 514,000 tonnes in 2022–23. Lamb is anticipated to continue to account for around two-thirds of Australian sheep meat exports. The value of Australian sheep meat exports is projected to increase gradually to around $3.5 billion (in 2017–18 dollars) in 2022–23, partly offset by declining export unit values.

Sheep meat exports by major destination, Australia, 2011–12 to 2022–23



f ABARES forecast. **z** ABARES projection.

Exports to the United States to slow as demand growth slows

Sheep meat is a niche product in the United States and demand is driven predominately by migrants. The United States has become increasingly reliant on imports as local producers continue to exit the industry. In the 10 years to 2016 US sheep meat production fell by 18 per cent while imports as a share of consumption rose from around 50 per cent to 60 per cent. Australia accounts for around three-quarters of US sheep meat imports and New Zealand for most of the remainder.

Over the medium term, growth in US demand for Australian sheep meat is expected to slow due to increased competition from local supplies and exports from New Zealand. Structural adjustment in the US sheep industry is expected to ease and NZ exports to the United States to remain competitive. However, between 2017–18 and 2022–23 Australian sheep meat exports to the United States are projected to rise from around 71,000 tonnes to 83,000 tonnes, largely reflecting US population growth. This represents an average annual increase of around 3 per cent, comparatively slower than the 8 per cent averaged during the five years to 2016–17.

Chinese demand to remain strong

Australian sheep meat exports to China are forecast to increase by 11 per cent to around 91,000 tonnes in 2017–18 and by a further 4 per cent to 95,000 tonnes in 2018–19. This mainly reflects higher Chinese meat consumption, driven by continued strong income growth.

Over the medium term, Chinese income growth is expected to continue to underpin strong growth in domestic demand for sheep meat. This is expected to outpace growth in local supply and continue to provide support for import demand. Over the medium term, Australian sheep meat exports to China are projected to expand by around 5 per cent per year to reach around 115,000 tonnes.

Middle East consumers to eat less sheep meat, but exports to grow marginally

Sheep meat is a staple of Middle Eastern diets and accounts for around 10 per cent of meat consumption. As incomes increase, consumers have reduced their individual consumption of sheep meat and increased their consumption of preferred alternatives such as chicken and beef. Despite falling per person consumption, population growth is projected to increase overall demand for Australian sheep meat exports to the region by around 1 per cent per year to reach 118,000 tonnes in 2022–23. In contrast, in the five years to 2016–17 Australian exports to the Middle East grew annually by 5 per cent.

Competition from New Zealand to continue

New Zealand is the largest sheep meat producer in the world and Australia's main export competitor. However, in the 10 years to 2017, NZ exports fell by around 15 per cent as sheep producers exited the industry—some to establish dairy farms. Over the medium term, the NZ sheep flock is projected to remain steady due to environmental water regulations and land availability restricting further expansion of the dairy industry. As a result, NZ sheep meat production is projected to stabilise, implying that New Zealand will remain a key competitor for Australia. Most NZ exports are expected to go to the high-value European Union and Chinese markets.

Live sheep exports to decline moderately

In 2017–18 Australia's live sheep exports are estimated to increase by 1 per cent to 1.9 million head. This is mainly the result of below average seasonal conditions in the first half of the year in South Australia and Western Australia. Almost all Australian live sheep are exported to the Middle East, but import demand in the region is weak and falling. Changing consumer preferences in the region as a result of income growth continue to drive substitution from mutton to lamb.

Australian live sheep exports are projected to decline over the medium term by around 0.5 per cent per year to 1.8 million head. This reflects reduced supply of sheep for export, partly because the WA wether flock is projected to remain relatively stable. Demand for Australian live sheep exports in the Middle East is expected to remain weak mainly as a result of continued substitution away from mutton.

Outlook for sheep meat

	unit	2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Prices									
Lambs									
– nominal	c/kg (cw)	533	592	625	645	665	660	655	650
– real **a**	c/kg (cw)	552	604	625	631	635	614	595	576
Sheep									
– nominal	c/kg (cw)	316	415	440	459	477	479	480	481
– real **a**	c/kg (cw)	328	423	440	449	455	445	436	426
Sheep numbers									
Total sheep **b**	million	67.5	70.2	70.5	72.3	73.5	74.2	74.7	75.0
Slaughterings									
Lambs	’000	23,131	22,344	22,700	23,300	23,950	24,908	25,780	26,682
Sheep	’000	8,127	6,553	8,200	7,770	7,800	7,830	7,900	7,950
Production									
Sheep meat	kt (cw)	713	670	711	722	748	762	793	827
Exports									
Sheep meat exports **c**	kt (sw)	417	390	419	430	454	465	488	514
Sheep meat export value									
– nominal	$m	2,470	2,653	2,975	3,168	3,467	3,549	3,717	3,905
– real **a**	$m	2,561	2,705	2,975	3,099	3,308	3,304	3,376	3,460
Live sheep exports	’000	1,859	1,851	1,870	1,860	1,850	1,840	1,830	1,820
Live sheep export value									
– nominal	$m	228	233	244	257	264	260	256	253
– real **a**	$m	236	238	244	251	252	242	233	224
Consumption per person									
Sheep meat	kg (cw)	8.8	8.7	8.2	8.0	7.8	7.7	7.7	7.7

a In 2017–18 Australian dollars. **b** At 30 June. **c** Fresh, chilled and frozen, shipped weight. **f** ABARES forecast. **s** ABARES forecast. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; Meat & Livestock Australia

Pig meat

Outlook to 2022–23

Jack Mullumby

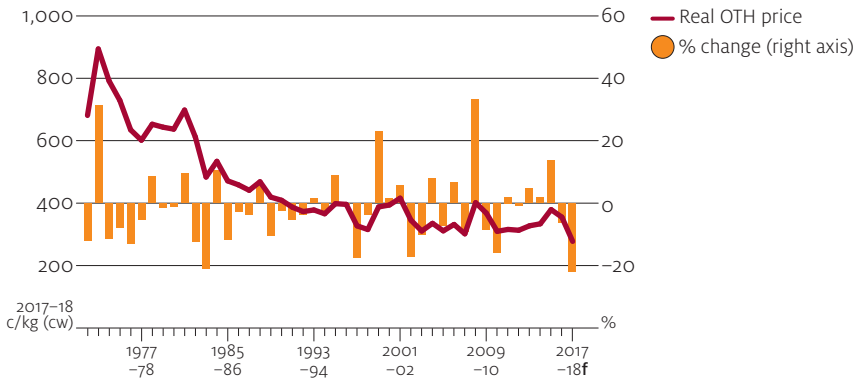
- Pig prices are forecast to fall in 2017–18 due to strong competition and an increased supply of pigs.
- Productivity gains resulting from continued consolidation in the Australian pig industry are projected to drive slaughter and production higher over the medium term.
- Higher export volumes over the short to medium term are expected to result in the value of Australian pig meat exports rising to $137 million in real terms in 2022–23.

Pig prices to fall over the medium term

In 2017–18 the Australian weighted over-the-hooks pig price is forecast to fall by 20 per cent to 278 cents per kilogram (carcase weight). If realised, this will be the lowest price in real terms and the largest annual decline on record. This sharp decline is due to a strong increase in the supply of pigs for slaughter in Australia and increased competition from other meats, particularly beef.

Over the short and medium term, Australian demand for pig meat is expected to be relatively strong, supported by income growth and consumer preferences for low-cost, versatile foods. However, growth in the supply of pig meat in Australia is expected to outpace demand and continue to place downward pressure on pig prices. In 2022–23 the Australian weighted over-the-hooks pig price is projected to average 288 cents a kilogram (in 2017–18 dollars), comparable to the 284 cents per kilogram forecast for 2018–19.

Over-the-hooks pig price and annual change, Australia, 1972–73 to 2017–18



f ABARES forecast.

Strong competition slows pig meat consumption growth

In 2017–18 Australian per person pig meat consumption is forecast to fall by 5 per cent to 26.4 kilograms. This is mainly due to increased competition from forecast higher beef production and lower prices. As a result, pig meat as a proportion of Australian meat consumption is expected to fall by 1 percentage point to 24 per cent.

Australian pig meat consumption is projected to expand to around 28 kilograms per person by 2022–23, 6 per cent above the 26.5 kilograms forecast for 2018–19. Consumer preferences and income growth are expected to drive this increase. However, growth is forecast to be slow initially because of strong competition from beef in the first half of the projection period.

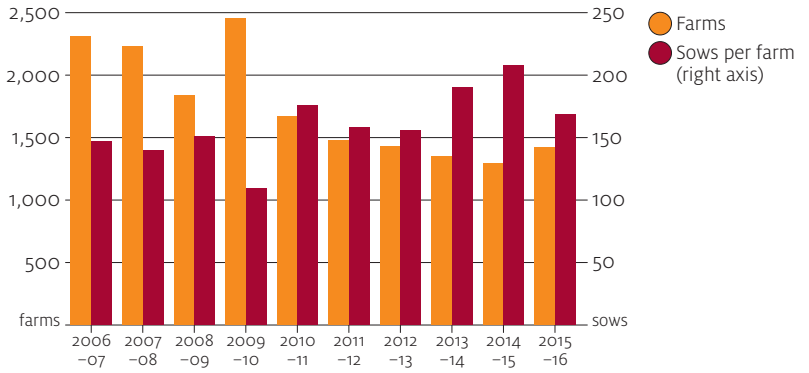
Higher production to be driven by continued consolidation

Consolidation and economies of scale in the Australian pig industry over the 10 years to 2015–16 have resulted in strong productivity growth and driven slaughter and pig meat production higher. During this period, the number of farms with pigs in Australia contracted by around one-third, but the number of sows per farm increased by 15 per cent. In 2017–18 Australian pig slaughter is forecast to increase by 4 per cent to 5.3 million head, the ninth consecutive year of expansion.

Over the medium term, structural adjustment is expected to continue but at a slower pace. This is expected to continue to drive productivity growth and increase pig slaughter. Between 2018–19 and 2022–23 Australian pig slaughter is projected to expand at around 2 per cent per year to 5.9 million head.

Reflecting the increase in slaughter, Australian pig meat production is projected to rise by 11 per cent from 412,000 tonnes (carcase weight) in 2017–18 to 457,000 tonnes in 2022–23. Average slaughter weights are not forecast to increase markedly over this period because domestic processors are expected to continue to focus on producing the lean and fresh pork products preferred by Australian consumers.

Farm with pigs and sows per farm, Australia, 2006–07 to 2015–16



Imports to fall in 2017–18 but rise over the medium term

In 2018–19 Australian pig meat imports are forecast to contract by 2 per cent to 142,000 tonnes, following a 13 per cent fall in 2017–18. Forecast strong pig prices in major exporting regions of North America and the European Union are expected to place upward pressure on world prices for processed pig meat. Strict biosecurity protocols require all pig meat imported into Australia to be processed before sale—usually into bacon, ham or smallgoods.

Over the medium term, international prices for processed pig meat are projected to decline as a result of expanding pig production in Europe and North America. Income is also forecast to grow. These factors are projected to drive Australian pig meat imports higher. In 2022–23 Australian pig meat imports are projected to reach 174,000 tonnes, around 18 per cent higher than the 148,000 tonnes forecast for 2019–20.

Value of pig meat exports to rise in the short term

The Australian pig industry is expected to continue to focus on supplying fresh pork products to the domestic market and export only a small share of production.

In 2017–18 the value of Australian pig meat exports is forecast to increase by 3 per cent to $128 million. Lower export prices are forecast to result in a 13 per cent increase in exports, mostly to New Zealand. In recent years, NZ demand for imported meat has continued to be relatively strong, but high pig prices have limited exports from Australia.

Between 2018–19 and 2022–23 the value of Australian pig meat exports is projected to average around $135 million (in 2017–18 dollars), with exports projected to account for around 14 per cent of production in 2022–23. Singapore—a niche market for fresh Australian pork products—is expected to remain the primary market and account for around 50 per cent of the total volume shipped.

Outlook for pig meat

	unit	2015–16	2016–17	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Over-the-hooks price									
nominal	c/kg (cw)	366	348	278	290	298	307	315	324
real **a**	c/kg (cw)	379	355	278	284	285	286	287	288
Sow numbers **b**	’000	240	242	251	253	254	254	254	254
Slaughterings	’000	5,000	5,160	5,341	5,572	5,689	5,765	5,829	5,890
Production	kt (cw)	378	397	412	430	440	446	452	457
Consumption per person	kg (cw)	27.6	27.7	26.4	26.5	26.9	27.2	27.6	28.0
Import volume	kt (sw)	167	167	145	142	148	156	165	174
Export volume	kt (sw)	27.9	30.7	34.7	37.5	38.8	40.2	41.6	42.9
Export value									
nominal	$m	128	124	128	137	140	144	149	154
real **a**	$m	132	126	128	134	134	134	135	137

a In 2017–18 Australian dollars. **b** At 30 June. **f** ABARES forecast. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics; Australian Pork Limited

Chicken meat

Outlook to 2022–23

Jack Mullumby

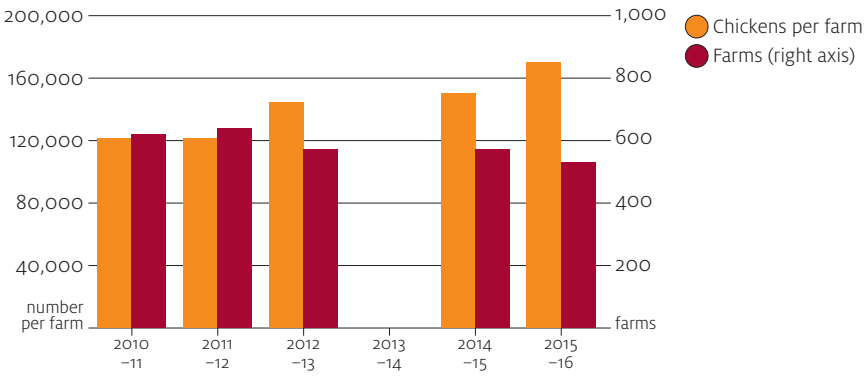
- Australian demand for chicken meat is expected to remain strong over the short and medium term.
- Chicken meat production is projected to increase to 1.4 million tonnes in 2022–23, driven by productivity growth.
- Australian chicken meat exports are expected to continue to account for a small share of production, reaching 48,000 tonnes in 2022–23.

Production and consumption to continue to rise

Australian demand for chicken meat continues to be strong, supported by income growth and an established preference for low-cost, versatile foods. As a result, chicken as a proportion of Australian meat consumption is expected to rise—despite competition from beef and pig meat. In 2022–23 Australian per person chicken meat consumption is projected to reach around 52 kilograms. This represents around 45 per cent of total meat consumption, up from 40 per cent in 2012–13.

Rising domestic production, driven by productivity growth and supported by low feed costs, is expected to meet the increase in domestic demand for chicken meat. In 2022–23 Australian chicken slaughter is projected to increase to 769 million head, 14 per cent higher than the 676 million head forecast for 2018–19. Continued consolidation and intensification in the Australian chicken meat industry is expected to drive this increase. Between 2010–11 and 2015–16 the number of chicken farms contracted by 15 per cent (excluding egg-laying enterprises). Over the same period, Australian chicken slaughter expanded by 12 per cent and the number of chickens per farm increased by 40 per cent.

Farms with chickens and chickens per farm, Australia, 2010–11 to 2015–16



Note: The Australian Bureau of Statistics did not report chicken or farm numbers in 2013–14.

Exports to account for a small share of production

Exports are expected to continue to account for a very small share of production, reaching just 4 per cent in 2022–23.

Between 2017–18 and 2022–23 the value of Australian chicken meat exports is projected to rise to around $70 million (in 2017–18 dollars), driven by an 21 per cent increase in export volumes to 48,000 tonnes (shipped weight). Export prices are projected to decline over the medium term as a result of increased competition in Asia from major exporters such as Brazil and the United States. In addition, demand in the domestic Australian market is expected to remain strong.

Outlook for chicken meat

	unit	2015–16	2016–17	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Slaughterings	million	623	653	664	676	699	721	745	769
Production	kt (cw)	1,191	1,230	1,238	1,250	1,295	1,342	1,390	1,439
Consumption per person	kg (cw)	48.5	48.8	49.0	47.7	48.6	49.6	50.5	51.5
Export volume	kt (sw)	27.3	35.4	39.8	41.4	43.0	44.8	46.5	48.3
Export value									
nominal	$m	49.8	54.1	63.6	67.4	69.7	71.4	74.8	78.6
real **a**	$m	51.6	55.2	63.6	65.9	66.5	66.5	67.9	69.7

a In 2017–18 Australian dollars. **f** ABARES forecast. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics

Wool

Outlook to 2022–23

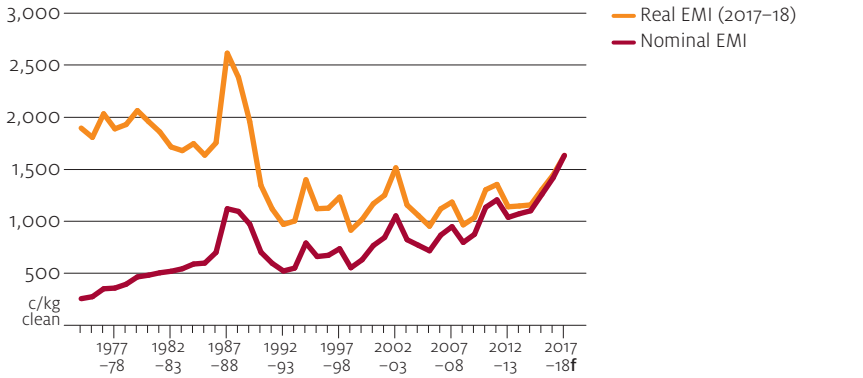
Conrad Rees, Peter Berry and Jack Mullumby

- The Australian Eastern Market Indicator wool price is forecast to continue rising over the medium term but remain below record levels.
- Australian wool production is projected to reach 456,000 tonnes in 2022–23.
- The value of Australian wool exports is projected to increase to $5.1 billion (in 2017–18 dollars), reflecting strong demand for superfine wool.

Wool prices to rise

In 2017–18 the Australian Eastern Market Indicator (EMI) wool price is forecast to rise by 15 per cent to average 1,630 cents per kilogram. If realised, this would be the highest annual price since the 1989–90 average of 1,955 cents per kilogram (in 2017–18 dollars) but would not be a record in real terms. The 2017–18 forecast remains 16 per cent below the 1,947 cents per kilogram averaged between the 1970s and 1980s, and 38 per cent below the 2,612 cents per kilogram averaged in 1987–88 (all in 2017–18 dollars).

Eastern Market Indicator, nominal and real, Australia, 1973–74 to 2017–18



f ABARES forecast.

The forecast rise in the EMI primarily reflects strong demand for superfine wool (less than 19.5 micron), but growth in supplies is expected to remain limited. In the first half of 2017–18 prices for 17 micron wool averaged 44 per cent higher year-on-year, but prices for 19.5 micron wool were just 3 per cent higher. Coarse wool graded 30 micron averaged 3 per cent lower.

Over the medium term to 2022–23, demand for superfine wool is expected to remain strong, supported by income growth in major apparel-consuming regions, on the assumption that superfine wool maintains its position as a premium natural fibre. World wool supplies are also projected to increase. However, coarse wool is expected to make up most of this increase and growth in superfine production forecast to be limited. This will result in a projected rise in the EMI to around 1,785 cents per kilogram (in 2017–18 dollars) by 2022–23, 5 per cent higher than the 2018–19 forecast of 1,700 cents per kilogram.

World wool outlook

World wool demand to grow moderately

Fine wool is a niche product in the global fibres market, accounting for around 1 per cent of world textile consumption in the five years to 2017. Processor demand for fine wool is driven by consumer demand for higher-quality apparel such as suits or other pure wool textiles and apparel. Final consumer demand for these goods is discretionary and strongly linked to incomes, consumer confidence and fashion trends.

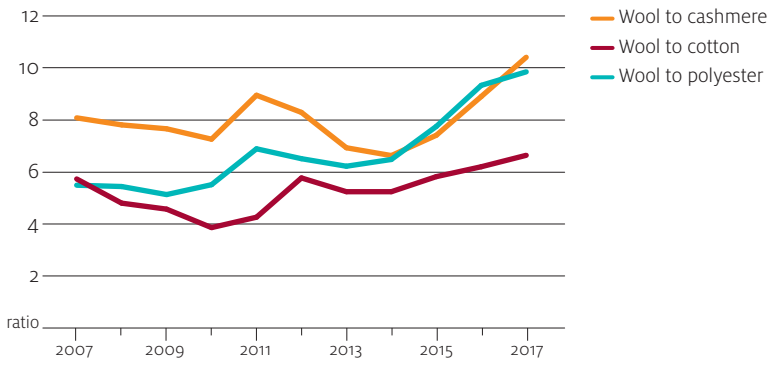
The largest global consumers of textiles and apparel are China, the United States and the European Union. Collectively these countries are estimated to account for over half of global apparel consumption by value. Over the projection period, income growth in these regions is expected to drive global consumer demand for woollen apparel higher.

High wool prices expected to reduce production of blended products

Strong demand for fine and superfine wool and limited global sources of supply have driven strong growth in wool prices in recent years. As a result, wool has become increasingly expensive compared with other fibres. In 2017 the wool to polyester price ratio averaged 9.8:1, compared with a ratio of 5.5:1 10 years earlier. Over the same period the wool to cotton price ratio rose from 5.7:1 to 6.6:1, while the wool to cashmere price ratio increased from 8.1:1 to 10.4:1.

The reduction in the price competitiveness of wool is expected to provide apparel manufacturers with an incentive to increase substitution away from wool to other fibres. This is expected to occur primarily for blended wool products because demand for raw wool is relatively responsive to price. Strong wool prices over the medium term are not expected to affect the production of higher-value and pure woollen apparel.

Price ratios of wool and alternative fibres, 2007 to 2017

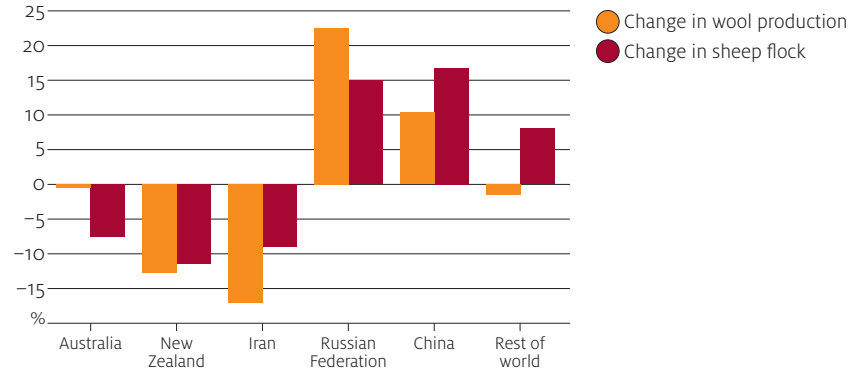


World coarse wool supply to rise

Over the medium term, world wool production is projected to rise, particularly coarse wool, driven by the expansion of the world sheep flock. Between 2000 and 2016 world sheep numbers increased by 7 per cent, largely due to a 17 per cent increase in China—the world's largest producer of wool. In the five years to 2016 the expansion of the Chinese flock was greater than the collective contraction of flocks in Australia, New Zealand and Iran. The Chinese sheep flock is expected to continue to expand over the medium term in line with the government's *National Beef and Sheep Meat Development and Promotion Plan 2013-2020*. This is expected to increase coarse wool production and place continued downward pressure on prices for coarse wool.

Production of superfine and fine wool is not expected to grow markedly over the medium term. This is because the Merino flock is projected to remain relatively stable in Australia, the world's largest superfine wool producer. An expansion in world fine-wool producing sheep flocks globally poses a future downside risk to fine wool prices.

Change in sheep flock and wool production, major wool-producing countries, 2011 to 2016



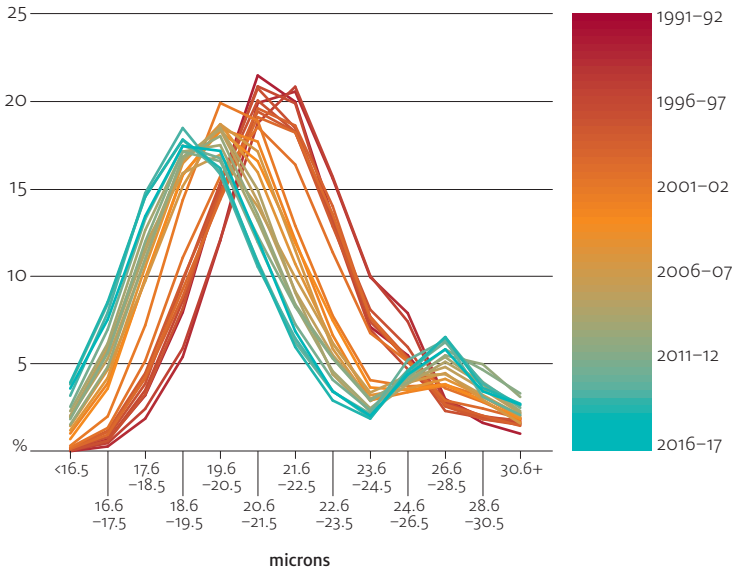
Prospects for the Australian wool industry

Wool production to grow slowly

Over the medium term, the Australian sheep flock is projected to expand modestly. By 2022–23 this will drive wool production to around 456,000 tonnes, 8 per cent higher than the 424,000 tonnes estimated for 2017–18. Most of the increase in the Australian flock is projected to be in sheep meat breeds. Increased segmentation of the industry is likely to drive growth in wool production, particularly of coarse wool.

Superfine wool production is also expected to rise but largely at the expense of fine grades. Productivity growth is expected to drive microns down for finer wool grades, assuming average seasonal conditions. In the five years to 2016–17 the average micron for wools classed as superfine and fine fell by 2 per cent to 19 micron.

Share of wool production by micron category, Australia, 1991–92 to 2016–17



Value of Australian wool exports to rise over the medium term

In 2017–18 the value of Australian wool exports is estimated to increase by around 20 per cent to $4.3 billion as a result of growth in export prices outpacing growth in volume. Over the medium term, global consumer demand for woollen apparel is expected to grow at a slower rate than in recent years. In 2022–23 a larger exportable supply of Australian wool and increased export prices are projected to increase the value of Australian wool exports to $5.1 billion (in 2017–18 dollars).

Over the projection period, the majority of Australia's wool is expected to be shipped to China, the world's largest producer and exporter of woollen clothing and textiles. In the five years to 2016–17 China accounted for 78 per cent of Australian wool exports. In the long term, a lack of diversity in export markets may expose the Australian wool industry to supply and demand shocks in a small number of markets, and to policy changes that seek to diversify sources of supply in those markets.

Outlook for wool

	unit	2015–16	2016–17	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Prices									
Eastern Market Indicator **a**									
– nominal	c/kg	1,256	1,415	1,630	1,700	1,785	1,874	1,949	2,015
– real **b**	c/kg	1,302	1,443	1,630	1,663	1,703	1,745	1,770	1,785
Sheep numbers									
Total sheep **c**	million	70.9	68.7	73.6	76.6	78.6	80.4	81.8	83.0
Sheep shorn	million	73.4	74.3	76.0	76.9	78.4	79.5	80.1	80.5
Cut per head	kg	4.4	4.6	4.6	4.5	4.5	4.5	4.5	4.5
Production									
Wool production (greasy)									
– shorn	kt	325	340	346	350	355	360	363	365
– other **d**	kt	79.2	73.4	78.3	80.3	82.2	84.8	87.7	90.7
– total	kt	404	414	424	430	437	445	451	456
Exports									
Wool exports	kt (gr. eq.)	417	429	446	456	464	466	473	478
Wool export value									
– nominal **e**	$m	3,283	3,617	4,331	4,620	4,932	5,208	5,489	5,743
– real **b**	$m	3,404	3,688	4,331	4,519	4,706	4,848	4,985	5,088

a Wool price, clean equivalent. **b** In 2017–18 Australian dollars. **c** At 30 June. **d** Includes wool on sheepskins, fellmongered and slipe wool. **e** On a balance of payment basis. **f** ABARES forecast. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics; Australian Wool Exchange

Dairy

Outlook to 2022–23

Andrew Cameron

- World dairy prices are forecast to average higher in 2017–18 before falling in 2018–19.
- EU stocks are expected to have significant impact on world markets over the medium term.
- Australian farmgate milk price is forecast to increase to an average of 48 cents per litre in 2018–19, before falling to around 46 cents per litre in real terms by 2022–23.

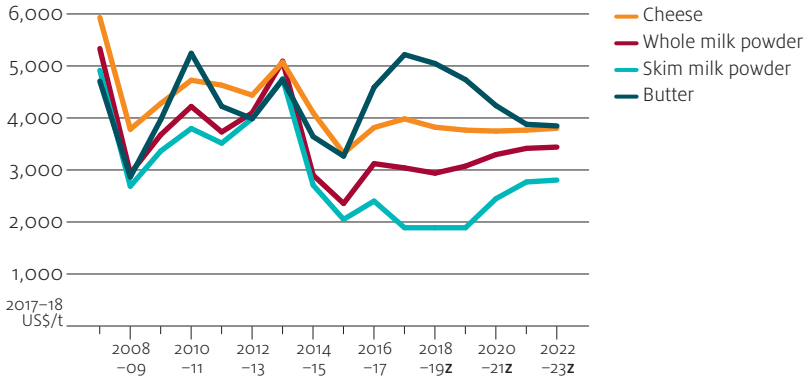
World dairy prices expected to moderate over medium term

World prices for butter and cheese are forecast to average higher in 2017–18 due to strong global demand. Skim milk powder prices are forecast to average 20 per cent lower and whole milk powder prices to be largely unchanged from the previous year. Growth in the volume of exportable supplies in 2018–19 is expected to result in most world prices falling marginally.

World demand is expected to grow in the medium term, driven by rising incomes, population growth and changing diets. However, world supplies are expected to grow faster than demand as major exporting countries including Australia expand output. As a result, world dairy prices are projected to ease in real terms over the outlook period. By 2022–23 all world dairy prices are projected to be lower in real terms than the 10-year average to 2016–17.

An assumed fall in the Australian dollar in 2018–19 and 2019–20 is expected to support the competitiveness of Australian exporters and cushion falls in US dollar-denominated prices.

World dairy prices, 2007–08 to 2022–23

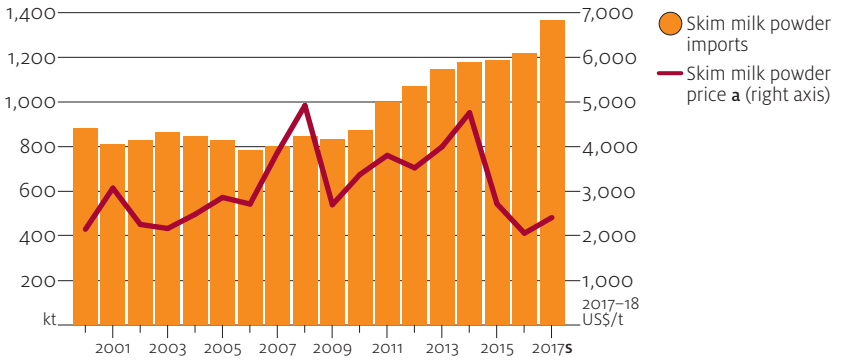


z ABARES projection.

Higher US and EU cheese production over the medium term is expected to largely meet an increase in world demand, meaning prices are likely to stabilise in the US$3,900–US$4,200 per tonne range (nominal). Strong demand for whole milk powder is expected from China, the Middle East and parts of Africa, but price increases are expected to be moderated by a growth in supply, particularly from New Zealand. In real terms, the whole milk powder price is projected to be 13 per cent higher in real terms by 2022–23 compared with 2017–18.

The world skim milk powder price is expected to remain below US$2,000 per tonne until 2020–21, assuming that the sell-off of the EU skim milk powder intervention stockpile limits potential for price increases. World skim milk powder imports are expected to have reached a record for 2017 as a result of importing countries taking advantage of low world prices. Over the medium term, growth in population and income is expected to result in higher world demand for skim milk powder. This is not likely to result in higher prices until the world stock overhang is eliminated in the second half of the outlook period. Processors are expected to respond to a recovery in the profitability of butter/skim milk powder manufacturing by increasing supply and reducing the world butter price over the outlook period. The butter price is expected to remain above the 10-year average to 2016–17, reflecting strong consumer demand.

World skim milk powder imports and price, 2000 to 2017



a Year ended 30 June. s US Department of Agriculture estimate.
Source: US Department of Agriculture PSD database

Global dairy market outlook

New Zealand production unchanged in 2017–18

NZ milk production is forecast to be unchanged in 2017–18. A recovery in the second quarter is expected to offset production falls due to a cold, wet start to the season. More favourable weather over summer is assumed to result in average production levels during the second half of the year. In 2018–19 an increase in production is forecast in response to favourable farmgate milk prices. This is expected to place downward pressure on the whole milk powder price.

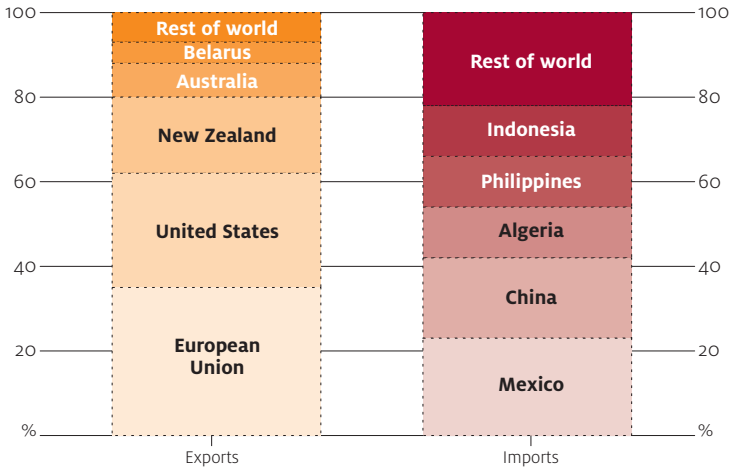
Over the medium term, NZ milk production is projected to grow marginally as a result of improved genetics, pasture management and feeding programs. Herd expansion will be limited by environmental water regulations and land availability. Butter production and exports are forecast to fall slightly in 2017–18 and 2018–19 before returning to growth over the medium term, placing downward pressure on the world price in the second half of the outlook period.

European Union stocks to limit world skim milk powder prices

The European Union's skim milk powder intervention scheme is expected to have a considerable impact on world dairy prices over the first half of the outlook period. In mid January 2018 the European Commission confirmed that processors will be required to participate in a competitive tender to sell into the scheme (which will run from March to September 2018), effectively eliminating the floor price. This is likely to result in more skim milk powder being sold on world markets—placing downward pressure on world prices in 2017–18 and 2018–19.

The commission is also increasingly likely to begin disposing of the skim milk powder stocks it already holds, as the increasing age of the powder diminishes its utility to customers. Medium term price forecasts assume that the commission will dispose of the stocks over 2018 and 2019, keeping the world skim milk powder price under US$2,000 per tonne during 2018–19 and 2019–20. Elimination of the stock overhang in 2020–21 is forecast to return the price closer to 2011–12 levels, when world stocks were roughly half their present size.

World skim milk powder export and import market share, 2017



Source: US Department of Agriculture PSD database

In Europe, favourable farmgate prices and plentiful cheap fodder supplies are forecast to result in higher milk production in 2017–18, but production will flatten in 2018–19. European cheese production is expected to expand in response to increased cheese prices resulting from higher domestic and export demand. Lower relative profitability from the butter/skim milk powder manufacturing stream is also likely to encourage processors to focus on cheese.

Over the medium term, EU milk production is projected to increase as a result of rising milk yields. Herd numbers are projected to contract slightly as a result of EU environmental regulations. Yields are expected to improve due to higher use of feed concentrates and improvements in genetics.

United States expected to expand cheese exports

The US milking herd is projected to expand over the medium term. Herd expansion and expected improvements in milk yields will lead to growth in milk production. This is expected to outpace domestic demand, leading to higher exportable supplies of cheese, butter and skim milk powder.

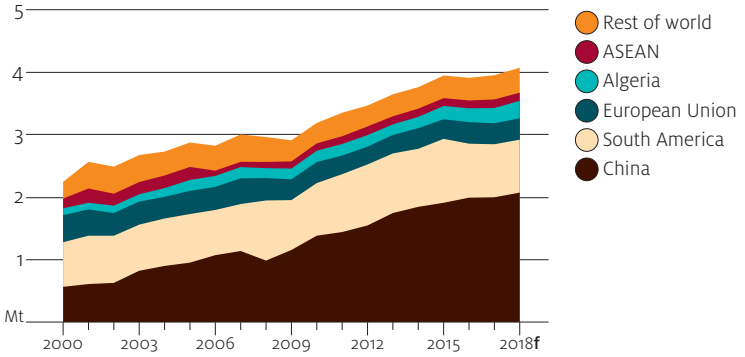
Mexico is the largest export market for US cheese and was the world's fourth-largest importer in 2017. Ongoing negotiations over the future of the North American Free Trade Agreement (NAFTA) are expected to contribute to uncertainty on world dairy markets. A potential breakdown in the agreement presents a downside risk for world dairy prices, particularly for cheese.

World demand growth to be steady over medium term

Import demand from China, the Middle East and North Africa is projected to grow over the medium term, reflecting rising consumer incomes and population growth. Ongoing consolidation in the Chinese dairy sector is expected as small high-cost producers continue to exit the industry. Chinese cow numbers are estimated to have declined by 10 per cent since peaking in 2014. This is expected to increase demand for imports. Despite government support measures, Algerian import demand is expected to grow, assuming domestic demand grows faster than domestic milk supply. Algeria was the world's second-largest whole milk powder import market in 2017.

The Russian Federation's embargo on dairy products from Australia, Canada, the European Union, Norway and the United States is due to end in December 2018. If the embargo ends as scheduled, this will add to global cheese demand—already expected to grow strongly over the medium term as a result of increased demand from the United States, Japan and Korea.

World whole milk powder consumption, 2000 to 2018



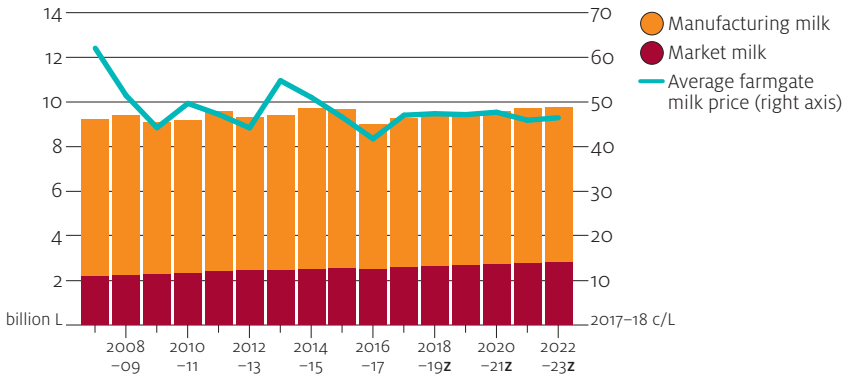
f US Department of Agriculture forecast.
Source: US Department of Agriculture PSD database

Prospects for the Australian dairy industry

Farmgate price rises expected in near term

The average Australian farmgate milk price is forecast to rise by 15 per cent to 47.0 cents per litre in 2017–18. This forecast assumes that the sale of Murray Goulburn to Saputo proceeds as proposed. Saputo is offering prices between $5.60 and $6.00 per kilogram of milk solids compared with Murray Goulburn's October 2017 price of $5.20. The price is forecast to increase by a further 3 per cent to 48.4 cents per litre in 2018–19, supported by an assumed fall in the Australian dollar to an average of US76c. A downside risk to this forecast is the Australian dollar not depreciating as expected.

Milk production and farmgate milk prices, Australia, 2007–08 to 2022–23



z ABARES projection.

Competition between processors for milk supply is expected to provide support for farmgate milk prices in the medium term, especially in the southern milk region where additional processing capacity is coming online. A growing focus on cheese production by Australian processors is also likely to make farmgate milk prices more sensitive to movements in the global cheese market over the medium term.

In real terms, the farmgate milk price is forecast to reach 47.7 cents per litre in 2020–21 before falling to 46.4 cents per litre by 2022–23. Growth in world production is expected to place downward pressure on world prices.

