Dairy Australia
Your Levy at Work

Australian Dairy Industry In Focus 2017

The Australian dairy industry at a glance 2016–17

Major markets for Australian dairy products

- **Greater China** 191,500 tonnes
- **Malaysia** 61,800 tonnes
- **Japan** 96,000 tonnes
- **Indonesia** 62,500 tonnes
- **Singapore** 81,600 tonnes

Dairy is Australia's 3rd largest rural industry

$3.7b value of farmgate production

Dairy: a major export industry

37% of Australian milk production was exported in 2016–17

$3b of export revenue was generated in 2016–17

6% of the world dairy trade is contributed by Australia

National dairy herd 1.51m cows

Average herd size 261 cows

Average annual milk production per cow 5,819 litres

Milk production 9,015m litres

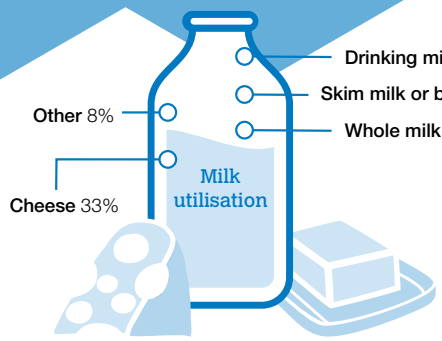
Annual per capita consumption

Drinking milk 103 litres

Cheese 13 kg

Dairy industry workforce

Approximately 42,000 people are directly employed in the industry



Annual production of main commodities

Milk powders 282,000 tonnes

Cheese 336,700 tonnes

Butter 99,950 tonnes

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Foreword

The dairy industry is one of the key sectors of Australia's agricultural economy, ranking third in farmgate value behind beef and wheat at $4.3 billion for the 2016/17 financial year.

Internationally, Australia is a significant exporter of dairy products. It ranks fourth in terms of world dairy trade, with a 6% share behind New Zealand, the European Union and the United States.

Whilst Australian dairy farmers have not been immune to the impacts of a deep and persistent trough in global dairy markets, the ability of the industry to adapt and adjust their businesses to the changing market conditions has been testament to the fortitude of the sector.

Both internationally and domestically, 2016/17 was another challenging year in the world of dairy

The difficult season due to low milk prices and seasonal conditions experienced by some farmers in Australia's southern export focused states caused cashflow challenges that impacted on farmer confidence and milk production.

Confidence about the future of the dairy industry among farmers measured by the National Dairy Farmer Survey (NDFS) dropped from 67% in 2016 to 53% in 2017.

The survey also revealed profitability was at a three year low - 45% of farmers surveyed anticipated a profit in 2016/17.

In turn national milk production for the 2016/17 season fell by about 6.9% on the previous financial year to about 9.02 billion litres.

However, following challenges in the last two years, modest growth in Australia's national milk production is anticipated in 2017/18 due to more favourable weather conditions and better dairy commodity prices globally.

Australian exports are overwhelmingly concentrated in Asia, which accounted for over 80% of the total dairy export value of more than AUD $3 billion in 2016/17.

While the total volume of Australian dairy exports to the rest of the world over 2016/17 fell by 2.7%, totalling 711,000 tonnes, a very strong 25% growth in infant formula export volumes occurred. The value of Australian infant formula exports in 2016/17 totalled US$309 million, compared to US$246 million in 2015/16 and US$55 million in 2014/15.

Australia's top five export markets by volume were Greater China, Japan, Singapore, Indonesia and Malaysia.

Locally, dairy demand through the supermarket channel remained steady for 2016/17. Total drinking milk sales volumes (including flavoured and UHT) remain at about 2.5 billion litres. Yoghurts have been a category of considerable growth for the dairy industry over the past two decades.

There is an ongoing trend within the yoghurt category, away from sweetened and flavoured varieties towards more traditional, unflavoured varieties of yoghurt, such as Greek-style yoghurts, which are perceived to be healthier and more 'natural'.

I trust you will find this latest issue of Australian Dairy Industry In Focus a valuable source of knowledge and information on this important industry. I would like to thank the dairy processors that contribute to our regular data collections. Without their participation, Australian Dairy Industry In Focus could not maintain its reputation as the most comprehensive and credible collection of Australian dairy industry statistics available. Regular monthly updates of much of the industry production data included in this publication are available at dairyaustralia.com.au.

Ian Halliday
Managing Director

The Australian dairy industry

An important rural industry

The dairy industry is one of Australia's major rural industries. Based on a farmgate value of production of $AUD 3.7 billion in 2016/17, it ranks third behind the beef and wheat industries. It is estimated that approximately 42,100 people are directly employed on dairy farms and by dairy companies within Australia. Related transport, distribution, farm services and research and development activities represent further employment associated with the industry.

Dairy is also one of Australia's leading rural industries in terms of adding value through further downstream processing. Much of this processing occurs close to farming areas, generating significant economic activity and employment in regional areas.

Although the bulk of milk production occurs in southeast seaboard states, all states have dairy industries that supply fresh drinking milk to nearby cities and towns. A range of high-quality consumer products, including fresh milks, custards, yoghurts and a wide variety of specialty cheeses, are produced in most Australian states. The manufacturing of dairy commodity products for export, such as cheddar and mozzarella cheese and specialised milk powders and butter fats, has become steadily more concentrated in the southeast of Australia.

Strong growth characterised the dairy industry through the 1990s, but that growth has stalled since de-regulation. This period also coincided with the latter half of the severe and prolonged 'Millennium Drought', while increased levels of market and margin volatility within the industry have also undermined confidence and ability of many farmers to grow production, who are seeking reliable returns on which to build a longer term future. There has been ongoing consolidation within both dairy farming and dairy processing. In terms of dairy farming the number of dairy farms has continued to fall, while the average size of farms has continued to increase. The number of large farms and their share of milk production has increased. Meanwhile the industry has seen continued consolidation amongst processors, and rationalisation has seen the closure of a number of smaller facilities.

Figure 1 provides a comparison across the major agricultural industries in Australia—provides farmgate and export sales values—and shows the relative importance of the dairy industry within the agricultural sector.

Table 1 details the long-term trends for a number of key industry measures.

Table 1 Australian dairy industry – long term trends

At June 30	1980	1990	CAGR 1980s	2000	CAGR 1990s	2010	CAGR 2000s	2017 (p)	CAGR 7 years
Milk production (m lts)	5,432	6,262	1.4%	10,847	5.6%	9,023	–1.8%	9,015	0.0%
Dairy cows ('000)	1,880	1,654	–1.3%	2,171	2.8%	1,596	–3.0%	1,512	–0.8%
Farm numbers	21,994	15,396	–3.5%	12,896	–1.8%	7,511	–5.3%	5,789	–3.7%
Value of farm production* ($m)	$3,625	$3,388	–0.7%	$4,297	2.4%	$3,366	–2.4%	$3,685	1.3%
Per capita consumption (milk equiv)	239	244	0.2%	274	1.2%	301	0.9%	325	1.1%
Export value* ($m)	$1,094	$613	–5.6%	$3,918	20.4%	$2,391	–4.8%	$3,021	3.4%
Export share of production	22%	31%		54%		45%		37%	

CAGR = Compound Annual Growth Rate
**Expressed in 2016/17 dollars*
Source: ABS, ADC, DA, state authorities