Australian milk production is forecast to expand slightly to around 9.3 billion litres in 2017–18 due to rising yields and herd rebuilding. Relatively favourable farmgate milk prices are expected to provide an incentive to rebuild herds. At the same time, falling manufacturing beef prices will reduce the incentive to cull older animals. Milk production is projected to reach around 9.8 billion litres by 2022–23 as producers increase herd sizes and productivity improves. Higher use of supplementary feeding and more controlled calving is expected to flatten the seasonal milk supply peak. This will increase farm exposure to movements in domestic grain, fodder and water prices.

Value of Australian dairy exports to rise over medium term

In 2017–18 the value of Australian dairy exports is forecast to rise by 8 per cent, buoyed by strong growth in cheese and whole milk powder exports. Over the medium term, increased exports of infant milk formula, skim milk powder, cheese and other value-added dairy products are projected to contribute to an increase in the value of Australian dairy exports to $3.7 billion in real terms by 2022–23. Recently, several major Australian processors successfully registered infant milk formula with the Chinese Government. This is expected to support Australian exports of the product.

Outlook for dairy

	unit	2015–16	2016–17 s	2017–18 f	2018–19 z	2019–20 z	2020–21 z	2021–22 z	2022–23 z
World									
Indicative price									
Butter									
nominal	US$/t	3,146	4,500	5,220	5,150	4,930	4,500	4,200	4,250
real **a**	US$/t	3,269	4,591	5,220	5,049	4,739	4,240	3,880	3,849
Skim milk powder									
nominal	US$/t	1,975	2,356	1,892	1,930	1,968	2,600	3,000	3,100
real **a**	US$/t	2,052	2,404	1,892	1,892	1,892	2,450	2,772	2,808
Cheese									
nominal	US$/t	3,200	3,742	3,985	3,900	3,920	3,980	4,080	4,200
real **a**	US$/t	3,325	3,817	3,985	3,824	3,768	3,750	3,769	3,804
Australia									
Cow numbers **b**	’000	1,562	1,512	1,520	1,532	1,538	1,550	1,565	1,575
Milk yields	L/cow	6,198	5,963	6,086	6,116	6,147	6,171	6,196	6,208
Production									
Total milk	ML	9,679	9,015	9,250	9,370	9,453	9,565	9,696	9,778
market sales	ML	2,520	2,506	2,596	2,639	2,682	2,725	2,768	2,810
manufacturing	ML	7,160	6,510	6,654	6,730	6,771	6,840	6,929	6,968
Butter **c**	kt	119	99.9	106	108	110	112	115	117
Cheese	kt	344	337	348	355	362	369	377	384
Skim milk powder	kt	256	222	227	232	236	241	246	251
Whole milk powder	kt	66.1	60.0	61.0	59.8	58.6	57.4	56.3	55.1
Farmgate milk price									
nominal	Ac/L	44.9	40.9	47.0	48.4	49.4	51.2	50.5	52.4
real **d**	Ac/L	46.6	41.7	47.0	47.3	47.1	47.7	45.9	46.4
Export volume									
Butter **c**	kt	33.6	21.4	20.6	21.4	21.8	22.3	22.7	23.2
Cheese	kt	172	167	180	179	181	182	188	193
Skim milk powder	kt	181	153	154	154	155	156	157	158
Whole milk powder	kt	57.0	59.9	67.8	69.3	68.6	67.9	67.2	66.6
Export value									
nominal	A$m	3,001	3,028	3,268	3,229	3,452	3,750	4,026	4,217
real **d**	A$m	3,112	3,087	3,268	3,158	3,294	3,491	3,657	3,736

a In 2017–18 US dollars. **b** At 30 June. **c** Includes the butter equivalent of butter oil, butter concentrate, ghee and dry butterfat.
d In 2017–18 Australian dollars. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.
Sources: ABARES; Australian Bureau of Statistics; Dairy Australia, Melbourne

Fisheries

Fisheries

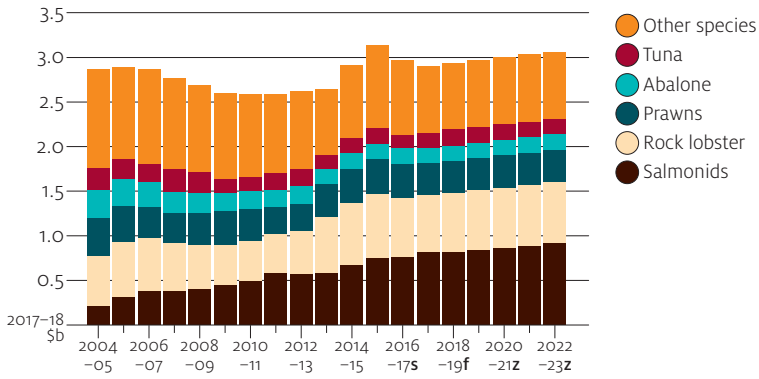
Outlook to 2022–23

David Mobsby, Andrea Bath and Robert Curtotti

- From 2018–19 to 2022–23 the value of Australia's fisheries and aquaculture production is projected to rise by 4 per cent in real terms to reach $3.1 billion (in 2017–18 dollars).
- Salmonid aquaculture production, primarily for domestic consumption, is projected to contribute most to gross value of production, averaging $858 million annually (in 2017–18 dollars) from 2018–19 to 2022–23.
- Between 2018–19 and 2022–23 the value of Australia's fishery product exports is projected to decline marginally in real terms to around $1.5 billion (in 2017–18 dollars).
- Rock lobster, abalone, tuna and prawns are projected to contribute most to fisheries product export value across the medium term (2018–19 to 2022–23). Between 2018–19 and 2022–23 these commodities will account for around 80 per cent of export value.

Over the outlook period to 2022–23, the value of Australia's fisheries and aquaculture production is projected to increase by 4 per cent in real terms to $3.1 billion (in 2017–18 dollars). This increase will be supported by growth in Australia's aquaculture sector, particularly for salmonids. Rock lobster, the most valuable wild-caught species produced in Australia, is projected to increase in production value and remain the second most valuable fisheries and aquaculture species, after salmonids.

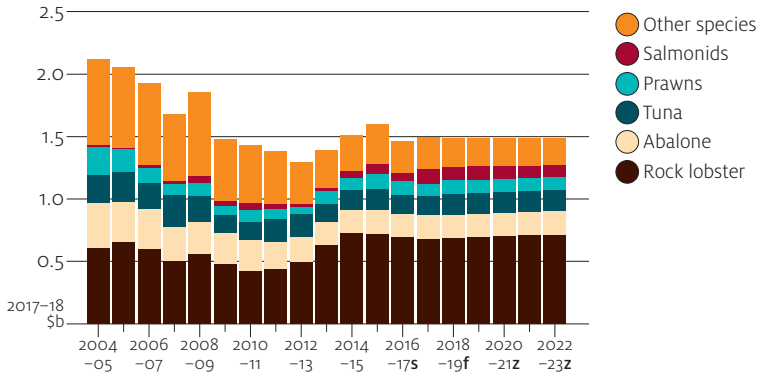
Gross value of Australian fishery and aquaculture production, 2004–05 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Over the medium term, the value of Australia's fisheries product exports is projected to decline marginally to around $1.5 billion in real terms (in 2017–18 dollars). Rock lobster, abalone, tuna and prawns will remain the most valuable fisheries product exports, accounting for around 80 per cent of export value over the outlook period.

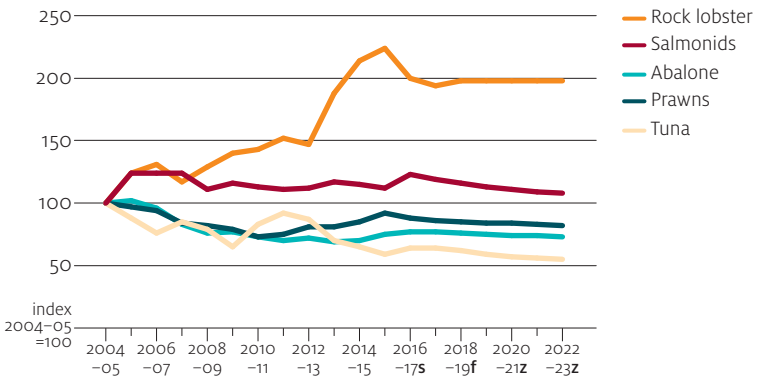
Australian fisheries product export value, 2004–05 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Over the medium term, prices received for fish species caught in Australian fisheries are projected to remain more stable compared with price movements between 2004–05 and 2016–17. This reflects an assumed stability in the Australian dollar exchange rate over the medium term. Over the medium term, the assumed exchange rate is expected to support prices in export markets and limit competition in the local market from fish product imports. These factors are likely to result in low levels of price volatility for products sold on the international and domestic market.

Real unit value, select species, 2004–05 to 2022–23



f ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Seafood consumption to 2022–23

The OECD-FAO (2017) agricultural outlook projects that global seafood consumption will rise by 13.0 million tonnes over the medium term to 189.8 million tonnes by 2023. Growth in seafood consumption is projected to be met largely by increased aquaculture production, which will grow to 96.2 million tonnes by 2023. Income and population growth will drive increased seafood consumption in key seafood-consuming regions in Asia, particularly China (with 7.6 million tonnes growth between 2017 and 2023), Indonesia (1.2 million tonnes) and India (1 million tonnes). However, the pattern of growth in seafood consumption in these regions is likely to be influenced by some key trends. Rising numbers of urbanised and high-income communities in Asia's larger cities will increase the pressure on supply chains to deliver fresh seafood using more convenient selling platforms. Increased online selling of seafood and selling through supermarkets is expected as consumers in urban areas opt for convenience. Consumers are also likely to become more discerning about the provenance of seafood. Sellers may respond by adopting technologies and processes that prove their supply chains are ethical and sustainable.

Australia's export seafood supply chains are well positioned to adapt to changes in seafood markets. Recent tariff reductions under Australia's free trade agreements with China, the Republic of Korea and Japan are expected to support export demand for Australian fisheries products over the medium term. Relatively stable exchange rates would also help Australia maintain market share in the key seafood-consuming regions in Asia. Many of Australia's larger seafood enterprises have processes in place to ensure sustainability, and Australia's robust fishery management systems help provide assurance to international buyers that Australian seafood is a quality sustainable product.

In Australia, per person consumption of seafood has been relatively stable in recent years, averaging 14.5 kilograms over the decade to 2015–16. However, seafood marketing in the domestic market is becoming increasingly sophisticated. Over the medium term, marketing is expected to continue to focus on seafood as a healthier alternative to other forms of protein. Seafood is featuring more prominently on supermarket shelves, with innovations in packaging making the product more attractive for consumers. Online selling of seafood is also increasingly being used to bring seafood to consumers, particularly in large Australian coastal metropolitan centres where retailers have access to fresh seafood and suitable transport infrastructure.

Key species outlook

Lobster

Between 2006 and 2015 global lobster production increased by 22 per cent to 310,571 tonnes. Canada and the United States accounted for most of the growth in world output during that period (FAO 2018). Over the same period the value of lobster exports from Canada and the United States increased by US$879 million in real terms to US$2.4 billion (in 2017 US dollars)(UN Statistics Division 2018). Between 2012 and 2016 the value of lobster exports to China from Canada and the United States more than tripled to US$231 million, driven largely by abundant supplies of relatively cheap lobster from North America (FAO 2017b).

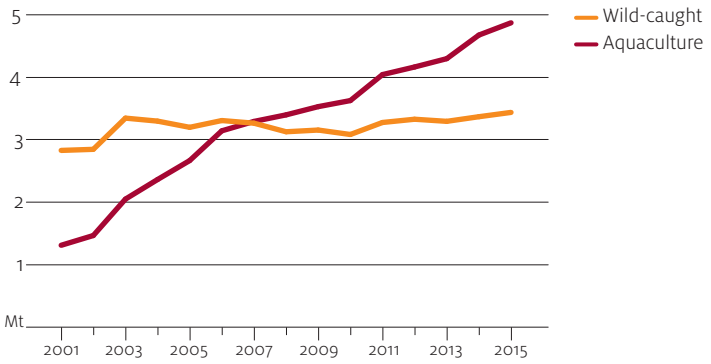
The value of Australian rock lobster production is forecast to rise by 5 per cent in 2018–19 to $678 million, reflecting increased production and higher average beach prices. The value of rock lobster exports is forecast to rise by 4 per cent in 2018–19 to $703 million, in line with production and assumed movements in the Australian dollar exchange rate. The Australian dollar exchange rate and import demand from Asia are expected to be key influences on beach prices over the medium term. In particular, increased demand for rock lobster from a growing middle class in China is anticipated to increase lobster import demand to that market. Australian rock lobster exports to China will be supported by a reduction in tariffs. Under the China–Australia Free Trade Agreement, Australian exports of unfrozen rock lobster to China will attract a tariff of 3 per cent in 2018 (a 3 percentage point reduction on 2017) and will be admitted duty-free from 2019 onwards. However, the assumption of a relatively stable Australian dollar and export competition for this market, particularly from North American exporters, is expected to limit increases on beach prices.

Prawns

World prawn production is estimated to have been 8.3 million tonnes in 2015 (FAO 2018). Since 2008 most global prawn production has been sourced from the growing aquaculture sector, particularly from farms in Asia. Shrimp and prawns are a major globally traded seafood product group and in 2015 were the second most valuable seafood product group, after salmonids (FAO 2017a).

Australia is a relatively minor producer of prawns but supplies and exports a range of high-quality species. Australia also imports a significant quantity of prawns to meet domestic consumption. Between 2012–13 and 2016–17 Australian exports of prawns averaged $98 million and imports averaged $421 million (in 2017–18 dollars). Australian prawn exports tend to be high unit value products, but imports are typically more processed and have lower unit values. Australian exports and imports target different market segments.

World prawn production, 2001 to 2015



Source: FAO (2018)

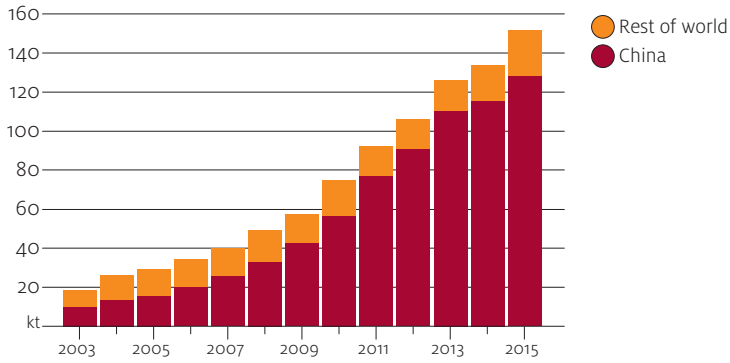
In 2018–19 the value of Australian prawn production is forecast to rise by 6 per cent to $375 million and export value to rise by 8 per cent to $112 million. This forecast is supported by an expected increase in wild-caught production, reflecting an assumed return to an average level of tiger prawn catch in the Commonwealth Northern Prawn Fishery from the below average level of catch estimated for 2017–18. Most of Australian prawn production is wild-caught, but the share of aquaculture-produced prawns is increasing. From 2006–07 to 2015–16 the share of production volume derived from farmed prawns increased from 16 per cent to 19 per cent. Queensland aquaculture production typically accounts for over 90 per cent of Australian farmed prawn production volume. In 2016–17 prawn farms in the Logan River region of southern Queensland were destocked following an outbreak of white spot disease. This is expected to have a significant impact on output in affected regions, particularly in 2017–18. However, production in non-affected regions is expected to increase. Farms in the affected region will lay fallow until 31 May 2018 (Biosecurity Queensland 2017).

Over the medium term, aquaculture prawn production is projected to rise, supported by an expected production recovery in farms recently affected by white spot disease. In contrast, wild-caught prawn production is expected to remain largely unchanged. A planned large-scale prawn farm in the Northern Territory could significantly increase aquaculture prawn production beyond projections if the farm becomes operational over the outlook period. The value of Australian prawn production is projected to be lower in real terms in 2022–23 compared with 2018–19. This reflects the outlook for lower average unit values in real terms over the projection period more than offsetting projected increased production.

Abalone

World abalone production increased by around 111,000 tonnes from 41,128 tonnes in 2006 to 151,973 tonnes in 2015 (FAO 2018). This was driven by an increase in aquaculture abalone production from 25,638 tonnes in 2006 to 141,871 tonnes in 2015. Much of the global increase occurred in China, where production rose by 108,011 tonnes to 127,967 tonnes between 2006 and 2015. While global aquaculture abalone has grown substantially, the volume of wild-caught abalone has continued to fall. Between 2006 and 2015 wild-caught abalone production fell from 15,490 tonnes to 10,102 tonnes, driven partly by declining global wild-catch stocks and restrictive quotas (Cook 2016). Despite the reduction in global wild-caught production, global prices of abalone have gradually fallen, reflecting increased global supply of aquaculture-produced abalone.

World abalone production, 2003 to 2015



Source FAO (2018)

In 2018–19 the value of Australian abalone production is forecast to remain largely unchanged at $170 million. A forecast increase in the value of aquaculture-produced abalone will be offset by a forecast decline in the value of wild-caught abalone. Australian aquaculture abalone production has risen significantly over recent years (increasing by 62 per cent to 757 tonnes between 2006–07 and 2015–16) and is expected to continue to expand over the medium term. In contrast, wild-caught production declined by 32 per cent between 2006–07 and 2015–16. Over the medium term, wild-caught volumes are expected to remain constrained by the assumption of conservatively set total allowable catch. By 2022–23 the value of Australian abalone production is forecast to increase to $174 million (in 2017–18 dollars), reflecting growth in aquaculture production.

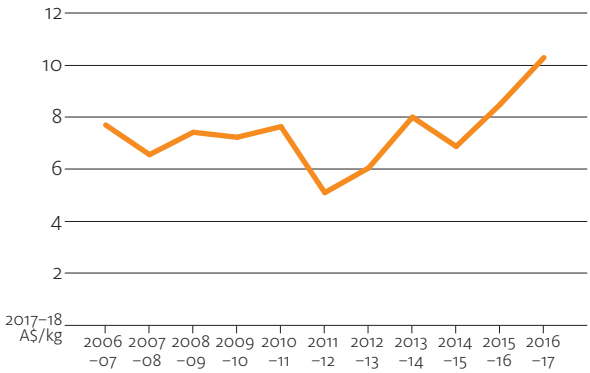
Australia produces species of abalone not produced in China. This should support Australian exports to major trading partners over the medium term. Under the China–Australia Free Trade Agreement, exports of abalone from Australia to China will be admitted duty-free from 2019 onwards. Despite being the world's largest producer of abalone, China has become an increasingly important export market for Australian abalone. Reduced barriers to trade should support exports to this market. In 2022–23 the value of Australian abalone exports is projected to be $195 million (in 2017–18 dollars).

Salmonids

Global production of salmonids (including salmon, trout and smelt) reached 4.5 million tonnes in 2015. The largest producers—both through aquaculture—are Norway (31 per cent of global production) and Chile (18 per cent) (FAO 2018). In contrast, Australia accounted for only 1 per cent of global production.

In 2016 production issues in Norway and Chile contributed to a global supply shortage. Norwegian farmed salmon were affected by an outbreak of sea lice. In Chile, algae blooms caused mass fish deaths. As a result of the supply shortage, international salmonid prices increased during 2015–16 and 2016–17.

International salmonid price, 2006–07 to 2016–17



Source: IMF (2018)

During 2016–17 high international prices for salmonids resulted in an estimated increase in Australian domestic prices, increasing total production value to $740 million despite an 8 per cent decline in production volumes. As international supply returns in 2018–19, a forecast decline in international prices will have a flow-on effect on domestic prices. In 2018–19 total domestic production is forecast to increase by 3 per cent to 59,165 tonnes ($812 million).

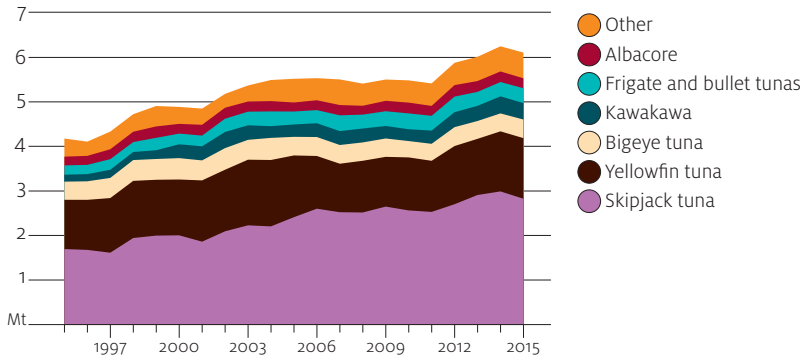
Australia exports a relatively small proportion of Australian salmonid production. In the decade to 2016–17, an average of 12 per cent of production was exported. In 2018–19 the volume of salmonid exports is forecast to decline by 5 percent to around 10,300 tonnes, as a results of falling international prices. The value of exports is forecast to fall from the high of $119 million in 2017–18 to $112 million in 2018–19.

By 2022–23 salmonid production is forecast to increase to 71,600 tonnes. This represents a more conservative growth level of salmonid production compared with previous years of growth as producers adjust to environmental restrictions. To support production levels, Tasmania's main salmonid producers are exploring alternative sites for farmed salmon at Bruny Island, Storm Bay and Okehampton Bay. The value of Australian salmonid production is projected to reach $910 million (in 2017–18 dollars) by 2022–23. Export volumes in the medium term are forecast to decline by 9 per cent from the higher levels of 2018–19 (around 10,300 tonnes) as international prices decline. However, expanding domestic production will support export volumes remaining high compared with historical levels at around 9,400 tonnes in 2022–23. In 2022–23 export earnings are projected to decline to $95 million (in 2017–18 dollars) in line with lower export volumes.

Tuna

Global tuna production includes large volumes of the major species skipjack, yellowfin and bigeye tuna, as well as smaller volumes of species such as albacore and southern bluefin. Each species has a distinct tuna market that determines value. Skipjack is the largest in terms of volume for global production. It is used primarily in the canned tuna market and a large portion is processed in Thailand. As a result of low production and labour costs for canning in South-East Asian countries, Australia does not compete in the canned market. However, Australia is competitive in fresh and frozen premium tuna markets for species such as southern bluefin, yellowfin and bigeye.

Global tuna production, 1995 to 2015



Source: FAO (2018)

Most of Australia's tuna production is from the Southern Bluefin Tuna Fishery (SBTF) in South Australia. Smaller quantities are produced at the Eastern Tuna and Billfish Fishery (ETBF), which extends from Cape York in Queensland to the South Australian/Victorian border. Tuna species from the ETBF include albacore, yellowfin and bigeye. Southern bluefin tuna from the SBTF are caught as wild juveniles using purse seine methods and then fattened in farms near Port Lincoln, South Australia. Australian tuna production is estimated to increase in 2018–19 to 13,382 tonnes, driven by an increase in the total allowable commercial catch for the SBTF. The value of production is forecast to increase in 2018–19 to $183 million, driven by the tuna export market.

Between 2006–07 and 2016–17 Australia exported on average around 10,800 tonnes of tuna a year. Exports are primarily southern bluefin tuna destined for the Japanese sashimi market. Export volumes are anticipated to rise in 2018–19 along with production volumes, increasing by 5 per cent to 11,900 tonnes. Export prices in 2018–19 are forecast to rise by 8 per cent to $166 million due to an assumed weakening of the Australian dollar against the yen.

Over the medium term, the volume of tuna production is expected to remain steady at around 13,400 tonnes. The total allowable commercial catch for the Australian SBTF is determined by an international governing body, the Commission for the Conservation of Southern Bluefin Tuna. This ensures the global southern bluefin tuna fishery is being utilised sustainably. The commission has set the total allowable commercial catch for Australia at 6,165 tonne per annum through to 2020. A similar level of total allowable commercial catch is assumed for the remaining forecast period to 2022–23. However, this represents a conservative level, with potential for the total allowable commercial catch to increase beyond 2020. The value of production is projected to decline from 2018–19 to $176 million (in 2017–18 dollars) in 2022–23. Export volumes are estimated to remain at similar levels to 2018–19, reaching 12,100 tonnes in 2022–23. In contrast, export value is estimated to decline by 3 per cent in real terms. Lower prices are projected in the medium term due to longer-term trends of lower tuna imports and lower consumption per capita of seafood in Japan.

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Outlook for fisheries

		2015–16	2016–17 s	2017–18 f	2018–19 f	2019–20 z	2020–21 z	2021–22 z	2022–23 z
Gross value of fisheries products									
Fish									
Tuna **a**	$m	171	153	171	187	188	193	197	199
real **b**	$m	177	156	171	183	180	180	179	176
Salmonids **c**	$m	718	740	810	830	871	919	971	1,027
real **b**	$m	744	754	810	812	831	855	881	910
Other fish	$m	523	475	428	438	448	459	469	480
real **b**	$m	542	484	428	428	428	427	426	426
Crustaceans									
Prawns	$m	388	378	355	375	383	392	401	410
real **b**	$m	402	385	355	367	366	365	364	364
Rock lobster **d**	$m	695	649	648	678	706	733	756	778
real **b**	$m	720	662	648	663	674	682	686	689
Other crustaceans	$m	63.6	59.8	61.1	61.3	61.6	61.8	62.1	62.3
real **b**	$m	66.0	61.0	61.1	60.0	58.8	57.6	56.4	55.2
Molluscs									
Abalone	$m	160	174	170	170	175	181	188	197
real **b**	$m	166	177	170	166	167	169	171	174
Other molluscs	$m	231	229	210	208	230	238	245	252
real **b**	$m	239	233	210	204	219	222	223	224
Other nei	$m	77.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3
real **b**	$m	80.1	53.4	52.3	51.2	49.9	48.7	47.5	46.4
Total value	$m	3,026	2,910	2,904	2,999	3,116	3,229	3,342	3,458
real **b**	$m	3,138	2,967	2,904	2,933	2,973	3,006	3,035	3,064
Fisheries export value									
Fish									
Tuna	$m	163	144	148	169	171	175	179	181
real **b**	$m	169	147	148	166	163	163	162	161
Salmonids	$m	79.9	58.9	135	112	112	107	107	107
real **b**	$m	82.9	60.1	135	109	107	99.8	97.3	94.9
Other fish	$m	111	103	98.4	85.4	86.7	88.0	89.7	91.8
real **b**	$m	116	105	98.4	83.5	82.7	81.9	81.5	81.3
Crustaceans and molluscs									
Abalone	$m	182	187	187	189	196	203	211	220
real **b**	$m	189	191	187	185	187	189	192	195
Prawns	$m	114	114	104	112	115	117	119	122
real **b**	$m	119	117	104	110	109	109	108	108
Rock lobster	$m	693	676	679	703	727	753	778	801
real **b**	$m	719	690	679	687	694	701	706	710
Pearls	$m	95.9	75.4	69.6	73.9	73.1	72.4	71.7	71.0
real **b**	$m	99.5	76.9	69.6	72.3	69.8	67.4	65.1	62.9
Other crustaceans and molluscs	$m	74.1	48.5	51.7	47.4	48.3	49.3	50.5	51.8
real **b**	$m	76.9	49.4	51.7	46.4	46.1	45.9	45.9	45.9
Other fisheries products	$m	27.5	27.2	30.6	28.4	28.7	29.1	28.7	28.8
real **b**	$m	28.5	27.7	30.6	27.7	27.3	27.1	26.1	25.5
Total fisheries products	$m	1,542	1,435	1,503	1,520	1,557	1,594	1,634	1,674
real **b**	$m	1,599	1,463	1,503	1,487	1,486	1,484	1,484	1,484

a Exports of tuna landed in Australia. Excludes tuna transhipped at sea or captured under joint venture or bilateral agreements. **b** In 2017–18 Australian dollars. **c** Predominantly salmon. Includes trout and salmon-like products. **d** Includes Queensland bugs. **f** ABARES forecast. **s** ABARES estimate. **z** ABARES projection.

Sources: ABARES; Australian Bureau of Statistics

Articles

Farm performance: broadacre and dairy farms, 2015–16 to 2017–18

Peter Martin, Caroline Levantis, Walter Shafron, Paul Phillips and James Frilay

Summary

- In 2017–18 farm cash income for broadacre farms nationally is projected to average $191,000 per farm. This is a small decline from the average of $212,600 recorded in 2016–17 which was the highest farm cash income recorded in the past 20 years.
- Lower farm cash income in 2017–18 is the result of reduced winter grain production in most regions and lower prices for beef cattle but is partly offset by higher prices for wool, sheep and lambs.
- In 2017–18 average farm cash income is projected to decline for broadacre farms in all states except Victoria and Tasmania.
- In 2017–18 higher wool, sheep and lamb prices are projected to result in farm cash income for sheep industry farms increasing to average $170,000, the highest farm cash income recorded in the past 20 years.
- Farm cash income for dairy farms is projected to increase by 53 per cent nationally to an average of $137,000 per farm in 2017–18, reflecting higher milk prices and increased milk production.

Overview

Broadacre farms grow grains, oilseeds or pulses or run beef cattle or sheep and are located in all regions across Australia. In aggregate, broadacre farms accounted for 65 per cent of Australian farm businesses and an estimated 60 per cent of the total gross value of Australian agricultural production in 2016–17.

In 2017–18 less favourable seasonal conditions in most of Australia's agricultural regions resulted in lower winter crop production and reduced pasture production for grazing beef cattle and sheep.

Despite higher prices for grains, oilseeds and pulses, lower crop production is projected to result in lower crop receipts for broadacre farms in most regions in 2017–18. Beef receipts are also projected to fall slightly because of lower prices, despite a small increase in turn-off per farm. In contrast, higher receipts for sheep, lambs and wool because of increased prices are projected to partly offset declines in crop and beef cattle receipts.

Nationally, average farm cash income for broadacre farms is projected to decrease from $212,600 per farm in 2016–17 to an estimated $191,000 per farm in 2017–18. Despite the projected fall in farm cash income, the 2017–18 estimate is expected to be the second highest in real terms in 20 years.

If realised, the reduction in broadacre farm cash income in 2017–18 will interrupt a four-year run of increasing farm incomes. These increases were mainly driven by higher prices for beef cattle and high beef cattle turn-off, partly in response to dry seasonal conditions in northern Australia in 2014–15 and 2015–16 and in parts of New South Wales, Victoria, South Australia and Tasmania in 2015–16. Beef cattle production is the most common and widely dispersed agricultural activity in Australia—around 57 per cent of all Australian farms carry beef cattle. From 2014–15 to 2016–17 increases in average farm cash income were also supported by high overall winter crop production; strong oilseed and pulse prices; higher sheep, lamb and wool prices; a relatively small increase in farm input costs; and lower interest rates on farm borrowing.

Farm receipts

Nationally, crop receipts account for the largest component of total cash receipts for broadacre farms, at 43 per cent in 2016–17. In 2017–18 lower crop production in many regions because of less favourable seasonal conditions is projected to result in a 17 per cent decline in total crop receipts. In the same period, the reduction in crop production is expected to be partly offset by higher prices for grains, oilseeds and pulses.

Beef cattle is the second-largest component of total cash receipts for broadacre farms, accounting for 28 per cent of receipts in 2016–17. In 2017–18 lower prices for beef cattle are expected to be partly offset by increased turn-off per farm, resulting in a 7 per cent reduction in beef cattle receipts. Following a small build-up in beef herds in 2016–17, drier seasonal conditions in Queensland and northern New South Wales are expected to contribute to the projected increase in cattle turn-off.

In 2016–17 receipts from sheep, lambs and wool accounted for 22 per cent of broadacre farm cash receipts. In 2017–18 this proportion is expected to rise to 27 per cent, the highest contribution of sheep, lambs and wool to farm cash receipts since 2002–03, when crop receipts were low because of drought. Average farm cash receipts in all states are projected to be boosted by higher prices for sheep, lambs and wool in 2017–18. In response to strong prices for wool, sheep and lambs, most broadacre farms with sheep have increased their production of wool, adult sheep turn-off and lambs sold for slaughter. Despite increased sheep and lamb turn-off, a small increase in the average size of sheep flocks on broadacre farms is projected in 2017–18.

In 2017–18 increased milk production and higher farmgate milk prices are projected to result in increased total cash receipts for dairy farms. Total cash receipts are projected to increase for dairy farms in all states except Queensland and Western Australia, where milk production is expected to be lower.

Farm costs

Average farm cash costs for broadacre farms are projected to fall nationally by around 3 per cent in 2017–18. Increased expenditure on hired labour; shearing and crutching; fertiliser; crop and pasture chemicals; fuel oil and grease; and interest payments are projected to be more than offset by lower expenditure on other cost categories. In particular, expenditure on beef cattle purchases is projected to fall by around 29 per cent in response to drier seasonal conditions in many areas and increased cattle turn-off.

In 2016–17 most dairy-farming regions recorded lower average farm cash costs. These were the result of lower hay and feed grain prices, favourable seasonal conditions in spring and early summer, increased availability of irrigation water and reduced dairy cow numbers. In 2017–18 a return to dry seasonal conditions in some regions is projected to result in increased expenditure on fodder by dairy farms.

Despite dry seasonal conditions, increased milk production is projected to result in increased expenditure on all major cost items, including wages paid for hired labour; fertiliser; crop and pasture chemicals; fuel, oil and grease; and repairs and maintenance. Slight reductions are projected for dairy cattle purchases and interest payments as a result of reduced average debt.

Box 1 Broadacre sector of Australian agriculture

The sector includes five industry types:

Wheat and other crops industry: specialised producers of cereal grains, coarse grains, pulses and oilseeds.

Mixed livestock–crops industry: properties engaged in producing sheep and/or beef cattle in conjunction with substantial activity in broadacre crops such as wheat, coarse grains, oilseeds and pulses.

Sheep industry: specialised producers of sheep and wool. Sheep industry farms account for only 30 per cent of Australia's wool production. Most wool and sheep meat production occurs on mixed enterprise farms, particularly on mixed livestock–crops industry farms.

Beef industry: properties engaged mainly in running beef cattle, accounting for around 65 per cent of Australia's beef production. This industry includes many small farms.

Sheep–beef industry: properties engaged in running sheep and beef cattle. This industry includes many small farms.

Box 2 Major financial performance indicators

Total cash receipts: total revenues received by the business during the financial year

Total cash costs: payments made by the business for materials and services and for permanent and casual hired labour (excluding owner–manager, partner and family labour)

Farm cash income: *total cash receipts – total cash costs*

Farm business profit: *farm cash income + change in trading stocks – depreciation – imputed labour costs*

Profit at full equity: return produced by all the resources used in the business (*farm business profit + rent + interest + finance lease payments – depreciation on leased items*).

Rate of return to total capital used: efficiency of businesses in generating returns from all resources used (*profit at full equity/total opening capital*) x 100

Rate of return to total capital including capital appreciation: profit and capital gain generated from all resources used (*profit at full equity including capital appreciation/total opening capital*) x 100

Box 3 Farm survey methodology

Each year, as part of its annual farm survey programme, ABARES interviews operators of around 1,600 broadacre farm businesses in its Australian Agricultural and Grazing industries Survey (AAGIS) and 300 dairy farm businesses in its Australian Dairy Industry Survey (ADIS). The AAGIS is targeted at commercial-scale broadacre farms—those that grow grains or oilseeds or run sheep or beef cattle and have an estimated value of agricultural output exceeding $40,000. Broadacre industries covered in this survey include wheat and other crops, mixed livestock–crops, sheep, beef and sheep–beef industries. The ADIS is targeted at commercial-scale milk-producing farms.

The information collected provides a basis for analysing the current financial position of farmers in these industries and expected changes in the short term. Data from the AAGIS and ADIS were analysed to gain insights into the performance of Australian broadacre and dairy farms in 2016–17, including projected farm financial performance in 2017–18.

ABARES uses the latest data available to produce estimates from its surveys. This means estimates are revised as new information becomes available. Preliminary estimates previously published are recalculated to reflect updated benchmark information from the Australian Bureau of Statistics (ABS).

ABARES surveys are designed, and samples selected, on the basis of a framework drawn from the ABS Business Register. This framework includes agricultural establishments in each statistical local area, classified by size and major industry.

continued ...

Box 3 Farm survey methodology continued

Data provided in this article were collected through on-farm interviews and incorporate detailed farm financial accounting information. The estimates presented were calculated by appropriately weighting the data collected from each sample farm.

Sample weights are calculated so estimates of number of farms, areas of crops and numbers of livestock in various geographic regions and industries correspond as closely as possible with the most recently available ABS data, as collected in agricultural censuses and updated annually with data collected in agricultural commodity surveys.

Estimates for 2015–16 and earlier years are final. All data from farmers, including accounting information, have been reconciled. Final production and population information from the ABS has been included and no further change is expected in the estimates.

The 2016–17 estimates are preliminary, based on full production and accounting information from farmers. However, editing and addition of sample farms may be undertaken and ABS production benchmarks may also change.

The 2017–18 projections are based on data collected through on-farm interviews and telephone interviews between October 2017 and January 2018. The estimates include crop and livestock production, receipts and expenditure up to the date of interview, together with expected production, receipts and expenditure for the remainder of the financial year. Modifications have been made to expected receipts and expenditure for the remainder of 2017–18 where prices have changed significantly since the interview.

Farm income and profit

Nationally, average farm cash income for broadacre farms has been high in recent years compared with incomes recorded historically. Farm cash income increased from $182,470 in 2015–16 to $212,600 in 2016–17. In 2017–18 farm cash income is projected to fall by around 10 per cent to average $191,000 per farm (Table 1), 43 per cent higher than the 10-year average to 2016–17 of $133,000 in real terms. If achieved, it would be the second-highest average farm cash income for broadacre farms in over 20 years (Figure 1).

In 2017–18 average broadacre farm cash income is projected to fall in all states except Victoria and Tasmania. Overall, average farm cash income differs significantly across industries, states and regions. By industry, incomes are projected to fall for farms in the wheat and other crops, mixed livestock–crops, and beef industries. Incomes are projected to rise in 2017–18 for farms in the sheep and dairy industries.

TABLE 1 Financial performance, all broadacre industries, Australia, 2015–16 to 2017–18 average per farm

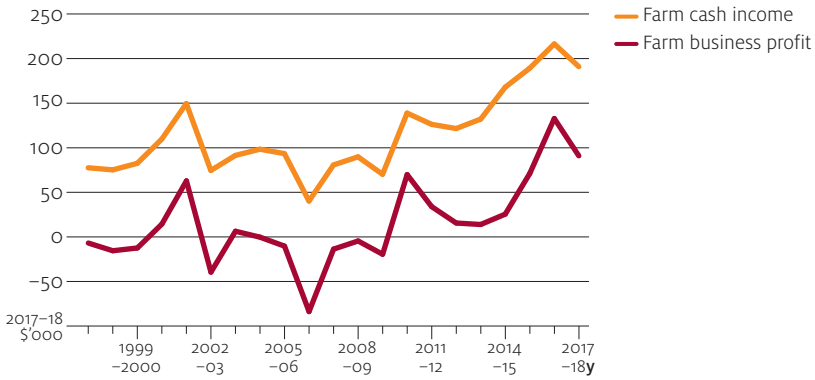
Financial performance measure	Unit	2015–16	2016–17p		2017–18y
Total cash receipts	$	529,800	604,200	(3)	573,000
Total cash costs	$	347,330	391,600	(3)	381,000
Farm cash income	$	182,470	212,600	(4)	191,000
Farms with negative farm cash income	%	14	13	(15)	16
Farm business profit	$	68,570	130,600	(6)	91,000
Profit at full equity					
– excluding cap. appreciation	$	107,600	171,000	(5)	132,000
– including cap. appreciation	$	383,110	386,800	(5)	na
Farm capital at 30 June **a**	$	4,874,370	5,307,900	(3)	na
Net capital additions	$	41,950	94,500	(22)	na
Farm debt at 30 June **b**	$	536,480	616,900	(7)	na
Change in debt - 1 July to 30 June **b**	%	5	5	(40)	na
Equity at 30 June **bc**	$	3,912,280	4,294,100	(3)	na
Equity ratio **bd**	%	88	87	(1)	na
Farm liquid assets at 30 June **b**	$	209,370	231,000	(8)	na
Farm management deposits (FMDs) at 30 June **b**	$	65,590	74,500	(10)	na
Change in FMDs - 1 July to 30 June **b**	%	5	21	(6)	na
Rate of return e					
– excluding cap. appreciation	%	2.4	3.4	(4)	2.5
– including cap. appreciation	%	8.4	7.8	(5)	na
Off-farm income of owner-manager and partner **b**	$	34,710	51,700	(29)	na

a Excludes leased plant and equipment. **b** Average per responding farm. **c** Farm capital minus farm debt. **d** Equity expressed as a percentage of farm capital. **e** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Farm cash income is a measure of cash funds generated by the farm business for farm investment and consumption after paying all costs incurred in production. This includes interest payments but excludes depreciation and payments to family workers. It is a measure of short-term farm performance because it does not take into account depreciation or changes in farm inventories. Farm business profit is a measure of longer-term profitability because it takes into account capital depreciation and changes in inventories of livestock, fodder, grain and wool.

In 2017–18 reductions in beef cattle and on-farm grain stocks in most states will reduce farm inventory values and result in a larger decrease in farm business profit compared with that for farm cash income. Farm business profit for Australian broadacre farms is expected to average $91,000 per farm in 2017–18. If achieved, this would be the second-highest farm business profit for broadacre farms in the 20 years since 1996–97.

FIGURE 1 Financial performance, all broadacre industries, Australia, 1997–98 to 2017–18 average per farm



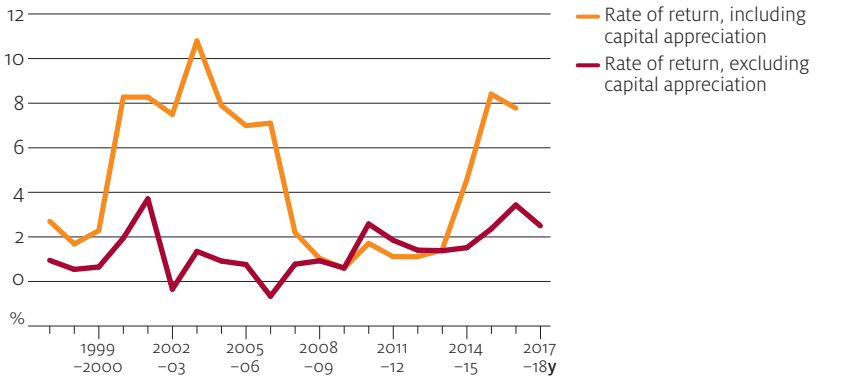
y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Investment returns

The average rate of return to total farm capital including capital appreciation for broadacre farms was high between 2000–01 and 2006–07 (Figure 2). Strong demand for rural land during most of the 2000s resulted in a sharp increase in land values in most agricultural regions. This raised the total capital value of farms. Rapidly rising farm capital values resulted in high rates of return including capital appreciation. However, from 2007–08 land values generally did not increase and reported land values declined in several regions in the five years to 2013–14. The reduction in reported land values during this period resulted in lower estimates of average rate of return to total farm capital including capital appreciation for broadacre and dairy farms.

In 2014–15 and 2015–16 a rise in land values was recorded in some high rainfall and pastoral zone regions. The value of beef and dairy cattle also increased significantly, contributing to an increase in average farm capital value and a divergence between rate of return including capital appreciation and rate of return excluding capital appreciation (Table 2).

FIGURE 2 Return on capital, average all broadacre industries, Australia, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

The average rate of return excluding capital appreciation for Australian broadacre farms is estimated to have been 3.4 per cent in 2016–17 and is expected to fall in 2017–18 to average 2.5 per cent as profit falls for many farms.

In 2017–18 rates of return excluding capital appreciation are expected to be positive across all states. The Northern Territory (5.1 per cent) and Western Australian (5.0 per cent) are projected to have the highest average rates of return excluding capital appreciation.

The projected average rate of return excluding capital appreciation is highest in the sheep–beef industry, at 3.4 per cent. The sheep industry has the second-highest projected average rate of return excluding capital appreciation, at 3.3 per cent. If achieved, this would be the first time the sheep industry has recorded a higher rate of return than the cropping industries since the late 1980s.

The dairy industry has a projected average rate of return excluding capital appreciation of 2.3 per cent in 2017–18 compared with 1.3 per cent in 2016–17. In 2017–18 the average rate of return is expected to be highest in Tasmania (3.7 per cent) and Western Australia (3.2 per cent) and lowest in Queensland (0.6 per cent).

TABLE 2 Financial performance of all broadacre industries, by state, Australia, 2015–16 to 2017–18 average per farm

Measure	Farm cash income				Farm business profit a				Rate of return excluding capital appreciation b				Rate of return including capital appreciation b			
	2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y	2015–16	2016–17p		
Unit	$	$		$	$	$		$	%	%		%	%	%		
New South Wales	174,760	183,400	(7)	166,000	89,320	107,200	(11)	65,000	2.9	3.1	(8)	2.0	12.0	10.6	(9)	
Victoria	96,060	124,600	(7)	131,000	–19,960	79,400	(12)	53,000	0.2	2.8	(10)	2.0	4.9	7.6	(11)	
Queensland	201,230	232,000	(8)	186,000	74,210	137,400	(12)	77,000	2.2	3.0	(8)	1.9	8.1	6.0	(13)	
Western Australia	304,120	387,400	(6)	358,000	171,270	234,800	(10)	229,000	4.2	5.2	(8)	5.0	5.8	6.1	(11)	
South Australia	182,380	239,500	(10)	199,000	55,280	152,900	(14)	88,000	2.2	4.0	(9)	2.5	8.3	6.1	(12)	
Tasmania	156,340	140,500	(10)	174,000	17,210	73,500	(17)	101,000	1.2	2.4	(12)	2.9	4.3	3.5	(21)	
Northern Territory	2,127,360	1,552,500	(28)	1,341,000	1,290,120	1,519,100	(30)	1,286,000	6.2	6.2	(22)	5.1	14.9	11.5	(29)	
Australia	182,470	212,200	(3)	191,000	68,570	130,200	(5)	91,000	2.4	3.4	(4)	2.5	8.4	7.8	(5)	
Dairy industry																
Australia	125,260	89,600	(22)	137,000	–9,950	–8,300	(99)	41,000	1.3	1.3	(42)	2.3	5.9	3.2	(21)	

a Defined as farm cash income plus build-up in trading stocks, less depreciation and the imputed value of operator, partner and family labour. **b** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Generally, larger farms generate higher rates of return as a result of increasing returns to scale, greater access to superior technologies and greater management skill (Jackson & Martin 2014).

Very large wheat and other crops industry farms (Box 4) generated an average rate of return excluding capital appreciation of 8.1 per cent over the five years to 2015–16, compared with 5.3 per cent for large farms and 2.3 per cent for medium-sized farms and –0.5 per cent for small farms (Table 3). In 2016–17 the average rate of return for very large wheat and other crops industry farms increased to 9.1 per cent but is expected to fall to 6.0 per cent in 2017–18.

Very large dairy farms generated an average rate of return of 6.2 per cent over the five years to 2015–16 and 5.2 per cent in 2016–17. This is expected to increase to 9.1 per cent in 2017–18.

The largest increase in rate of return excluding capital appreciation in recent years was for very large beef industry farms. Rates of return increased from an average of 3.6 per cent for the five years to 2015–16 to a projected 8.9 per cent in 2017–18.

TABLE 3 Rate of return to total capital (excluding capital appreciation) by industry and farm size, Australia, 2011–12 to 2017–18 average per farm

Industry	Business size	Five years ending 2015–16	2016–17p		2017–18y
		%	%		%
Wheat and other crops	Small	–0.5	0.6	(124)	0.7
	Medium	2.3	4.7	(10)	2.3
	Large	5.3	6.8	(7)	4.1
	Very large	8.1	9.1	(13)	6.0
Mixed livestock–crops	Small	–0.5	0.8	(72)	1.1
	Medium	2.6	4.1	(8)	3.2
	Large	3.9	5.0	(8)	4.0
	Very large	9.2	4.6	(32)	4.4
Sheep	Small	–0.5	1.3	(31)	2.7
	Medium	2.3	3.9	(13)	6.0
	Large	4.6	5.6	(10)	7.1
	Very large	ns	ns		ns
Beef	Small	–0.7	0.3	(90)	–0.2
	Medium	1.7	2.8	(11)	3.2
	Large	2.0	3.8	(9)	4.0
	Very large	3.6	6.2	(13)	8.9
Sheep–beef	Small	–0.2	1.4	(33)	2.6
	Medium	1.8	3.2	(17)	4.4
	Large	3.4	5.1	(9)	6.5
	Very large	ns	ns		ns
All broadacre farms		1.7	3.4	(3)	2.5
Dairy	Small	0.0	–1.8	(78)	0.2
	Medium	2.2	1.9	(14)	3.8
	Large	4.3	2.7	(9)	4.1
	Very large	6.2	5.2	(17)	9.1
All dairy farms		2.6	1.3	(31)	2.3

p Preliminary estimates. **y** Provisional estimates.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Box 4 Farm sizes

Small farms: farms with a total value of sales of less than $450,000. Small farms account for 65 per cent of Australian broadacre and dairy farms and around 21 per cent of the total value of sales (receipts) from broadacre and dairy farms. Small farms are mostly family owned and operated, typically with a total capital value of less than $5 million. Off-farm income from wages, salaries, investments and other non-farm businesses often accounts for more than 50 per cent of the disposable cash income of farm operators.

Medium farms: farms with a total value of sales of between $450,000 and $1 million. Medium farms account for 20 per cent of Australian broadacre and dairy farms and around 25 per cent of the total value of sales from broadacre and dairy farms. Medium farms are mostly family owned and operated, typically with a total capital value of between $5 million and $9 million. Off-farm income generally accounts for less than 50 per cent of the disposable cash income of farm operators.

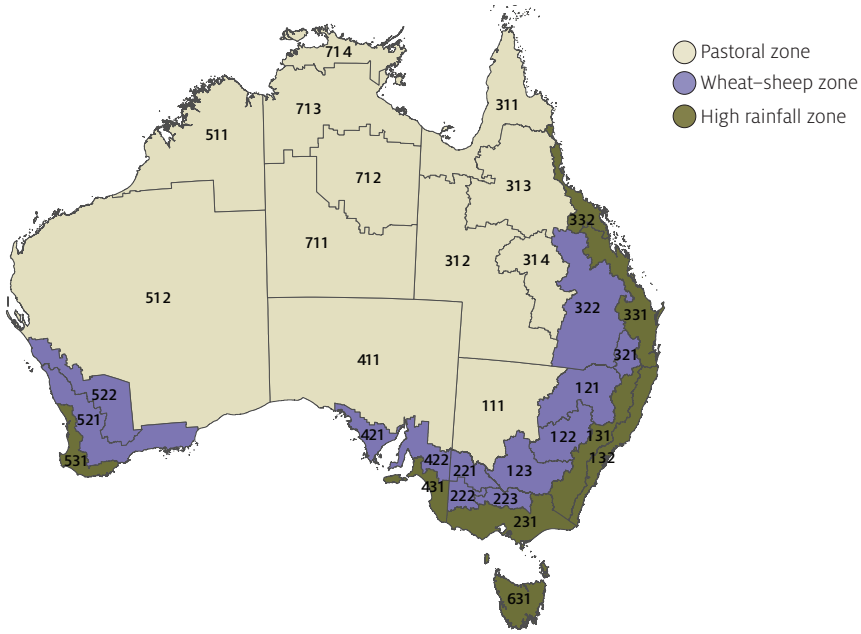
Large farms: farms with a total value of sales of between $1 million and $2 million. Large farms account for 10 per cent of Australian broadacre and dairy farms and for around 24 per cent of the total value of sales from broadacre and dairy farms. The majority of large farms are family owned and operated, but complex ownership and operating arrangements are more common among large farms. Typically, the total capital invested in large farms exceeds $10 million. Off-farm income usually accounts for only a small proportion of the disposable cash income of farm operators.

Very large farms: farms with a total value of sales exceeding $2 million. The majority of very large farms have corporate structures and are often part of a conglomeration of rural properties. Very large farms account for 5 per cent of broadacre and dairy farms and 30 per cent of the total value of sales.

Performance, by state

Projected farm financial performance in 2017–18, is expected to remain high in historical terms, while varying markedly across states and regions (Table 4 and Table 5).

MAP 1 Broadacre zones and regions, Australia



Note: Each region is identified by a unique code of three digits. The first digit indicates the state or territory, the second digit identifies the zone and the third digit identifies the region.
Source: ABARES

TABLE 4 Farm cash income, broadacre farms, by region, Australia, 2016–17 to 2017–18 average per farm

	Five years ending 2015–16	2016–17p		2017–18y
Unit	$	$		$
New South Wales				
111: NSW Far West	188,570	306,900	(15)	386,000
121: NSW North West Slopes and Plains	137,520	259,500	(12)	144,000
122: NSW Central West	127,390	172,700	(10)	177,000
123: NSW Riverina	191,620	237,300	(16)	227,000
131: NSW Tablelands	82,070	133,000	(15)	140,000
132: NSW Coastal	14,460	36,700	(26)	22,000
Victoria				
221: VIC Mallee	159,230	178,900	(30)	182,000
222: VIC Wimmera	142,790	179,300	(17)	225,000
223: VIC Central North	99,190	69,700	(22)	75,000
231: VIC Southern and Eastern Victoria	80,550	127,200	(8)	132,000
Queensland				
311: QLD Cape York and the Gulf	202,230	730,200	(26)	906,000
312: QLD West and South West	218,880	172,100	(59)	276,000
313: QLD Central North	153,050	396,100	(30)	295,000
314: QLD Charleville—Longreach	166,750	253,800	(17)	308,000
321: QLD Eastern Darling Downs	100,900	96,100	(43)	151,000
322: QLD Darling Downs and Central Highlands	165,440	378,200	(10)	219,000
331: QLD South Queensland Coastal	48,920	94,000	(24)	60,000
332: QLD North Queensland Coastal	73,410	131,000	(27)	132,000
South Australia				
411: SA North Pastoral	221,910	271,200	(30)	395,000
421: SA Eyre Peninsula	266,110	267,600	(17)	174,000
422: SA Murray Lands and Yorke Peninsula	227,560	289,600	(16)	171,000
431: SA South East	128,440	171,100	(17)	219,000
Western Australia				
511: WA Kimberley	863,610	1,608,800	(9)	904,000
512: WA Pilbara and Southern Rangelands	329,940	747,400	(22)	456,000
521: WA Central and South Wheat Belt	292,850	427,900	(9)	449,000
522: WA North and East Wheat Belt	305,710	451,400	(11)	300,000
531: WA South West	97,910	155,300	(20)	192,000
Tasmania	117,250	143,300	(10)	174,000
Northern Territory				
711: NT Alice Springs District	276,750	854,500	(40)	871,000
712: NT Barkly Tablelands	3,132,210	3,927,400	(19)	3,935,000
713: NT Victoria River District—Katherine	520,620	1,496,000	(62)	659,000
714: NT Top End Darwin and the Gulf	170,090	486,500	(39)	538,000

p ABARES preliminary estimates. **y** ABARES provisional estimates.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey

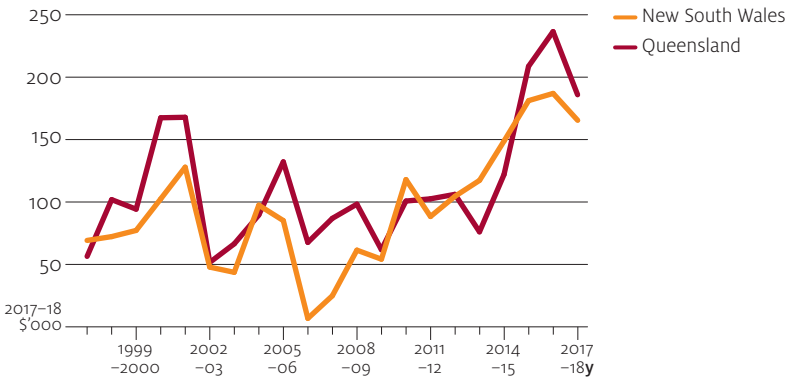
New South Wales

Average farm cash income was high in New South Wales in 2015–16 and increased further in all regions in 2016–17 as a result of higher prices for beef cattle, wool, sheep, lambs and increased crop production (Table 4).

In 2017–18 average farm cash income is projected to increase further in the Far west, Central West and Tablelands regions while declining in the North West Slopes and Plains, Riverina and Coastal regions of New South Wales, a result of lower winter crop production and lower prices for beef cattle.

Broadacre farm cash income in New South Wales is projected to decrease to average $166,000 per farm in 2017–18. Despite declining from the previous year, this result would still be 52 per cent higher than the 10-year average to 2016–17 of $109,000 (Figure 3).

FIGURE 3 Farm cash income, all broadacre farms, New South Wales and Queensland, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 5 Financial performance, all broadacre industries, by state, Australia, 2015–16 to 2017–18

average per farm

State		New South Wales				Victoria			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	509,580	547,900	(5)	518,000	338,390	385,400	(5)	398,000
Total cash costs	$	334,820	364,500	(5)	352,000	242,330	260,800	(5)	268,000
Farm cash income	$	174,760	183,400	(7)	166,000	96,060	124,600	(7)	131,000
Farms with negative farm cash income	%	14	16	(24)	15	20	16	(27)	15
Farm business profit	$	89,320	107,200	(11)	65,000	–19,960	79,400	(12)	53,000
Profit at full equity									
–excluding cap. appreciation	$	123,980	143,900	(9)	104,000	9,040	109,900	(10)	83,000
–including cap. appreciation	$	520,130	497,300	(9)	na	181,540	302,000	(11)	na
Farm capital at 30 June **a**	$	4,798,700	5,161,200	(4)	na	3,897,850	4,291,200	(4)	na
Net capital additions	$	50,850	86,100	(34)	na	4,730	85,900	(30)	na
Farm debt at 30 June **b**	$	527,300	643,300	(8)	na	349,160	398,100	(8)	na
Change in debt – 1 July to 30 June **b**	%	12	8	(39)	4	7	6	(50)	0
Equity at 30 June **bc**	$	3,827,810	4,297,200	(4)	na	3,263,840	3,737,300	(5)	na
Equity ratio **bd**	%	88	87	(1)	na	90	90	(1)	na
Farm liquid assets at 30 June **b**	$	244,350	235,400	(19)	na	156,910	167,700	(12)	na
Farm management deposits (FMDs) at 30 June **b**	$	54,600	64,100	(20)	na	42,250	45,900	(17)	na
Share of farms with FMDs at 30 June **b**	%	5	23	(12)	na	–9	14	(13)	na
Rate of return e									
–excluding cap. appreciation	%	2.9	3.1	(8)	2.0	0.2	2.8	(10)	2.0
–including cap. appreciation	%	12.0	10.6	(9)	na	4.9	7.6	(11)	na
Off-farm income of owner–manager and partner **b**	$	37,820	39,400	(12)	na	34,000	92,400	(62)	na

continued ...

TABLE 5 Financial performance, all broadacre industries, by state, Australia, 2015–16 to 2017–18

average per farm continued

State		Queensland				Western Australia			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	511,920	616,200	(6)	540,000	968,190	1,112,800	(5)	1,063,000
Total cash costs	$	310,690	384,300	(10)	355,000	664,080	725,400	(5)	705,000
Farm cash income	$	201,230	232,000	(8)	186,000	304,120	387,400	(6)	358,000
Farms with negative farm cash income	%	17	13	(21)	23	5	6	(37)	11
Farm business profit	$	74,210	137,400	(12)	77,000	171,270	234,800	(10)	229,000
Profit at full equity									
–excluding cap. appreciation	$	114,150	181,300	(10)	122,000	244,520	304,100	(8)	296,000
–including cap. appreciation	$	425,300	366,300	(13)	na	336,030	351,900	(12)	na
Farm capital at 30 June **a**	$	5,618,360	6,374,000	(4)	na	5,973,240	6,031,900	(5)	na
Net capital additions	$	61,240	46,900	(145)	na	70,020	184,600	(28)	na
Farm debt at 30 June **b**	$	626,150	706,100	(11)	na	919,530	992,100	(11)	na
Change in debt – 1 July to 30 June **b**	%	0	6	(94)	4	3	–1	(369)	1
Equity at 30 June **bc**	$	4,505,620	4,953,900	(4)	na	4,673,360	4,641,200	(6)	na
Equity ratio **bd**	%	88	88	(1)	na	84	82	(2)	na
Farm liquid assets at 30 June **b**	$	189,860	269,900	(13)	na	206,700	265,200	(15)	na
Farm management deposits (FMDs) at 30 June **b**	$	51,960	79,600	(16)	na	86,070	105,400	(17)	na
Share of farms with FMDs at 30 June **b**	%	23	40	(12)	na	4	22	(15)	na
Rate of return e									
–excluding cap. appreciation	%	2.2	3.0	(8)	1.9	4.2	5.2	(8)	5.0
–including cap. appreciation	%	8.1	6.0	(13)	na	5.8	6.1	(11)	na
Off-farm income of owner–manager and partner **b**	$	38,530	52,300	(12)	na	28,270	24,300	(62)	na

continued ...

TABLE 5 Financial performance, all broadacre industries, by state, Australia, 2015–16 to 2017–18

average per farm continued

State		South Australia				Tasmania			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	486,750	618,000	(8)	577,000	480,390	453,500	(6)	493,000
Total cash costs	$	304,370	378,500	(8)	378,000	324,050	313,000	(7)	319,000
Farm cash income	$	182,380	239,500	(10)	199,000	156,340	140,500	(10)	174,000
Farms with negative farm cash income	%	8	3	(41)	19	7	16	(38)	6
Farm business profit	$	55,280	152,900	(14)	88,000	17,210	73,500	(17)	101,000
Profit at full equity									
–excluding cap. appreciation	$	89,300	187,400	(12)	124,000	53,710	108,900	(13)	138,000
–including cap. appreciation	$	336,740	285,200	(13)	na	195,770	156,300	(22)	na
Farm capital at 30 June **a**	$	4,354,270	4,878,400	(8)	na	4,648,110	4,589,500	(6)	na
Net capital additions	$	41,780	119,700	(35)	na	–31,210	22,300	(234)	na
Farm debt at 30 June **b**	$	436,770	445,200	(14)	na	481,070	641,900	(15)	na
Change in debt – 1 July to 30 June **b**	%	2	6	(84)	–1	–3	10	(58)	4
Equity at 30 June **bc**	$	3,776,770	3,920,400	(9)	na	3,661,260	4,164,300	(7)	na
Equity ratio **bd**	%	90	90	(1)	na	88	87	(2)	na
Farm liquid assets at 30 June **b**	$	258,510	271,200	(15)	na	179,060	176,900	(21)	na
Farm management deposits (FMDs) at 30 June **b**	$	139,500	124,100	(20)	na	73,830	65,000	(33)	na
Share of farms with FMDs at 30 June **b**	%	10	10	(14)	na	7	–4	(28)	na
Rate of return e									
–excluding cap. appreciation	%	2.2	4.0	(9)	2.5	1.2	2.4	(12)	2.9
–including cap. appreciation	%	8.3	6.1	(12)	na	4.3	3.5	(21)	na
Off-farm income of owner–manager and partner **b**	$	28,280	31,300	(12)	na	28,230	36,300	(16)	na

continued ...

TABLE 5 Financial performance, all broadacre industries, by state, Australia, 2015–16 to 2017–18

average per farm continued

State		Northern Territory				Australia			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	3,925,080	3,487,500	(19)	3,303,000	529,800	603,600	(2)	573,000
Total cash costs	$	1,797,730	1,935,000	(15)	1,962,000	347,330	391,300	(3)	381,000
Farm cash income	$	2,127,360	1,552,500	(28)	1,341,000	182,470	212,200	(3)	191,000
Farms with negative farm cash income	%	1	5	(81)	1	14	13	(13)	16
Farm business profit	$	1,290,120	1,519,100	(32)	1,286,000	68,570	130,200	(5)	91,000
Profit at full equity									
–excluding cap. appreciation	$	1,437,220	1,648,200	(29)	1,415,000	107,600	170,600	(4)	132,000
–including cap. appreciation	$	3,467,370	3,074,300	(35)	na	383,110	386,200	(5)	na
Farm capital at 30 June **a**	$	24,844,560	28,447,000	(11)	na	4,874,370	5,303,500	(2)	na
Net capital additions	$	228,000	–49,000	(523)	na	41,950	92,900	(20)	na
Farm debt at 30 June **b**	$	1,361,830	1,718,500	(21)	na	536,480	615,900	(5)	na
Change in debt – 1 July to 30 June **b**	%	1	0	(1615)	2	5	5	(34)	2
Equity at 30 June **bc**	$	10,130,160	12,275,000	(10)	na	3,912,280	4,290,500	(2)	na
Equity ratio **bd**	%	88	88	(2)	na	88	87	(1)	na
Farm liquid assets at 30 June **b**	$	91,040	182,200	(39)	na	209,370	231,500	(8)	na
Farm management deposits (FMDs) at 30 June **b**	$	15,920	24,600	(76)	na	65,590	74,400	(9)	na
Share of farms with FMDs at 30 June **b**	%	na	5	(64)	na	5	21	(6)	na
Rate of return e									
–excluding cap. appreciation	%	6.2	6.2	(22)	5.1	2.4	3.4	(4)	2.5
–including cap. appreciation	%	14.9	11.5	(29)	na	8.4	7.8	(5)	na
Off-farm income of owner–manager and partner **b**	$	75,220	39,000	(23)	na	34,710	51,600	(27)	na

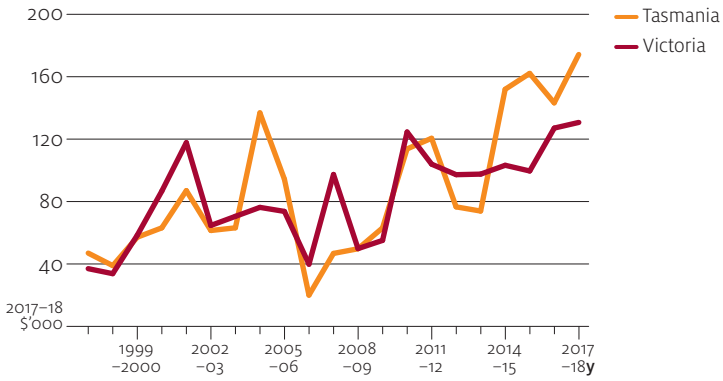
a Excludes leased plant and equipment. **b** Average per responding farm. **c** Farm capital minus farm debt. **d** Equity expressed as a percentage of farm capital. **e** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Victoria

In 2015–16 average farm cash income for Victorian broadacre grain farms was reduced as a result of low winter grain, oilseed and pulse yields due to prolonged dry seasonal conditions, particularly in the Wimmera region. In 2016–17 farm cash income for all regions of Victoria except the Central North region increased. This was a result of increased production of wheat, barley, oilseeds and pulses, and increased receipts from sheep, lambs and wool.

In 2017–18 farm cash income is projected to increase in all Victorian regions, particularly the Wimmera (Table 4). Average farm cash income for broadacre farms in Victoria is projected to increase to $131,000 per farm in 2017–18. If achieved, this would be around 37 per cent above the 10-year average to 2016–17 (Figure 4).

FIGURE 4 Farm cash income, all broadacre farms, Victoria and Tasmania, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Queensland

Farm cash income increased in all Queensland regions in 2015–16. This was achieved partly through a reduction in cattle herds when cattle turn-off increased in response to dry seasonal conditions and higher cattle prices. In 2016–17 farm cash income increased in the Cape York and the Gulf region, Central North, Charleville–Longreach, Darling Downs and Central Highlands, South Queensland Coastal and North Queensland Coastal regions (Table 4). In contrast, farm cash income decreased in the West and South West, and Eastern Darling Downs regions. In 2016–17 production of wheat and pulses, particularly chickpeas, increased, but grain sorghum production decreased.

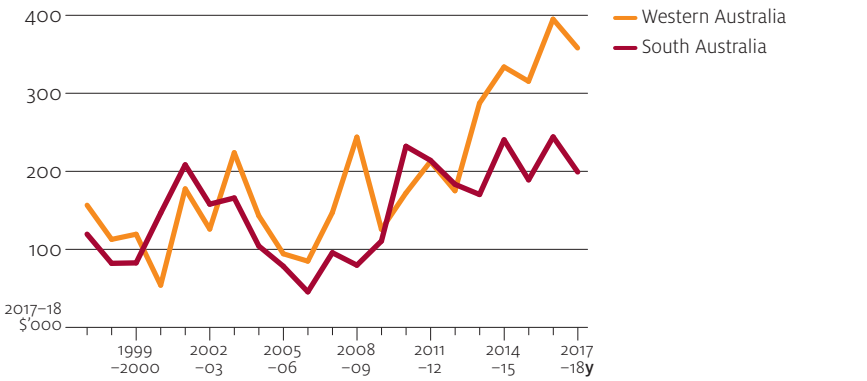
Overall total farm cash receipts for Queensland broadacre farms are projected to decrease by 12 per cent in 2017–18. Average total cash costs are projected to decrease by around 8 per cent. Average broadacre farm cash income in Queensland is projected to decrease to $186,000 per farm in 2017–18. If achieved, this would still be around 55 per cent above the 10-year average to 2016–17.

South Australia

Average broadacre farm cash income declined in 2015–16 but increased in 2016–17 as a result of high grain yields and despite reduced wheat and barley prices (Figure 5). In 2016–17 higher receipts from lentils also contributed to higher average farm cash income for farms in the Murray Lands and Yorke Peninsula region.

In 2017–18 broadacre farm cash income is projected to decrease to average $199,000 per farm. This would be around 13 per cent above the 10-year average to 2016–17.

FIGURE 5 Farm cash income, all broadacre farms, South Australia and Western Australia, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Western Australia

In 2015–16 a decline in wheat and barley yields and lower grain prices, partly due to lower grain quality, resulted in a decrease in average broadacre receipts in Western Australia and a small decline in average broadacre farm cash income. The impact of lower grain receipts on farm cash income was partly offset by increased beef cattle and wool receipts resulting from higher beef cattle and wool prices in 2015–16.

In 2016–17 average total farm cash income increased in all regions of Western Australia largely because of higher beef cattle receipts (Table 4).

Overall, broadacre farm cash income in Western Australia is projected to decrease from an average of $387,400 per farm in 2016–17 to $358,000 per farm in 2017–18. If achieved, this would be around 49 per cent above the 10-year average to 2016–17.

Tasmania

In 2015–16 average farm cash income for Tasmanian broadacre farms was similar to that recorded in 2014–15. Dry seasonal conditions throughout 2015 resulted in reduced crop and wool production and a further increase in beef cattle turn-off. Crop, sheep and wool receipts declined and beef cattle receipts increased due to higher turn-off and higher beef cattle prices.

In 2016–17 average farm cash income fell in Tasmania with declines in receipts for beef cattle, wool, sheep and crops.

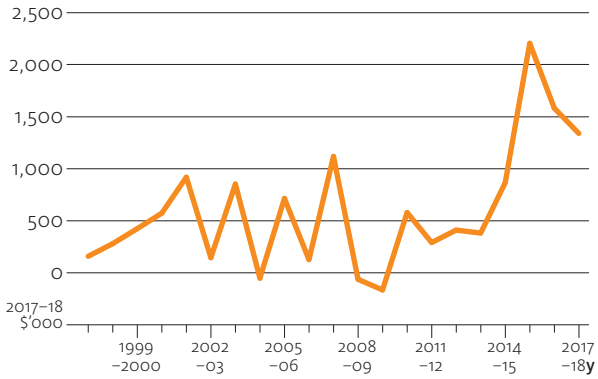
On average, farm cash income for broadacre farms in Tasmania is projected to increase to $174,000 per farm in 2017–18 (Table 5). This would be around 74 per cent above the 10-year average to 2016–17 and the highest in over 20 years (Figure 4).

Northern Territory

Many farm businesses in the north of the Northern Territory derive a large share of their total cash receipts from selling cattle for live export, particularly to Indonesia. The expansion of the live export trade between 2013–14 and 2015–16 resulted in cattle being sourced from a much larger area of northern Australia.

In 2016–17 average farm cash income decreased as a result of lower total cash receipts and a small increase in total cash costs. Average farm cash income increased in each region (Table 4). Overall, farm cash income in the Northern Territory is projected to decrease to average $1,341,000 per farm in 2017–18, compared with the 10-year average to 2016–17 of $722,000 per farm (Figure 6). This result would be 86 per cent above the 10-year average to 2016–17.

FIGURE 6 Farm cash income, all broadacre farms, Northern Territory, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Performance, by industry

Farm financial performance in 2016–17, projected performance in 2017–18 and historical ranking vary markedly across industries (Table 6 and Table 7).

Wheat and other crops industry

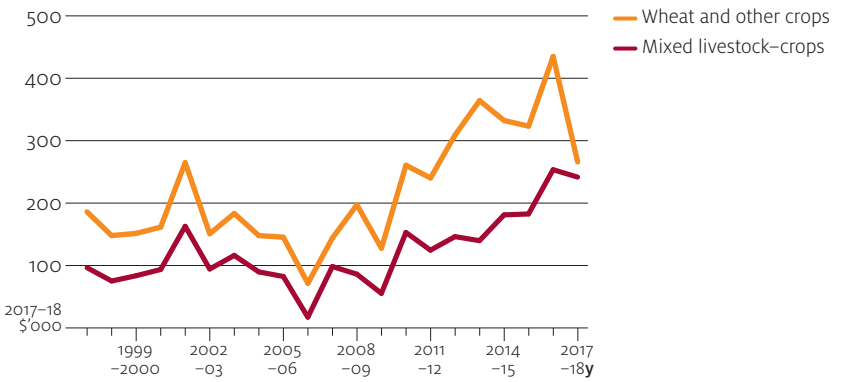
Average farm cash income for the wheat and other crops industry decreased slightly in 2015–16, mainly as a result of lower grain and oilseed prices. The decline in total grain receipts was partly offset by increased receipts for pulses. Average farm cash costs did not increase and farm cash income for wheat and other crops industry farms averaged $311,830 per farm.

In 2016–17 farm cash income for the wheat and other crops industry increased to an average of $426,500 per farm. This is the result of increased winter crop production in all major grain-producing states in 2016–17 offsetting lower prices for grains and oilseeds and increased total cash costs (Figure 7).

In 2017–18 average farm cash income for the wheat and other crops industry is projected to fall to an average of $266,000 as a result of less favourable seasonal conditions following the record high winter crop production of 2016–17.

Wheat and other crops industry farms recorded an average rate of return excluding capital appreciation of 6 per cent in 2016–17. This is projected to fall to 3 per cent in 2017–18.

FIGURE 7 Farm cash income, grains industries, Australia, 1997–98 to 2017–18
average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 6 Financial performance, broadacre farms, by industry, Australia, 2015–16 to 2017–18

average per farm

	Farm cash income			Farm business profit		
	2015–16	2016–17p	2017–18y	2015–16	2016–17p	2017–18y
Unit	$	$	$	$	$	$
Wheat and other crops	311,830	426,500	266,000	195,080	303,700	117,000
Mixed livestock–crops	176,170	248,700	242,000	49,410	148,600	122,000
Beef industry	174,230	150,600	132,000	54,050	83,800	48,000
Sheep	96,720	125,800	170,000	5,100	61,100	95,000
Sheep beef	158,870	174,500	235,000	55,370	105,400	141,000
All broadacre industries	182,470	212,600	191,000	68,570	130,600	91,000
Dairy	125,260	89,600	137,000	−9,950	−8,300	41,000

	Rate of return excluding capital appreciation a			Rate of return including capital appreciation a		
	2015–16	2016–17p	2017–18y	2015–16	2016–17p	2017–18y
Unit	%	%	%	%	%	%
Wheat and other crops	4.5	6.0	3.0	8.6	10.5	na
Mixed livestock–crops	2.1	3.9	3.2	5.3	10.9	na
Beef industry	1.7	2.1	1.4	10.9	5.1	na
Sheep	0.8	2.4	3.3	5.3	6.1	na
Sheep beef	2.0	2.8	3.4	8.1	7.9	na
All broadacre industries	2.4	3.4	2.5	8.4	7.8	na
Dairy	1.3	1.3	2.3	5.9	3.2	na

a Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates.**na** Not available.
Source: ABARES Australian Agricultural and Grazing Industries Survey and Australian Dairy Industry Survey

Mixed livestock–crops industry

Average farm cash income for the mixed livestock–crops industry increased in 2015–16 to $176,170 per farm. In 2016–17 crop receipts increased due to increased winter crop production and higher receipts from beef cattle, sheep, lambs and wool. This resulted in an overall increase in total farm cash receipts of around 20 per cent.

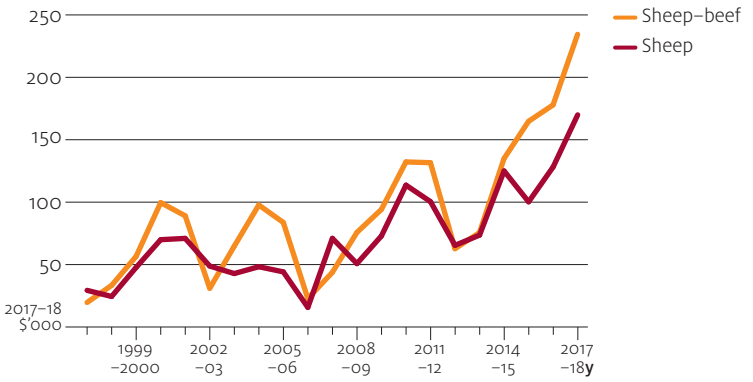
In 2017–18 total cash receipts are projected to decrease by around 4 per cent, total cash costs by around 4 per cent and total average farm cash income by around 3 per cent to $242,000 per farm. This result would be around 70 per cent above the 10-year average to 2016–17.

Sheep industry

In 2015–16 reduced wool production resulted in farm cash income for sheep industry farms declining slightly to average $96,720 per farm (Figure 8).

In 2016–17 farm cash income for the sheep industry increased to an average of $125,800 per farm as a result of higher wool, lamb and sheep prices. In 2017–18 average farm cash income is projected to increase further to $170,000 per farm. If realised, farm cash income will be around 88 per cent higher than the 10-year average to 2016–17 and the highest recorded in the 20 years since 1997–98 (Figure 8).

FIGURE 8 Farm cash income, sheep industries, Australia, 1997–98 to 2017–18
average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Sheep–beef industry

In 2015–16 receipts from the sale of beef cattle increased significantly, and receipts from the sale of sheep, lambs and wool increased slightly. This was the result of higher prices for beef cattle, lambs, adult sheep and wool and despite a reduction in beef cattle turn-off. In 2015–16 farm cash income for sheep–beef industry farms increased to average $158,870 per farm.

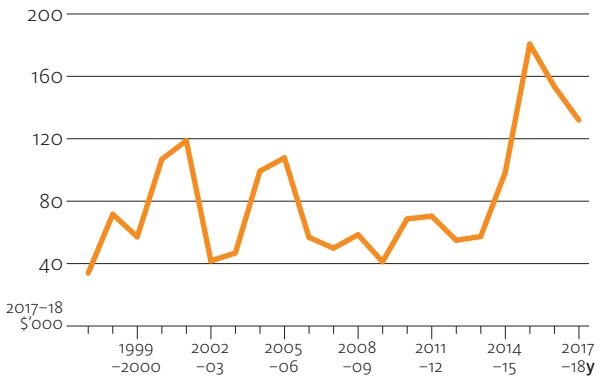
In 2016–17 farm cash income for sheep–beef industry farms increased further to average $174,500 per farm as a result of higher prices for wool, lambs, sheep and beef cattle and despite a reduction in beef cattle turn-off. In 2017–18 farm cash income is projected to increase to an average of $235,000 per farm. If achieved, this would be around 114 per cent above the 10-year average to 2016–17 and the highest average farm cash income of sheep–beef farms in the 20 years since 1997–98.

Beef industry

Beef industry average farm cash income increased strongly in 2015–16 as a result of increased cattle prices and the highest beef cattle turn-off in 36 years (Figure 9). Increased turn-off was due to dry seasonal conditions. Average farm cash income for beef industry farms is estimated to have increased from $98,000 per farm in 2014–15 to $174,230 in 2015–16.

In 2016–17 farm cash income for beef industry farms decreased to an average of $150,600 per farm. Average total farm cash receipts increased for beef industry farms in 2016–17. However, average total cash costs increased at a higher rate than receipts. In 2017–18 average total farm cash income is projected to decrease further to $132,000 per farm as a result of decreased beef cattle receipts (Table 6).