A world-competitive industry

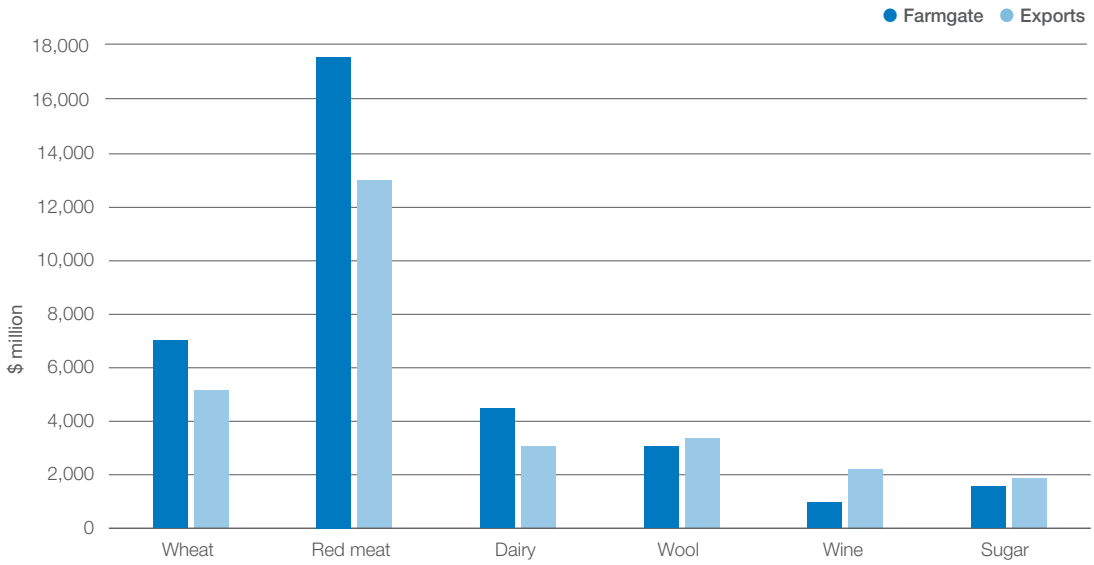
Australian dairy farmers operate in a deregulated and open market and have done so since the industry deregulation in 2000, which saw the removal of government price controls. The open nature of Australia's dairy market means that the Australian domestic market is linked to international trends, with Australia acting as both a major exporter and importer of dairy (predominantly from New Zealand). Hence, although most Australian dairy is consumed domestically, international markets and events have a major influence on Australian farmgate milk prices.

At an average of approximately US$30 per 100 kg of milk last year, Australian dairy farmers generally received a price below that of the major producing countries in the European Union, United States and New Zealand. This partly reflects lower levels of government support provided to Australian farmers compared to northern hemisphere counterparts.

However, this status as a low cost producer has become increasingly difficult to maintain in recent years. Farm cost structures have increased in response to the need to adapt to drier conditions, with increased expenditure on purchases of supplementary feed and temporary water allocations. Farm cost structures and total milk production has not yet returned to levels of the early 2000's, despite the end of the millennium drought. Whilst local milk production has contracted since deregulation, the size of the domestic market has increased with continued population growth. As a result, the share of Australia's milk that is exported, and Australia's share of international dairy trade has trended lower.

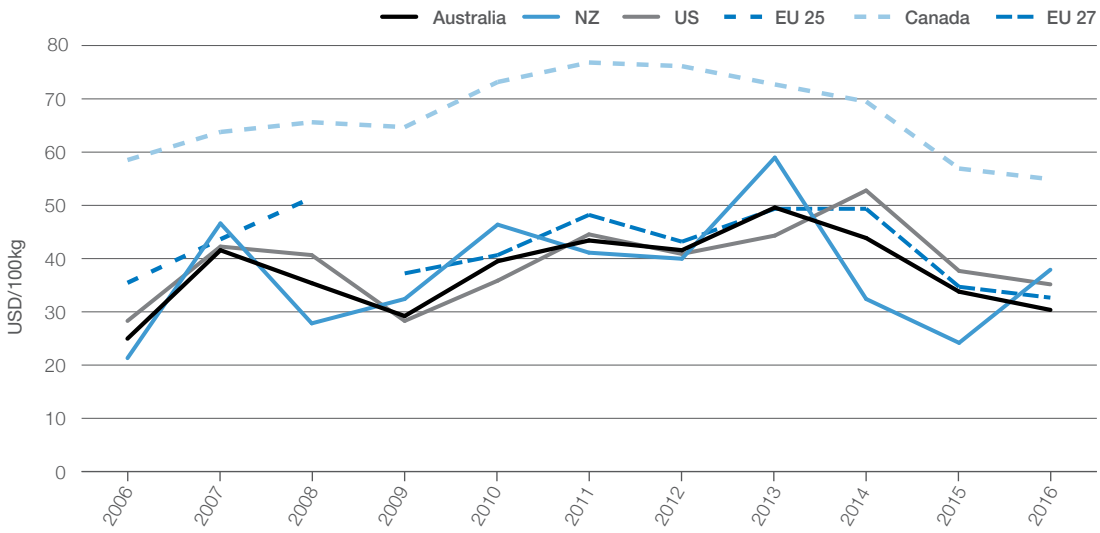
As shown in Figure 2, the convergence of prices received by farmers around the world during the commodity price boom in 2007 has continued, with progressive deregulation, removal of the most market distorting industry policies and increased global trade of dairy meaning farmgate milk prices more closely reflect global dairy commodity price trends. New Zealand is the most globally exposed dairy producer (approximately 95% of New Zealand's production is exported), and has experienced considerably more volatility than other major producers. Whilst broadly tracking other producers, Canada's producers operate in a highly regulated environment, where prices, production and imports are determined according to a system known as supply management.

Figure 1 Farmgate value vs export sales value – 2015/16



Source: ABARES Australian Commodites Quarterly Report

Figure 2 International farmgate milk prices (USD/100 kg)



Source: Dairy Australia

Farm facts

Southeast Australia's climate and natural resources are generally favourable to dairying and allow the industry to be predominantly pasture-based, with approximately 60–65% of cattle feed requirements coming from grazing in a year of 'normal' seasonal conditions. This results in cost efficient, high-quality milk production.

Most dairy production is located in coastal areas where pasture growth generally depends on natural rainfall. Nevertheless, there are several inland dairying areas reliant on irrigation schemes, most notably in northern Victoria and the New South Wales Riverina.

Total mixed ration (TMR) dairying remains the exception in Australia, although the use of supplementary feed – grains, hay and silage – is widespread and has increased significantly over the past decade, as farmers have adapted to drier conditions in many dairying regions. Such changes in production systems have introduced an added input cost and additional level of risk in the variability of farm returns.

According to the 2017 National Dairy Farmer Survey, practically all dairy farmers engaged in some level of supplementary feeding during the 2016/17 season, with the national average of around 1.6 tonnes per cow per year unchanged from last year. Feeding moderate to high levels of concentrates remains the most common feed system, however the proportion of dairy farmers doing so fell in both Victoria and Tasmania. Slight increases in feeding were observed in New South Wales and Queensland, due to drier seasonal conditions.

See Appendix 3 for detailed tables on grain prices by state dairying regions.