FIGURE 9 Farm cash income, beef industry, Australia, 1997–98 to 2017–18
average per farm



y Provisional estimates.
Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 7 Financial performance, by industry, broadacre and dairy industries, Australia, 2015–16 to 2017–18
average per farm

Industry	Unit	Wheat and other crops industry				Mixed livestock–crops industry			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	1,051,100	1,297,300	(4)	1,107,000	583,350	701,600	(7)	677,000
Total cash costs	$	739,270	870,700	(4)	841,000	407,180	453,000	(10)	435,000
Farm cash income	$	311,830	426,500	(7)	266,000	176,170	248,700	(7)	242,000
Farms with negative farm cash income	%	14	10	(31)	27	16	10	(31)	12
Farm business profit	$	195,080	303,700	(8)	117,000	49,410	148,600	(12)	122,000
Profit at full equity									
–excluding cap. appreciation	$	286,920	399,100	(7)	216,000	98,440	200,000	(9)	174,000
–including cap. appreciation	$	553,990	703,700	(8)	na	247,020	551,500	(10)	na
Farm capital at 30 June **a**	$	6,820,050	7,343,400	(4)	na	4,934,010	5,571,600	(6)	na
Net capital additions	$	71,070	315,900	(18)	na	101,200	117,300	(22)	na
Farm debt at 30 June **b**	$	1,184,910	1,425,600	(6)	na	668,690	752,500	(23)	na
Change in debt – 1 July to 30 June **b**	%	7	5	(45)	1	7	5	(97)	5
Equity at 30 June **bc**	$	5,240,610	5,690,800	(5)	na	3,997,770	4,604,500	(5)	na
Equity ratio **bd**	%	82	80	(1)	na	86	86	(3)	na
Farm liquid assets at 30 June **b**	$	325,990	337,400	(20)	na	168,060	199,100	(12)	na
Farm management deposits (FMDs) at 30 June **b**	$	177,980	166,800	(21)	na	65,910	92,500	(14)	na
Change in FMDs – 1 July to 30 June **b**	%	4	14	(10)	na	14	31	(11)	na
Rate of return e									
–excluding cap. appreciation	%	4.5	6.0	(6)	3.0	2.1	3.9	(9)	3.2
–including cap. appreciation	%	8.6	10.5	(8)	na	5.3	10.9	(10)	na
Off-farm income of owner–manager and partner **b**	$	36,400	44,000	(26)	na	31,970	30,100	(13)	na

continued ...

TABLE 7 Financial performance, by industry, broadacre and dairy industries, Australia, 2015–16 to 2017–18 average per farm continued

Industry	Unit	Sheep industry				Beef industry			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	288,970	330,100	(9)	388,000	404,380	410,800	(6)	381,000
Total cash costs	$	192,250	204,400	(10)	219,000	230,160	260,200	(6)	249,000
Farm cash income	$	96,720	125,800	(9)	170,000	174,230	150,600	(8)	132,000
Farms with negative farm cash income	%	12	10	(32)	7	15	18	(23)	20
Farm business profit	$	5,100	61,100	(20)	95,000	54,050	83,800	(15)	48,000
Profit at full equity									
–excluding cap. appreciation	$	23,880	78,400	(16)	113,000	77,020	109,000	(12)	74,000
–including cap. appreciation	$	157,910	194,500	(19)	na	497,690	260,700	(13)	na
Farm capital at 30 June **a**	$	3,073,480	3,367,200	(8)	na	4,970,590	5,304,000	(4)	na
Net capital additions	$	–11,370	23,700	(109)	na	19,770	58,300	(70)	na
Farm debt at 30 June **b**	$	268,640	266,900	(12)	na	337,330	396,800	(13)	na
Change in debt – 1 July to 30 June **b**	%	–2	6	(77)	4	4	8	(77)	2
Equity at 30 June **bc**	$	2,690,950	2,978,200	(8)	na	3,934,240	4,175,800	(4)	na
Equity ratio **bd**	%	91	92	(1)	na	92	91	(1)	na
Farm liquid assets at 30 June **b**	$	111,500	149,700	(13)	na	242,230	247,500	(14)	na
Farm management deposits (FMDs) at 30 June **b**	$	30,680	42,000	(24)	na	36,210	42,600	(21)	na
Change in FMDs – 1 July to 30 June **b**	%	4	21	(16)	na	5	25	(15)	na
Rate of return e									
–excluding cap. appreciation	%	0.8	2.4	(12)	3.3	1.7	2.1	(11)	1.4
–including cap. appreciation	%	5.3	6.1	(16)	na	10.9	5.1	(12)	na
Off-farm income of owner–manager and partner **b**	$	30,070	27,700	(16)	na	38,040	82,000	(49)	na

continued ...

TABLE 7 Financial performance, by industry, broadacre and dairy industries, Australia, 2015–16 to 2017–18
average per farm continued

Industry	Unit	Sheep–beef industry				Dairy industry			
		2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y
Total cash receipts	$	437,750	475,100	(13)	515,000	766,970	711,500	(3)	782,000
Total cash costs	$	278,880	300,600	(13)	280,000	641,720	621,900	(3)	645,000
Farm cash income	$	158,870	174,500	(15)	235,000	125,260	89,600	(22)	137,000
Farms with negative farm cash income	%	10	6	(47)	6	17	31	(20)	25
Farm business profit	$	55,370	105,400	(19)	141,000	−9,950	−8,300	(301)	41,000
Profit at full equity									
–excluding cap. appreciation	$	81,520	132,100	(19)	167,000	55,800	62,300	(41)	112,000
–including cap. appreciation	$	329,280	370,800	(19)	na	247,890	149,500	(21)	na
Farm capital at 30 June **a**	$	4,367,440	4,887,400	(12)	na	4,516,880	4,793,200	(3)	na
Net capital additions	$	62,150	−52,400	(164)	na	116,060	1,900	(99)	na
Farm debt at 30 June **b**	$	420,070	423,600	(18)	na	938,680	926,700	(6)	na
Change in debt – 1 July to 30 June **b**	%	5	−5	(95)	2	7	−2	(196)	−1
Equity at 30 June **bc**	$	3,706,050	4,186,600	(13)	na	3,584,600	3,724,400	(4)	na
Equity ratio **bd**	%	90	91	(1)	na	79	80	(2)	na
Farm liquid assets at 30 June **b**	$	152,730	191,400	(24)	na	193,620	168,200	(18)	na
Farm management deposits (FMDs) at 30 June **b**	$	38,880	59,000	(23)	na	31,980	32,000	(28)	na
Change in FMDs – 1 July to 30 June **b**	%	21	20	(20)	na	−2	4	(26)	na
Rate of return e									
–excluding cap. appreciation	%	2.0	2.8	(11)	3.4	1.3	1.3	(42)	2.3
–including cap. appreciation	%	8.1	7.9	(18)	na	5.9	3.2	(21)	na
Off-farm income of owner–manager and partner **b**	$	33,290	34,500	(17)	na	16,840	15,900	(14)	na

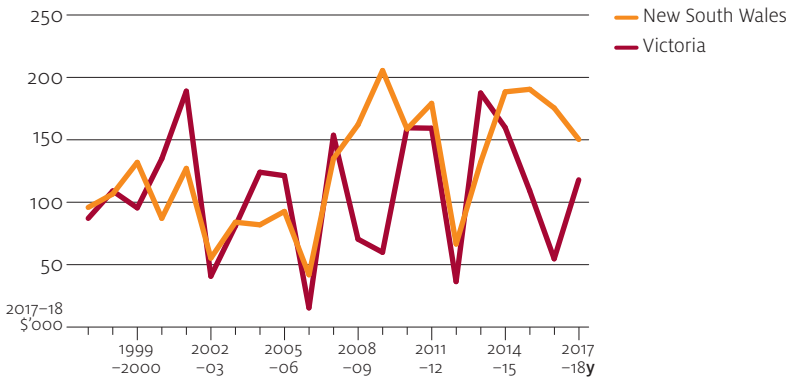
a Excludes leased plant and equipment. **b** Average per responding farm. **c** Farm capital minus farm debt. **d** Equity expressed as a percentage of farm capital. **e** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES Australian Agricultural and Grazing Industries Survey and Australian Dairy Industry Survey

Dairy industry

In 2016–17 average farm cash income declined in New South Wales, Victoria, South Australia and Tasmania (Table 8). Farm cash income for Victorian dairy farms declined from an average of $105,350 per farm in 2015–16 to $53,700 in 2016–17 (Figure 10). In contrast, in Western Australia higher milk prices and an increase in milk production resulted in a rise in average farm cash income for dairy farms (Figure 11). In Queensland, higher average milk prices and a small reduction in average farm cash costs (mainly due to the exit of higher-cost producers) resulted in an increase in average farm cash income.

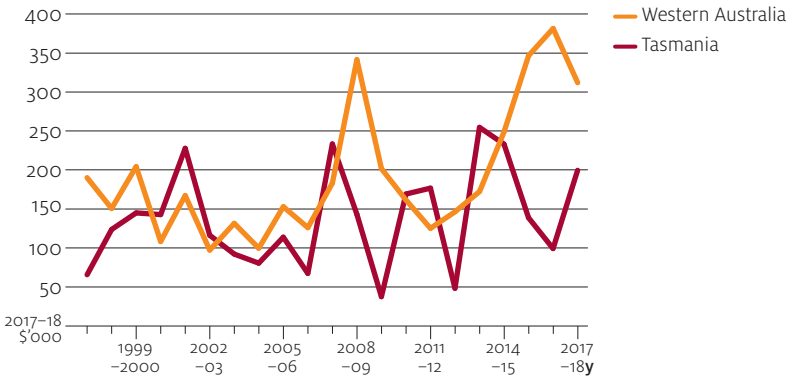
In 2017–18 farm cash income is projected to increase in Victoria, South Australia and Tasmania as a result of higher milk prices and increased milk production. In New South Wales, Queensland and Western Australia, farm cash income is projected to decline as drier seasonal conditions result in increased fodder expenditure and reduced milk production per farm. Nationally, farm cash income is projected to increase from an average of $89,600 per farm in 2016–17 to $137,000 per farm in 2017–18.

FIGURE 10 Farm cash income, dairy industry farms, New South Wales and Victoria, 1997–98 to 2017–18 average per farm



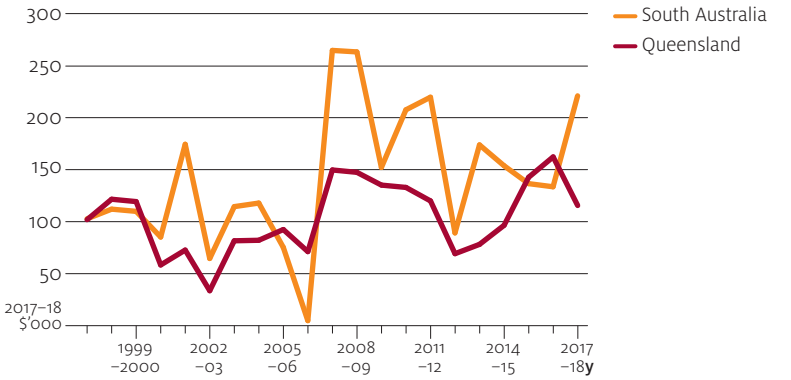
y Provisional estimates.
Source: ABARES Australian Dairy Industry Survey

FIGURE 11 Farm cash income, dairy industry farms, Western Australia and Tasmania, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Dairy Industry Survey

FIGURE 12 Farm cash income, dairy industry farms, Queensland and South Australia, 1997–98 to 2017–18 average per farm



y Provisional estimates.
Source: ABARES Australian Dairy Industry Survey

TABLE 8 Financial performance, dairy industry, by state, 2015–16 to 2017–18 average per farm

	Farm cash income				Farm business profit a				Rate of return excluding capital appreciation b				Rate of return including capital appreciation b			
	2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y	2015–16	2016–17p		2017–18y	2014–15	2015–16p		2016–17y
	$	$		$	$	$		$	%	%		%	%	%		%
New South Wales	184,950	172,100	(10)	150,000	57,450	55,300	(38)	36,000	2.6	2.3	(18)	1.8	6.4	4.9	(26)	na
Victoria	105,350	53,700	(54)	118,000	−39,120	−43,700	(83)	31,000	0.6	0.6	(137)	2.2	6.8	2.3	(45)	na
Queensland	137,550	159,100	(11)	116,000	63,780	71,200	(45)	−4,000	3.0	2.8	(30)	0.6	5.7	4.6	(23)	na
Western Australia	334,260	374,000	(11)	312,000	201,260	262,700	(21)	202,000	3.4	3.7	(14)	3.2	4.0	4.0	(13)	na
South Australia	131,710	131,000	(26)	221,000	18,470	15,400	(221)	96,000	2.1	1.8	(39)	3.1	2.9	7.8	(28)	na
Tasmania	133,790	97,500	(30)	200,000	−470	31,700	(84)	106,000	1.8	2.5	(21)	3.7	1.9	3.6	(27)	na
Australia	125,260	89,600	(22)	137,000	−9,950	-8,300	(301)	41,000	1.3	1.3	(42)	2.3	5.9	3.2	(21)	na

a Defined as farm cash income plus build-up in trading stocks, less depreciation and the imputed value of operator, partner and family labour. **b** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates. **na** Not available.

Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Farm productivity

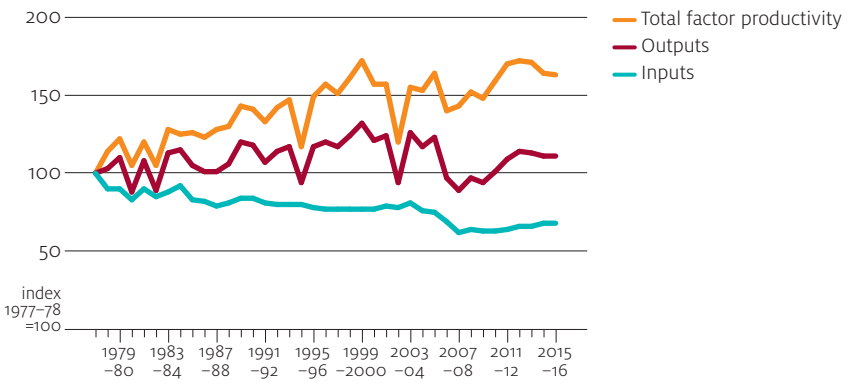
Productivity growth is an important measure of performance for Australian agriculture because it reflects changes in the efficiency of inputs such as land, labour and capital and intermediate inputs (for example, chemicals, fodder and purchased services) to produce outputs such as crops, meat, wool and milk.

Productivity growth is important for maintaining Australia's international competitiveness and agriculture profitability in the face of long-term declines in Australian farmers' terms of trade.

ABARES favours using total factor productivity (TFP), also known as multifactor productivity (MF), to measure productivity. Long-term TFP growth is an important indicator of technological progress. In the short term, variability in TFP can reflect seasonal conditions and sample change rather than changes in the underlying technology.

From 1977–78 to 2015–16 average productivity growth was 1.1 per cent per year (Figure 13). Productivity growth over the past 39 years has been driven mainly by reduced input use rather than significant output growth.

FIGURE 13 Total factor productivity, output and input, all broadacre farms, Australia, 1977–78 to 2015–16



Source: ABARES Australian Agricultural and Grazing Industries Survey

Between 1977–78 and 2015–16 total input use in the broadacre industries declined at an average annual rate of 0.9 per cent per year. Land use accounts for the largest share of total broadacre input use and declined on average by 1.5 per cent a year. The use of capital also declined by 1.5 per cent a year and labour by 2.2 per cent a year. In contrast, use of material inputs, including fertiliser, fodder and crop chemicals, increased by 1.7 per cent a year over the same period, partly reflecting changes in farming technologies in cropping and livestock industries.

Despite declining input use, broadacre output increased by 0.1 per cent a year between 1977–78 and 2015–16. However, the increase varied substantially over time, mostly because of changing seasonal conditions and industry structure. The relatively small change in aggregate broadacre output over this period masks significant structural change, including a 49 per cent decline in the number of farms and a shift from livestock to crop production in many regions.

Between 1977–78 and 2015–16 productivity increased in all broadacre industries (Table 9). In the cropping industry, output growth (2.7 per cent per year) was faster than input growth (1.2 per cent per year). Productivity growth in the beef industry was driven by a growth in output (1.1 per cent per year) and a reduction in the use of inputs (–0.2 per cent per year). In contrast, productivity growth in the mixed livestock–crops, sheep and sheep–beef industries was driven by reductions in input use outstripping declines in output.

TABLE 9 Total factor productivity, output and input growth, by industry, Australia, 1977–78 to 2015–16

Industry	TFP (%)	Input (%)	Output (%)
All broadacre	1.1	–0.9	0.1
Cropping specialists	1.5	1.2	2.7
Mixed livestock–crops	0.9	–1.8	–0.9
Sheep	0.2	–2.9	–2.7
Beef	1.2	–0.2	1.1
Sheep–beef	0.2	–2.4	–2.1

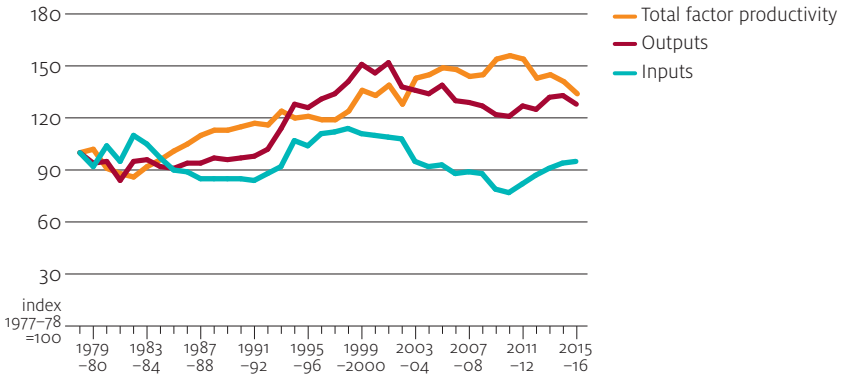
Source: ABARES Australian Agricultural and Grazing Industries Survey

From 1978–79 to 2015–16 dairy farm productivity growth averaged 1.4 per cent per year (Figure 14). The long-term productivity growth was due mostly to increased output rather than decreased inputs. Dairy industry productivity growth was faster than the broadacre sector as a whole.

The drivers of productivity growth in the dairy industry were substantially different after the deregulation reforms implemented in 2000. Throughout the 1980s and 1990s, many dairy farms transitioned to more intensive production systems. This reduced labour and land requirements but increased material inputs such as fertiliser and supplementary feed. Productivity improvements during this period were driven by output increasing faster than input use, as farmers adopted new technologies such as rotary dairies, artificial insemination and improved pastures.

In the 2000s many smaller farms exited the dairy industry following deregulation and total output declined. Productivity growth during this period was driven by input use declining faster than output, as resources such as land, labour and capital shifted towards the most efficient farms.

FIGURE 14 Total factor productivity, output and input, dairy farms, Australia, 1978–79 to 2015–16



Source: ABARES Australian Dairy Industry Survey

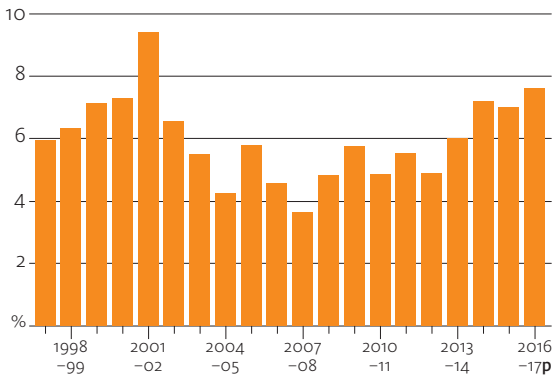
Farm investment

A producer's capacity to generate farm income is influenced by past investments in additional land to expand the scale of farming activities, and in new infrastructure, plant and machinery to boost productivity in the longer term.

Over the decade to 2016–17 broadacre and dairy farmers invested heavily in land, plant and machinery. In 2016–17 new investment remained relatively high for broadacre and dairy farms.

In 2014–15 and 2015–16 higher average farm cash income for broadacre farms led to an increased proportion of broadacre farmers acquiring additional land through purchase or lease (Figure 15). Around 8 per cent of broadacre farms acquired additional land in both 2014–15 in 2015–16. This was above the average of 5 per cent for the previous 10 years and comparable with the rates of the late 1990s and early 2000s. In 2016–17 an estimated 7.6 per cent of broadacre farms acquired additional land.

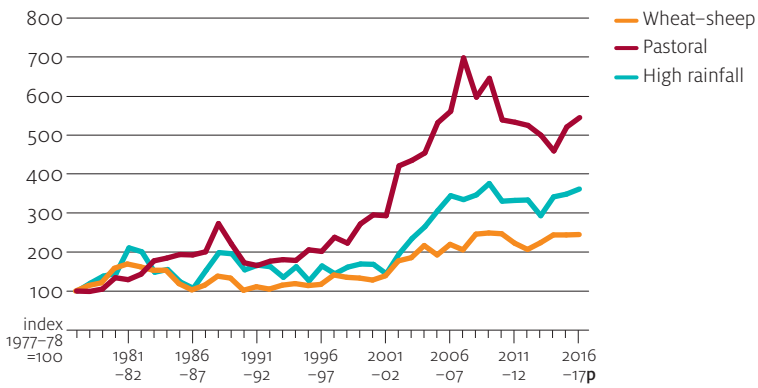
FIGURE 15 Proportion of broadacre farms acquiring land, Australia, 1997–98 to 2016–17 percentage of farms



p ABARES preliminary estimate.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Between 2009–10 and 2013–14 land values reported for broadacre and dairy farms declined in some regions, particularly in the pastoral zone of northern Australia (Figure 16). From 2014–15 to 2016–17 increased land sales led to a slight increase in reported broadacre land values in some regions. This was particularly the case in high rainfall regions and some pastoral zone regions.

FIGURE 16 Land prices for broadacre farms, by zone, Australia, 1977–78 to 2016–17 average per farm



p ABARES preliminary estimate.
Source: ABARES Australian Agricultural and Grazing Industries Survey

Farm debt

Debt is an important source of funds for farm investment and ongoing working capital for the broadacre and dairy industries. This is because more than 95 per cent of farms in these sectors are family owned and operated. Funding by family farms for expansion and improvement is limited to the funds available to the family, the profits the business can generate and the funds it can borrow.

Change in farm debt over time is the balance between the amount of principal repaid and the increase in principal owed (new borrowing). The increase in broadacre and dairy industry debt is the result of increased borrowing and reduced loan principal repayments through much of the 2000s.

Lower interest rates from the late 1990s and increased lending fuelled the boom in land prices. This raised farm equity (net wealth) and induced lenders to provide more finance. This continued until there was a correction in land values in some regions after 2009 and a tightening of lending practices by banks in recent years. Provision of interest subsidies to farmers in drought through exceptional circumstances arrangements supported debt servicing. In many regions this assistance was sustained for most of the 2000s.

Several factors in addition to lower interest rates contributed to the growth in debt over this period. Structural adjustment resulted in broadacre farmers changing the mix of commodities produced and increasing farm size. An increase in the average size of farm enterprises resulted in higher borrowing for ongoing working capital. Factors that contributed to increased working capital debt included movement away from less input-intensive wool production into more intensive cropping, changes in grain payment methods, higher variability in crop incomes compared with livestock incomes and movement to more intensive production technologies involving greater use of purchased inputs such as herbicides.

Loan repayment slowed and borrowing to meet working capital requirements increased during the 2000s drought. Working capital debt accounted for 30 per cent of the increase in average farm debt for broadacre farms between 2000–01 and 2016–17.

From 2000–01 to 2016–17 average broadacre and dairy farm debt more than doubled, mainly resulting from an increase in average farm size. The increase in average debt per farm was modest relative to the increase in average equity of farm business owners. The capacity to repay debt also improved as the proportion of net income needed to meet interest payments increased by less than the increase in debt.

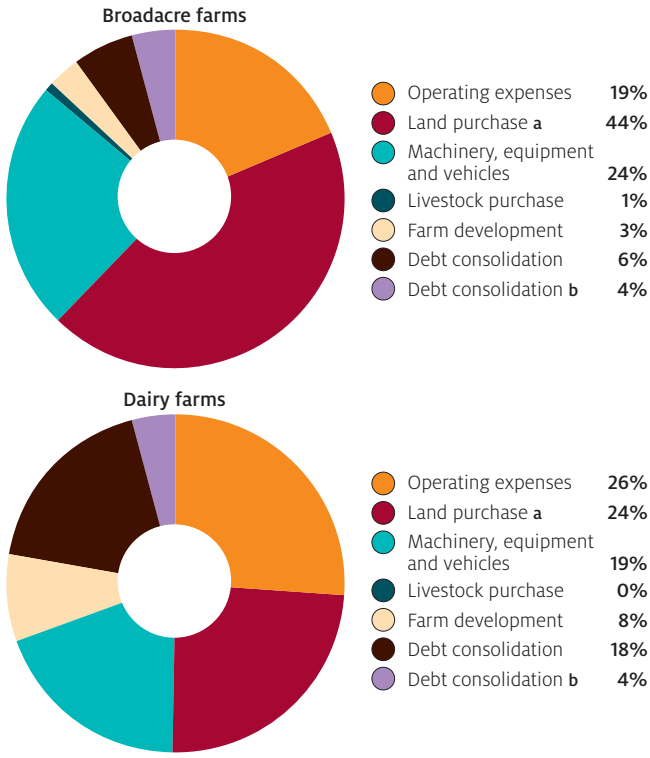
Borrowing increased most for land purchase and on-farm investment. Borrowing for ongoing working capital also rose in line with increases in average farm size and greater mechanisation and intensification of enterprises.

Broadacre farm debt is estimated to have increased by 5 per cent during 2016–17 to average $616,900 per farm at 30 June. In contrast, dairy industry debt declined by around 2 per cent to average $926,700 per farm (Table 7).

Borrowing to fund new on-farm investment, particularly the purchase of land, machinery and vehicles, was the largest contribution to the increase in average broadacre farm debt. In particular, debt to fund land purchase accounted for the largest share (an estimated 52 per cent) of the increase in average debt for broadacre farms between 2000–01 and 2015–16.

During 2016–17 most new borrowing for broadacre and dairy farms funded new on-farm investment (Figure 17). The proportion of new borrowing to cover operating expenses was higher in the dairy industry (26 per cent) than the broadacre industries (19 per cent). A higher proportion of borrowing for operating expenses is common for more intensive farm enterprises.

FIGURE 17 Purpose of borrowing increases identified by farm operators, Australia, 2016–17p average per farm



a Includes purchase of permanent irrigation water entitlement. **b** Includes borrowing to fund changes in farm business ownership/partnership.
Source: ABARES Australian Agricultural and Grazing Industries Survey and Australian Dairy Industry Survey

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Exploring Australia's comparative advantage for exporting fresh produce

Charley Xia and Rohan Nelson

Key points

- The value of Australia's fruit and nut exports to its top five export markets more than doubled in the six years to 2016–17, with the value of vegetable exports up 50 per cent.
- China was the top market for fruit, the European Union for nuts and the Gulf Cooperation Council for vegetables.
- Global import demand has been growing strongly, and this is expected to continue.
  - In developed countries demand for fresh produce has been driven by quality and choice, as well as concerns for food safety, health, traceability and the environment.
  - In emerging markets growing incomes and urbanisation are driving demand for choice and high-quality fresh produce.
- Australia is facing strong competition in fruit export markets from other southern hemisphere producers such as Chile, New Zealand, Peru and South Africa.
- The United States and South Africa compete strongly with Australia in almond and macadamia markets, while China is becoming more competitive in vegetable markets.
- Australia's institutional and policy environment has generally supported the development of export-oriented horticultural industries, with ongoing reform to industry-specific regulation.
- Renewed technology investment would help to offset the competitive disadvantage of Australia's high labour costs and secure productivity gains against future fluctuations in exchange rates.

Introduction

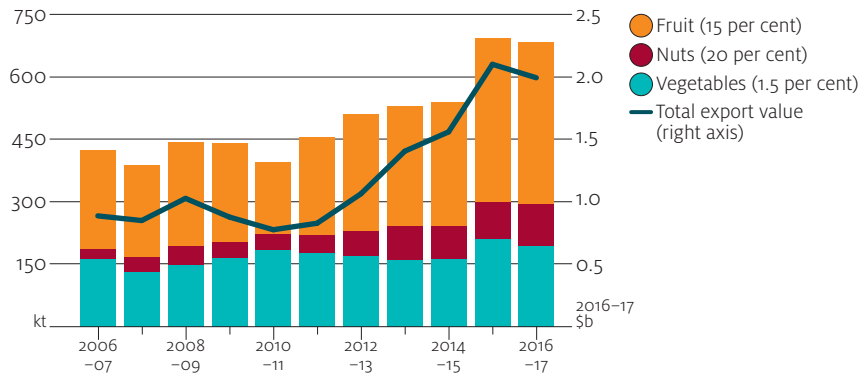
Australian fresh produce exports have increased significantly since 2010–11, reflecting strong global demand for high-quality fresh produce (fruit, nuts and vegetables) and Australia's increasing competitiveness in global markets. This has improved awareness in the Australian horticultural industry of opportunities in international markets. Industry organisations have supported export growth through initiatives to improve market access and by promoting Australian produce abroad (HIA 2016b, 2017a).

This article explores the scale, scope and drivers of the recent boom in Australia's fresh produce exports. These include growth in global demand, competition in export markets and other factors that will affect the future international competitiveness of Australia's fresh produce value chains.

Australian fresh produce exports

Between 2010–11 and 2016–17 the value of Australian fresh produce exports (in 2016–17 dollars) increased by an average of 18 per cent per year (Figure 1). This was driven by increased export volumes of fruit (15 per cent per year) and nuts (20 per cent). Export volumes of vegetables increased only slowly over the same period (1.5 per cent).

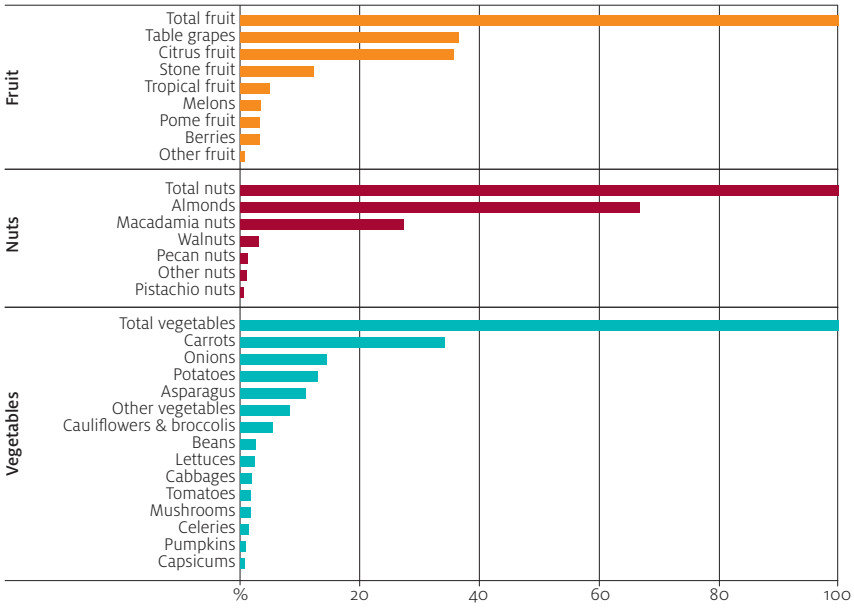
FIGURE 1 Australian fresh produce exports, 2006–07 to 2016–17



Note: See Appendix 1 for products in fruit, nuts and vegetables categories.
Source: ABS (2017)

In the six years to 2016–17, table grapes accounted for the largest share of fruit exports (37 per cent), followed by citrus fruit (34 per cent) (Figure 2). Almonds accounted for the majority (67 per cent) of nut exports and carrots for the largest share of vegetable exports (34 per cent).

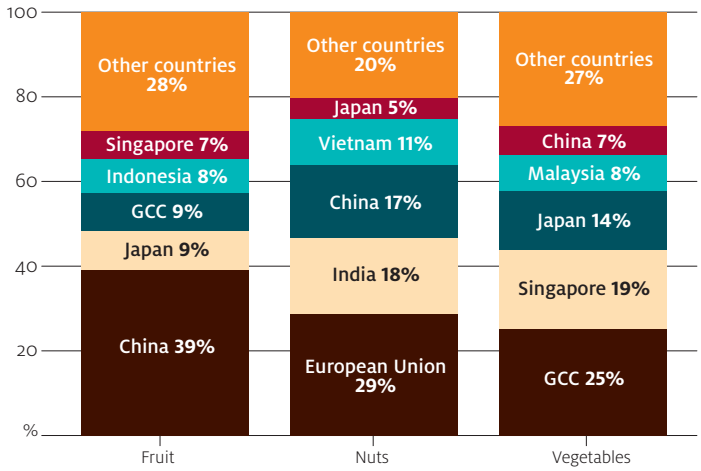
FIGURE 2 Commodity's share of total category export value, by category, 2010–11 to 2016–17



Note: See Appendix 2 for products in other fruit, other nuts and other vegetable categories.
Source: ABS (2017)

In 2016–17 Australia's top five export destinations were countries in Asia, Europe and the Middle East. China was the top market for fruit, the European Union for nuts and the Gulf Cooperation Council for vegetables (Figure 3).

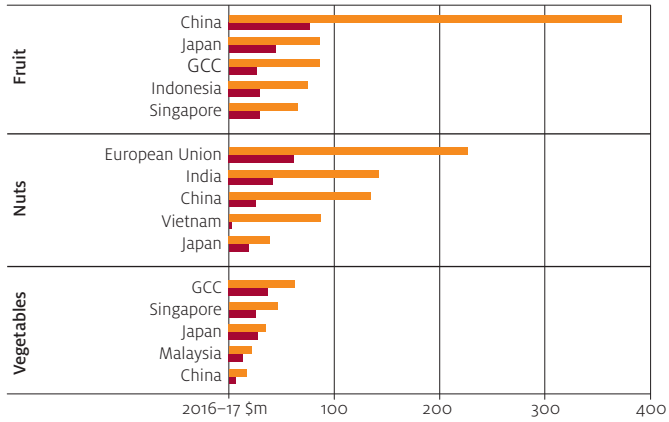
FIGURE 3 Share of Australian fresh produce exports, by country, 2016–17



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau.
Source: ABS (2017)

In the six years to 2016–17 the value of fruit exports (in 2016–17 dollars) to the top five fruit-export markets more than doubled, with exports to China increasing five-fold (Figure 4). Over the same period the value of nut exports also grew strongly to the European Union (by 265 per cent), India (240 per cent) and China (429 per cent). Nut exports to Vietnam increased more than 30-fold (from a low base), mostly because of Vietnam's emergence as an important transit point for processing of in-shell macadamia nuts from Australia. Vegetable exports to the top five vegetable-export markets increased by more than 28 per cent

FIGURE 4 Value of Australian fresh produce exports to top five destinations, by category, 2010–11 and 2016–17

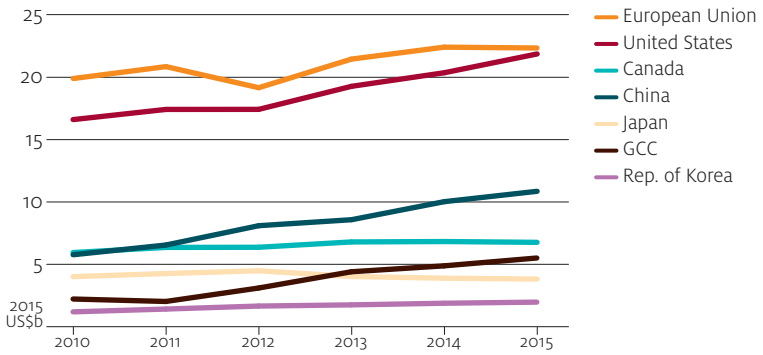


GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau.
Source: ABS (2017)

Global import demand for fresh produce

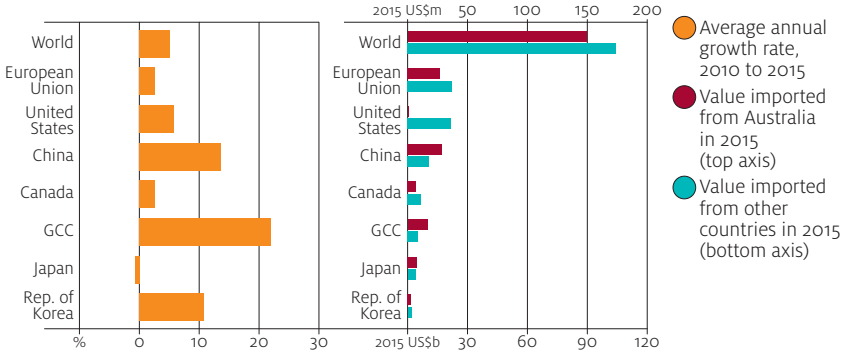
The real value of global fresh produce imports grew by an average of 5 per cent per year between 2010 and 2015, based on the most recent international data (Figure 5 and Figure 6). Import growth in China, the Gulf Cooperation Council, the Republic of Korea and the United States outpaced that in other countries. The European Union and the United States remained the largest importers (Figure 5).

FIGURE 5 Value of fresh produce imports, selected markets, 2010 to 2015



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. Imports are net of re-exports. EU and GCC imports exclude intra-regional trade.
Source: UN Statistics Division (2017)

FIGURE 6 Growth in fresh produce imports, selected countries



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. Imports are net of re-exports. EU and GCC imports exclude intra-regional trade.
Source: UN Statistics Division (2017); ABS (2017)

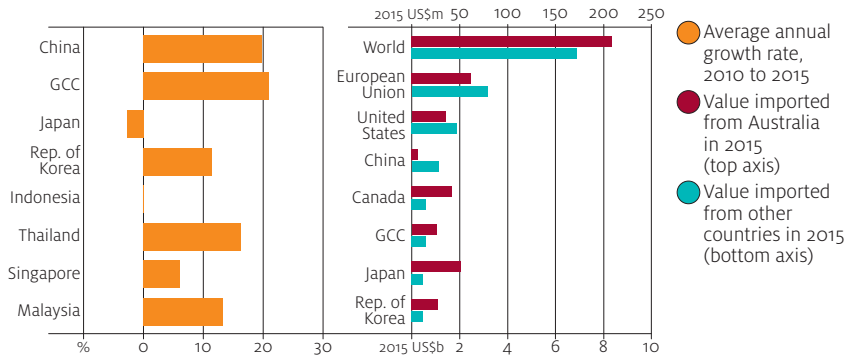
In developed countries such as Canada, the European Union and the United States demand for fresh produce has been influenced by several factors, including food safety, health concerns, quality, environmental impacts and product traceability (Moser, Raffaelli & Thilmany-Mcfadden 2011). For example, EU consumers have increased consumption of products marketed on health-promoting characteristics and are demanding more information on country-of-origin and production methods (CBI 2018).

In the emerging markets of China and the Gulf Cooperation Council, higher income has supported a rise in demand for imports of high-quality fresh produce, with an emphasis on consistent appearance, taste and texture (Alpen Capital 2017; Moser, Raffaelli & Thilmany-Mcfadden 2011; PMA 2016). Urbanisation has also exposed consumers to imported products through ecommerce and supermarkets (Alpen Capital 2017; Hamshere et al. 2014).

Fruit

Over the five years to 2015 fresh fruit imports grew strongly in most of Australia's major export markets. These include the Gulf Cooperation Council (GCC) and Asian countries such as China, the Republic of Korea, Malaysia, Singapore and Thailand (Figure 7). Increased demand for Australian fruit by the Gulf Cooperation Council and China was driven by factors such as income growth and urbanisation (Alpen Capital 2017; Hamshere et al. 2014), with Chinese demand also driven by food safety concerns about domestically grown fruit, including unhygienic handling and unsafe levels of pesticide residue (PMA 2016).

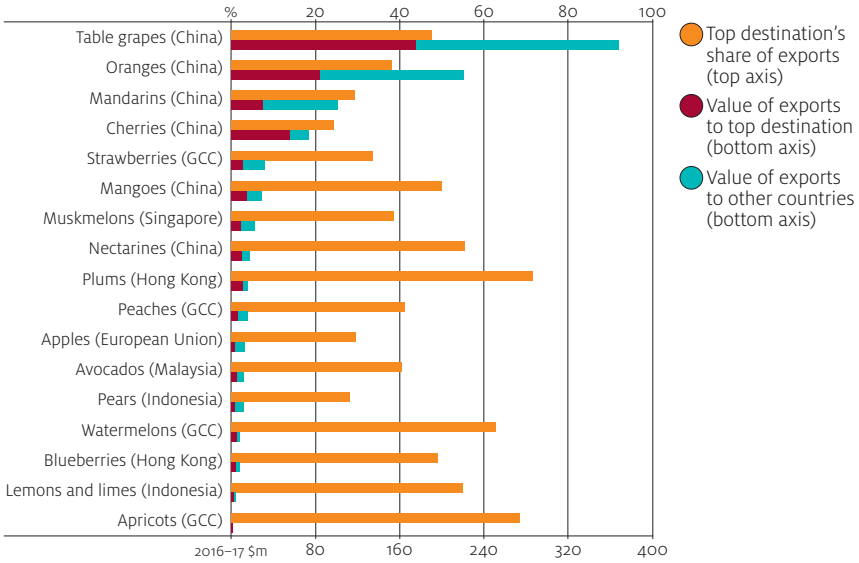
FIGURE 7 Growth in fresh fruit imports, selected countries



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. Imports are net of re-exports. GCC imports exclude intra-regional trade.
Source: UN Statistics Division (2017); ABS (2017)

Between 2010–11 and 2016–17 Australian fruit exports to China grew by an average of 18 per cent per year, increasing from 22 per cent of annual Australian fruit exports in 2010–11 to 39 per cent in 2016–17. In 2016–17 China was the top destination for a significant proportion of Australian fruit exports (Figure 8).