The number of farms has fallen by almost three quarters since 1979/80 from 21,994 to 5,789 in mid-2017. The trend in farm numbers will often follow changes in farmgate milk prices from season to season, with strong prices either slowing the rate of attrition or even reversing the long-term trend. At times of low farmgate milk prices, farmers choose to leave the industry or else cease dairying operations in favour of other farming activities such as beef cattle, until market conditions improve.

Nevertheless, falling farm numbers reflect a trend in agriculture around the world, as changing business practices have encouraged a shift to larger, more intensive operating systems with greater economies of scale.

Table 2 Number of registered dairy farms

	NSW	VIC	QLD	SA	WA	TAS	AUST
1979/80	3,601	11,467	3,052	1,730	622	1,522	**21,994**
1989/90	2,220	8,840	1,970	969	496	901	**15,396**
1999/00	1,725	7,806	1,545	667	419	734	**12,896**
2005/06	1,024	5,892	802	383	245	498	**8,844**
2006/07	924	5,346	734	354	222	475	**8,055**
2007/08	886	5,422	664	332	186	463	**7,953**
2008/09	860	5,462	648	320	183	451	**7,924**
2009/10	820	5,159	621	306	165	440	**7,511**
2010/11	807	4,588	595	286	170	437	**6,883**
2011/12	778	4,556	555	275	162	444	**6,770**
2012/13	731	4,284	518	268	160	437	**6,398**
2013/14	710	4,268	475	264	156	435	**6,308**
2014/15	704	4,127	448	252	157	440	**6,128**
2015/16 (r)	685	4,141	421	259	151	434	**6,102**
2016/17 (p)	661	3,889	410	241	148	440	**5,789**

Source: State milk authorities

Average herd size has increased from 93 cows in 1985 to an estimated 262 currently. There is also an emerging trend of large farm operations of more than 1,000 dairy cattle.

Despite the increase in average herd sizes over the longer term, one of the variables placing a limit on total milk production in recent years has been a fairly static national herd size. One factor contributing to this situation is that the increased volatility in farm cash incomes has led many farmers to participate in the export heifer trade, or selling dairy cows for slaughter in an attempt to stabilise farm income.

The dominant breed in Australia is the Holstein, accounting for around 65% of all dairy cattle. Other important breeds include the Jersey, the Holstein/Jersey cross, Brown Swiss, Ayrshire and local breeds, the Australian Red and the Illawarra.

Most breeding is by artificial insemination and so Australian farmers have access to some of the best genetic material in the world. Herd recording is widely practiced, with around half of all dairy farms regularly recording herd performance.

Improved herd genetics, as well as advances in pasture management and supplementary feeding regimes, have seen average annual yield per cow double from 2,900 litres to as high as 5,900 litres over the past three decades. Nevertheless, the average yield figure does vary by state and with seasonal conditions. Recent years have also seen a slowing in the growth trend in improvements in yields.

The genetic evaluation of dairy cattle was previously conducted by the Australian Dairy Herd Improvement Service (ADHIS). ADHIS has now been superseded by DataGene, an independent, industry-owned, not-for-profit organisation that focuses on precompetitive herd improvement. DataGene is involved several aspects of herd improvement including genetics, herd testing, herd recording, data systems, herd test standards and evaluation. DataGene goes beyond the ADHIS in seeking to drive genetic gain and herd improvement by combining research, development and extension within one organisation.

See Appendix 8 for detailed tables on heifer exports.

Table 3 Number of dairy cows ('000 head)

	NSW	VIC	QLD*	SA	WA	TAS	AUST
At March 31							
1979/80	311	1,047	247	103	71	103	**1,880**
1989/90	238	968	201	89	64	92	**1,654**
1999/00	289	1,377	195	105	65	139	**2,171**
New Series**							
2005/06	222	1,217	127	104	67	143	**1,880**
2006/07	210	1,150	121	114	60	140	**1,796**
2007/08	195	1,055	100	103	54	134	**1,641**
2008/09	201	1,061	107	106	52	149	**1,676**
2009/10	203	1,014	98	92	55	134	**1,596**
2010/11	195	1,010	97	90	59	138	**1,589**
2011/12	204	1,115	101	76	57	148	**1,700**
2012/13	210	1,096	96	77	62	148	**1,688**
2013/14	181	1,093	98	73	66	137	**1,647**
2014/15	177	1,147	91	68	59	147	**1,689**
2015/16 (r)	182	1,005	89	78	60	149	**1,562**
2016/17 (e)	165	995	87	65	55	145	**1,512**

** For 1999 and 2000, Qld state figure includes Northern Territory cow numbers.*
*** Change in ABS data collection. From 2001 census date is June 30, NT and ACT numbers are included in national total*
From 2001 census date is June 30, NT and ACT numbers are included in the national total
Source: ABS and Dairy Australia

Table 4 Average annual milk production per cow (litres)

	NSW	VIC	QLD	SA	WA	TAS	AUST
1979/80	2,870	3,012	1,984	3,163	3,105	2,958	**2,848**
1989/90	3,602	3,920	3,122	3,934	4,205	3,791	**3,781**
1999/00	4,827	4,989	4,349	6,790	6,338	4,381	**4,996**
2005/06	5,039	5,221	4,076	5,791	5,369	4,581	**5,108**
2006/07	5,151	5,261	4,033	6,417	5,235	4,696	**5,182**
2007/08	5,031	5,393	4,163	5,799	5,907	4,961	**5,275**
2008/09	5,420	5,807	5,032	6,053	6,355	5,140	**5,691**
2009/10	5,329	5,518	5,052	5,907	6,641	4,640	**5,448**
2010/11	5,409	5,860	4,980	6,257	6,637	5,379	**5,758**
2011/12 (r)	5,760	6,027	5,008	6,646	5,967	5,636	**5,930**
2012/13 (r)	5,534	5,473	4,667	7,099	5,996	5,166	**5,498**
2013/14 (r)	5,512	5,651	4,619	6,858	5,418	5,578	**5,615**
2014/15 (r)	6,495	5,821	4,340	7,317	5,696	6,400	**5,917**
2015/16 (r)	6,610	5,658	4,571	7,497	6,582	5,981	**5,841**
2016/17 (e)	6,309	5,761	4,731	6,521	6,504	5,651	**5,819**

Source: Dairy manufacturers, ABS and Dairy Australia

Farmgate milk prices

Australian farmgate milk prices are based on the milkfat and protein content of the milk produced on farm, with different prices for each component. Unlike many countries around the world, there is no legislative control over the price milk processing companies pay farmers for their milk. Since de-regulation in 2000/2001 all prices within the industry are set by market forces. Farmgate milk prices will vary between processors, with individual company returns being affected by factors such as market and product mix, marketing strategies, the utilisation and efficiencies in factory processing capacity, and exchange rate hedging policies. Competition for milk among processors will also influence farmgate milk prices from season to season, as can the dividend policies of farmer-owned cooperatives.

Furthermore, payment structures from processors to individual farmers can also vary significantly as companies provide a range of incentives for milk quality, productivity or volume levels and for year-round milk supply. There may be volume growth incentives in place to encourage milk supply to particular processing plants to improve operating efficiencies, or loyalty incentives to guarantee supply for longer periods. These will all effect the final price farmgate price received.