FIGURE 8 Value of Australian fruit exports to top destination, by commodity, 2016–17

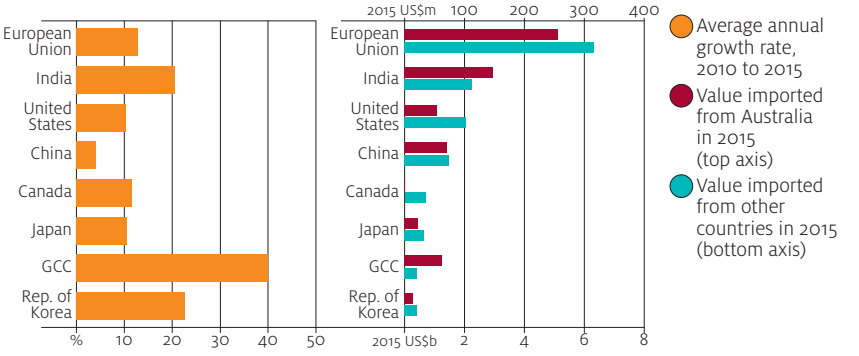


GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. However, Hong Kong is separated where industries did not have technical market access into mainland China in 2016–17.
Source: ABS (2017)

Nuts

In the five years to 2015 the import value of nuts grew strongly in the European Union, the Gulf Cooperation Council, India and the Republic of Korea (Figure 9). This highlights the global popularity of nuts as a snack and health food (Fumasi & Soccio 2016).

FIGURE 9 Growth in nuts imports, selected countries



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. Imports are net of re-exports. GCC imports exclude intra-regional trade.
Source: UN Statistics Division (2017); ABS (2017)

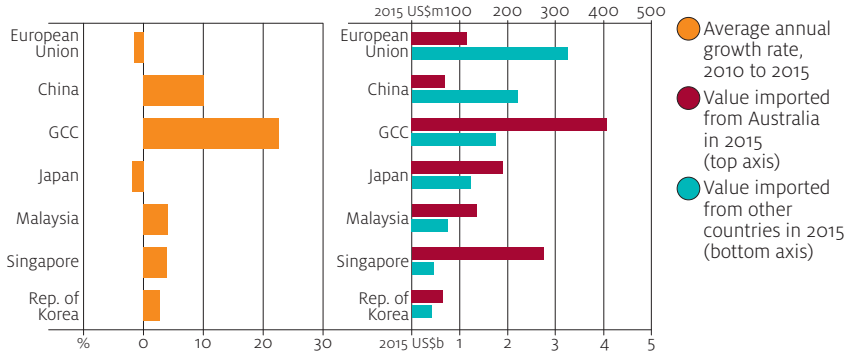
From 2010–11 to 2016–17 the value of Australian almond exports increased by an average of 31 per cent per year. The European Union was the main destination for Australian almonds because of strong demand and reduced competition from the United States due to drought in the main production region of California (Smith 2016). India was the second-largest export market for Australian almonds, with export growth averaging 30 per cent per year.

China was also an important destination for Australian nuts. Between 2010–11 and 2016–17 exports to China increased from $25 million to $135 million (in 2016–17 dollars), and China was the main export destination for Australian macadamia and pistachio nuts.

Vegetables

Over the five years to 2015 fresh vegetable imports increased across some of Australia's most established export destinations, including the Gulf Cooperation Council, Malaysia, the Republic of Korea and Singapore (Figure 10). Vegetable imports declined in the European Union and Japan.

FIGURE 10 Growth in fresh vegetable imports, selected countries



GCC Gulf Cooperation Council.
Note: China includes mainland China, Hong Kong and Macau. Imports are net of re-exports. GCC imports exclude intra-regional trade.
Source: UN Statistics Division (2017); ABS (2017)

In the six years to 2016–17 Australian exports to the Gulf Cooperation Council grew mainly as a result of increased demand for quality produce in the United Arab Emirates and Saudi Arabia. The Gulf Cooperation Council was the top destination for Australian carrots, accounting for 58 per cent of carrot export earnings.

In Asia consumers have become increasingly focused on health and convenience, and their diets are increasingly varied (ANZ 2015; Kocheri 2015). This has led to greater demand for Australian fresh vegetables, particularly in Singapore and Malaysia. In the six years to 2016–17 Singapore was the leading export destination for Australian broccoli, cabbage, cauliflower, lettuce and pumpkins. Malaysia was the top destination for celery.

Australia's international competitors

As competition in international markets intensifies, Australia's horticultural industries will need to keep a close eye on innovation by international competitors in order to understand and build Australia's comparative advantage in global fresh produce markets. An important first step is to understand who Australia's competitors are. An equally important second step is to understand whether and why Australia has a competitive advantage and how this can be sustained.

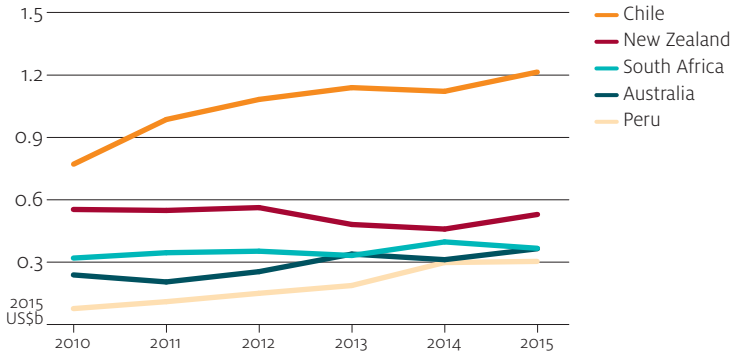
International trade in fresh produce is evolving rapidly and Australia faces strong competition from other exporting countries. Australia's fruit exports are mainly counter-seasonal fresh fruit to the northern hemisphere, competing against counter-seasonal exporters from other southern hemisphere producers including Chile, New Zealand, Peru and South Africa. The United States and South Africa compete with Australia in the global markets for almonds and macadamia nuts. China competes strongly with Australia in the Asian and GCC markets for vegetables.

Fruit

Australia competes in Asian import markets with other southern hemisphere countries including Chile, New Zealand, Peru and South Africa. Competition is intensifying because these competitors are expanding production and investing in value chains (IEG Vu 2017; Khidirov, Larson & Schuman 2015; Westpac 2016).

Chile has significantly increased its exports of fruit to Australia's major export markets in Asia including China, Indonesia, Japan, the Republic of Korea, Malaysia, Singapore and Thailand (Figure 11). The Chilean fruit industry has developed under government policies that pursue trade liberalisation and efficient regulation of sanitary standards, as well as policies that support investment in innovation and marketing (Khidirov, Larson & Schuman 2015; World Bank 2011). Chilean exports to Asia include a diverse range of fresh fruit such as avocados, blueberries, cherries, peaches, plums and table grapes.

FIGURE 11 Value of fruit exports to selected Asian countries by Australia and its major competitors, 2010 to 2015



Note: Selected Asian countries include China (including Hong Kong and Macau), Japan, Indonesia, the Republic of Korea, Malaysia, Singapore and Thailand.
Source: UN Statistics Division (2017)

New Zealand's major fruit exports include apples and kiwifruit and its avocado, blueberry and cherry exports to Asian countries are increasing. Producers have increased farm productivity by improving yields and quality, as well as by reducing costs through vertical integration of value chains and by attracting seasonal workers from Pacific nations (Curtain 2016; Westpac 2016). The fruit industry has also differentiated its fresh fruit exports through packaging and product innovations that deliver on growing consumer demand for convenience, improved shelf life, new tastes and special varieties (Coriolis 2017). New Zealand is a significant competitor for Australia because of its similar reputation for food safety and quality.

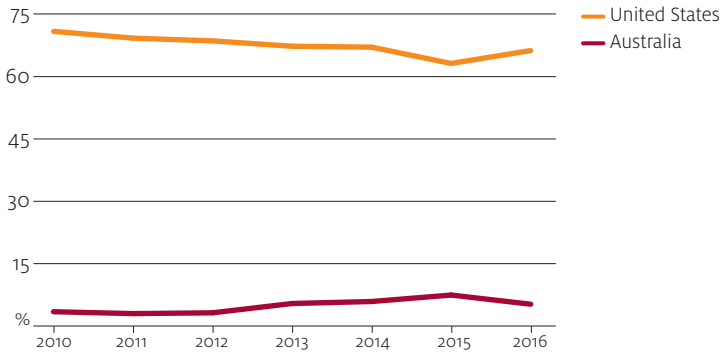
Peru is an emerging exporter and has recently diversified its products and export markets. Peruvian Government policy reforms in property rights, water resource management, trade liberalisation and incentives for foreign investment have enabled the horticultural sector to grow (Fumasi & Soccio 2016). This has led to exports of avocados, berries, mangoes and table grapes beyond its traditional US markets into markets in Asia.

South Africa exports citrus, table grapes, pome fruit and stone fruit mostly to supermarkets in the European Union. It has improved its export standards to comply with EU certification and food safety requirements, and to meet the demands of EU consumers for high-quality produce (Barrientos & Visser 2012; European Commission 2016). South African producers have also targeted growing retail outlets in Asia and the Gulf Cooperation Council since the 2008 global recession affected EU demand.

Nuts

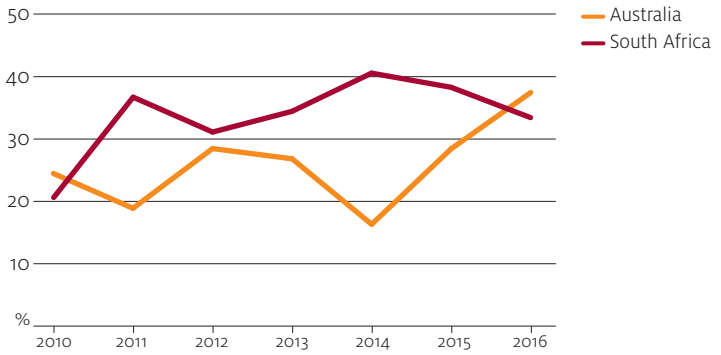
Australia's largest competitors in the global nut trade are the United States for almonds and South Africa for macadamia nuts. Over the three years to 2017 droughts significantly affected US and South African production and reduced exports. This contributed to an expansion of Australia's global market share (Figure 12 and Figure 13). Increases in global demand for almonds and macadamia nuts have provided incentives for growers in all three countries to expand orchards (IEG Vu 2017; Rabobank 2017; USDA 2017a). For example, the non-bearing areas planted to almond trees in California increased from 170,000 acres in 2014 to 300,000 acres in 2016 (USDA 2017b). New macadamia tree plantings in South Africa are expected to increase by 10 per cent per year over the next 10 years (IEG Vu 2017). This increase in global production capacity poses a significant future price risk for Australian nut exporters.

FIGURE 12 Share of world almond exports by value, United States and Australia, 2010 to 2016



Source: UN Statistics Division (2017)

FIGURE 13 Share of world macadamia nut exports by value, South Africa and Australia, 2010 to 2016



Source: UN Statistics Division (2017)

Vegetables

China competes with Australia in Asian and GCC markets for fresh carrots, cabbages, cauliflowers, onions and potatoes. The Chinese vegetable industry has invested in standardised production methods, promoted brands and complemented low labour costs with advanced technologies (Hey 2016). The Chinese Government has improved pesticide regulation and implemented industry standards for domestic cold chain logistics (Teng & Chen 2017; Zhou & Jin 2013). These developments have increased China's capacity to produce quality vegetables, meet the food safety standards of its higher-value domestic markets and increase exports to Asia and the Gulf Cooperation Council.

Australia's other major competitors in the world vegetable market include the United States for potatoes to the Republic of Korea, New Zealand for onions to the European Union and Peru for asparagus to Japan.

The determinants of Australia's competitiveness

The competitiveness of Australia's fresh produce on the world market depends on the capacity of its industries to compete on price or to produce higher-quality products that consumers are willing to pay more for. Competitiveness starts with on-farm productivity and extends to the ability of supply chain participants to work together and create value (or minimise the risk of diminishing value) in transporting, processing and marketing. Enabling institutional factors, such as government policy, are crucial to investment, as are competitive access to utilities including electricity and water. Governments is also key to overcoming international trade barriers and regulating for biosecurity and food safety. Macroeconomic factors such as exchange and interest rates further contribute to the environment affecting competitiveness.

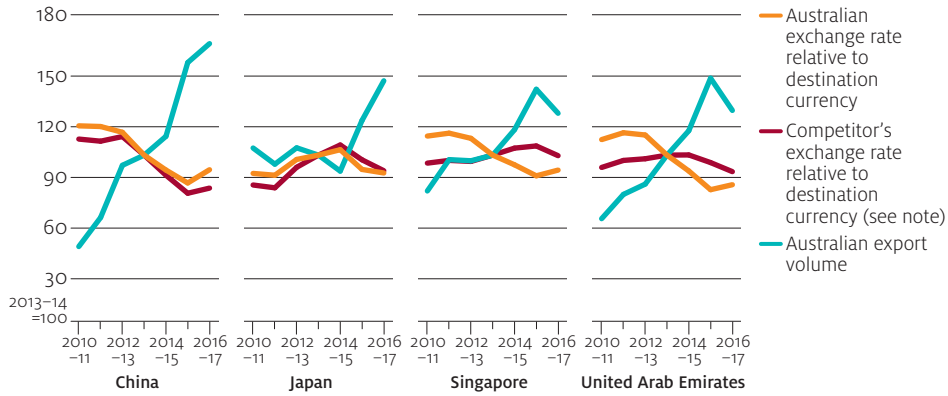
Understanding the trajectory of Australia's changing international competitiveness means looking beyond the farm gate, using diverse and sometimes incomplete sources of data, while constantly refining the analysis with industry-specific data.

Exchange rate

The exchange rate of the Australian dollar against international currencies affects the relative price of imported Australian produce in other countries. Between 2010–11 and 2016–17 the Australian dollar depreciated against most destination market currencies, including the Chinese yuan (by 28 per cent) and the UAE dirham (32 per cent). This was one of the more significant contributing factors behind the increase in Australian exports to China and the United Arab Emirates (Figure 14).

In some export markets, demand for Australian products also increased due to a more favourable exchange rate for the Australian dollar compared to the currency of Australia's competitors. For example, the Australian dollar depreciated more significantly against the UAE dirham than the Chinese yuan (Figure 14), which contributed to increased UAE imports of Australian products relative to Chinese products. Just as the Australian horticultural industry has benefited from exchange rate depreciation, it must use current market opportunities to prepare for possible future exchange rate appreciation by making strategic investments in supply chain efficiencies.

FIGURE 14 Index of exchange rate movements and Australian fresh produce exports, selected export markets and competitors, 2010–11 to 2016–17

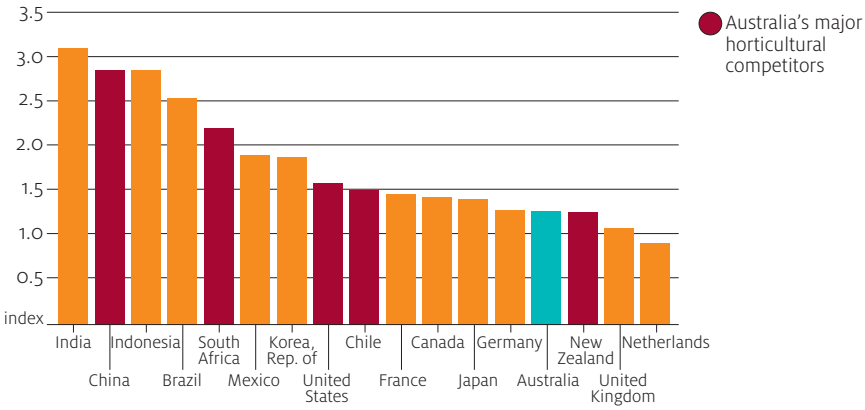


Note: Selected competitors were Chile for exports to China, Peru for exports to Japan, China for exports to the United Arab Emirates and Singapore.
Sources: ABS (2017); IMF (2017); RBA (2017)

Institutional and policy environment

Differences in government policies and regulation can affect competitiveness through their influence on the costs of doing business, industry structure and investment. The OECD surveys member governments to produce an index of product market regulation. This indicates how much regulation restricts competition through imposed state control or creation of barriers to entrepreneurship, investment and trade. In 2013 the index ranked Australia as having one of the lowest barriers to competition relative to its horticultural export market competitors, only marginally behind New Zealand (OECD 2017c) (Figure 15).

FIGURE 15 Index of product market regulation, selected countries, 2013



Note: Because Peru is not an OECD member, no index measure exists.
Source: OECD (2017c)

The World Economic Forum surveys business leaders annually to assess their opinions on whether agricultural policy is 'excessively burdensome for the economy' or 'balances well the interests of taxpayers, consumers and producers' (World Economic Forum 2017). For 2014 to 2016 Australia ranked better on average than its competitors, with the exception of New Zealand (Table 1).

TABLE 1 Average country rankings and score, burden of agricultural policy costs, 2014 to 2016

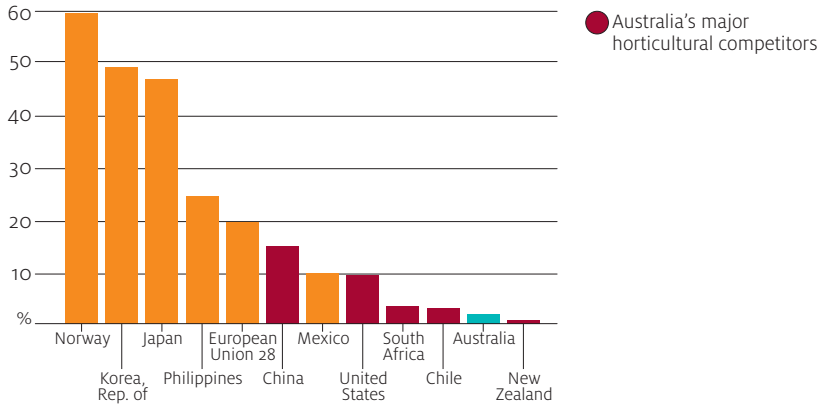
Country	Average ranking	Average score
New Zealand	1st	5.89
Australia	15th	4.60
China	16th	4.58
Chile	17th	4.57
United States	24th	4.39
South Africa	69th	3.78
Peru	78th	3.71

Note: Countries ranked from 1 (best) to 148 (last) based on the survey question, 'In your country, how would you assess the agricultural policy?' [1 = excessively burdensome for the economy; 7 = balances well the interests of taxpayers, consumers, and producers].
Source: World Economic Forum (2017)

Compared with the policy environments of many international competitors, Australian policies better facilitate investment and efficient resource allocation across agriculture (including horticulture) because they ensure industry exposure to long-term efficiency-promoting market forces (Gray, Oss-Emer & Sheng 2014). The OECD Producer and Consumer Support Estimates are one measure of the degree of protection of agricultural industries by country. They show that agricultural producers in Australia receive less support in direct subsidies and price support than those of Australia's competitors, with the exception of New Zealand (OECD 2017b) (Figure 16).

The Australian horticultural industry is more exposed than most of its competitors to the market forces that promote efficiency in the long term. However, Australian producers are disadvantaged in the short term because government support in some other exporting nations artificially inflates domestic farm gate prices by 10 per cent to 15 per cent (OECD 2017b). This also increases exportable supplies and puts downward pressure on world prices, reducing returns to Australian exporters.

FIGURE 16 Producer support as average percentage of gross farm receipts, 2014 to 2016



Note: Because Peru is not an OECD member, no index measure exists.
Source: OECD (2017b)

Import tariffs on Australian products in China, Japan, the Republic of Korea, Malaysia and Thailand have been reduced or eliminated under free trade agreements. This additional market access has contributed to increased Australian exports. It has also provided a more competitive platform for initiating new agreements to further improve market access. Certification and pest-treatment protocols for Australian products have also improved market access and contributed to greater exports to Taiwan and South-East Asian markets including Indonesia and the Philippines. For example, Australian exports of table grapes to Indonesia and the Philippines increased following negotiated protocols for cold treatment against fruit fly.

Industry-specific regulation can directly affect international competitiveness, making it important that regulation meet policy objectives without imposing unnecessary costs. The Australian Government has introduced or upgraded regulatory impact systems to improve the scrutiny of new regulatory proposals. It is also important to regularly review the stock of regulations to ensure they continue to meet their intended objectives as operating conditions change. For example, Australian horticultural farmers must have timely access to new and safe chemicals to compete with countries that already have these technologies. The Productivity Commission (2016) found that Australian Government's agricultural and veterinary chemical regulations could be streamlined by increasing the use of international approvals for products already registered by trusted regulators overseas. The Australian Government is preparing reforms in this area including proposing a co-regulatory system with industry.

Local planning regulations affect business investment decisions and competitive access to utilities. Local regulatory environments that are slow to accommodate new and growing industries can complicate the development of supply-chains and farm infrastructure (Nguyen et al. 2013). For example, adoption of world-leading greenhouse technologies is increasingly important for industries looking to invest in controlled production environments for higher-quality produce (HIA 2017b). As Nguyen and colleagues (2013) note, local regulators may not have the resources to effectively adapt regulation to rapidly changing industries, so Australian or state governments may have a role in developing information resources to assist.

Supply chain

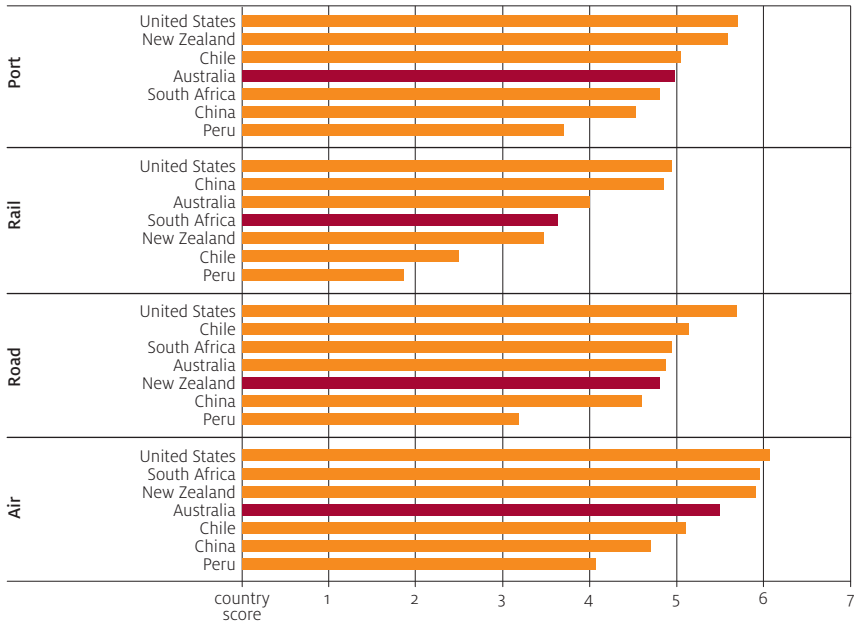
The term 'fresh' when applied to horticultural produce usually implies minimal transformation or processing. However, fresh produce is still transformed by post-harvest handling such as washing, sorting, packing and transport.

Detailed inter-country comparisons of horticultural value chains are commercially valuable and therefore rarely made public. International studies of food traceability systems and global rankings of infrastructure quality highlight inter-country differences. Published data on the cost of inputs, such as labour and utilities (which affect costs of transport, processing and marketing) indicate relative costs across countries competing in global horticultural markets. These data provide an overview of important aspects of horticultural value chains, but a comprehensive analysis of Australia's international competitiveness would require industry-specific data.

Food traceability systems are increasingly important for communicating information and providing transparency to consumers focused on food safety and quality. Food traceability systems help manage food safety risks and improve market access by authenticating provenance and compliance with relevant protocols. They are used increasingly to manage supply chains efficiently and as a marketing tool. In 2014 the Global Food Traceability Center ranked Australia's food traceability regulations above China's and equal to those of New Zealand and the United States (Charlebois et al. 2014). However, China has since significantly improved food traceability by establishing industry standards, implementing food labelling laws and enforcing requirements for producers to maintain detailed record systems. The United States has also implemented laws and promoted industry initiatives to enhance traceability throughout its supply chains.

Transport is a central component of horticultural supply chains because fast and reliable delivery is essential for marketing highly perishable products. For 2014 to 2016 the World Economic Forum ranked Australia between key competitors on the quality of transport infrastructure, including air, road, rail and port (Figure 17). Australia's transport infrastructure is generally well developed, but transport reliability and cost can affect regions that produce low-volume, seasonal agricultural products. Access to competitive airfreight and refrigerated transport will be crucial for ensuring Australia's future success in international horticulture markets.

FIGURE 17 Average country score, quality of transport infrastructure, 2014 to 2016



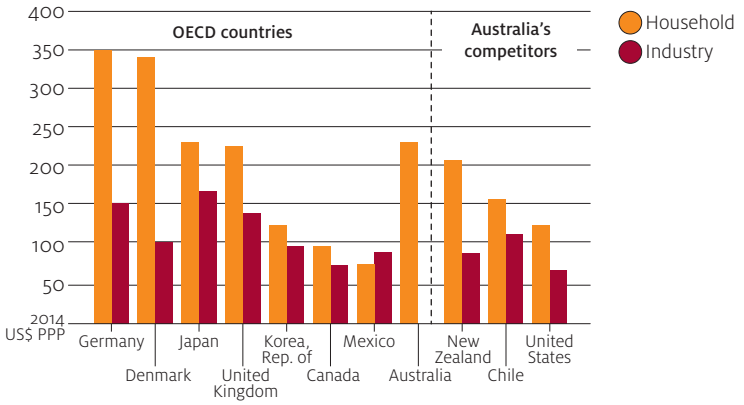
Note: Countries scored based on qualitative ratings of transport infrastructure by business leaders [1 = extremely underdeveloped; 7 = extensive and efficient].
Source: World Economic Forum (2017)

Horticultural supply chains are labour intensive at critical stages such as on-farm harvesting and post-harvest handling. In 2014–15 farm expenditure on labour (including hired labour and contracts paid) accounted for a significant proportion of the total cash costs of fruit farms in the Murray–Darling Basin (32 per cent) and Australian vegetable farms (28 per cent) (Valle, Millist & Galeano 2017).

Labour costs (measured by minimum wages) in Australia are high relative to those in competing countries, including New Zealand, the United States and Chile (OECD 2017d). Better conditions and pay across the Australian services sector have attracted Australian workers away from seasonal work in horticulture, resulting in the Australian horticultural industry relying on seasonal foreign workers arriving through Working Holiday Maker visas or the Australian Seasonal Worker Programme. For many Australian horticultural farms, ready access to labour remains an issue during critical harvest periods. This disadvantages Australia relative to developing countries that often prioritise horticultural sector development as an export diversification and poverty reduction strategy (Van den Broeck & Maertens 2016). For example, the Peruvian Government has subsidised exports through special tax regimes and lower employment costs. These have contributed to large horticultural estates attracting migrant workers from regions across the country (Schuster & Maertens 2016).

Australian household electricity prices are also high by international standards (Figure 18). The International Energy Agency publishes the cost of electricity to industry for 34 countries (not including Australia). Industrial users often negotiate electricity costs with governments to improve investment prospects and facilitate business expansion. Consequently, electricity prices for industrial users in countries with similar population densities and agricultural sectors to Australia (such as Chile, Canada and New Zealand) are 40 per cent lower than for households. Energy use on horticulture farms only accounts for a small proportion of total costs, estimated at 3 per cent for Australian vegetable farms in 2016–17 (Weragoda & Ashton 2017). However, the share of energy use in processing costs can be expected to be substantial in some cases, affecting Australia's international price competitiveness. The Australian Food & Grocery Council (2018) has expressed concern that rising energy costs will reduce business investment in the skills and equipment needed to expand Australia's capability in agricultural product packaging and processing.

FIGURE 18 Electricity prices, selected OECD countries, average 2014 to 2016



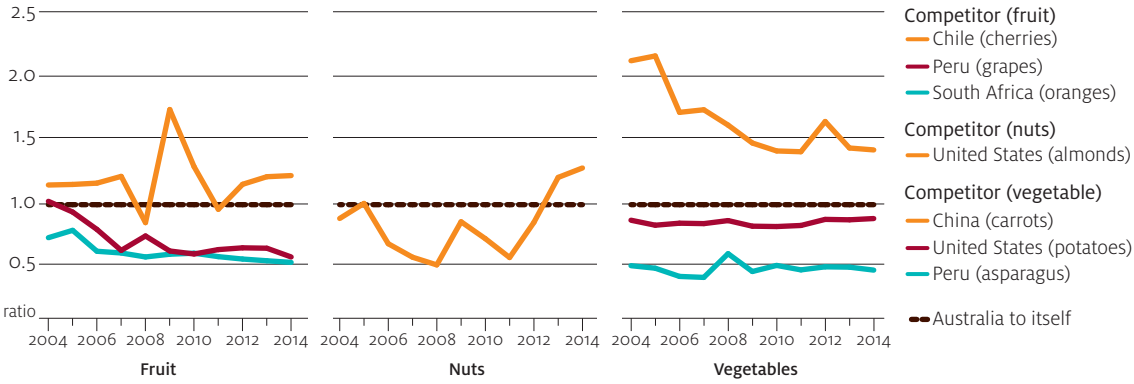
Note: **PPP** purchasing power-parity.
Note: Industry value for Australia not available.
Source: OECD (2017a)

Farm productivity

Australian farmers gain competitive advantage when they improve productivity relative to their competitors. Horticultural farm productivity can be measured by yield (output per hectare of land) and pack-out rates (proportion of output that meets quality standards). Industries can compensate for reduced competitiveness in yields by improving product quality or reducing costs through more efficient use of resources (such as equipment, labour and land).

Australian crop yields relative to those of its competitors have been increasing for some major exports (almonds and cherries) and stagnating or declining for others (Figure 19). For example, Australian almond yields have grown as a result of on-farm investments in integrated pest management and drip irrigation systems (HIA 2016a). These improvements have increased production and profits, leading to further orchard expansions in the Australian almond industry.

FIGURE 19 Australian crop yields relative to major competitors, by crop type, 2004 to 2014

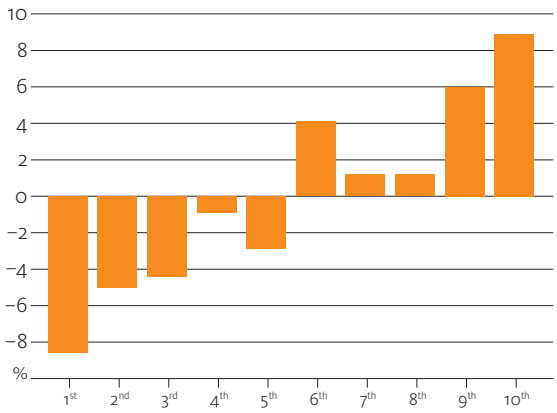


Source: FAOSTAT (2017)

Australian horticultural farmers have increased production of high-quality fresh produce to meet domestic demand for quality attributes such as colour, taste and texture. This has helped the industry position and market itself internationally as a reliable source of higher-quality products for premium markets (Citrus Australia 2016; HIA 2017a). Comparative data on pack-out rates and product grades are unavailable so it is not possible to assess Australia's comparative advantage for consistently producing high-quality products. However, increased exports in the six years to 2016–17 suggest that Australian farmers met quality requirements, allowing them to capitalise on the poor seasonal conditions affecting competitor countries, exchange rate movements and improved market access. In the long term, Australia's competitiveness will be increasingly driven by improvements in quality and the effectiveness of marketing relative to its competitors.

In the Australian horticultural industry, exposure to market forces has contributed to farm consolidation and vertical integration. This has concentrated production in large and profitable businesses. For example, average vegetable planting area increased from 29 hectares in 2011–12 to 37 hectares in 2013–14, and the number of large vegetable farms with planting areas greater than 75 hectares grew by 11 per cent (Weragoda, Frilay & Ashton 2017). The correlation between rate of return and farm size is relatively strong (Figure 20), so structural adjustment in the horticultural industry can be expected to continue to contribute significantly to Australia's international competitiveness.

FIGURE 20 Rate of return by decile size, Australian vegetable farms, average 2011–12 to 2013–14



Note: Decile size is defined according to annual cash receipts. Rate of return is profit at full equity as a percentage of total opening capital. It represents the ability of a business to generate a return to all the capital it uses, including capital borrowed or leased.
Source ABARES Australian Vegetable Industry Survey

Conclusions

A dramatic increase in Australia's fresh produce exports over an extended period raises questions as to whether this trend can continue or be accelerated. Global demand for the horticultural products that Australia produces is growing strongly as income growth and urbanisation shift consumer preferences towards more diverse, higher-quality and safer fresh produce. Demand is expected to continue to grow, expanding export opportunities for Australian produce.

However, Australia is not the only country capable of satisfying the changing preferences of international consumers. Competition in fresh produce export markets is intensifying. Australia is facing intense competition from rapidly developing southern hemisphere producers for a share of northern-hemisphere markets for counter-seasonal fruit. For nuts, Australia is facing competition from a resurgent post-drought United States in almond markets, and will shortly face increasing competition from new macadamia plantings in South Africa. China is orienting part of its large agricultural production capacity towards global vegetable markets.

Australia's horticultural industries operate in an institutional environment that generally supports their future competitiveness. Priorities for reform include planning controls and industry-specific regulation of chemicals that currently cede significant cost and productivity advantages to international competitors. Australia's seasonal labour costs are likely to remain higher than those in competing nations, requiring ongoing investment in technologies that maximise productivity throughout the value chain. A priority for Australian exporters is to increase productivity in order to secure international competitiveness against future fluctuations in exchange rates. If these challenges can be met, Australia is well placed to increase its share of fresh produce in world markets.

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Appendix 1 List of products in fresh produce categories

Categories	Products
Fruit	Apples; apricots; avocados; bananas; cherries; citrus nec; cranberries and bilberries; currants and gooseberries; dates; durians; figs; fruits nec; grapefruits; guavas, mangoes and mangosteens; kiwifruits; lemons and limes; mandarins; melons nec; nectarines; olives; oranges; papayas; peaches; pears; persimmons; pineapples; plantains; plums; quinces; raspberries; strawberries; table grapes; watermelons
Nuts	Almonds (fresh and processed); areca nuts; brazil nuts; cashews; chestnuts; hazelnuts; kola nuts; macadamia nuts; nuts nec; pecan nuts; pistachios; walnuts
Vegetables	Artichokes; asparagus; aubergines; beans; beetroots; broccol; Brussel sprouts; cabbage; capsicums; carrots; cassavas; cauliflowers and broccolis; celeries; Chinese cabbages; cucumbers; garlic; leeks; leguminous vegetables; lettuce; mixed vegetables; mushrooms and truffles; onions and shallots; peas; potatoes; pumpkins, squashes and gourds; spinach; sweet potatoes; tubers nec; taros; tomatoes; turnips; vegetables nec; yams; yautias

nec Not elsewhere classified.
Source: ABS 2017

Appendix 2 Classification of different products

Categories	Products
Citrus fruit	Citrus nec; grapefruit; lemons and limes; mandarins; oranges
Stone fruit	Apricots; cherries; nectarines; peaches; plums
Tropical fruit	Avocados; bananas; durians; guavas, mangoes and mangosteens; papayas; pineapples; plantains
Melon fruit	Melons nec; watermelons
Pome fruit	Apples; pears; quinces
Berry fruit	Cranberries and bilberries; currants and gooseberries; raspberries; strawberries; kiwifruits
Other fruit	Dates; figs; fruits nec; olives; persimmons
Other nuts	Brazil nuts; cashews; chestnuts; hazelnuts; kola nuts; nuts nec
Other vegetables	Artichokes; aubergines; beetroot; brussel sprouts; cassavas; cucumbers; garlic; leeks; leguminous vegetables; mixed vegetables; peas; spinaches; tubers nec; vegetables nec

nec Not elsewhere classified.
Source: ABS 2017

Disaggregating farm performance statistics by size

Tom Jackson and Walter Shafron

Overview

In this article, farm performance statistics are presented for 10 size categories based on farm revenue. Each category represents 10 per cent of the farm population in each industry and region, ranked from smallest to largest according to total farm receipts. For more information about the design of these statistics see Jackson and Shafron (2016).

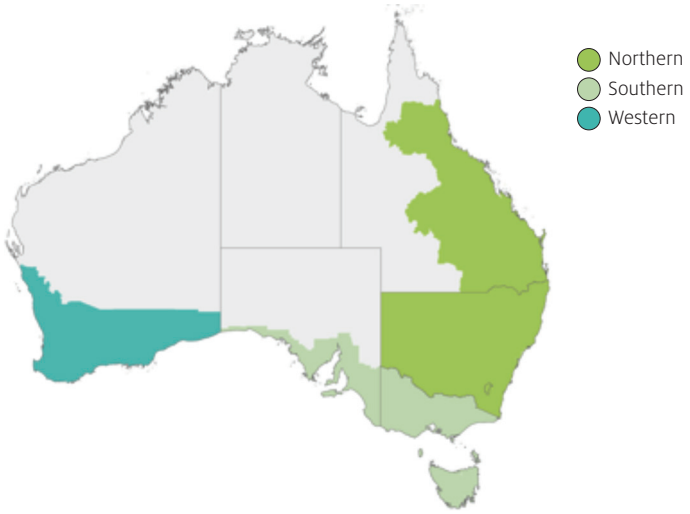
Tables present the most recent data for a set of variables that summarise the output and economic performance of farms in each size category. The variables are:

- share of total output produced
- total cash receipts
- total cash costs
- profit at full equity
- total opening capital
- net capital additions
- rate of return including capital appreciation
- equity ratio

Farm returns vary significantly from year to year, reflecting factors such as seasonal conditions and commodity prices. Data are averaged over 2014–15 to 2016–17 to provide a more meaningful picture of farm performance than would be provided by a single year.

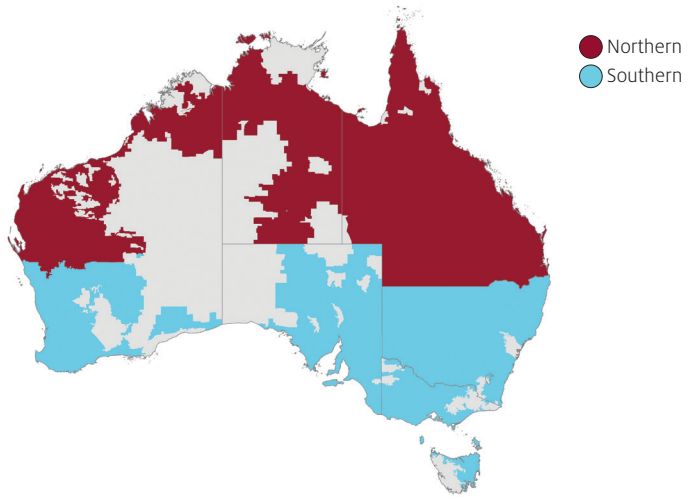
Results are provided for the broadacre, dairy and vegetable industries. The broadacre industry is split into wheat and other crops, beef, sheep, mixed livestock-crops and sheep–beef. The cropping industry is separated into the Grains Research and Development Corporation western, northern and southern regions (Map 1) and the beef industry into the Meat & Livestock Australia northern and southern regions (Map 2).

MAP 1 Grains Research and Development Corporation regions, Australia



Source: Grains Research and Development Corporation

MAP 2 Beef cattle industry, Australia



Source: Meat & Livestock Australia

Key points for 2014–15 to 2016–17

- The largest 10 per cent of broadacre farms produced 47 per cent of total output and the smallest 50 per cent of farms produced 12 per cent of total output.
- The average rate of return including capital appreciation generated by the largest 10 per cent of broadacre farms was 9.4 per cent and the smallest 10 per cent generated average returns of –0.3 per cent.
- The largest 10 per cent of broadacre farms had the lowest average equity ratio of all farms (80 per cent) and the second-smallest 10 per cent of farms had the highest average equity ratio (98 per cent).