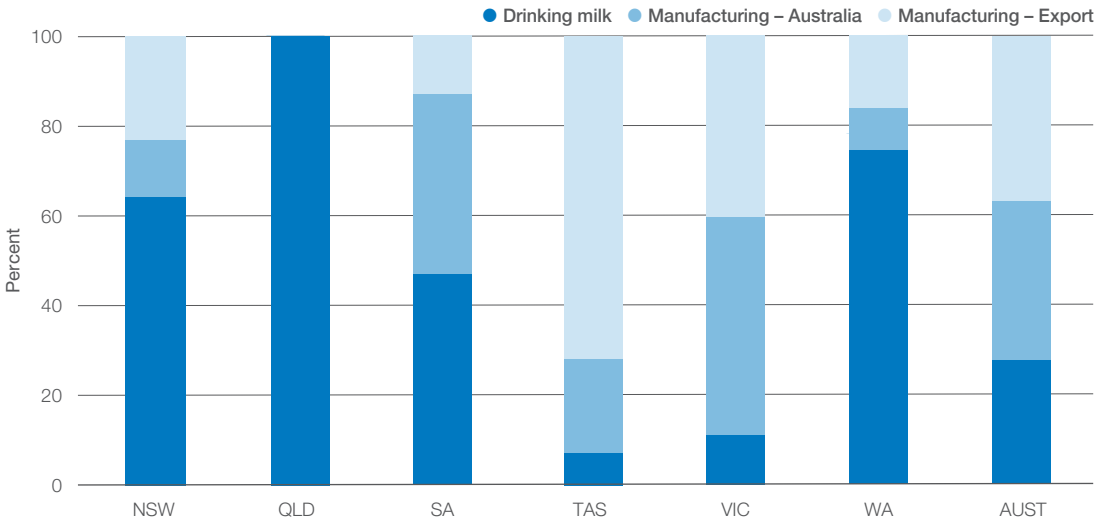
Australian dairy companies operate in an open and internationally competitive market, which includes free trade under the Closer Economic Relations Agreement with New Zealand, a major global dairy producer. Consequently, the returns that local processors can achieve are influenced by global dairy commodity prices, even if they do not directly participate in export trade. World dairy prices directly affect returns for the 30-35% of local milk exported as butter, cheese and milk powders which must compete with other countries' exports; as well as the additional 30-40% of production that goes into locally consumed butter, cheese and milk powders and which must be competitively priced against imports.

Thus up to 75% of milk production is exposed to world prices for dairy commodities; while the remainder is consumed within Australia as liquid drinking milk. The strength of the Australian dollar on foreign exchange markets is another important factor. Australian dairy companies benefit from a 'weaker' Australian dollar, which makes exports more competitive and imports

relatively more expensive, all other things being equal. Thus, farmgate milk prices farmers receive can vary significantly around Australia, depending on how milk is used in the marketplace

As shown in Figure 3, milk for processing accounts for most milk produced in the southeast of Australia. Hence, average farmgate milk prices will tend to follow global markets and export returns, with the majority of farmers in these exporting regions receive a 'blended' price that incorporates returns from milk for manufacturing and the proportionately smaller local fresh drinking milk market. Conversely, in the northern and western dairy regions, fresh drinking milk makes up a much larger proportion of the production mix. Farmers in these regions will receive farmgate milk prices tied to the drinking milk market, where a stable year-round supply of milk is more important.

Figure 3 Use of Australian milk by state — 2016/17



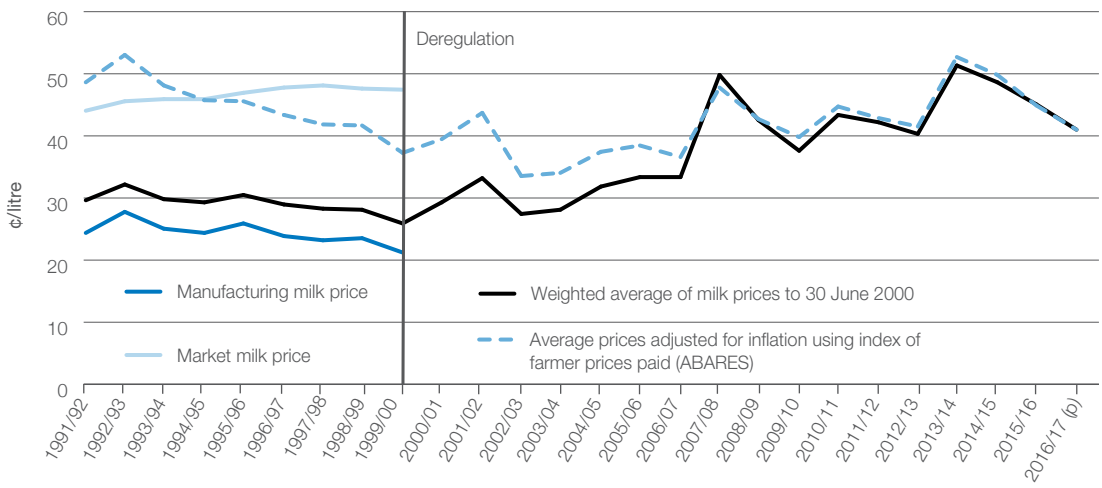
Source: Dairy Australia

Table 5 Indicative factory paid prices by state

		2010/11	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
NSW	¢/litre	48.3	47.4	46.4	51.0	52.8	51.0	49.0
	$/kg milk solids	6.74	6.60	6.45	7.10	7.31	7.06	6.81
VIC	¢/litre	42.0	40.6	37.8	51.0	47.1	42.8	38.0
	$/kg milk solids	5.58	5.46	5.05	6.81	6.24	5.68	5.04
QLD	¢/litre	53.1	53.6	53.6	53.4	57.4	58.5	60.0
	$/kg milk solids	7.26	7.33	7.33	7.36	7.84	7.99	8.22
SA	¢/litre	38.0	41.0	38.3	49.6	46.1	42.5	37.1
	$/kg milk solids	5.36	5.76	5.42	7.02	6.53	6.03	5.19
WA	¢/litre	43.4	41.9	45.0	46.8	51.0	52.3	50.6
	$/kg milk solids	6.03	5.97	6.37	6.63	7.17	7.32	7.06
TAS	¢/litre	43.2	39.9	40.2	54.1	49.6	43.7	39.0
	$/kg milk solids	5.59	5.19	5.16	6.96	6.33	5.61	4.97
AUST	**¢/litre**	**43.2**	**42.0**	**40.2**	**51.2**	**48.5**	**44.9**	**40.9**
	$/kg milk solids	**5.80**	**5.69**	**5.41**	**6.89**	**6.49**	**6.01**	**5.46**

Source: Dairy manufacturers

Figure 4 Factory paid milk prices



Source: Dairy manufacturers and ABARES

Farm business performance

The Dairy Farm Monitor Project (DFMP) and the Queensland Dairy Accounting Scheme (QDAS) records financial and production data of participant dairy farms in all major dairying regions across Australia. The data allows for analysis of dairy farm productivity and profitability to support government and industry policy and service delivery. It also facilitates comparison and benchmarking by farmers and farm business consultants to improve farm business performance. Participants are selected for the project in order to represent a distribution of farm sizes, herd sizes and geographical locations within each region. The results presented do not represent population averages, as the participant farms are not selected using random population sampling, and may not be representative of the whole dairy industry.