TABLE 1 Broadacre farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	0.8	49 670	43 928	– 34 322	1 559 642	–10 452	–0.3	97.2
2	1.6	91,213	67,130	–24,211	2,244,677	–2,608	1.4	98.1
3	2.2	136,456	99,860	–21,926	2,359,701	803	2.1	94.5
4	3	182,874	119,821	993	2,581,967	16,232	3.8	95.2
5	3.9	236,626	157,313	17,441	3,043,697	–11,028	4.3	92.7
6	5.2	314,980	207,443	32,860	3,302,382	38,683	4.2	91.1
7	7.4	443,563	284,092	91,753	4,511,522	36,706	5.8	91.5
8	11	657,529	427,854	157,966	5,785,155	63,911	7.8	88.2
9	18	1,078,895	711,033	302,564	8,323,368	194,801	8.5	85.4
10	46.9	2,818,480	1,871,522	890,776	16,531,695	586,651	9.4	79.8

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 2 Wheat and other crops farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	0.8	93,599	75,783	–32,971	1,092,295	–311	–0.4	95
2	1.6	231,823	124,755	38,075	2,375,221	–93,807	4.3	94.9
3	3.1	392,693	271,290	70,125	3,612,268	–27,509	5.2	86.3
4	4.1	550,443	394,517	115,203	3,705,514	22,204	10.8	84.5
5	5.4	683,495	504,578	121,569	4,734,676	278,287	10.3	80.5
6	7.4	960,508	652,846	225,608	6,236,125	261,603	7.9	83.9
7	9.8	1,269,893	893,270	295,411	7,182,355	225,315	7.8	82.6
8	13.2	1,712,854	1,161,904	459,328	8,756,365	534,954	7.4	83.4
9	17.9	2,298,732	1,563,318	717,320	10,900,327	576,358	12.2	75.7
10	36.8	4,791,609	3,205,737	1,636,615	20,688,251	1,236,498	10.8	76.2

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 3 Beef farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.0	41,407	27,033	−9,881	1,275,746	6,297	3.0	97.6
2	1.5	64,235	60,483	−48,807	2,316,746	11,469	−1.2	98.7
3	2.5	92,374	76,768	−46,055	2,101,353	−2,414	0.2	98.1
4	2.8	121,547	87,005	−2,415	3,565,868	−759	0.4	96.5
5	3.5	144,807	80,371	−5,032	2,463,207	21,965	3.6	97.5
6	4.5	180,291	105,965	19,424	2,908,633	−22,824	5.4	96.9
7	5.8	238,106	157,482	4,777	4,569,335	−60,407	4.1	94.5
8	9.3	367,348	238,932	60,797	4,408,984	76,990	5.5	90.9
9	14.7	624,104	361,411	175,053	7,548,285	63,778	6.0	93.3
10	54.5	2,239,775	1,393,755	710,275	19,503,828	336,489	7.3	83.2

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 4 Sheep farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.5	47,911	44,058	−38,096	1,138,243	3	0.2	93.2
2	2.9	89,646	51,092	−4,847	1,140,639	8,935	7.1	91.8
3	4.3	145,659	113,172	−38,820	2,229,137	29,657	0.1	93.9
4	5.8	179,339	104,826	15,506	2,257,710	1,627	2.8	98.4
5	6.0	203,797	163,437	−12,487	1,862,003	27,788	1.9	95.1
6	6.9	232,087	160,600	25,056	2,735,352	72,205	4.6	90.8
7	8.9	285,012	193,159	18,634	3,064,567	92,956	4.6	91.7
8	10.5	341,711	235,419	60,227	3,633,395	77,860	3.8	90.6
9	17.5	557,301	348,757	132,861	5,233,381	10,186	6.1	91.9
10	35.9	1,248,118	746,796	432,475	9,878,475	−41,977	8.3	88.4

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 5 Mixed livestock–crops farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.5	89,022	87,848	–57,919	2,014,691	–14,184	–1.4	95.3
2	2.2	163,307	137,198	–37,645	2,050,137	61,301	0.1	90.7
3	3.4	245,523	165,034	23,393	2,811,794	–7,583	7.2	90.2
4	4.7	311,994	226,615	–4,061	2,422,787	–9,121	2.1	87.8
5	5.4	379,355	207,519	73,888	3,279,821	12,593	4.8	92.7
6	6.9	490,016	335,865	87,342	4,369,056	100,172	5.0	91.2
7	9.3	633,848	445,122	128,967	4,986,800	98,553	6.3	85.9
8	13.5	898,604	577,260	242,308	5,945,545	112,166	10.7	82.5
9	17.3	1,226,897	825,934	337,787	8,209,043	209,589	10.2	81.9
10	35.8	2,507,368	1,733,662	808,201	15,532,431	619,555	11.0	82.2

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 6 Sheep–beef farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	2.2	82,999	58,746	2,759	1,461,033	6,953	4.0	99.2
2	2.1	139,090	125,517	–23,183	2,533,814	–98,922	5.2	91.9
3	4.7	195,499	118,846	11,802	1,652,370	7,594	7.8	85.0
4	4.7	235,214	164,527	–19,652	3,168,732	16,742	2.6	94.8
5	6.3	282,935	152,870	11,616	2,611,765	28,912	1.9	98.0
6	5.9	322,467	214,620	55,893	3,632,206	15,499	5.6	91.4
7	8.6	404,745	234,601	76,565	4,258,052	–52,383	5.4	96.4
8	11.2	589,893	394,523	138,145	5,763,911	–271,398	11.8	90.0
9	18.9	869,894	556,470	257,126	9,465,100	43,032	8.4	87.6
10	35.4	1,807,041	1,236,225	540,406	14,169,192	267,884	7.9	87.4

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 7 Dairy farms, Australia, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	3.8	280,980	212,341	22,218	2,710,214	14,362	1.8	88.8
2	4.9	383,717	421,170	−87,475	2,945,347	−182,134	0.1	74.0
3	4.6	415,138	345,656	−30,828	3,714,251	18,222	6.5	90.3
4	6.5	513,694	452,644	105,719	3,260,190	28,709	4.5	81.5
5	7.6	594,087	477,507	64,118	3,232,231	47,783	4.2	80.4
6	8.9	705,901	603,452	77,491	4,524,196	98,939	5.1	80.2
7	9.5	825,146	731,214	87,656	4,235,737	121,387	4.2	75.7
8	12.0	974,409	778,778	177,397	5,604,647	68,626	5.3	79.4
9	15.4	1,253,602	1,040,344	183,027	6,056,369	200,832	5.6	79.1
10	26.9	2,212,756	1,846,876	415,139	10,647,975	165,560	5.5	76.8

Source: ABARES Australian Dairy Industry Survey

TABLE 8 Vegetable farms, Australia, 2013–14 to 2015–16

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	0.2	27,017	34,396	−65,910	692,657	0	−8.9	90.8
2	0.6	73,183	71,510	−63,075	1,387,968	1,616	−4.0	95.2
3	1.0	121,976	95,846	−53,926	1,893,359	0	−2.0	97.1
4	1.6	205,251	136,255	−16,804	4,448,175	5,375	6.3	93.8
5	2.6	314,522	237,279	−28,003	2,015,424	9,401	−0.8	90.7
6	3.5	427,804	313,454	46,263	2,820,549	−2,405	2.6	87.5
7	5.0	607,538	464,975	32,347	3,105,898	1,518	2.8	85.0
8	6.9	840,784	633,107	114,293	4,885,465	60,338	8.0	84.2
9	11.5	1,402,494	1,110,133	150,044	5,996,929	46,490	2.9	84.9
10	67.0	8,194,868	6,840,894	1,241,647	15,296,248	100,998	10.3	80.2

Note: The most recent data available for the vegetable industry covers 2013–14 to 2015–16.
Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 9 Wheat and other crops farms, Western region, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.4	171,933	132,371	–11,003	2,356,109	4,706	0.6	95.6
2	1.8	238,565	145,228	36,901	2,537,120	13,552	1.2	94.6
3	3.3	373,220	226,536	17,752	3,263,684	–75,754	0.5	90.6
4	3.1	513,924	332,856	89,912	3,604,495	148,627	3.0	90.5
5	6.0	706,023	496,759	158,725	5,420,148	114,740	5.6	88.0
6	7.5	995,678	634,225	254,538	6,047,565	98,753	3.6	83.2
7	8.9	1,268,678	888,529	293,641	6,579,887	164,035	5.3	82.2
8	13.1	1,734,923	1,334,699	355,857	8,421,869	543,588	4.1	78.3
9	18.2	2,397,625	1,703,131	618,716	10,984,459	421,209	6.5	79.4
10	36.9	4,845,292	3,252,199	1,551,630	17,745,930	931,391	9.5	74.9

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 10 Wheat and other crops farms, Southern region, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.1	55,228	35,273	–5,661	1,188,489	–42	–0.9	97.5
2	1.5	99,500	98,648	–39,535	1,989,456	–3,130	1.8	92.9
3	3.0	162,651	123,096	–23,659	2,414,693	44,734	–0.2	95.7
4	3.6	210,058	136,755	11,573	3,060,325	–18,498	6.7	96.1
5	4.9	278,607	168,342	46,608	3,527,995	43,592	5.0	91.9
6	6.4	364,209	232,229	68,242	3,937,341	6,223	5.0	91.1
7	9.2	519,265	370,530	89,971	4,259,938	53,991	6.9	88.4
8	12.2	689,669	463,108	156,420	6,218,823	92,116	7.6	89.7
9	18.6	1,049,816	714,427	265,581	8,495,244	201,838	10.0	86.0
10	39.6	2,260,361	1,487,034	757,142	15,554,945	769,417	9.2	83.8

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 11 Wheat and other crops farms, Northern region, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	0.8	60,625	60,014	−40,163	1,378,710	−19,451	1.2	95.1
2	1.9	136,106	114,950	−41,427	2,479,644	−11,548	3.5	93.4
3	2.7	205,110	155,700	−15,197	2,135,633	58,839	4.7	92.7
4	4.0	274,212	175,444	10,716	2,766,490	11,340	6.0	91.3
5	4.7	340,759	238,262	35,196	3,148,709	17,582	4.5	87.9
6	6.0	468,613	310,952	95,435	4,308,518	64,951	8.5	90.2
7	8.4	620,186	408,645	145,984	5,806,763	16,929	8.4	85.9
8	11.5	854,968	553,205	238,254	6,149,756	175,747	10.7	84.9
9	17.7	1,297,252	881,835	370,510	9,268,551	213,711	9.8	81.2
10	42.5	3,130,982	2,118,184	1,049,606	17,409,949	735,682	11.7	78.0

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 12 Beef farms, Southern region, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	1.8	46,971	24,551	7,839	1,178,545	7,157	2.6	99.5
2	2.7	66,937	69,402	−66,699	2,389,199	−10,030	−2.2	99.8
3	3.2	91,605	80,582	−36,643	2,394,191	25,942	1.3	99.2
4	4.5	114,259	71,448	−16,135	3,906,712	8,742	−0.3	99.5
5	6.2	136,358	88,250	6,177	2,267,679	18,598	5.0	92.0
6	4.0	154,960	100,470	−15,187	2,348,029	3,589	2.1	98.4
7	7.0	188,254	96,370	50,159	2,933,405	603	5.7	98.7
8	9.7	254,097	174,977	24,716	4,644,978	−110,009	4.5	93.7
9	15.8	431,218	265,933	90,146	4,679,413	123,989	6.5	95.4
10	45.1	1,222,710	811,783	435,236	11,196,919	397,456	8.9	86.9

Source: ABARES Australian Agricultural and Grazing Industries Survey

TABLE 13 Beef farms, Northern region, 2014–15 to 2016–17

Size decile	Output share (%)	Cash receipts ($)	Cash costs ($)	Profit ($)	Capital ($)	Net capital additions ($)	Rate of return (%)	Equity ratio (%)
1	0.5	32,782	30,738	−36,781	1,415,921	5,015	3.6	95.5
2	1.2	63,778	47,215	−24,643	1,955,706	4,814	0.2	96.9
3	1.3	98,066	92,881	−53,103	2,498,573	−8,857	−0.6	95.0
4	2.5	145,761	76,466	−8,110	2,812,133	−37,851	3.7	98.2
5	3.1	196,672	130,112	−31,988	4,149,008	10,757	3.2	94.8
6	4.3	271,619	191,936	−1,617	3,975,638	−14,389	5.0	89.2
7	5.9	370,296	214,846	87,703	4,842,215	36,063	4.6	90.5
8	9.3	569,680	352,218	113,129	7,277,310	46,264	5.2	92.0
9	15.3	964,095	561,896	304,612	11,029,936	313,570	5.4	89.5
10	56.7	3,537,737	2,122,802	1,064,652	29,465,497	34,776	6.9	80.7

Source: ABARES Australian Agricultural and Grazing Industries Survey

References

Jackson, T & Shafron, W 2016, 'Disaggregating farm performance statistics by size', in *Agricultural commodities: March quarter 2016*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Statistical tables

Figures

Tables

FIGURE 1 Contribution to GDP Australia, chain volume measures, reference year 2015–16

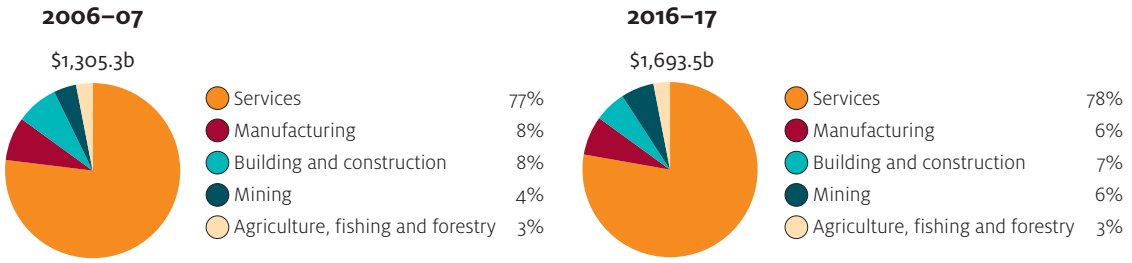


FIGURE 2 Markets for Australian merchandise exports in 2016–17 dollars

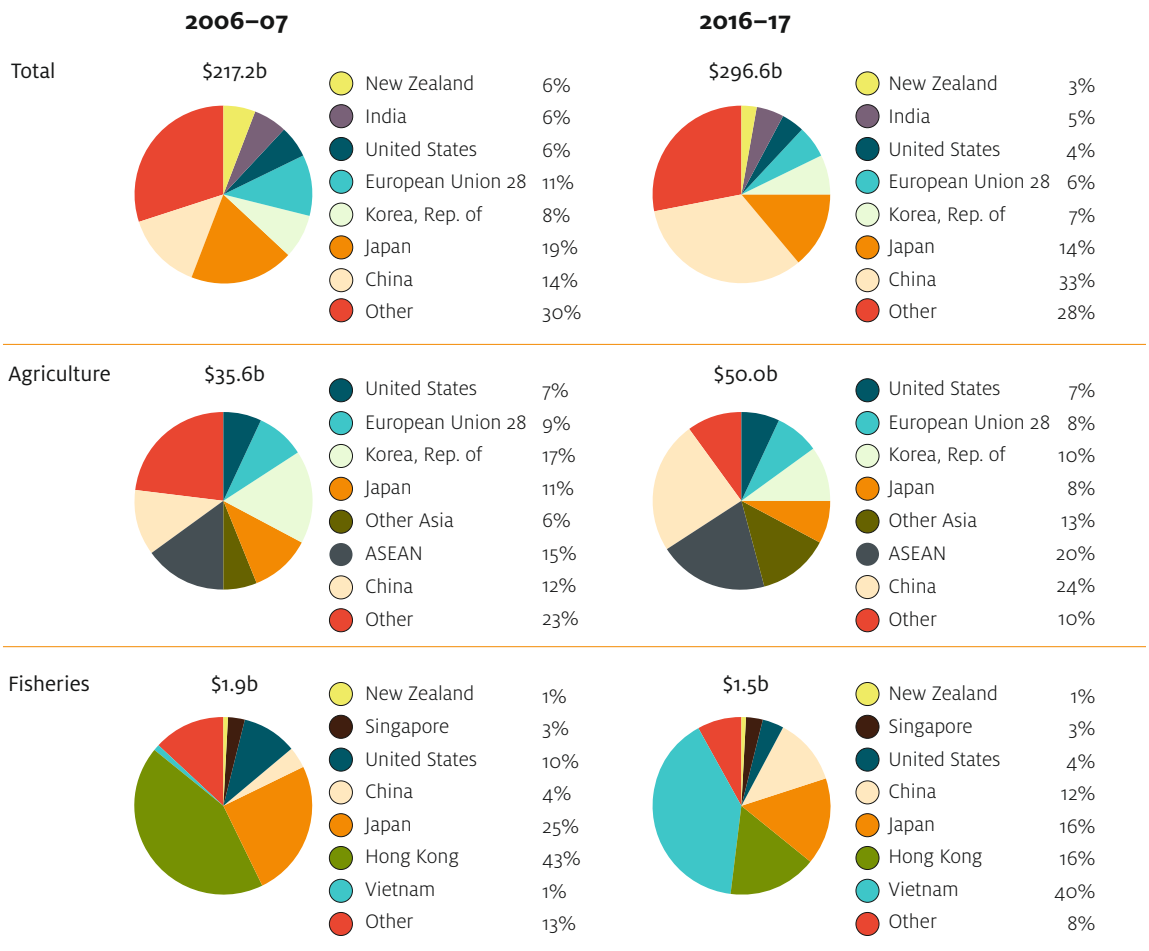


FIGURE 3 Sources of Australian merchandise imports in 2016–17 dollars

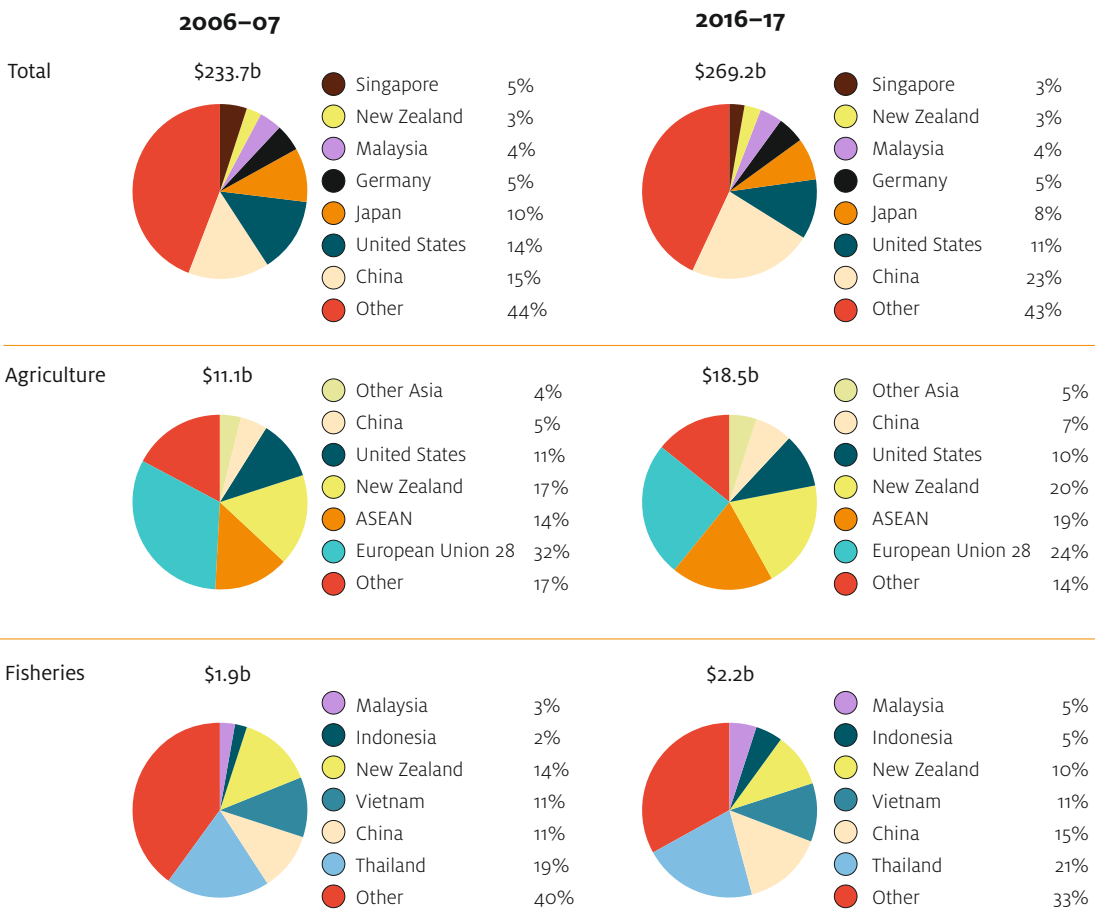


FIGURE 4 Principal markets for Australian agricultural, forestry and fisheries exports in 2016–17 dollars

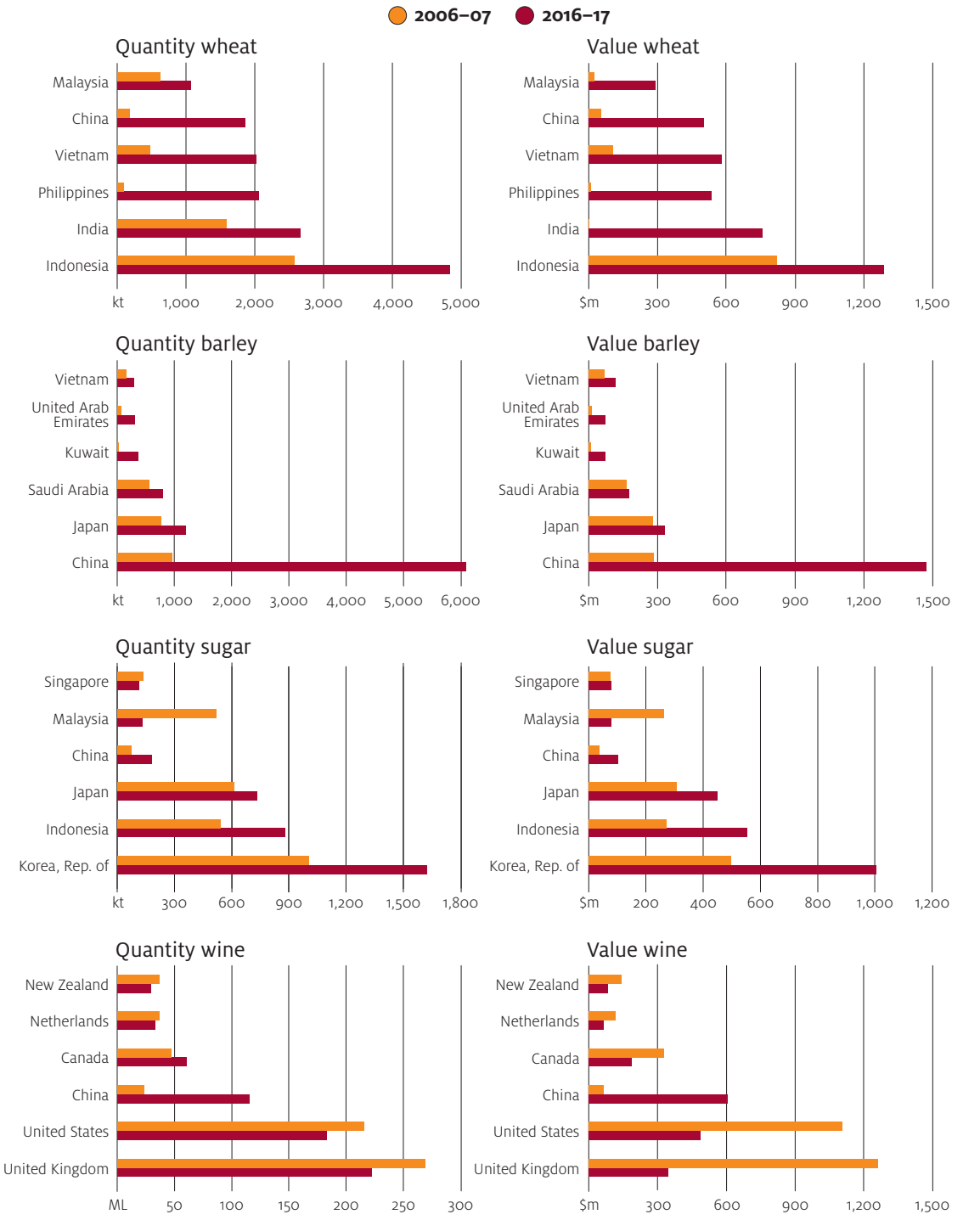


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FIGURE 4 Principal markets for Australian agricultural, forestry and fisheries exports in 2016–17 dollars continued

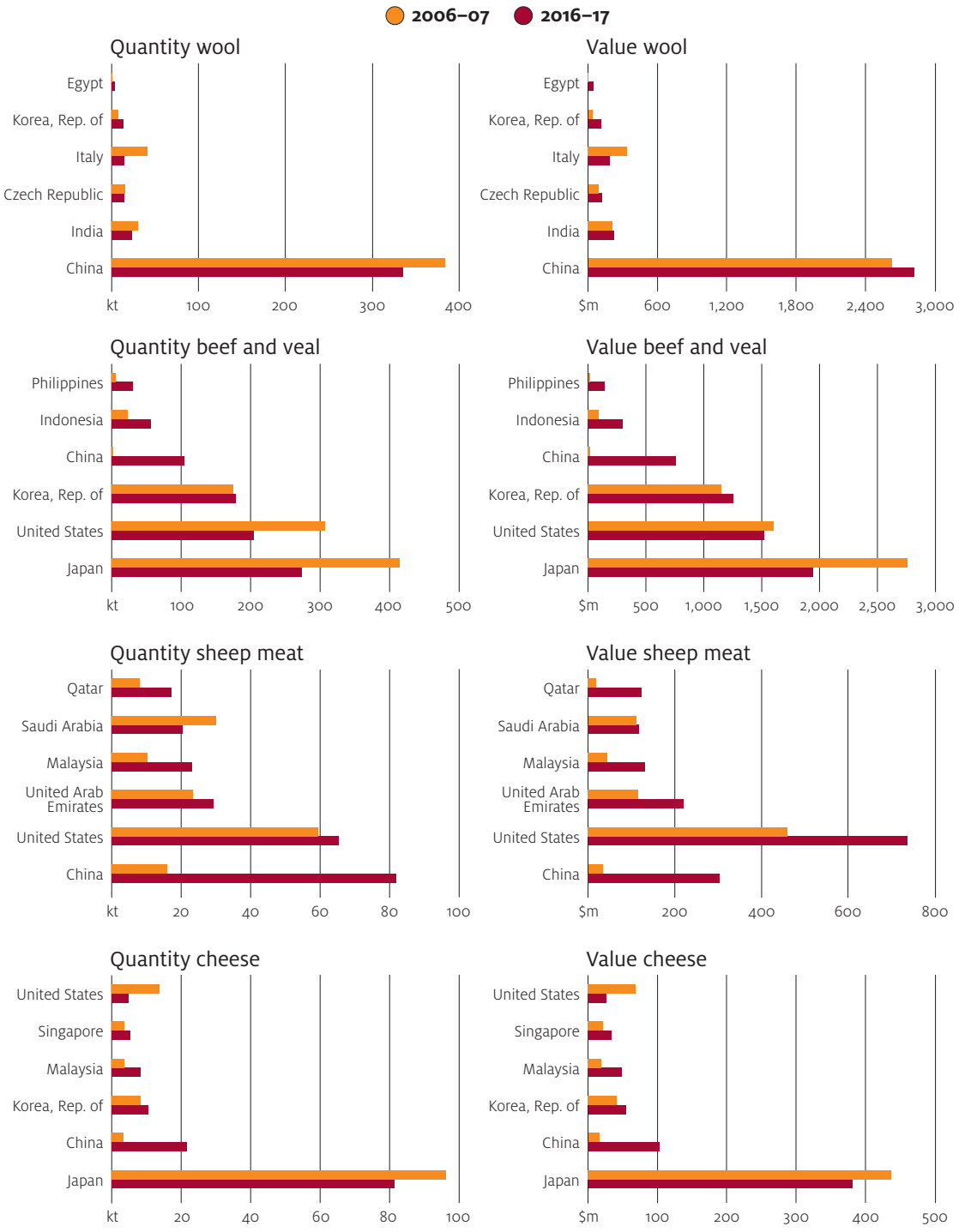

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FIGURE 4 Principal markets for Australian agricultural, forestry and fisheries exports in 2016–17 dollars continued

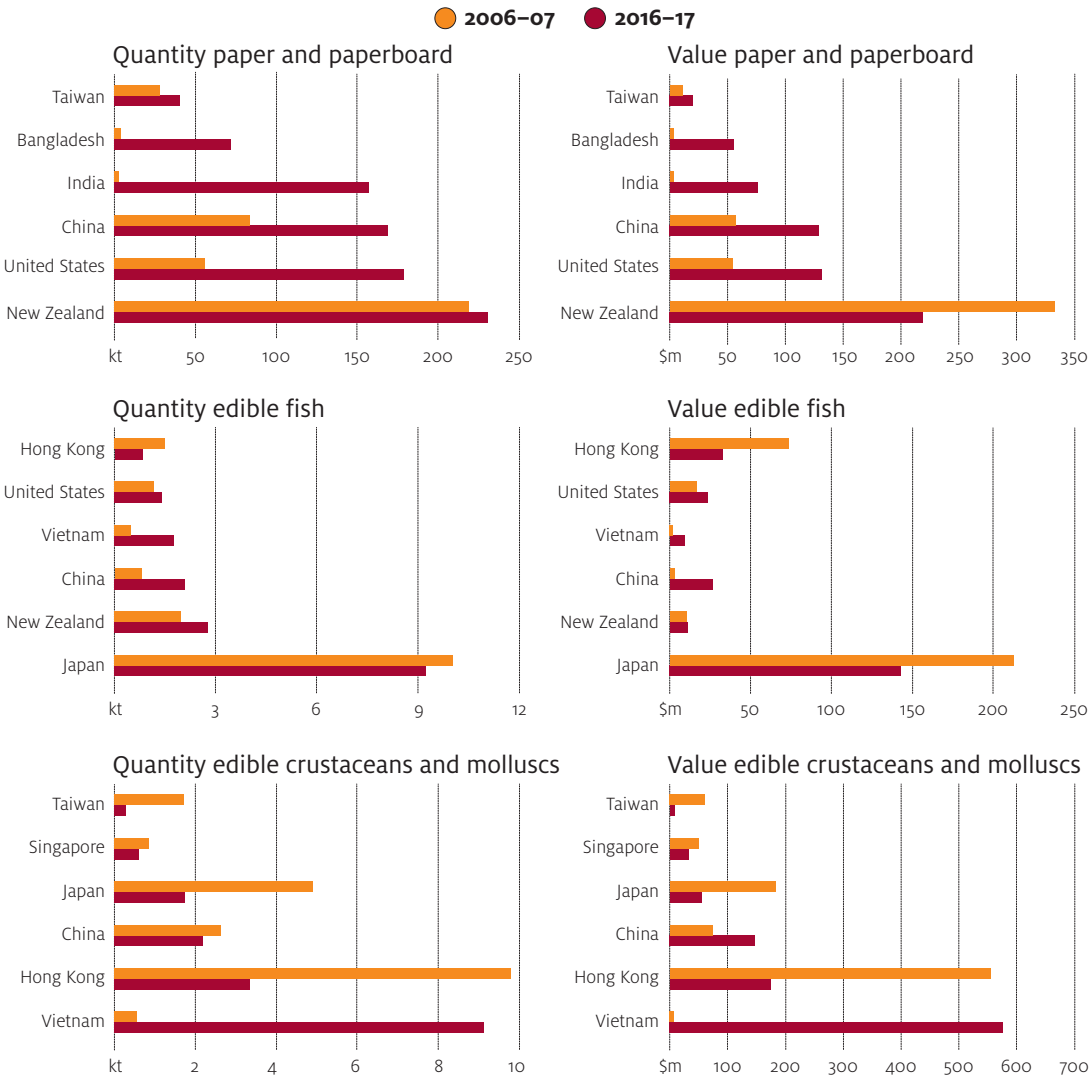


TABLE 1 Indexes of prices received by farmers Australia

Commodity	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crops						
Grains						
Barley	167.9	175.6	159.0	114.6	154.9	157.3
Canola	144.1	130.6	137.9	134.9	130.5	129.2
Grain sorghum	177.2	178.1	162.3	141.0	176.4	181.1
Lupins	176.4	149.3	185.0	141.4	133.8	228.3
Oats	156.0	183.1	224.0	174.0	184.0	175.3
Wheat	159.8	151.7	140.1	125.0	143.3	150.5
Total grains a	149.9	147.0	141.9	124.0	141.4	143.0
Cotton	103.9	104.4	111.7	123.4	121.5	124.3
Hay	160.9	169.6	176.4	179.3	184.5	184.5
Fruit	158.8	170.4	162.0	164.8	168.0	171.8
Sugar	125.4	127.2	117.8	126.0	109.0	99.3
Vegetables	174.1	179.1	172.9	175.8	179.3	183.3
Total crops	131.1	131.8	128.4	122.0	129.6	131.1
Livestock						
Livestock for slaughter						
Cattle	156.3	196.4	252.9	267.8	227.8	219.6
Lambs	201.8	233.4	236.2	291.6	307.8	317.6
Sheep	250.8	337.8	304.1	462.5	490.2	511.3
Live sheep for export	233.4	286.6	312.3	321.3	333.0	352.1
Pigs	151.7	156.4	181.0	172.3	137.4	143.5
Poultry	116.9	126.2	126.8	125.9	122.4	124.4
Total livestock for slaughter	161.2	192.4	227.5	245.1	222.8	221.2
Livestock products						
Wool	153.5	159.1	186.5	208.7	240.4	250.8
Milk	169.1	162.6	148.2	137.1	157.5	162.2
Eggs	112.7	114.6	112.7	113.7	114.8	116.1
Total livestock products	157.2	155.8	156.1	157.1	178.2	184.1
Store and breeding stock	169.2	209.7	260.1	295.7	269.7	264.1
Total livestock	157.4	177.8	201.5	214.3	207.3	208.1
Total prices received	142.9	152.4	161.0	162.2	164.2	165.4

a Total for the group includes commodities not separately listed. **f** ABARES forecast. **s** ABARES estimate.
Notes: The indexes for commodity groups are calculated on a chain-weighted basis using Fisher's ideal index with a reference year of 1997–98 = 100. Indexes for most individual commodities are based on annual gross unit value of production. Prices used in these calculations exclude GST. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.
Source: ABARES; Australian Bureau of Statistics

TABLE 2 Terms of trade and indexes of prices paid by farmers Australia

Category	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Farmers' terms of trade a	98.2	103.9	109.2	110.3	108.9	106.1
Materials and services						
Seed, fodder and livestock						
Fodder and feedstuffs	126.8	134.5	138.5	129.1	141.0	141.7
Seed, seedlings and plants	130.6	130.4	129.9	122.0	131.8	134.0
Store and breeding stock	169.2	209.7	261.1	295.7	269.7	264.1
Total seed, fodder and livestock	136.9	151.2	165.2	165.0	168.8	168.3
Chemicals	113.6	115.0	116.2	117.7	119.4	121.4
Electricity	185.7	176.4	178.9	181.9	200.1	204.6
Fertiliser	153.2	154.7	157.8	134.1	136.8	143.4
Fuel and lubricants	221.1	207.9	167.9	175.7	187.2	200.3
Total materials and services	150.8	155.1	159.1	158.4	162.7	165.8
Labour	163.5	166.3	168.6	171.5	174.8	178.8
Marketing	159.3	152.9	144.1	149.6	157.0	165.8
Overheads						
Insurance	195.2	198.5	201.3	204.7	208.7	213.4
Interest paid	85.3	79.5	74.8	68.4	68.6	77.5
Rates and taxes	160.6	163.4	165.6	168.4	171.7	175.6
Other overheads	155.8	158.5	160.7	163.4	166.6	170.4
Total overheads	110.6	107.1	104.1	99.8	100.9	109.1
Capital items	161.5	164.4	166.9	169.8	173.1	177.0
Total prices paid	145.5	146.7	147.4	147.1	150.9	156.0
Excluding capital items	143.9	144.9	145.5	144.9	148.7	153.9
Excluding capital and overheads	154.3	156.8	157.7	159.4	164.1	168.1
Excluding seed, fodder and livestock	147.3	145.5	143.5	143.2	146.9	153.2

a Ratio of index of prices received by farmers and index of prices paid by farmers. **f** ABARES forecast. **s** ABARES estimate.

Notes: The indexes for commodity groups are calculated on a chain-weighted basis using Fisher's ideal index with a reference year of 1997–98 = 100. Prices used in these calculations exclude GST. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES (compiled from various market sources); Australian Bureau of Statistics

TABLE 3 Farm costs and returns Australia

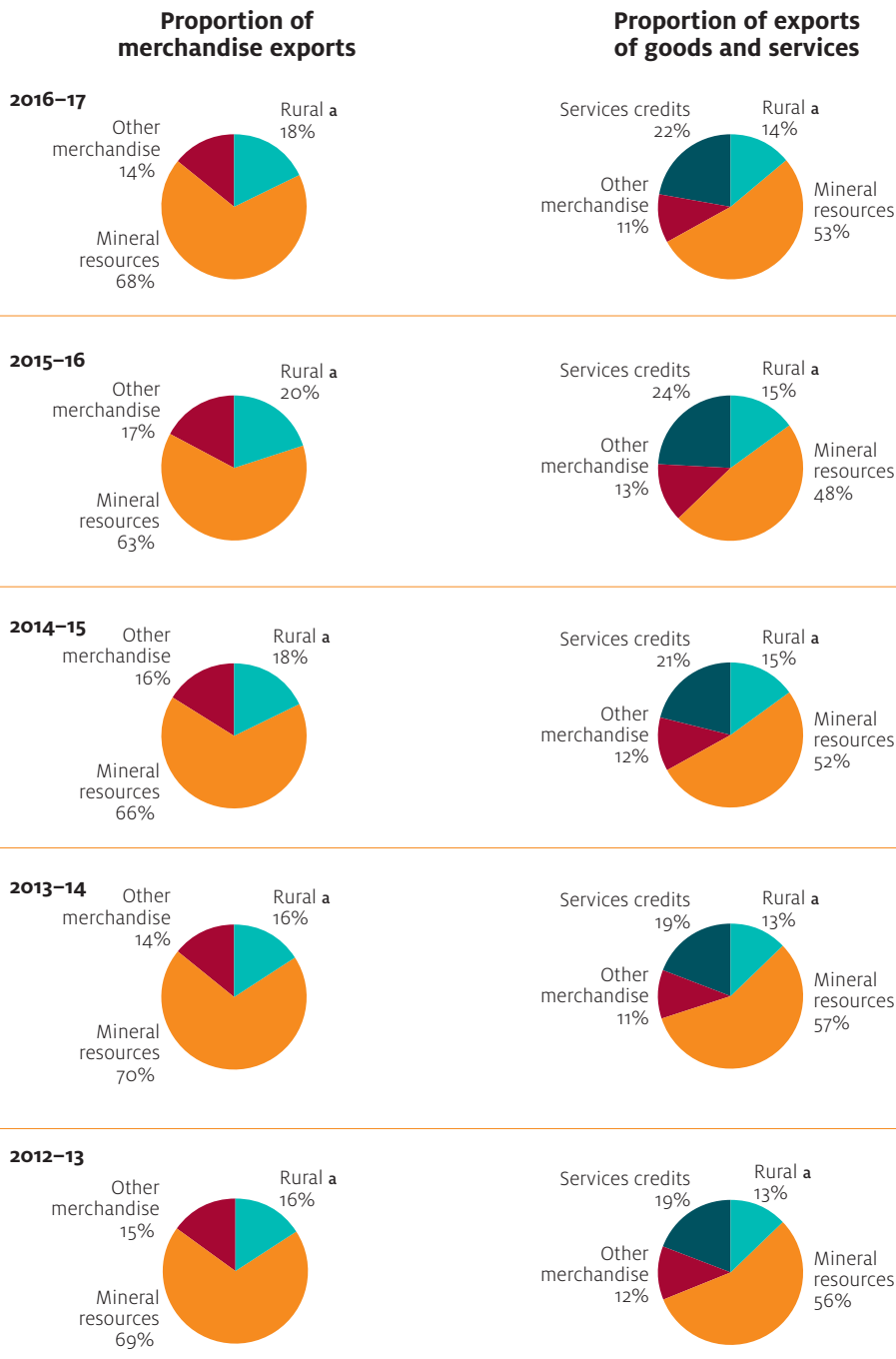
Category	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Costs							
Materials and services							
Chemicals	$m	1,406	1,455	1,510	1,505	1,500	1,500
Fertiliser	$m	2,091	2,121	2,169	1,837	1,856	1,932
Fuel and lubricants	$m	2,248	1,978	1,659	1,734	1,830	1,944
Marketing	$m	4,108	4,118	4,079	4,928	4,240	4,522
Repairs and maintenance	$m	4,529	4,922	5,267	5,937	5,787	6,147
Seed and fodder	$m	4,650	4,938	5,026	4,826	5,358	5,500
Other	$m	4,711	4,727	4,738	5,030	5,109	5,300
Total materials and services	$m	23,741	24,259	24,448	25,797	25,680	26,844
Labour	$m	4,364	4,303	4,145	4,310	4,426	4,573
Overheads							
Interest paid	$m	3,956	3,874	3,828	3,606	3,731	4,426
Rent and third-party insurance	$m	551	561	569	578	590	603
Total overheads	$m	8,871	8,738	8,542	8,494	8,747	9,602
Total cash costs	$m	32,612	32,997	32,990	34,291	34,427	36,446
Depreciation **a**	$m	5,345	5,444	5,526	5,621	5,731	5,860
Total farm costs	$m	37,957	38,441	38,516	39,912	40,158	42,306
Returns							
Gross value of farm production	$m	51,479	54,362	56,643	62,331	58,999	60,687
Net returns and production							
Net value of farm production **b**	$m	13,522	15,921	18,127	22,418	18,841	18,380
Real net value of farm production **c**	$m	14,460	16,738	18,797	22,857	18,841	17,976
Net farm cash income **d**	$m	18,867	21,365	23,653	28,040	24,572	24,241
Real net farm cash income **c**	$m	20,175	22,461	24,528	28,589	24,572	23,707

a Based on estimated movements in capital expenditure and prices of capital inputs. **b** Gross value of farm production less total farm costs. **c** In 2017–18 Australian dollars. **d** Gross farm cash income less total cash costs. **f** ABARES forecast. **s** ABARES estimate.