DFMP began as a collaboration between Agriculture Victoria and Dairy Australia, gathering data from 75 model farms spread evenly across Victoria's three dairying regions in Gippsland, northern and southwest Victoria, and is in its tenth year. This program has since been expanded across all major dairying regions in Australia, in collaboration with local state agriculture departments and universities. Annual reports can be found on the Dairy Australia website, in the Farm Business Management section. QDAS has been run for over 20 years by the Department of Agriculture and Fisheries, Queensland with support from Dairy Australia.

Data collected through the DFMP and QDAS is housed in DairyBase and provides the high quality data available to generate accurate industry benchmarks. DairyBase is a web-based tool developed by Dairy Australia allowing farmers and their advisors to assess farm business performance in a consistent industry agreed methodology. DairyBase also contains additional verified and validated datasets from farm business consultants and service providers, making it the largest and most detailed single repository of Australian dairy farm data. DairyBase is designed to facilitate comparative analysis and measurement of business performance over time, and is free to join. Training and support are also available.

Table 6 Farm working expenses by state ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
NSW	5.18	5.52	5.86	5.94	5.72	5.66
VIC	3.77	4.08	4.45	4.48	4.70	4.15
QLD	5.56	5.73	6.18	6.36	6.27	6.13
SA		5.12	5.09	5.28	5.31	5.12
WA			5.29	5.29	5.31	5.25
TAS			4.44	4.55	4.64	4.62
Australia			4.76	4.82	4.94	4.56

Source: Dairy Farm Monitor Project and Queensland Dairy Accounting Scheme

Table 7 Victorian regional farm working expenses ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Eastern	3.54	3.94	4.23	4.19	4.33	3.74
Northern	3.86	4.28	4.60	4.75	5.09	4.73
Western	3.90	4.01	4.51	4.50	4.67	3.98

Source: Dairy Farm Monitor Project

Table 8 Farm operating cash surplus by state ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
NSW	2.27	1.50	1.79	2.03	2.34	2.04
VIC	2.18	1.13	2.67	2.06	1.34	1.58
QLD	2.10	1.66	1.85	2.11	2.36	2.71
SA		1.13	2.34	1.79	1.49	1.63
WA			2.13	2.70	2.80	2.38
TAS			2.81	2.18	1.42	1.34
Australia			2.50	2.08	1.58	1.69

Source: Dairy Farm Monitor Project and Queensland Dairy Accounting Scheme

Table 9 Victorian regional farm operating cash surplus ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Eastern	2.31	1.10	2.85	2.17	1.49	1.72
Northern	2.04	1.06	2.49	1.79	1.06	1.11
Western	2.17	1.22	2.66	2.22	1.46	1.89

Source: Dairy Farm Monitor Project

Table 10 Earnings before interest and tax by state ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
NSW	1.24	0.32	0.68	1.21	1.01	0.84
VIC	1.02	-0.07	1.88	1.08	0.10	0.67
QLD	0.65	-0.33	–0.09	0.84	0.96	1.68
SA		-0.46	1.80	0.57	0.74	0.76
WA			1.39	2.08	1.93	1.48
TAS			2.36	1.94	1.00	0.93
Australia			1.67	1.18	0.44	0.79

Source: Dairy Farm Monitor Project and Queensland Dairy Accounting Scheme

Table 11 Victorian regional earnings before interest and tax ($/kg MS)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Eastern	1.14	–0.33	1.87	1.20	0.26	0.65
Northern	1.29	0.28	1.89	0.92	–0.07	0.29
Western	0.63	–0.15	1.89	1.13	0.11	1.06

Source: Dairy Farm Monitor Project

Table 12 Return on assets by state

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
NSW	3.98%	1.12%	2.13%	3.08%	2.74%	2.3%
VIC	4.58%	0.11%	7.88%	4.60%	0.28%	2.2%
QLD	1.95%	–0.21%	0.18%	2.48%	2.76%	4.5%
SA		–1.07%	8.12%	3.29%	2.89%	2.5%
WA			4.17%	6.26%	6.06%	5.4%
TAS			8.70%	8.13%	4.21%	3.7%
Australia			6.79%	4.65%	1.43%	2.63%

Source: Dairy Farm Monitor Project and Queensland Dairy Accounting Scheme

Table 13 Victorian regional return on assets

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Eastern	3.86%	–0.66%	5.90%	4.11%	1.03%	2.1%
Northern	7.21%	1.49%	10.49%	5.16%	–0.49%	0.7%
Western	2.78%	–0.50%	7.24%	4.52%	0.30%	3.9%

Source: Dairy Farm Monitor Project

Following the challenging seasonal and market conditions faced by the industry during the 2015/16 season, 2016/17 proved to be another challenging year particularly for the southern export-oriented regions of Victoria, Tasmania, South Australia and southern NSW. Notwithstanding the extended wet winter and spring experienced in the Murray Dairy region, most southern regions experienced favourable seasonal conditions. With less intensive use of inputs and lower input prices, a longer growing season and higher fodder yields, dairying regions across Victoria were able to reduce their costs of production by an average of 12%. This focus on cost reduction meant that many farm businesses in Victoria actually recorded improved cash surpluses in $/kg MS terms, albeit with lower production levels meaning smaller total actual cash surpluses. Other states such as Tasmania and New South Wales saw less drastic reduction in farm working expenses and saw slight falls in cash surpluses and a decline in rate of return on assets as well.

Domestic focused regions of New South Wales and Queensland experience a slight drop in milk price compared to 2015/16, however, the more stable milk price environment coupled with average or better than average seasonal conditions across most regions saw farm business performance maintained. Similarly Western Australian dairy farmers experienced better prices and an average to above seasonal conditions, however growth in the WA industry is constrained by the size and limited demand from the local market.

For a longer national time series, the annual ABARES Farm Survey also estimates the financial performance of Australian dairy farms, which Dairy Australia has previously reported. It should be noted that there are several differences in methodology that mean that the series may not be directly comparable with those shown in Dairy Farm Monitor Project.

Milk production

Farm numbers have steadily decreased over the past three decades whilst average farm sizes and milk production generally increased, due to increased cow numbers and improved cow yields – up until the major widespread drought of 2002/03. The following decade saw a period of consolidation for the industry, with falling cow numbers and dry seasonal conditions constraining production, particularly in northern Victoria. Volatility in farmgate milk prices and farm incomes have impacted farmer confidence, willingness and ability to grow.

With the industry disruption caused by the late season step-downs in 2015/16 and the lower average farmgate milk prices seen in southern, export oriented regions in 2016/17 farmers have focused on survival. This has seen a prioritisation of cost minimisation, refinancing and business consolidation, rather than making on farm investments to increase production. In many cases, farmers culled extensively, taking advantage of higher beef prices to generate badly needed income.

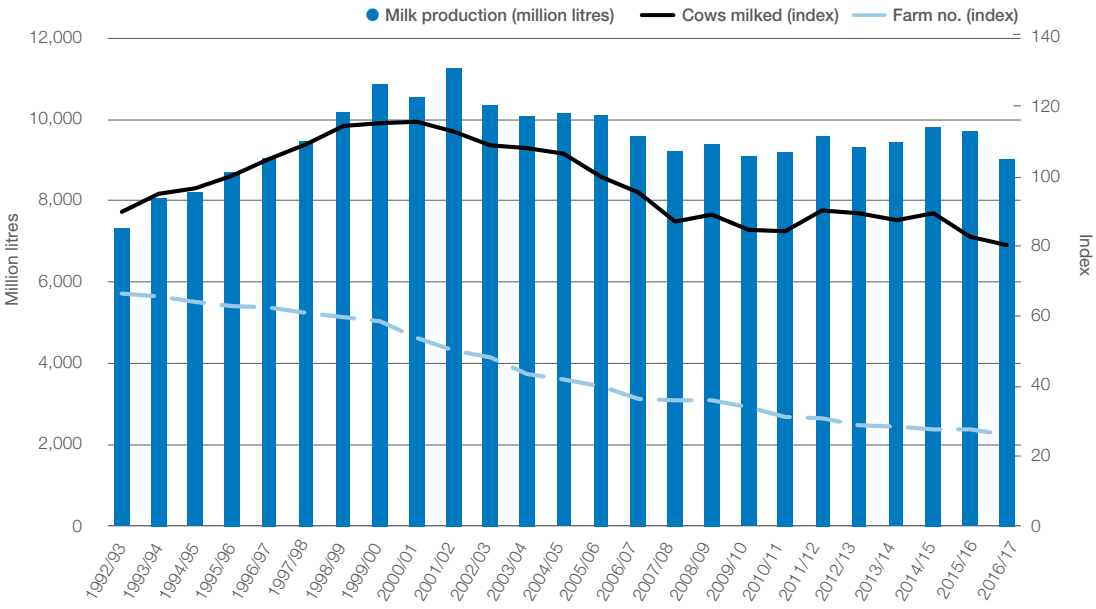
Australian milk production declined by almost 670 million litres, or 6.9% to 9,015 million litres in 2016/17 – reflecting reduced confidence and a generally lower milk prices. The season began with national milk production down 10%, while volumes gradually and unevenly closed the gap on the previous season over the course of 2016/17, with production in June ahead 2.2% on the previous year.

As Figure 5 indicates, the underlying trend has continued towards fewer farms, larger herds and increasing levels of milk production per farm.

Milk production is concentrated in the temperate zone of Australia, as can be seen in Table 14. Australian milk production remains strongly seasonal in the key south-eastern dairying regions, reflecting the predominantly pasture-based nature of the industry. Milk production peaks in October, tapers off until late-summer, and then flattens out into the cooler winter months (refer to Figure 8). The production of long shelf-life manufactured products in these parts of the country has enabled maximum milk utilisation within the seasonal cycle. However, the seasonality of milk output in Queensland, New South Wales and Western Australia is much less pronounced, due to a greater focus on drinking milk and fresh products. Farmers in these states manage calving and feed systems to ensure more even, year-round milk production.

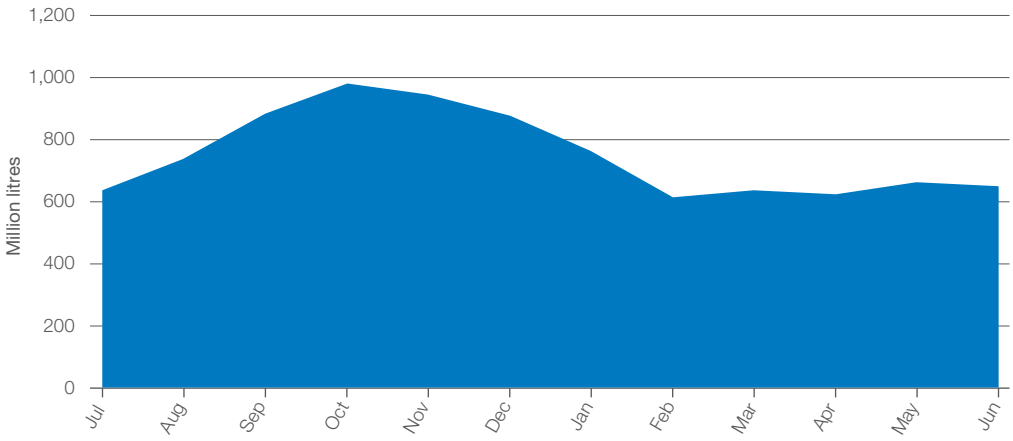
See Appendix 4 for more details on the seasonality of milk production by state dairying regions.

Figure 5 Australian milk production vs indices of farms and cows milked



Source: Dairy manufacturers, ABS, state authorities and Dairy Australia

Figure 6 Seasonality of milk production in Australia, 2016/17 (million litres)



Source: Dairy manufacturers

Table 14 Milk production by state (million litres)

	NSW	VIC	QLD	SA	WA	TAS	AUST
1979/80	907	3,151	508	329	222	315	**5,432**
1989/90	879	3,787	629	356	267	344	**6,262**
1999/00	1,395	6,870	848	713	412	609	**10,847**
2005/06	1,197	6,651	597	646	377	622	**10,089**
2006/07	1,104	6,297	537	655	349	641	**9,583**
2007/08	1,048	6,102	486	606	319	661	**9,223**
2008/09	1,064	6,135	513	628	340	709	**9,388**
2009/10	1,099	5,813	530	605	359	677	**9,084**
2010/11	1,087	5,936	487	572	372	726	**9,180**
2011/12 (r)	1,136	6,246	491	575	349	792	**9,589**
2012/13 (r)	1,137	6,076	465	542	349	765	**9,334**
2013/14 (r)	1,118	6,186	444	522	340	810	**9,421**
2014/15 (r)	1,170	6,440	418	523	364	891	**9,806**
2015/16 (r)	1,179	6,290	414	528	387	883	**9,681**
2016/17 (p)	1,121	5,773	418	487	380	835	**9,015**

From July 2005, data collection based on farm location rather than factory location
From July 2011, data revised to reflect additional data collection
Source: Dairy manufacturers

Cows' milk consists of solids (milkfat, protein, lactose and minerals) in water, which makes up bout 87% of the volume. The milkfat and protein components are those on which companies base their farmgate milk prices, with protein usually the more valuable component.

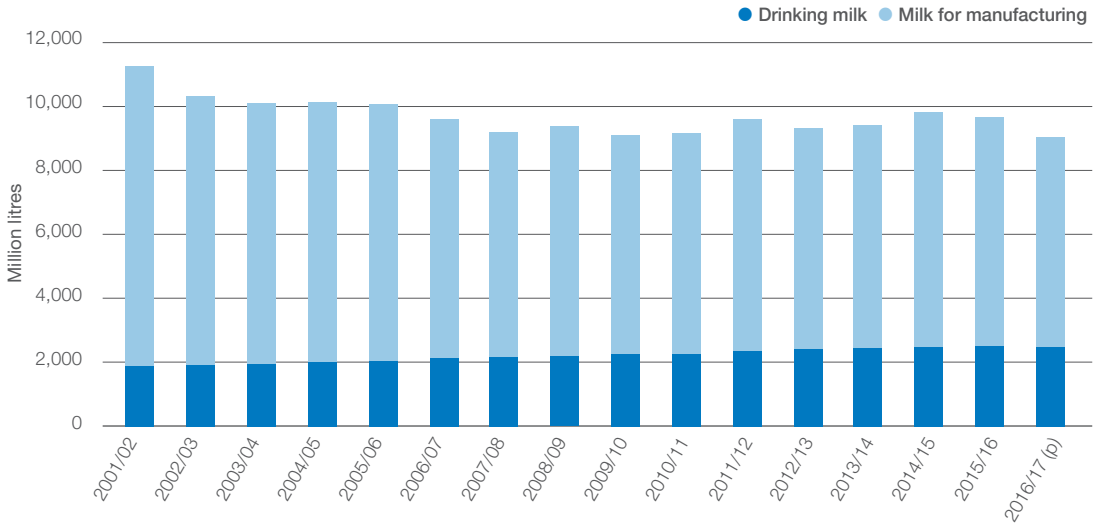
Milk composition can vary between regions and seasons, as shown in Table 15. This may be due to a number of factors, such as cow breed, age, nutrition and feed quality.