Notes: Prices used in these calculations exclude GST. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES (compiled from various market sources); Australian Bureau of Statistics

FIGURE 5 Contribution to exports by sector, balance of payments basis Australia



a ABARES rural balance of payments adjusted to include farm, fisheries and forestry products classified as other merchandise by Australian Bureau of Statistics.
Sources: ABARES; Australian Bureau of Statistics

TABLE 4 Volume of production indexes Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Farm							
Grains and oilseeds	index	144.9	138.8	130.2	202.3	134.6	143.9
Total crops	index	131.9	125.0	130.2	165.4	138.2	142.8
Livestock slaughterings	index	127.7	137.0	127.3	116.6	123.2	126.0
Total livestock	index	111.3	118.1	111.1	103.6	108.5	110.6
Total farm sector	index	122.2	122.3	120.8	131.7	122.9	126.1
Forestry a							
Hardwood	index	107.5	121.9	135.4	152.5	143.9	135.9
Softwood	index	130.4	135.5	148.4	157.5	151.2	145.5
Total forestry	index	119.4	129.0	142.2	155.1	147.7	140.9

a Volume of logs harvested excluding firewood. **f** ABARES forecast. **s** ABARES estimate.

Notes: ABARE revised the method for calculating production indexes in October 1999. The indexes for the different groups of commodities are calculated on a chained weight basis using Fisher's ideal index with a reference year of 1997–98 = 100. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics

TABLE 5 Industry gross value added ab Australia

Industry	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Agriculture, forestry and fishing							
Agriculture	$m	36,306	35,970	36,382	36,889	33,972	40,251
Forestry and fishing	$m	6,052	6,082	6,148	6,215	6,365	6,826
Total agriculture, forestry and fishing	$m	42,347	42,039	42,520	43,091	40,338	47,077
Mining	$m	70,739	77,449	85,599	91,960	97,655	100,078
Manufacturing							
Food, beverage and alcohol	$m	26,137	26,734	26,632	25,936	25,390	26,391
Petroleum, coal, chemical products, rubber	$m	21,649	20,435	20,251	19,710	19,197	18,944
Metal products	$m	17,921	16,465	16,790	16,244	15,449	15,213
Machinery and equipment	$m	22,457	21,367	20,134	19,855	19,318	18,018
Total manufacturing	$m	109,268	105,748	104,613	103,132	100,696	98,991
Building and construction	$m	124,253	128,921	134,607	131,099	129,902	124,943
Electricity, gas and water supply	$m	23,224	22,845	22,452	22,458	22,742	22,730
Taxes less subsidies on products	$m	108,831	110,498	110,839	112,443	116,832	118,000
Statistical discrepancy	$m	0.0	0.0	0.0	0.0	1.0	– 4,212
Gross domestic product	$m	1,498,021	1,537,561	1,576,898	1,613,972	1,659,604	1,693,452

a Chain volume measures, reference year is 2015–16. **b** ANZSIC 2006.

Sources: Australian Bureau of Statistics (ABS), *Australian national accounts: national income, expenditure and product,* cat. no. 5206.0, Canberra; ABS, *Balance of payments, Australia* , cat. no. 5302.0, Canberra

TABLE 6 Employment **ab** Australia

Industry	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Agriculture, forestry and fishing							
Horticulture **c**	’000	57.0	58.1	62.9	52.1	63.9	61.5
Sheep, beef cattle and grain	’000	125	116	101	123	91.6	90.7
Other crop growing	’000	8.5	13.0	9.4	4.0	4.0	3.8
Dairy cattle	’000	23.5	21.0	26.0	21.3	26.0	26.5
Poultry	’000	9.6	10.4	4.6	5.4	11.6	10.0
Other livestock **d**	’000	9.9	11.0	9.6	15.2	14.0	9.2
Other agriculture **nfd**	’000	39.3	41.6	50.5	60.8	62.3	56.9
Total agriculture	’000	273	271	264	282	273	260
Forestry and logging	’000	6.9	7.5	5.6	6.0	5.5	7.7
Forestry support services	’000	3.7	3.0	3.1	2.9	2.7	4.9
Aquaculture	’000	4.0	2.5	4.6	7.6	5.0	8.2
Fishing	’000	5.1	5.3	3.8	5.0	5.2	5.6
Hunting and trapping	’000	0.4	0.3	0.2	1.0	0.2	0.4
Fishing, hunting and trapping **nfd**	’000	1.0	0.9	0.1	0.4	0.3	0.9
Agriculture and fishing support services **e**	’000	19.3	19.2	21.5	18.1	17.7	19.7
Total agriculture, forestry and fishing	’000	316	311	305	325	312	309
Manufacturing							
Food product	’000	185	191	186	193	198	200
Beverage and tobacco	’000	32.8	25.4	35.3	30.0	34.9	33.7
Wood product	’000	37.7	38.2	43.4	44.4	43.9	39.2
Pulp, paper and converted paper product	’000	15.8	15.6	12.7	13.7	13.1	16.9
Total manufacturing	’000	942	941	927	917	886	909
Total employment	’000	11,204	11,373	11,454	11,627	11,870	12,023

a Average employment over four quarters. **b** ANZSIC 2006. **c** Includes nursery, floriculture, vegetable, fruit and tree nut growing. **d** Includes deer farming. **e** Includes agriculture, forestry and fishing support services not further defined.
Note: Australian Bureau of Statistics advises caution using employment statistics at the ANZSIC subdivision and group levels because estimates may be subject to sampling variability and standard errors too high for most practical purposes.
Source: Australian Bureau of Statistics, *Labour force, Australia,* cat. no. 6291.0.55.003, Canberra

TABLE 7 All banks lending to business **a** Australia

Industry	unit	Jun–16	Sep–16	Dec–16	Mar–17	Jun–17	Sep–17
Agriculture, forestry and fishing	$b	66.9	67.9	67.2	67.2	68.6	68.2
Mining	$b	34.6	32.5	31.9	29.4	27.4	26.1
Manufacturing	$b	44.8	45.3	47.7	45.7	47.1	46.3
Construction	$b	32.0	32.8	31.9	33.3	31.8	32.2
Wholesale and retail trade, transport and storage	$b	115	117	123	120	116	119
Finance and insurance	$b	172	179	185	187	286	268
Other	$b	432	438	453	457	465	468
Total	$b	897	912	939	939	1,042	1,028

a Includes variable and fixed interest rate loans outstanding plus bank bills outstanding.
Source: Reserve Bank of Australia, *Bank lending to business-selected statistics,* Bulletin Statistical Table D8

TABLE 8 Rural indebtedness to financial institutions Australia

Institution	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Rural debt							
All banks **a**	$m	59,749	61,778	62,461	64,966	66,912	68,557
Other government agencies **b**	$m	2,076	2,236	2,451	878	977	1,142
Pastoral and other finance companies	$m	1,801	1,569	1,486	1,463	1,622	1,987
Large finance institutional debt **c**	$m	63,626	65,583	66,397	67,307	69,511	71,686
Deposits							
Farm management deposits	$m	3,532	3,721	4,139	4,604	5,068	6,095

a Derived from all banks lending to agriculture, fishing and forestry. **b** Includes the government agency business of state banks and advances made under War Service Land Settlement. **c** Sum of rural debt.

Sources: Department of Agriculture and Water Resources; Reserve Bank of Australia, *Estimated rural debt to specified lenders,* Bulletin Statistical Table D9

TABLE 9 Annual world indicator prices of selected commodities

Commodity	unit	2013–14	2014–15	2015–16	2016–17	2017–18 s	2018–19 f
Crops							
Wheat **a**	US$/t	317	266	211	197	221	234
Corn **b**	US$/t	219	173	168	157	158	167
Rice **c**	US$/t	429	420	386	394	400	409
Soybeans **d**	US$/t	547	418	373	384	370	360
Cotton **e**	USc/lb	90.6	70.8	70.4	82.8	81.0	85.0
Sugar **g**	USc/lb	16.8	13.4	16.7	17.3	14.0	12.7
Livestock products							
Beef **h**	USc/kg	440	550	450	447	441	429
Wool **i**	Ac/kg	1,070	1,098	1,256	1,415	1,630	1,700
Butter **j**	US$/t	4,498	3,483	3,146	4,500	5,220	5,150
Cheese **j**	US$/t	4,817	3,921	3,200	3,742	3,985	3,900
Skim milk powder **j**	US$/t	4,513	2,592	1,975	2,356	1,892	1,930

a US no. 2 hard red winter wheat, fob Gulf. **b** US no. 2 yellow corn, fob Gulf. **c** USDA nominal quote for Thai white rice, 100 per cent, Grade B, fob, Bangkok (August–July basis). **d** US no. 2 soybeans, fob Gulf. **e** Cotlook 'A' index. **f** ABARES forecast. **g** Nearby futures price (October–September basis), Intercontinental Exchange, New York no. 11 contract. **h** Cow 90CL US cif price. **i** Australian Wool Exchange eastern market indicator. **j** Average of traded prices (excluding subsidised sales). **s** ABARES estimate.

Sources: ABARES; Australian Bureau of Statistics; Australian Wool Exchange; Cotlook Ltd; Dairy Australia; Intercontinental Exchange; International Grains Council; Meat & Livestock Australia; New York Board of Trade; US Department of Agriculture

TABLE 10 Gross unit values of farm products a

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crops b							
Grains							
Barley	$/t	267	280	253	182	247	250
Corn (maize)	$/t	297	330	326	295	315	307
Grain sorghum	$/t	300	301	275	239	298	306
Oats	$/t	213	250	306	238	251	240
Rice	$/t	340	395	419	350	365	390
Triticale	$/t	258	256	248	199	236	238
Wheat	$/t	316	300	277	247	283	298
Oilseeds							
Canola	$/t	555	503	532	520	503	498
Soybeans c	$/t	538	588	560	558	519	519
Sunflower seed c	$/t	660	756	652	590	654	590
Pulses							
Chickpeas	$/t	352	567	784	833	955	581
Field peas	$/t	419	413	449	328	297	378
Lupins	$/t	345	292	362	277	262	447
Industrial crops							
Cotton lint d	c/kg	229	199	226	243	267	256
Sugar cane (cut for crushing)	$/t	40.2	39.4	37.3	37.2	34.3	31.7
Wine grapes	$/t	441	476	544	565	539	551
Livestock							
Beef cattle	c/kg	304	382	492	521	443	427
Lambs	c/kg	410	474	480	592	625	645
Pigs	c/kg	300	310	358	341	272	284
Poultry	c/kg	209	226	223	226	219	223
Livestock products							
Wool	c/kg	604	626	734	821	946	987
Milk	c/L	50.5	48.5	44.2	40.9	47.0	48.4
Eggs	c/dozen	221	229	238	242	242	244

a Average gross unit value across all grades in principal markets, unless otherwise indicated. Includes the cost of containers, commission and other expenses incurred in getting the commodities to their principal markets. These expenses are significant. **b** Average unit gross value relates to returns received from crops harvested in that year, regardless of when sales take place, unless otherwise indicated. **c** Price paid by crusher. **d** Australian base price for sales in the financial year indicated. **f** ABARES forecast. **s** ABARES estimate.

Notes: Prices used in these calculations exclude GST. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics

TABLE 11 World production, consumption, stocks and trade for selected commodities [a]

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Grains							
Wheat							
Production	Mt	717	730	736	754	750	742
Consumption	Mt	697	715	719	736	742	744
Closing stocks	Mt	191	207	224	242	250	248
Exports **bc**	Mt	157	153	166	176	178	180
Coarse grains							
Production	Mt	1,283	1,303	1,260	1,366	1,324	1,317
Consumption	Mt	1,229	1,259	1,273	1,328	1,347	1,364
Closing stocks	Mt	211	246	252	262	234	187
Exports **b**	Mt	165	186	163	202	189	188
Rice d							
Production	Mt	479	480	474	487	490	505
Consumption	Mt	479	476	473	486	487	507
Closing stocks	Mt	116	121	122	123	126	82.7
Exports **be**	Mt	42.5	41.3	39.4	44.3	44.4	39.0
Oilseeds and vegetable oils							
Oilseeds							
Production	Mt	504	537	520	564	574	585
Consumption	Mt	493	517	526	551	573	580
Closing stocks	Mt	77.7	93.4	88.6	102	102	107
Exports **b**	Mt	134	147	153	167	176	181
Vegetable oils							
Production	Mt	170	176	176	184	194	197
Consumption	Mt	170	173	178	184	191	199
Closing stocks	Mt	21.5	20.5	18.7	18.0	21.2	19.5
Exports **b**	Mt	70.1	76.6	74.8	75.6	79.5	83.8
Vegetable protein meals							
Production	Mt	282	299	306	319	333	337
Consumption	Mt	279	294	305	321	330	338
Closing stocks	Mt	13.8	15.4	16.7	15.1	18.5	17.5
Exports **b**	Mt	82.4	85.5	87.3	89.5	96.5	98.5
Industrial crops							
Cotton							
Production	Mt	26.2	26.0	20.9	23.2	26.3	27.1
Consumption	Mt	23.9	24.3	24.2	25.0	26.0	26.9
Closing stocks	Mt	22.4	24.2	20.8	19.1	19.4	19.6
Exports	Mt	8.9	7.7	7.6	8.2	8.4	9.1
Sugar							
Production	Mt	182	182	174	178	190	186
Consumption	Mt	176	179	180	181	185	186
Closing stocks	Mt	77.6	80.5	74.8	72.5	77.3	77.4
Exports	Mt	58.0	55.6	58.5	68.8	66.7	66.7

continued ...

TABLE 11 World production, consumption, stocks and trade for selected commodities a continued

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Livestock products							
Meat egh							
Production	Mt	273	274	275	278	283	287
Consumption	Mt	267	269	269	272	277	285
Closing stocks	Mt	2.8	2.6	2.5	2.6	2.6	2.7
Exports **b**	Mt	28.8	28.3	29.6	30.4	31.2	32.5
Wool i							
Production	kt	1,155	1,160	1,155	1,154	1,156	1,158
Consumption **ej**	kt	1,147	1,164	1,155	1,154	1,156	1,158
Closing stocks **k**	kt	35.0	30.0	33.0	35.0	37.0	39.0
Exports **l**	kt	553	551	549	547	548	551
Butter eh							
Production	kt	9,651	9,904	10,014	10,193	10,435	10,597
Consumption	kt	9,038	9,204	9,443	9,670	9,950	10,148
Closing stocks	kt	250	332	308	348	328	269
Exports	kt	924	907	945	819	831	844
Skim milk powder ehm							
Production	kt	4,524	4,760	4,749	4,689	4,810	4,882
Consumption	kt	3,581	3,771	3,630	3,872	3,887	3,979
Closing stocks	kt	515	608	950	934	742	565
Exports	kt	1,968	2,083	1,996	2,198	2,288	2,350

a Figures sourced from external organisations may not based on precise or complete analyses. **b** Excludes intra-EU trade. **c** Includes the grain equivalent of wheat flour. **d** Milled equivalent. **e** On a calendar year basis, e.g. 2015–16 = 2016. **f** ABARES forecast. **g** Beef and veal, mutton, lamb, goat, pig and chicken meat. **h** Selected countries. **i** Clean equivalent. **j** Virgin wool at the spinning stage in 65 countries. **k** Held by marketing bodies and on-farm in five major exporting countries. **l** Five major exporting countries. **m** Non-fat dry milk. **s** ABARES estimate.
Sources: ABARES; Argentine Wool Federation; Australian Bureau of Statistics; Capewools South Africa; Commonwealth Secretariat; Economic Commission for Europe; Fearnleys; International Grains Council; International Sugar Organization; International Wool Textile Organisation; Ministry of Agriculture, Forestry and Fisheries (Japan); New Zealand Wool Board; Poimena Analysis, Melbourne; UN Food and Agriculture Organization; US Department of Agriculture; Uruguayan Association of Wool Exporters

TABLE 12 Agricultural, fisheries and forestry commodity production Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crops							
Grains							
Barley	kt	9,174	8,646	8,992	13,414	8,928	9,000
Corn (maize)	kt	390	495	400	514	383	461
Grain sorghum	kt	1,282	2,209	1,791	1,017	1,465	1,941
Oats	kt	1,255	1,198	1,300	1,873	1,119	1,305
Rice	kt	819	690	274	809	800	800
Triticale	kt	126	143	127	255	114	156
Wheat	kt	25,303	23,743	22,275	34,369	21,244	23,742
Oilseeds							
Canola	kt	3,832	3,540	2,775	4,309	3,669	4,012
Cottonseed	kt	1,252	746	890	1,260	1,407	1,174
Soybeans	kt	31.6	37.4	40.2	48.5	62.8	47.6
Sunflower seed	kt	17.9	30.4	25.1	36.4	30.8	33.9
Other oilseeds **a**	kt	26.5	21.5	19.9	30.4	30.1	29.9
Pulses							
Chickpeas	kt	629	555	875	2,004	1,028	761
Field peas	kt	342	290	205	415	289	289
Lupins	kt	626	549	652	1,031	631	450
Other pulses **b**	kt	620	564	611	1,269	907	746
Total grains, oilseeds and pulses	kt	45,726	43,459	41,251	62,655	42,106	44,948
Industrial crops							
Cotton lint	kt	885	528	629	891	995	830
Sugar cane (cut for crushing)	kt	30,521	32,360	34,828	36,507	33,500	33,941
Sugar (tonnes actual)	kt	4,364	4,572	4,920	4,804	4,700	4,830
Wine grapes	kt	1,438	1,608	1,752	1,841	1,690	1,750
Horticulture							
Fruit							
Apples	kt	267	295	308	307	305	310
Bananas	kt	254	252	354	309	315	320
Oranges	kt	350	338	399	328	330	335
Vegetables							
Carrots	kt	243	261	300	310	315	318
Onions	kt	256	315	265	271	270	274
Potatoes	kt	1,171	1,155	1,130	1,150	1,150	1,175
Tomatoes	kt	326	389	405	365	405	410
Livestock							
Slaughterings							
Cattle and calves	’000	9,473	10,103	8,796	7,423	7,755	8,000
Lambs	’000	21,899	22,867	23,131	22,344	22,700	23,300
Sheep	’000	10,066	9,022	8,127	6,553	8,200	7,770
Pigs	’000	4,778	4,924	5,000	5,160	5,341	5,572
Chickens	million	580	591	623	653	664	676
Live exports							
Cattle **c**	’000	1,133	1,379	1,258	917	975	1,010
Sheep **d**	’000	2,020	2,180	1,859	1,851	1,966	1,860
Goats	’000	81.2	91.0	80.7	29.6	20.2	15.0
Meat produced e							
Beef and veal	kt (cw)	2,464	2,662	2,344	2,069	2,227	2,278
Lamb	kt (cw)	474	507	516	506	508	528
Mutton	kt (cw)	228	214	196	163	202	194
Goat meat	kt (cw)	33.6	32.3	33.3	33.0	29.5	30.8
Pig meat	kt (cw)	360	371	378	397	412	430
Chicken meat	kt (cw)	1,084	1,116	1,191	1,230	1,238	1,250
Total meat produced	kt (cw)	4,644	4,902	4,658	4,398	4,617	4,711

continued ...

TABLE 12 Agricultural, fisheries and forestry commodity production Australia continued

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Livestock products							
Wool **g**	kt (gr. eq.)	419	427	404	414	424	430
Milk **h**	ML	9,372	9,732	9,679	9,015	9,250	9,370
Eggs	million dozen	322	318	329	335	343	351
Butter **i**	kt	116	119	119	99.9	106	108
Cheese **j**	kt	311	344	344	337	348	355
Skim milk powder	kt	211	242	256	222	227	232
Whole milk powder	kt	126	96.8	66.1	60.0	61.0	59.8
Buttermilk powder	kt	11.1	11.6	10.7	8.7	11.3	11.3
Forestry products k							
Hardwood	'000 m^3	10,899	12,361	13,737	15,469	14,591	13,779
Softwood	'000 m^3	14,367	14,929	16,346	17,347	16,655	16,023
Total forestry products	'000 m^3	25,266	27,290	30,083	32,816	31,246	29,802
Fisheries l							
Tuna	kt	10.7	12.4	14.2	12.5	12.8	13.4
Salmonids **m**	kt	41.8	48.6	56.3	51.8	57.4	59.2
Other fish	kt	102	102	123	114	104	104
Prawns	kt	25.0	25.5	24.6	24.5	22.8	24.2
Rock lobster **n**	kt	10.5	10.3	10.1	10.4	10.5	10.5
Abalone	kt	4.7	4.6	4.2	4.3	4.1	4.1
Scallops	kt	4.4	4.3	5.0	4.8	4.8	4.4
Oysters	kt	11.6	11.0	11.3	11.5	8.3	7.7
Other molluscs	kt	5.9	7.2	7.6	7.1	7.1	7.1
Other crustaceans	kt	5.5	5.6	5.2	4.8	4.8	4.8

a Linseed, safflower seed and peanuts. **b** Faba beans, lentils, mung beans and navy beans. **c** Includes all bovine for feeder/slaughter, breeding and dairy purposes. **d** Includes animals for breeding. **e** Includes carcase equivalent of canned meats. **f** ABARES forecast. **g** Includes shorn wool (includes crutching), dead and fellmongered wool, and wool exported on skins. h Includes the whole milk equivalent of farm cream intake. **i** Includes the butter equivalent of butter oil, butter concentrate, ghee and dry butterfat. **j** Excludes processed cheese. **k** Excludes logs harvested for firewood. **l** Liveweight. **m** Includes salmon and trout production. **n** Includes Queensland bugs. **s** ABARES estimate.

Note: Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics; Australian Fisheries Management Authority; Dairy Australia; Department of Fisheries, Western Australia; Department of Primary Industries, Parks, Water and Environment, Tasmania; Fisheries Queensland, Department of Agriculture, Fisheries and Forestry; Fisheries Victoria, Department of Primary Industries; Industry & Investment New South Wales; Northern Territory Department of Regional Development, Primary Industry, Fisheries and Resources; Primary Industries and Regions, Fisheries, South Australia; Pulse Australia; Raw Cotton Marketing Advisory Committee; South Australian Research and Development Institute; state and territory forest services; various Australian forestry industries

TABLE 13 Gross value of farm, fisheries and forestry production Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crops							
Grains							
Barley	$m	2,453	2,417	2,277	2,447	2,201	2,253
Corn (maize)	$m	116	163	130	151	121	142
Grain sorghum	$m	384	666	492	243	437	595
Oats	$m	268	300	398	445	281	313
Rice	$m	279	273	115	283	292	312
Triticale	$m	32.4	36.7	31.6	50.7	26.8	37.0
Wheat	$m	7,998	7,124	6,170	8,494	6,020	7,067
Other cereals	$m	115	90.0	14.5	105	110	115
Oilseeds							
Canola	$m	2,129	1,782	1,476	2,241	1,846	1,998
Soybeans	$m	17.0	22.0	22.5	27.0	32.6	24.7
Sunflower seed	$m	11.8	23.0	16.4	21.4	20.1	20.0
Other oilseeds **a**	$m	25.6	26.3	19.3	27.5	17.7	26.4
Pulses							
Chickpeas	$m	222	315	685	1,669	982	442
Field peas	$m	143	120	92	136	86	109
Lupins	$m	216	160	236	285	165	201
Other pulses	$m	391	425	522	1,154	828	455
Total grains, oilseeds and pulses	$m	14,800	13,943	12,697	17,781	13,466	14,110
Industrial crops							
Cotton lint and cottonseed **b**	$m	2,004	1,184	1,530	2,394	2,632	2,246
Sugar cane (cut for crushing)	$m	1,226	1,276	1,299	1,357	1,148	1,075
Wine grapes	$m	672	765	953	1,040	911	965
Total industrial crops	$m	3,902	3,225	3,783	4,791	4,691	4,286
Horticulture							
Table and dried grapes	$m	331	343	453	490	466	513
Fruit and nuts (excl. grapes)	$m	3,187	3,512	4,225	4,194	4,439	4,820
Vegetables	$m	3,510	3,350	3,585	3,514	3,820	3,964
Nursery, cut flowers and turf	$m	1,247	1,252	1,296	1,318	1,344	1,374
Other horticulture **nei c**	$m	233	232	241	245	250	256
Total horticulture	$m	8,507	8,689	9,801	9,762	10,319	10,928
Other crops **nei d**	$m	1,490	1,538	1,600	1,660	1,720	1,780
Total crops	$m	28,699	27,395	27,880	33,993	30,196	31,104

continued ...

TABLE 13 Gross value of farm, fisheries and forestry production Australia continued

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Livestock							
Slaughterings							
Cattle and calves **eg**	$m	7,495	10,175	11,536	10,783	9,873	9,737
Sheep **g**	$m	513	650	535	678	889	889
Lambs **g**	$m	1,943	2,401	2,477	2,998	3,178	3,405
Pigs **g**	$m	1,081	1,149	1,353	1,355	1,120	1,222
Poultry	$m	2,344	2,610	2,748	2,857	2,797	2,870
Goats	$m	80.5	120	167	203	145	157
Other slaughterings	$m	22.7	24.4	17.7	19.0	21.0	20.0
Live exports							
Cattle exported live **h**	$m	1,049	1,356	1,551	1,199	1,220	1,265
Sheep exported live **i**	$m	185	245	228	233	256	257
Goats exported live	$m	9.9	9.6	10.3	4.7	3.9	3.0
Total livestock j	$m	14,723	18,740	20,622	20,330	19,503	19,826
Livestock products							
Wool **k**	$m	2,530	2,676	2,965	3,397	4,010	4,244
Milk **l**	$m	4,729	4,722	4,282	3,687	4,348	4,535
Eggs	$m	710	729	783	808	829	855
Honey and beeswax	$m	88.0	101	110	116	127	122
Total livestock products	$m	8,057	8,227	8,140	8,008	9,313	9,757
Total farm	$m	51,479	54,362	56,643	62,331	59,012	60,687
Forestry products m							
Hardwood	$m	822	961	1,076	1,197	1,142	1,090
Softwood	$m	1,018	1,064	1,194	1,341	1,300	1,263
Total forestry products	$m	1,840	2,025	2,270	2,539	2,442	2,352
Fisheries products n							
Tuna	$m	147	161	171	153	171	187
Salmonids **o**	$m	543	631	718	740	810	830
Other fish **p**	$m	405	435	523	475	428	438
Prawns	$m	339	365	388	378	355	375
Rock lobster **q**	$m	588	668	695	649	648	678
Other crustaceans	$m	63.9	65.1	63.6	59.8	61.1	61.3
Abalone	$m	164	164	160	174	170	170
Scallops	$m	11.3	11.3	14.0	13.6	13.8	13.3
Oysters	$m	91.3	93.0	97.0	100	79.7	75.3
Pearls	$m	60.7	67.9	78.4	69.0	71.7	73.0
Other molluscs	$m	33.5	40.8	41.5	45.5	45.0	46.6
Other **nei**	$m	27.1	67.7	77.3	52.3	52.3	52.3
Total fisheries products	$m	2,473	2,769	3,026	2,910	2,904	2,999

a Linseed, safflower seed and peanuts. **b** Value delivered to gin. **c** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **d** Mainly fodder crops. **e** Includes dairy cattle slaughtered. **f** ABARES forecast. **g** Excludes skin and hide values. **h** Includes all bovine for feeder/slaughter, breeding and dairy purposes. **i** Includes animals exported for breeding purposes. **j** Total livestock slaughterings includes livestock disposals. **k** Shorn, dead and fellmongered wool, and wool exported on skins. **l** Milk intake by factories and valued at the farm gate. **m** Excludes logs harvested for firewood. **n** Value to fishers of product landed in Australia. **o** Includes salmon and trout production. **p** Includes an estimated value of aquaculture. **q** Includes Queensland bugs. **s** ABARES estimate.

Notes: The gross value of production is the value placed on recorded production at the wholesale prices realised in the marketplace. The point of measurement can vary between commodities. Generally the marketplace is the metropolitan market in each state and territory. However, where commodities are consumed locally or where they become raw material for a secondary industry, these points are presumed to be the marketplace. Prices used in these calculations exclude GST. Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics

TABLE 14 Crop and forestry areas and livestock numbers Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crop areas							
Grains							
Barley	’000 ha	3,814	4,078	4,108	4,035	3,878	4,000
Corn (maize)	’000 ha	52.3	59.6	53.3	62.9	56.1	62.0
Grain sorghum	’000 ha	532	732	521	396	501	618
Oats	’000 ha	715	854	821	914	742	818
Rice	’000 ha	74.9	69.7	26.6	81.4	79.8	79.8
Triticale	’000 ha	79.9	81.5	78.4	99.4	77.4	85.0
Wheat	’000 ha	12,613	12,384	11,282	12,634	12,237	12,176
Oilseeds							
Canola	’000 ha	2,721	2,897	2,091	2,388	2,729	2,950
Soybeans	’000 ha	24.9	20.2	20.8	29.4	33.4	34.0
Sunflower seed	’000 ha	17.1	25.4	22.8	27.3	25.3	30.0
Other oilseeds **a**	’000 ha	21.3	12.7	12.7	16.1	16.3	17.0
Pulses							
Chickpeas	’000 ha	508	425	677	1,069	1,116	634
Field peas	’000 ha	245	237	238	230	222	221
Lupins	’000 ha	387	443	534	515	518	386
Total grains, oilseeds and pulses b	’000 ha	22,559	22,909	21,337	23,696	23,429	23,073
Industrial crops							
Cotton	’000 ha	392	197	270	557	500	415
Sugar cane **c**	’000 ha	371	378	381	372	380	385
Wine grapes **d**	’000 ha	127	132	130	134	140	140
Livestock numbers e							
Beef cattle	million	26.3	24.6	22.3	23.3	23.8	24.2
Dairy cattle	million	2.8	2.8	2.7	2.6	2.6	2.7
Milking herd **g**	million	1.6	1.7	1.6	1.5	1.5	1.5
Total cattle	million	29.1	27.4	25.0	25.9	26.4	26.9
Sheep	million	72.6	70.9	67.5	70.2	70.5	72.3
Pigs	million	2.3	2.3	2.3	2.4	2.5	2.5
Sows	’000	266	271	240	242	251	253
Forestry plantation area							
Hardwood	’000 ha	963	928	928	na	na	na
Softwood	’000 ha	1,024	1,035	1,037	na	na	na
Total plantation area h	’000 ha	2,000	1,973	1,975	na	na	na

a Linseed, safflower seed and peanuts. **b** Total includes components not listed separately. **c** Cut for crushing. **d** This figure is for grapes for wine only. **e** At 30 June. **f** ABARES forecast. **g** Cows in milk and dry. **h** Includes areas where plantation type is unknown. **s** ABARES estimate.

Note: Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics; Pulse Australia; Cotton Australia, Australian cotton industry statistics - Cotton Annual, Sydney; Australian Sugar Milling Council, Annual Review, Brisbane.

TABLE 15 Average farm yields Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Crops							
Grains							
Barley	t/ha	2.4	2.1	2.2	3.3	2.3	2.3
Corn (maize)	t/ha	7.5	8.3	7.5	8.2	6.8	6.8
Grain sorghum	t/ha	2.4	3.0	3.4	2.6	2.9	2.9
Oats	t/ha	1.8	1.4	1.6	2.0	1.5	1.5
Rice	t/ha	10.9	9.9	10.3	9.9	10.0	10.0
Triticale	t/ha	1.6	1.8	1.6	2.6	1.5	1.5
Wheat	t/ha	2.0	1.9	2.0	2.7	1.7	1.7
Oilseeds							
Canola	t/ha	1.4	1.2	1.3	1.8	1.3	1.3
Soybeans	t/ha	1.3	1.9	1.9	1.7	1.9	1.9
Sunflower seed	t/ha	1.0	1.2	1.1	1.3	1.2	1.2
Pulses							
Chickpeas	t/ha	1.2	1.3	1.3	1.9	0.9	0.9
Field peas	t/ha	1.4	1.2	0.9	1.8	1.3	1.3
Lupins	t/ha	1.6	1.2	1.2	2.0	1.2	1.2
Industrial crops							
Cotton (lint)	t/ha	2.3	2.7	2.3	1.6	2.0	2.0
Sugar cane (for crushing)	t/ha	82.3	85.7	91.4	98.3	88.2	88.2
Wine grapes	t/ha	11.3	12.1	13.5	13.7	12.1	12.1
Livestock products							
Wool **a**	kg/sheep	4.4	4.5	4.4	4.6	4.6	4.6
Whole milk	L/cow	5,692	5,761	6,198	5,963	6,086	6,086

a Shorn (including lambs). **f** ABARES forecast. **s** ABARES estimate.

Note: Series break in 2015–16. Prior to 2015–16 figures are based on establishments with an estimated value of agricultural operations (EVAO) of $5,000. From 2015–16 (inclusive) figures are based on establishments with an EVAO of $40,000.

Sources: ABARES; Australian Bureau of Statistics; Dairy Australia; Pulse Australia

TABLE 16 Volume of agricultural and fisheries exports Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Farm							
Crops							
Grains							
Barley **a**	kt	7,124	6,208	5,498	9,537	6,199	6,635
Corn (maize)	kt	83.3	58.1	41.3	73.3	67.3	72.2
Grain sorghum	kt	701	1,205	1,075	729	484	972
Oats	kt	213	284	230	369	210	221
Rice	kt	544	461	314	199	401	423
Wheat **b**	kt	18,336	16,571	15,777	22,057	16,828	16,287
Oilseeds							
Canola	kt	3,194	2,445	1,946	3,599	2,530	3,123
Cottonseed	kt	464	167	147	316	250	477
Other oilseeds **c**	kt	13.6	5.8	10.0	9.8	15.0	24.1
Pulses							
Chickpeas	kt	562	674	1,140	1,970	1,290	815
Peas	kt	155	179	143	225	209	160
Lupins	kt	298	270	220	380	316	320
Other pulses	kt	771	597	588	1,252	1,123	492
Total grains, oilseeds and pulses	kt	32,458	29,124	27,130	40,716	29,920	30,022
Industrial crops							
Raw cotton **d**	kt	1,036	681	536	763	887	930
Sugar	kt	3,052	3,675	4,140	3,970	3,843	3,863
Wine	ML	717	745	727	786	858	858
Livestock and livestock products							
Meat and live animals							
Beef and veal	kt (sw)	1,214	1,376	1,196	991	1,080	1,110
Live feeder/slaughter cattle **e**	’000	1,006	1,295	1,114	817	875	910
Live breeder cattle **g**	’000	127	83.4	144	99.2	100	100
Lamb	kt (sw)	236	254	261	255	255	273
Live sheep **h**	’000	2,020	2,180	1,859	1,851	1,870	1,860
Mutton	kt (sw)	186	180	156	135	163	157
Pig meat	kt (sw)	27.7	28.5	27.9	30.7	34.7	37.5
Chicken meat	kt (sw)	38.2	36.0	27.3	35.4	39.8	41.4
Goat meat	kt (sw)	38.3	36.5	29.6	29.3	26.2	27.3
Live goats	’000	81.2	91.0	80.7	29.6	20.2	15.0
Wool							
Greasy **i**	kt	295	325	296	313	326	332
Semi-processed	kt (gr. eq.)	35.2	41.4	34.8	30.9	31.5	32.4
Skins	kt (gr. eq.)	97.1	92.5	86.0	85.3	88.9	91.5
Total wool **i**	kt (gr. eq.)	428	459	417	429	446	456
Dairy products							
Butter **j**	kt	49.3	43.6	33.6	21.4	20.6	21.4
Cheese	kt	151	159	172	167	180	179
Casein	kt	2.9	0.2	0.4	0.4	0.4	0.2
Skim milk powder	kt	143	186	181	153	154	154
Whole milk powder	kt	94.4	69.3	57.0	59.9	67.8	69.3

continued ...

TABLE 16 Volume of agricultural and fisheries exports Australia continued

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Fisheries products							
Tuna	kt	11.0	12.1	13.8	10.7	11.2	11.9
Salmonids	kt	1.8	5.0	8.0	5.0	12.5	10.3
Other fish	kt	5.8	6.5	20.6	15.5	7.9	6.9
Abalone	kt	2.7	2.6	2.6	2.6	2.5	2.5
Prawns	kt	7.1	6.5	6.7	7.0	6.5	6.9
Rock lobster	kt	8.0	8.2	8.0	8.6	8.8	8.8
Other crustaceans and molluscs	kt	2.5	2.4	2.4	2.0	1.8	1.8
Total edible k	kt	38.9	43.3	62.1	51.4	51.4	49.1

a Includes the grain equivalent of malt. **b** Includes the grain equivalent of wheat flour. **c** Includes soybeans, linseed, sunflower seed, safflower seed and peanuts. Excludes meals and oils. **d** Excludes cotton waste and linters. **e** Includes buffalo. **f** ABARES forecast. **g** Includes dairy cattle and buffalo. **h** Includes breeding stock. **i** Australian Bureau of Statistics recorded trade data adjusted for changes in stock levels held overseas. **j** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter. **k** total non-edible export volume not avaliable. **s** ABARES estimates.