Table 15 Average protein/fat composition by state (%)

	NSW	VIC	QLD	SA	WA	TAS	AUST
Milk fat							
2008/09	3.93	4.22	3.97	3.93	3.99	4.25	**4.15**
2009/10	3.97	4.20	4.05	4.05	3.91	4.34	**4.15**
2010/11	3.92	4.15	4.00	3.82	3.96	4.28	**4.10**
2011/12	3.90	4.08	4.00	3.85	3.86	4.25	**4.05**
2012/13	3.92	4.12	4.02	3.81	3.87	4.32	**4.08**
2013/14	3.91	4.10	3.98	3.80	3.88	4.30	**4.07**
2014/15	3.93	4.15	4.01	3.77	3.89	4.35	**4.11**
2015/16	3.92	4.12	4.00	3.77	3.92	4.30	**4.08**
2016/17 (p)	3.91	4.13	4.00	3.84	3.92	4.34	**4.10**
Protein							
2008/09	3.26	3.38	3.28	3.28	3.24	3.39	**3.35**
2009/10	3.27	3.35	3.33	3.27	3.20	3.41	**3.34**
2010/11	3.26	3.38	3.31	3.28	3.23	3.44	**3.35**
2011/12	3.28	3.36	3.31	3.27	3.16	3.44	**3.34**
2012/13	3.27	3.36	3.29	3.26	3.20	3.47	**3.35**
2013/14	3.28	3.39	3.29	3.27	3.18	3.47	**3.37**
2014/15	3.29	3.40	3.32	3.29	3.22	3.49	**3.38**
2015/16	3.29	3.40	3.32	3.28	3.23	3.48	**3.38**
2016/17 (p)	3.28	3.41	3.30	3.31	3.24	3.50	**3.39**

Source: Dairy manufacturers

Figure 7 Drinking and manufacturing milk production (million litres)



Source: Dairy manufacturers

With ongoing population growth since 2001/02, the amount of milk destined for domestic consumption as either drinking milk or manufactured products (e.g. cheese and butter) in Australia has increased. In 2016/17, 28% of Australia's production was used for drinking milk, compared to 18% in 2001/02, while 38% of milk produced was used for domestically consumed manufactured products last financial year; up from 26% in 2001/02. Conversely, the proportion of milk available for export as manufactured product has declined from 56% in 2001/02 to around 37% in 2016/17, as shown in Figure 7. An interesting development has been the growth in imports for local consumption, which has meant that Australia can continue to export a large share of its milk production, despite having a larger domestic market and lower milk production.

Dairy manufacturing

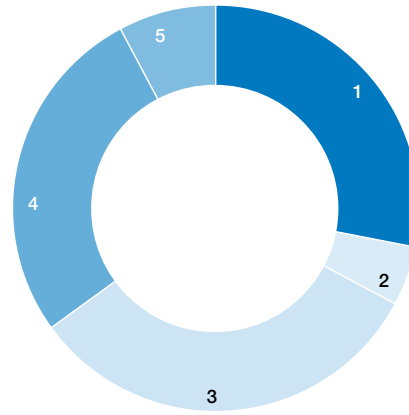
The Australian dairy manufacturing sector is diverse and includes farmer-owned co-operatives and multinational companies, both privately owned and publicly listed. Farmer-owned cooperatives no longer dominate the industry and now account for less than 40% of Australia's milk production. The lack of growth in milk production over the past decade or so reduced the need for Australian dairy companies to invest in processing capacity – at least in the short to medium term. At the same time, the age of existing plants and the need to rationalise production has seen some processors close plants to reduce costs, while others have upgraded or increased capacity at remaining sites.

The milk processing sector has undergone significant changes in the past 12 months, with a number of long-term investment decisions being made or otherwise changed. Murray Goulburn has announced the closure of three plants in Kiewa, Rochester and Edith Creek, as well as its intention to sell the mothballed Leitchville cheese factory. Fonterra's newly rebuilt Stanhope cheese factory is expected to come fully online in the first half of the 2017/18 season, whilst Warrnambool Cheese and Butter Factory have upgraded their Allansford factory, adding another 25,000 tonnes of cheese capacity. Meanwhile, a new player has emerged in southeast South Australia, with Union Dairy Company's new milk powder plant set to begin production this season. Large multinational companies have operated in the Australian dairy industry for many years and currently include Fonterra (New Zealand), Kirin of Japan (Lion Dairy and Drinks), Lactalis of France (Parmalat) and Saputo of Canada (Warrnambool Cheese and Butter Factory).

Around 51% of manufactured product (in milk equivalent terms) was exported and the remaining 49% sold on the Australian market in the 2016/17 season. This contrasts with drinking milk, where over 90% was consumed in the domestic market.

Cheese is consistently the major product stream, accounting for a third of Australia's milk production in 2016/17- recent increases in cheese production capacity suggest that this will become the case even more so in the future. Drinking milk and skim milk powder/ butter production were the two next largest users of milk, accounting for 28% and 26% of Australian milk.

Figure 8 Australian milk utilisation in 2016/17



1 SMP/Butter **26%**

2 WMP **5%**

3 Cheese **33%**

4 Drinking milk **28%**

5 Other **8%**

Source: Dairy Australia

Dairy markets

Historically Australian milk production has exceeded the volume required for domestic consumption, creating a marketable surplus destined for export markets. The share of total production exported has ranged from around 30–60% over the period shown in Figure 11. Over recent years Australia has exported closer to 30-40% of its milk, with the combination of a declining milk production base, and a larger domestic market due to population growth resulting in less milk available for export.

Although Australia accounts for less than 2% of the world's estimated milk production, it is a significant exporter of dairy products. Australia currently ranks fourth in terms of world dairy trade – with a 6% share – behind New Zealand, the European Union as a bloc and the United States.