Sources: ABARES; Australian Bureau of Statistics; Department of Foreign Affairs and Trade; UN Commodity Trade Statistics Database (UN Comtrade)

TABLE 17 Value of agricultural and fisheries exports (fob) Australia

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Farm							
Crops							
Grains							
Barley **a**	$m	2,199	2,137	1,790	2,427	1,724	1,927
Corn (maize)	$m	36.5	30.0	21.7	31.8	35.9	35.7
Grain sorghum	$m	253	424	364	212	137	256
Oats	$m	80.0	106	104	126	65.6	68.3
Rice **b**	$m	490	506	408	245	527	531
Wheat **c**	$m	6,103	5,547	5,120	6,094	5,174	5,462
Oilseeds							
Canola	$m	1,929	1,349	1,097	2,128	1,388	1,697
Cottonseed	$m	168	74.7	68.9	137	101	192
Other oilseeds **d**	$m	18.3	13.6	19.0	29.8	21.9	42.0
Pulses							
Chickpeas	$m	297	414	1,013	1,921	1,170	542
Peas	$m	67.2	90.5	85.5	109	86.9	73.3
Lupins	$m	125	119	96.8	136	99.3	94.7
Other pulses	$m	530	541	584	964	780	432
Total grains, oilseeds and pulses	$m	12,296	11,352	10,772	14,559	11,310	11,353
Industrial crops							
Raw cotton **e**	$m	2,355	1,546	1,269	1,788	2,058	2,400
Sugar	$m	1,385	1,643	1,823	2,424	1,861	1,663
Wine	$m	1,847	1,983	2,184	2,366	2,850	2,796
Total industrial crops	$m	5,587	5,172	5,277	6,579	6,769	6,859
Horticulture							
Fruit	$m	724	755	1,072	1,086	1,083	1,239
Tree nuts	$m	610	734	930	820	903	1,022
Vegetables	$m	268	289	340	354	402	459
Nursery	$m	11.3	11.9	14.8	19.2	19.6	20.0
Other horticulture **g**	$m	220	230	252	281	287	293
Total horticulture	$m	1,833	2,019	2,609	2,561	2,694	3,034
Other crops and crop products	$m	2,601	3,031	3,872	4,289	3,672	3,824
Total crops	$m	22,318	21,574	22,529	27,988	24,445	25,069
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	6,422	9,040	8,495	7,115	7,560	7,550
Live feeder/slaughter cattle **h**	$m	795	1,163	1,280	1,031	1,050	1,055
Live breeder cattle **i**	$m	255	192	271	168	170	210
Lamb	$m	1,534	1,779	1,771	1,934	2,050	2,243
Live sheep **j**	$m	185	245	228	233	244	257
Mutton	$m	772	824	699	719	925	925
Pig meat	$m	93.9	110	128	124	128	137
Chicken meat	$m	53.7	58.1	49.8	54.1	63.6	67.4
Goat meat	$m	199	258	226	250	257	279
Live goats	$m	9.9	9.6	10.3	4.7	3.9	3.0
Total meat and live animals	$m	10,318	13,680	13,157	11,633	12,451	12,727
Wool							
Greasy **k**	$m	2,212	2,497	2,590	3,014	3,626	3,850
Semi-processed	$m	238	282	281	248	275	313
Skins	$m	426	375	412	355	431	458
Total wool k	$m	2,877	3,154	3,283	3,617	4,331	4,620

continued ...

TABLE 17 Value of agricultural and fisheries exports (fob) Australia continued

Commodity	unit	2013–14	2014–15	2015–16	2016–17 s	2017–18 f	2018–19 f
Dairy products							
Butter **l**	$m	243	198	156	111	132	145
Cheese	$m	765	823	859	847	967	970
Casein	$m	42.3	10.5	10.4	11.0	8.6	9.0
Skim milk powder	$m	708	682	516	454	393	407
Whole milk powder	$m	532	294	257	268	296	282
Other dairy products **m**	$m	904	868	1,202	1,336	1,470	1,416
Total dairy products	$m	3,194	2,876	3,001	3,028	3,268	3,229
Other livestock and livestock products	$m	2,657	2,916	2,824	2,727	2,730	2,834
Total livestock exports	$m	19,046	22,625	22,265	21,004	22,792	23,410
Total farm exports	$m	41,364	44,200	44,794	48,993	47,209	48,333
Fisheries products							
Tuna	$m	136	151	163	144	148	169
Salmonids	$m	17.4	48.1	79.9	58.9	135	112
Other fish	$m	72.5	72.1	111	103	98.4	85.4
Abalone	$m	170	174	182	187	187	189
Prawns	$m	101	94.2	114	114	104	112
Rock lobster	$m	590	691	693	676	679	703
Other crustaceans and molluscs	$m	51.6	62.3	74.1	48.5	51.7	47.4
Pearls	$m	144	111	95.9	75.4	69.6	73.9
Other fisheries products	$m	21.5	36.2	27.5	27.2	30.6	28.4
Total fisheries products	$m	1,304	1,440	1,542	1,435	1,503	1,520

a Includes malt. **b** Includes the milled equivalent of rice flour. **c** Includes wheat flour. **d** Includes soybeans, linseed, sunflower seed, safflower seed and peanuts. Excludes meals and oils. **e** Excludes cotton waste and linters. **f** ABARES forecast. **g** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **h** Includes buffalo. **i** Includes dairy cattle and buffalo. **j** Includes breeding stock. **k** On a balance of payments basis. Australian Bureau of Statistics recorded trade data adjusted for changes in stock levels held overseas. **l** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter. **m** Other dairy products include food preparations identified by industry as containing a high proportion of dairy products. **s** ABARES estimate.
Sources: ABARES; Australian Bureau of Statistics; Department of Agriculture and Water Resources, Canberra; UN Commodity Trade Statistics Database (UN Comtrade)

TABLE 18 Agricultural exports to China (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Farm							
Crops							
Grains							
Barley **a**	$m	454	494	1,080	1,464	834	1,417
Grain sorghum	$m	3.9	98.0	215	410	350	179
Wheat **b**	$m	457	357	484	323	426	493
Other grains **c**	$m	0.1	5.7	0.2	0.4	0.7	0.3
Oilseeds	$m	116	344	627	317	13.6	148
Pulses	$m	4.3	1.3	0.6	16.9	20.0	7.3
Total grains, oilseeds and pulses	$m	1,035	1,300	2,407	2,531	1,645	2,244
Industrial crops							
Raw cotton **d**	$m	1,812	1,849	1,520	851	636	464
Sugar	$m	20.8	2.0	42.0	126	120	100
Wine	$m	209	241	202	269	416	595
Total industrial crops	$m	2,041	2,093	1,764	1,246	1,172	1,159
Horticulture							
Fruit	$m	10.0	27.6	37.4	64.2	187	258
Tree nuts	$m	11.5	36.4	37.1	38.6	62.7	73.6
Vegetables	$m	2.5	2.6	3.3	3.9	3.8	2.9
Nursery	$m	0.5	0.3	0.3	0.8	1.1	1.0
Other horticulture **e**	$m	3.0	3.0	2.9	4.5	4.9	5.0
Total horticulture	$m	27.5	69.9	81.0	112	260	340
Other crops and crop products	$m	66.0	65.3	119	361	802	1,078
Total crops	$m	3,170	3,528	4,370	4,250	3,878	4,822
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	59.1	408	787	758	867	747
Live breeder cattle **g**	$m	133	125	180	149	221	126
Lamb	$m	85.1	120	217	191	144	208
Mutton	$m	30.3	123	229	168	86.0	89.5
Other meat and live animals	$m	0.5	1.3	19.4	36.7	29.8	8.9
Total meat and live animals h	$m	308	778	1,433	1,303	1,347	1,179
Wool							
Greasy	$m	1,925	1,844	1,713	1,986	2,017	2,423
Semi-processed	$m	24.5	18.3	17.6	32.2	14.5	16.7
Skins	$m	369	337	378	336	385	329
Total wool	$m	2,319	2,200	2,109	2,354	2,417	2,769
Dairy products							
Butter **i**	$m	7.2	5.9	7.5	11.4	11.1	11.5
Cheese	$m	36.7	44.0	74.0	72.3	85.0	101
Casein	$m	1.3	1.0	0.9	0.2	0.3	0.0
Skim milk powder	$m	49.6	35.5	108	58.6	70.3	75.9
Whole milk powder	$m	11.2	55.7	159	19.9	82.4	78.0
Other dairy products	$m	185	208	151	173	427	552
Total dairy product exports	$m	291	350	501	335	676	819
Other livestock exports	$m	613	629	756	828	648	535
Total livestock and livestock products	$m	3,530	3,956	4,798	4,820	5,088	5,302
Total agricultural exports	$m	6,700	7,483	9,168	9,071	8,966	10,124

a Includes malt. **b** Includes wheat flour. **c** Includes grains not separately listed (excluding rice). **d** Excludes cotton waste and linters. **e** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **g** Includes dairy cattle and buffalo. **h** Excludes value of live feeder slaughter for October 2015. **i** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter.

Sources: ABARES; Australian Bureau of Statistics

TABLE 19 Agricultural exports to Indonesia (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Farm							
Crops							
Grains							
Barley **a**	$m	10.4	7.1	6.4	5.4	4.7	2.9
Wheat **b**	$m	1,156	1,395	1,194	1,403	1,127	1,263
Other grains, oilseeds and pulses	$m	13.7	11.8	27.6	14.4	17.9	20.4
Total grains, oilseeds and pulses	$m	1,180	1,414	1,228	1,423	1,150	1,286
Industrial crops							
Raw cotton **c**	$m	282	220	174	136	130	183
Sugar	$m	302	316	467	519	476	541
Wine	$m	4.3	4.5	2.6	3.9	4.0	5.9
Total industrial crops	**$m**	588	540	644	659	610	730
Horticulture							
Fruit	$m	33.2	48.9	53.0	62.2	90.7	76.8
Tree nuts	$m	1.5	1.4	1.2	2.4	5.1	5.8
Vegetables	$m	10.9	12.4	11.1	6.0	10.0	9.4
Nursery	$m	0.1	0.0	0	0.0	0	0.1
Other horticulture **d**	$m	2.7	2.3	2.9	3.8	1.5	1.8
Total horticulture	$m	48.5	64.9	68.2	74.4	107	93.9
Other crops and crop products	$m	24.7	33.8	39.3	43.4	47.8	50.4
Total crops	$m	1,842	2,053	1,980	2,200	1,915	2,161
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	168	137	258	247	315	292
Live feeder/slaughter cattle **e**	$m	252	165	452	595	578	620
Live breeder cattle **e**	$m	2.4	9.4	8.8	5.0	7.2	15.9
Lamb	$m	8.8	7.8	4.5	7.1	7.6	8.7
Mutton	$m	1.3	1.6	1.2	4.1	6.2	5.8
Other meat and live animals **g**	$m	0.6	0.5	0	0.0	0	0.0
Total meat and live animals	$m	433	321	724	858	914	942
Wool	$m	0.4	0.3	0.9	0.6	0.5	0.4
Dairy products							
Butter **h**	$m	3.9	5.5	6.6	4.6	3.2	3.5
Cheese	$m	18.6	18.3	18.4	18.1	17.7	24.7
Casein	$m	7.2	9.4	9.7	0.0	0.0	0.4
Skim milk powder	$m	71.6	68.1	126	164	120	107
Whole milk powder	$m	34.0	18.0	37.3	8.0	2.9	3.0
Other dairy products	$m	39.1	28.4	38.8	56.5	51.2	61.0
Total dairy product exports	$m	174	148	237	251	195	200
Other livestock products	$m	113	146	143	140	121	150
Total livestock and livestock products	$m	721	615	1,106	1,250	1,231	1,293
Total agricultural exports	$m	2,562	2,668	3,086	3,450	3,146	3,454

a Includes malt. **b** Includes wheat flour. **c** Excludes cotton waste and linters. **d** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **e** Includes buffalo. **g** Includes dairy cattle and buffalo. **h** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter.

Sources: ABARES; Australian Bureau of Statistics

TABLE 20 Agricultural exports to Japan (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Farm							
Grains							
Barley **a**	$m	316	292	251	177	223	325
Grain sorghum	$m	219	202	16.2	2.3	0.6	2.1
Wheat **b**	$m	395	392	322	305	326	304
Oilseeds							
Canola	$m	47.4	71.7	113	175	62.7	83.8
Cottonseed	$m	30.9	36.1	30.9	23.3	27.3	18.8
Other grains and oilseeds **c**	$m	9.4	16.9	9.9	6.4	5.2	7.0
Pulses	$m	11.5	10.4	10.6	8.5	14.5	11.5
Total grains, oilseeds and pulses	$m	1,030	1,021	754	697	659	752
Industrial crops							
Raw cotton **d**	$m	62.6	27.6	31.9	25.4	26.6	30.8
Sugar	$m	211	198	244	164	233	439
Wine	$m	45.3	42.2	41.5	43.8	45.6	47.0
Total industrial crops	$m	318	268	318	233	306	517
Horticulture							
Fruit	$m	59.0	62.6	60.6	59.2	89.0	105
Tree nuts	$m	20.3	22.5	19.3	22.7	35.4	45.0
Vegetables	$m	40.8	41.1	39.1	37.6	44.1	50.7
Nursery	$m	2.9	2.6	1.8	1.7	2.0	5.0
Other horticulture **e**	$m	4.6	2.3	7.0	7.1	7.1	6.9
Total horticulture	$m	128	131	128	128	178	212
Other crops and crop products	$m	355	337	370	375	364	374
Total crops	$m	1,830	1,757	1,570	1,433	1,506	1,855
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	1,580	1,466	1,439	1,858	1,813	1,910
Live feeder/slaughter cattle **gh**	$m	19.7	14.6	15.1	14.4	14.7	22.1
Lamb	$m	62.7	56.3	75.5	86.0	72.0	83.1
Mutton	$m	25.0	16.9	28.8	27.3	35.1	32.2
Other meat and live animals	$m	2.9	3.5	3.7	4.7	10.8	10.1
Total meat and live animals	$m	1,690	1,558	1,562	1,990	1,946	2,058
Wool							
Greasy	$m	11.6	8.0	0.6	0.2	0.0	0.1
Semi-processed	$m	26.1	21.5	10.3	14.2	20.5	11.1
Skins	$m	1.6	1.0	1.6	1.8	1.7	1.5
Total wool	$m	39.3	30.4	12.5	16.2	22.2	12.7
Dairy products							
Butter **i**	$m	8.7	3.9	2.2	3.9	3.3	2.7
Cheese	$m	423	415	343	407	410	373
Casein	$m	21.5	16.8	20.4	5.4	4.9	3.1
Skim milk powder	$m	2.0	5.0	16.5	30.5	5.2	9.8
Whole milk powder	$m	0.7	0.4	0.0	0.1	0.0	0.0
Other dairy products	$m	45.9	68.0	38.6	33.4	38.8	39.4
Total dairy product exports	$m	502	509	421	481	462	428
Other livestock products	$m	301	293	276	291	361	365
Total livestock and livestock products	$m	2,531	2,390	2,271	2,778	2,792	2,863
Total agricultural exports	$m	4,362	4,147	3,841	4,211	4,298	4,718

a Includes malt. **b** Includes the grain equivalent of wheat flour. **c** Includes grains and oilseeds not separately listed. **d** Excludes cotton waste and linters. **e** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **g** Excludes breeding stock and includes buffalo for feeder/slaughter purposes. **h** Excludes value of live feeder slaughter for October 2015. **i** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter.

Sources: ABARES; Australian Bureau of Statistics

TABLE 21 Agricultural exports to the Republic of Korea (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Farm							
Crops							
Grains **a**							
Barley **b**	$m	94.3	87.2	116	116	95.7	83
Wheat **c**	$m	628	449	310	354	410	300
Corn (maize)	$m	12.3	19.6	22.6	21.6	13.2	23.6
Oilseeds							
Cottonseed	$m	26.5	36.8	30.5	15.4	19.1	12.3
Other grains and oilseeds **d**	$m	0.9	2.3	5.9	1.9	4.0	3.5
Pulses	$m	35.7	74.0	57.0	68.4	25.0	49.8
Total grains, oilseeds and pulses	$m	798	669	541	577	567	471
Industrial crops							
Raw cotton **e**	$m	120	119	130	81.8	24.4	21.7
Sugar	$m	514	467	300	512	631	984
Wine	$m	8.8	10.2	7.6	10.5	13.1	13.5
Total industrial crops	$m	643	596	438	604	668	1,019
Horticulture							
Fruit	$m	4.9	6.6	6.0	9.6	12.3	9.0
Tree nuts	$m	2.6	2.3	3.9	10.8	17.6	14.5
Vegetables	$m	9.1	7.0	4.7	8.5	16.6	14.9
Other horticulture **g**	$m	1.7	1.9	2.7	1.9	1.9	3.1
Total horticulture	$m	18.2	17.8	17.4	30.7	48.5	41.5
Other crops and crop products	$m	135	141	166	156	174	245
Total crops	$m	1,594	1,424	1,162	1,368	1,458	1,777
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	654	703	892	1,068	1,324	1,228
Lamb	$m	14.6	13.6	24.0	32.0	48.9	95.7
Mutton	$m	4.3	3.9	5.7	7.1	8.8	10.1
Other meat and live animals	$m	1.8	1.0	1.3	1.8	3.1	3.4
Total meat and live animals	$m	675	722	923	1,108	1,385	1,337
Wool	$m	43.2	43.5	61.1	81.3	127	108
Dairy products							
Butter **h**	$m	9.2	6.9	6.3	9.6	14.3	9.6
Cheese	$m	31.0	29.8	26.1	32.0	39.2	53.1
Casein	$m	2.4	1.5	1.1	0.1	0.2	0.0
Skim milk powder	$m	23.3	19.3	26.5	24.6	13.6	19.6
Whole milk powder	$m	7.4	1.9	3.1	2.4	1.9	2.1
Other dairy products	$m	42.2	29.0	29.0	24.3	29.6	30.5
Total dairy products	$m	116	88.4	92.1	92.9	98.7	115
Other livestock products	$m	120	95.7	110	174	160	189
Total livestock and livestock products	$m	954	950	1,187	1,456	1,771	1,749
Total agricultural exports	$m	2,548	2,373	2,349	2,825	3,229	3,526

a Includes commodities subjected to ABS confidentiality restricitions. **b** Includes malt. **c** Includes wheat flour. **d** Includes grains not separately listed. **e** Excludes cotton waste and linters. **g** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **h** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter.

Sources: ABARES; Australian Bureau of Statistics

TABLE 22 Agricultural exports to the United States (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Farm							
Crops							
Grains, oilseeds and pulses							
Grains **a**	$m	0.2	1.2	1.7	0.3	0.1	0.1
Oilseeds	$m	19.7	49.9	66.2	21.6	1.5	20.4
Pulses	$m	5.0	4.0	4.8	4.4	4.5	7.6
Total grains, oilseeds and pulses	$m	24.8	55.1	72.7	26.3	6.1	28.2
Industrial crops							
Sugar	$m	120	54.2	31.0	52.7	77.9	73.2
Wine	$m	493	483	472	463	477	479
Total industrial crops	$m	613	537	504	515	555	552
Horticulture							
Fruit	$m	33.1	25.4	31.3	23.8	34.0	34.0
Tree nuts	$m	14.6	27.8	48.3	64.9	82.1	43.3
Vegetables	$m	4.9	5.0	6.4	8.0	8.7	9.5
Nursery	$m	1.7	1.5	1.5	1.7	2.1	2.0
Other horticulture **b**	$m	9.7	9.3	17.7	19.9	19.7	29.1
Total horticulture	$m	64.0	69.0	105	118	147	118
Other crops and crop products	$m	207	243	322	323	364	357
Total crops	$m	909	904	1,003	983	1,072	1,055
Livestock and livestock products							
Meat and live animals							
Beef and veal	$m	894	970	1,360	3,233	2,488	1,494
Lamb	$m	304	303	398	532	617	619
Mutton	$m	24.5	33.8	50.6	77.7	94.3	102
Other meat and live animals	$m	0.0	0.1	0.2	1.3	0.5	0.5
Total meat and live animals	$m	1,223	1,307	1,809	3,844	3,200	2,216
Wool							
Greasy	$m	7.8	6.7	3.9	6.7	7.3	2.8
Semi-processed	$m	2.9	1.7	2.5	2.7	4.2	2.1
Skins	$m	0.0	0.5	0.3	0.1	0.0	0.1
Total wool	$m	10.7	8.9	6.6	9.5	11.6	4.9
Dairy products							
Butter **c**	$m	6.8	12.7	0.5	13.0	9.6	1.4
Cheese	$m	3.4	11.1	8.5	26.7	32.1	25.5
Casein	$m	6.5	8.9	4.2	0.9	1.4	2.9
Whole milk powder	$m	3.8	5.1	0.0	0.9	4.4	1.6
Other dairy products	$m	17.4	22.1	16.4	17.3	19.8	16.0
Total dairy products	$m	37.9	60.0	29.7	58.8	67.3	47.4
Other livestock products	$m	60.2	63.5	95.0	134	146	154
Total livestock and livestock products	$m	1,331	1,439	1,940	4,047	3,424	2,422
Total agricultural exports	$m	2,240	2,343	2,943	5,030	4,496	3,477

a Includes commodities subjected to ABS confidentiality restricitions. **b** Other horticulture includes mainly coffee, tea, spices, essential oils, vegetables for seed and other miscellaneous horticultural products. **c** Includes ghee, dry butterfat, butter concentrate and butter oil, and dairy spreads, all expressed as butter.

TABLE 23 Volume of fisheries products exports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Edible a							
Fish							
Live	kt	0.9	0.8	0.9	0.8	0.8	0.8
Tuna	kt	8.9	8.9	11.0	12.1	13.8	10.7
Salmonids	kt	5.8	2.6	1.8	5.0	8.0	5.0
Swordfish	kt	0.5	0.5	0.4	0.5	0.6	0.5
Whiting	kt	0.9	0.4	0.1	0.0	0.0	0.0
Other fish	kt	5.1	4.7	4.4	5.3	19.2	14.2
Total fish	kt	22.0	17.8	18.6	23.6	42.4	31.2
Crustaceans and molluscs							
Rock lobster	kt	6.9	7.8	8.0	8.2	8.0	8.6
Prawns	kt	5.4	3.9	7.1	6.5	6.7	7.0
Abalone	kt	3.1	2.8	2.7	2.6	2.6	2.6
Scallops	kt	0.4	0.4	0.5	0.3	0.4	0.4
Crabs	kt	0.8	0.4	0.4	0.6	0.6	0.5
Other crustaceans and molluscs	kt	1.7	2.1	1.6	1.6	1.5	1.1
Total crustaceans and molluscs	kt	18.4	17.5	20.3	19.7	19.7	20.1
Total edible fisheries products	kt	40.5	35.3	38.9	43.3	62.1	51.4

a Includes prepared and preserved.

Source: Australian Bureau of Statistics

TABLE 24 Value of fisheries products exports (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Edible							
Fish							
Live	$m	32.0	30.7	34.2	29.9	30.2	31.6
Tuna	$m	163	163	136	151	163	144
Salmonids	$m	41.8	25.4	17.4	48.1	79.9	58.9
Swordfish	$m	4.2	3.9	3.9	4.4	6.9	7.5
Whiting	$m	2.5	1.4	0.2	0.1	0.0	0.1
Other fish	$m	46.2	34.2	34.2	37.7	74.3	63.5
Total fish	$m	289	258	225	271	355	306
Crustaceans and molluscs							
Rock lobster	$m	387	447	590	691	693	676
Prawns	$m	66.7	51.8	101	94.2	114	114
Abalone	$m	197	186	170	174	182	187
Scallops	$m	15.3	10.8	13.6	10.7	11.7	12.0
Crabs	$m	11.0	8.2	5.5	7.9	7.6	7.7
Other crustaceans and molluscs	$m	34.4	40.2	32.5	43.7	54.8	28.8
Total crustaceans and molluscs	$m	711	744	913	1,021	1,064	1,026
Total edible fisheries products	$m	1,001	1,002	1,138	1,293	1,418	1,333
Non-edible							
Marine fats and oils	$m	7.3	10.0	9.1	20.9	11.2	10.0
Fish meal	$m	0.4	1.0	0.7	1.0	0.5	1.1
Pearls **a**	$m	207	152	144	111	96	75
Ornamental fish	$m	2.3	3.8	2.0	1.9	2.1	2.4
Other non-edible	$m	9.4	6.5	9.7	12.3	13.8	13.8
Total non-edible fisheries products	$m	226	173	166	147	123	103
Total fisheries products	$m	1,227	1,175	1,304	1,440	1,542	1,435

a Includes items temporarily exported and re-imported.

Source: Australian Bureau of Statistics

TABLE 25 Volume of fisheries products imports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Edible a							
Fish							
Tuna	kt	40.8	46.9	50.1	49.2	44.9	47.9
Salmonids	kt	10.2	11.9	14.2	16.1	15.1	14.7
Hake	kt	5.3	6.1	4.5	4.9	5.1	5.7
Swordfish	kt	0.2	0.2	0.2	0.2	0.2	0.1
Toothfish	kt	0.1	0.2	0.2	0.1	0.2	0.1
Herrings	kt	0.9	1.8	0.9	1.1	2.2	0.8
Shark	kt	0.5	0.5	0.7	0.6	0.4	0.2
Other fish	kt	86.6	92.8	90.0	87.6	86.4	87.2
Total fish **b**	kt	144	161	161	160	154	157
Crustaceans and molluscs							
Prawns	kt	37.5	34.8	38.7	32.4	31.9	31.8
Lobster	kt	0.9	0.8	1.0	1.1	0.9	1.2
Crabs	kt	1.5	1.5	2.1	2.0	1.9	1.7
Mussels	kt	2.8	3.7	3.6	3.1	3.3	3.6
Scallops	kt	3.0	3.1	3.5	2.9	2.6	3.0
Squid and octopus	kt	17.0	19.9	23.2	22.3	23.4	23.9
Other crustaceans and molluscs	kt	7.3	4.1	4.8	4.0	4.2	4.3
Total crustaceans and molluscs	kt	69.8	67.9	76.7	67.8	68.3	69.5
Total edible fisheries products abc	kt	214	228	238	228	223	226

a Includes prepared and preserved. **b** Excludes live tonnage. **c** Includes other fisheries products not classified into fish or crustaceans and molluscs.

Source: Australian Bureau of Statistics

TABLE 26 Value of fisheries products imports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Edible a							
Fish							
Tuna	$m	206	258	296	284	275	303
Salmonids	$m	91.8	119	167	191	185	217
Hake	$m	20.9	23.4	19.5	21.8	23.6	23.1
Swordfish	$m	1.2	1.7	1.4	1.7	1.6	1.2
Toothfish	$m	1.3	2.2	3.0	3.5	8.2	4.7
Herrings	$m	4.2	5.1	4.5	3.9	5.7	4.2
Shark	$m	4.0	4.6	5.5	4.9	3.9	2.2
Other fish	$m	460	480	508	544	570	577
Total fish **b**	$m	789	894	1,005	1,055	1,073	1,132
Crustaceans and molluscs							
Prawns	$m	351	305	495	431	401	402
Lobster	$m	16.0	15.3	22.4	28.3	29.9	33.8
Crabs	$m	15.5	16.8	28.3	31.1	28.7	24.9
Mussels	$m	11.7	17.1	19.1	17.9	20.0	21.7
Scallops	$m	43.6	41.1	52.9	49.6	55.0	68.6
Squid and octopus	$m	90.4	97.7	114	112	135	167
Other crustaceans and molluscs	$m	57.0	40.7	44.0	42.9	50.7	49.8
Total crustaceans and molluscs	$m	585	533	776	712	720	768
Total edible fisheries products abc	$m	1,374	1,428	1,781	1,767	1,793	1,900
Non-edible							
Pearls **d**	$m	138	105	102	97.2	144	132
Fish meal	$m	34.2	43.3	43.2	64.3	61.7	60.8
Ornamental fish	$m	3.7	4.0	4.5	4.4	4.9	4.2
Marine fats and oils	$m	39.5	39.1	40.1	52.7	61.1	56.0
Other marine products	$m	17.1	29.0	30.4	22.2	21.3	22.7
Total non-edible fisheries products	$m	233	221	220	241	293	275
Total fisheries products	$m	1,607	1,648	2,002	2,008	2,086	2,175

a Includes prepared and preserved. **b** Includes live value. **c** Includes other fisheries products not classified into fish or crustaceans and molluscs. **d** Mainly re-imports.

Source: Australian Bureau of Statistics

TABLE 27 Value of Australian fisheries products trade, by selected countries Australia

Trade	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Exports							
Edible (including live)							
Hong Kong	$m	479	317	209	192	224	203
Vietnam	$m	60.5	293	566	716	682	574
Japan	$m	255	236	192	192	205	194
China	$m	58.5	45.2	36.6	48.7	105	170
Singapore	$m	42.5	31.0	34.2	35.0	35.3	37.7
United States	$m	23.1	17.9	22.1	28.0	44.8	38.2
Taiwan	$m	17.5	9.8	13.7	15.1	20.9	13.4
Thailand	$m	18.1	9.3	8.0	10.0	9.4	11.8
New Zealand	$m	10.1	9.1	14.5	13.9	19.9	17.0
Malaysia	$m	7.7	7.8	9.9	11.2	7.5	17.5
Indonesia	$m	6.1	7.4	9.9	9.3	10.0	12.5
Non-edible							
Hong Kong	$m	96.6	54.3	74.6	55.9	53.2	29.3
Japan	$m	44.4	33.0	26.9	23.4	24.0	29.8
United States	$m	22.2	21.0	19.2	16.6	21.6	14.4
Imports							
Edible (excluding live)							
Thailand	$m	362	400	417	422	416	455
New Zealand	$m	197	206	207	190	200	215
China	$m	231	196	342	285	292	305
Vietnam	$m	174	163	232	233	243	243
Malaysia	$m	73.2	81.0	97.9	94.7	88.9	101
United States	$m	45.1	52.2	56.0	53.0	54.9	51.1
Indonesia	$m	36.3	50.9	73.5	85.6	89.5	78.8
Taiwan	$m	38.9	48.1	44.5	58.3	60.3	55.4
South Africa	$m	31.3	35.1	31.6	27.5	27.7	26.5
Denmark	$m	25.3	32.2	44.8	58.2	47.7	61.8
Norway	$m	27.1	29.9	45.4	68.1	66.8	91.3

Source: Australian Bureau of Statistics

TABLE 28 Volume of forest products exports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Volume							
Roundwood	'000 m^3	1,806	1,516	2,363	2,616	3,685	4,323
Sawnwood							
Softwood roughsawn **a**	'000 m^3	198	207	268	300	247	265
Softwood dressed	'000 m^3	12.9	3.0	4.6	25.5	10.8	8.2
Hardwood roughsawn	'000 m^3	25.9	20.2	73.2	117.2	19.1	27.5
Hardwood dressed	'000 m^3	14.6	6.7	25.4	72.6	23.3	18.8
Total sawnwood	'000 m^3	252	237	371	515	300	319
Railway sleepers	'000 m^3	8.1	8.3	17.0	13.9	7.4	6.3
Wood-based panels							
Veneers	'000 m^3	105.6	51.6	63.7	50.1	45.2	78.1
Plywood	'000 m^3	18.1	36.4	35.8	13.9	30.5	36.5
Particleboard	'000 m^3	4.5	1.9	5.5	11.3	10.8	4.7
Hardboard	'000 m^3	1.9	2.4	2.7	10.9	21.3	3.9
Medium-density fibreboard	'000 m^3	79.3	52.4	74.9	78.0	85.2	66.2
Softboard and other fibreboards	'000 m^3	4.6	1.1	0.9	21.4	3.9	1.2
Total wood-based panels	'000 m^3	214	146	184	185	197	191
Paper and paperboard							
Newsprint	kt	29.6	71.6	84.5	56.2	49.8	193
Printing and writing	kt	132	139	153	141	139	96
Household and sanitary	kt	26.2	11.5	19.7	23.1	17.0	15.6
Packaging and industrial	kt	933	906	950	948	924	939
Total paper and paperboard	kt	1,121	1,127	1,207	1,168	1,130	1,243
Recovered paper	kt	1,403	1,506	1,449	1,397	1,420	1,354
Pulp	kt	1.3	0.2	0.1	0.1	0.2	0.2
Woodchips **bc**	kt	4,150	3,806	4,776	5,707	6,393	7,100

a Softwood roughsawn includes softwood dressed from January 2017. **b** Bone dry tonnes. **c** Includes particles.

Note: Components may not add to totals due to rounding.

Sources: ABARES; Australian Bureau of Statistics

TABLE 29 Value of forest products exports (fob) Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Value							
Roundwood	$m	175	155	292	313	438	598
Sawnwood							
Softwood roughsawn **a**	$m	54.8	61.4	75.2	74.1	67.6	69.3
Softwood dressed	$m	3.2	2.4	2.9	11.2	7.4	5.4
Hardwood roughsawn	$m	23.3	19.6	22.5	19.9	17.1	29.0
Hardwood dressed	$m	6.9	6.4	7.2	4.5	11.0	6.1
Total sawnwood	$m	88.2	89.9	108	110	103	110
Railway sleepers	$m	2.8	2.9	2.5	1.9	1.7	1.5
Miscellaneous forest products **b**	$m	64.8	76.3	88.6	97.9	141	170
Wood-based panels							
Veneers	$m	50.2	24.5	29.0	26.9	24.1	40.3
Plywood	$m	2.2	4.1	2.9	2.9	4.2	4.4
Particleboard	$m	1.4	1.4	1.4	1.6	2.3	1.9
Hardboard	$m	1.8	2.1	2.0	2.4	7.0	3.4
Medium-density fibreboard	$m	26.3	18.5	25.7	27.3	27.9	22.5
Softboard and other fibreboards	$m	0.7	0.2	0.4	6.3	1.1	0.3
Total wood-based panels	$m	82.6	50.8	61.5	67.3	66.5	72.8
Paper and paperboard							
Newsprint	$m	15.5	36.2	59.1	38.9	33.4	96.9
Printing and writing	$m	120	117	139	146	128	95.8
Household and sanitary	$m	63.7	32.8	48.7	59.6	53.2	37.5
Packaging and industrial	$m	518	526	605	657	683	680
Total paper and paperboard	$m	717	712	853	901	898	910
Paper manufactures **c**	$m	134	132	132	109	102	110
Recovered paper	$m	240	230	241	241	249	260
Pulp	$m	0.7	0.2	0.3	0.3	0.4	0.7
Woodchips **d**	$m	729	611	768	954	1,149	1,252
Total wood products	$m	2,234	2,059	2,546	2,795	3,147	3,485

a Softwood roughsawn includes softwood dressed from January 2017. **b** Includes such items as wooden doors, mouldings, packing cases, parquetry flooring, builders carpentry, cork, gums, resins, eucalyptus and tea tree oils, and other miscellaneous wood articles. Excludes wooden furniture. **c** Includes other paper articles that have had some further processing. **d** Includes particles.

Note: Components may not add to totals due to rounding.

Sources: ABARES; Australian Bureau of Statistics

TABLE 30 Volume of forest products imports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Volume							
Roundwood	'000 m^3	1.1	1.3	0.6	0.8	1.8	0.5
Sawnwood **a**							
Softwood roughsawn	'000 m^3	239	247	271	291	241	220
Softwood dressed	'000 m^3	470	443	449	608	540	506
Hardwood roughsawn	'000 m^3	45.9	41.3	41.4	42.7	38.6	28.8
Hardwood dressed	'000 m^3	36.1	28.4	24.7	26.4	22.3	31.9
Total sawnwood	'000 m^3	791	759	786	968	841	787
Wood-based panels							
Veneers	'000 m^3	14.7	12.6	8.6	12.5	14.1	14.6
Plywood	'000 m^3	293	278	287	341	357	405
Particleboard	'000 m^3	67.2	72.2	95.1	94.6	89.2	124
Hardboard	'000 m^3	69.1	59.8	86.2	81.7	91.4	99.2
Medium-density fibreboard	'000 m^3	91.1	76.6	65.3	85.1	88.8	98.3
Softboard and other fibreboards	'000 m^3	7.1	5.6	5.1	6.7	7.4	6.3
Total wood-based panels	'000 m^3	542	505	548	622	648	747
Paper and paperboard							
Newsprint	kt	121	84.7	75.2	76.3	69.3	64.9
Printing and writing	kt	1,174	1,155	1,172	1,040	960	861
Household and sanitary	kt	118	159	123	142	155	164
Packaging and industrial	kt	333	385	357	392	410	427
Total paper and paperboard	kt	1,746	1,783	1,727	1,651	1,595	1,516
Recovered paper	kt	2.6	3.7	4.6	3.9	1.5	1.7
Pulp	kt	256	263	297	302	281	299
Woodchips **bc**	kt	1.2	1.2	1.7	2.3	1.9	2.7

a Excludes railway sleepers. **b** Bone dry tonnes. **c** Includes particles.

Sources: ABARES; Australian Bureau of Statistics

TABLE 31 Value of forest products imports Australia

Commodity	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Value							
Roundwood	$m	0.7	0.9	0.8	0.6	1.7	4.0
Sawnwood							
Softwood roughsawn	$m	105	100	111	128	112	108
Softwood dressed	$m	248	246	281	382	361	345
Hardwood roughsawn	$m	44.3	41.5	45.7	57.2	55.1	43.9
Hardwood dressed	$m	50.8	35.0	30.8	34.3	27.7	37.3
Total sawnwood	$m	448	423	468	601	555	535
Miscellaneous forest products **a**	$m	756	769	946	1,102	1,304	1,204
Wood-based panels							
Veneers	$m	20.8	19.1	15.4	22.4	23.6	21.3
Plywood	$m	183	184	210	264	300	349
Particleboard	$m	26.1	26.9	35.5	37.8	41.0	52.4
Hardboard	$m	53.9	47.5	71.6	67.0	69.2	68.2
Medium-density fibreboard	$m	36.3	32.3	35.2	45.3	51.3	50.7
Softboard and other fibreboards	$m	3.2	2.1	2.7	3.0	4.0	4.0
Total wood-based panels	$m	323	311	370	439	489	546
Paper and paperboard							
Newsprint	$m	90.6	57.9	48.9	48.3	43.6	40.1
Printing and writing	$m	1,217	1,151	1,194	1,123	1,036	877
Household and sanitary	$m	187	244	208	254	305	296
Packaging and industrial	$m	543	590	654	728	845	883
Total paper and paperboard	$m	2,037	2,043	2,105	2,153	2,230	2,096
Paper manufactures **b**	$m	486	446	537	582	662	648
Recovered paper	$m	0.7	0.9	2.0	1.3	0.3	0.5
Pulp	$m	164	154	203	217	222	215
Woodchips **c**	$m	2.0	2.7	3.2	3.2	3.9	4.7
Total wood products	$m	4,217	4,151	4,636	5,099	5,468	5,253

a Includes such items as wooden doors, mouldings, packing cases, parquetry flooring, builders carpentry, cork, gums, resins, eucalyptus oils and other miscellaneous wood articles. Excludes wooden furniture. **b** Includes other paper articles that have had some further processing. **c** Includes particles.

Note: Components may not add to totals due to rounding.

Sources: ABARES; Australian Bureau of Statistics

TABLE 32 Value of Australian forest products trade, by selected countries a

Trade	unit	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17
Exports							
China	$m	535	474	542	817	1,342	1,620
Hong Kong	$m	39.3	16.5	10.3	12.6	11.5	21.5
Japan	$m	579	394	21.2	316	444	459
Korea, Rep. of	$m	39.8	33.4	44.3	38.1	37.3	42.3
Malaysia	$m	112	72.9	87.6	70.6	71.1	88.6
New Zealand	$m	305	270	292	297	318	328
Taiwan	$m	68.4	68.3	56.8	73.5	110	118
Imports							
China	$m	800	913	1,110	1,321	1,497	1,479
Finland	$m	120	205	221	184	160	143
Germany	$m	148	135	163	150	156	146
Indonesia	$m	342	313	348	427	495	448
Malaysia	$m	236	227	249	270	306	306
New Zealand	$m	634	557	605	646	673	624
United States	$m	298	304	339	361	347	355

a Value of wood products trade to selected countries may exclude data where ABS confidentiality restrictions apply.

Sources: ABARES; Australian Bureau of Statistics

Abbreviations

lb	pound	454 grams
kg	kilogram	2.20462 pounds
t	tonne	1,000 kilograms
kt	kilotonne	1,000 tonnes
Mt	megatonne	1,000,000 tonnes
L	litre	1.761 pints
kL	kilolitre	1,000 litres
ML	megalitre	1,000,000 litres
GL	gigalitre	1,000,000,000 litres
ha	hectare	2.471 acres
m^3	cubic metre	1.307 cubic yards
c	cent (Australian)	
A$	dollar (Australian)	
$m	million dollars (Australian)	
DM	deutschmark	
ECU	European currency unit	
€	euro	
£	pound sterling	
USc	cent (United States)	
US$	dollar (United States)	
¥	yen	
cif	cost, insurance and freight	
cw	carcase weight	
sw	shipped weight	
fas	free alongside ship	
fob	free on board	
fot	free on truck	
na	not available	
nec	not elsewhere classified	
nei	not elsewhere included	
nfd	not further defined	
ABARE	Australian Bureau of Agricultural and Resource Economics	
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences	
ABS	Australian Bureau of Statistics	
ANZSIC	Australian and New Zealand Standard Industrial Classification	
BAE	Bureau of Agricultural Economics (now ABARES)	
BRS	Bureau of Rural Sciences (now ABARES)	
CIS	Commonwealth of Independent States	
EVAO	Estimated value of agricultural operations	
FAO	Food and Agriculture Organization of the United Nations	
USDA	United States Department of Agriculture	

All values and prices are in nominal terms unless stated in table footnotes.

Small discrepancies in totals are generally caused by rounding. Zero is used to denote nil or a negligible amount.

The 'Biosphere' Graphic Element
The biosphere is a key part of the department's visual identity. Individual biospheres are used to visually describe the diverse nature of the work we do as a department, in Australia and internationally.

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