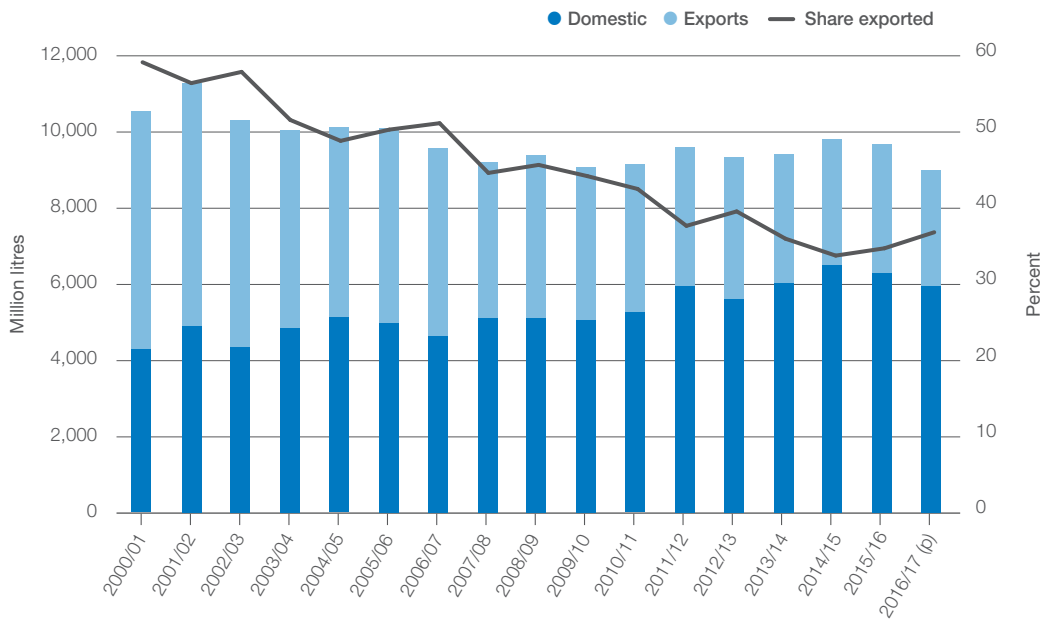
Greater China (including China, Hong Kong and Macau) is now Australia's largest market, accounting for 24% of exports by volume. Japan remains a vital trade partner for Australian exporters, as a mature, high-value market with long-established business relationships. Australian exports are overwhelmingly concentrated in Asia, which accounted for over 80% of the total dairy export value of over AUD $3 billion in 2016/17.

This concentration of exports in Asia reflects both Australia's geographic proximity to these markets and the extent to which Australia has been excluded from other major markets by direct restrictions (as in the case of the European Union) or the impact of increased export volumes from competitor countries. Asian markets have considerable potential for consumption growth as incomes rise and diets become more 'westernised', and Australian dairy companies have proven track records in supplying these markets over a number of decades.

Australia's top five export markets by value in 2016/17 were Greater China, Japan, Indonesia, Singapore and Malaysia. The top five by volume differed only slightly by order: Greater China, Japan, Singapore, Indonesia and Malaysia. The fastest growing export markets by volume for Australia in the last five years have been Greater China and Malaysia.

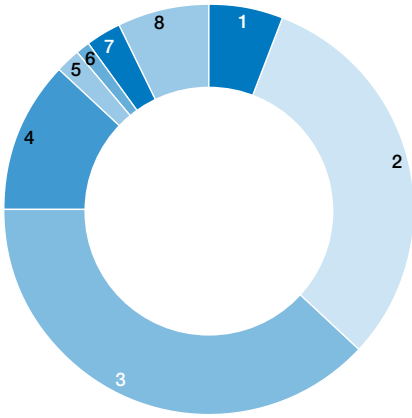
See Appendix 8 for detailed tables of Australia's export markets.

Figure 9 Australian consumption and exports (milk equivalents)



Source: Dairy manufacturers and ABS

Figure 10 Exporters' share of world dairy trade in 2016 (milk equivalents)



1 Australia **6%**

2 EU **31%**

3 NZ **38%**

4 USA **12%**

5 Argentina **2%**

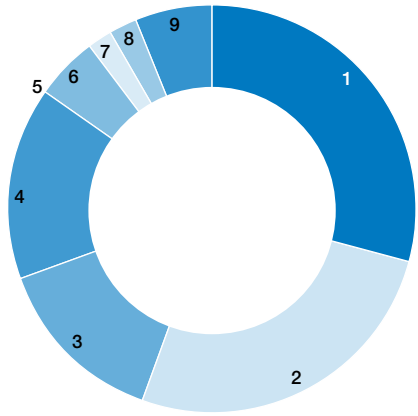
6 Ukraine **1%**

7 Uruguay **3%**

8 Other **7%**

Source: Dairy Australia

Figure 11 Australian exports by region, 2016/17 (A$ million)



1 South East Asia **$866**

2 Greater China **$783**

3 Japan **$431**

4 Other Asia **$463**

5 Europe **$11**

6 Middle East **$159**

7 Africa **$63**

8 Americas **$69**

9 Other **$176**

Source: ABS

Table 16 Australian dairy exports by product by region 2016/17 ($A million)

	SE Asia	Other Asia	Europe	Middle East	Africa	Americas	Other	Total
Butter/AMF	51	38	1	4	2	6	8	**110**
Cheese	158	572	3	39	19	26	30	**847**
Milk	77	94	0	1	1	0	21	**194**
SMP	265	137	0	43	3	0	6	**454**
WMP*	91	561	0	13	1	12	11	**689**
Other	224	275	7	59	37	25	100	**727**
Total	**866**	**1,677**	**11**	**159**	**63**	**69**	**176**	**3,021**

**Also includes infant powder*
Source: Dairy Australia estimates and ABS

Table 17 Top 10 Australian export destinations, 2016/17

Country	Volume (tonnes)	% of total	Country	Value (A$ million)	% of total
Greater China*	191,586	**24%**	Greater China*	933	**31%**
Japan	95,961	**12%**	Japan	431	**14%**
Singapore	81,582	**10%**	Indonesia	206	**7%**
Indonesia	62,487	**8%**	Singapore	194	**6%**
Malaysia	61,807	**8%**	Malaysia	188	**6%**
Philippines	38,728	**5%**	New Zealand	133	**4%**
Thailand	29,772	**4%**	South Korea	115	**4%**
Taiwan	28,041	**4%**	Thailand	109	**4%**
New Zealand	27,544	**3%**	Taiwan	106	**3%**
Vietnam	25,836	**3%**	Philippines	93	**3%**

**Includes China, Hong Kong and Macau*
Source: Dairy Australia and ABS

Australian consumption of dairy products

The major Australian consumer dairy products are drinking milk, cheese, butter and butter blends, and yoghurt.

Per capita consumption trends over the past two decades have varied quite significantly by individual product. These trends reflect changes in consumer tastes and preferences in response to a number of factors such as multicultural influences on food trends, health perceptions around dairy products, new product development, as well as flavour and packaging innovations.

Per capita consumption of drinking milk is currently estimated at 103 litres. It remains at high levels compared to other comparable, developed countries – thanks in part to the expansion of the 'coffee culture' in Australia during the last decade and growth in flavoured milk products.

Cheese consumption has stabilised in recent years at around 13.5 kg per person, as has the split between cheddar and non-cheddar varieties. Whilst cheddar types remain the most popular variety of cheese, non-cheddar cheese varieties available in Australia have increased in popularity, due to factors such as demand for mozzarella cheese in food-service, as well as growth in specialist cheese varieties.

Annual per capita consumption of butter in Australia is around 4.8 kg. Consumers are attracted to the natural characteristics of butter, along with its superior taste and cooking functionality. Recent findings in health and nutritional science have also led to a changing consumer perception of the health risks associated with saturated fats and butter in particular, which has also been important in underpinning sales volumes of the category.

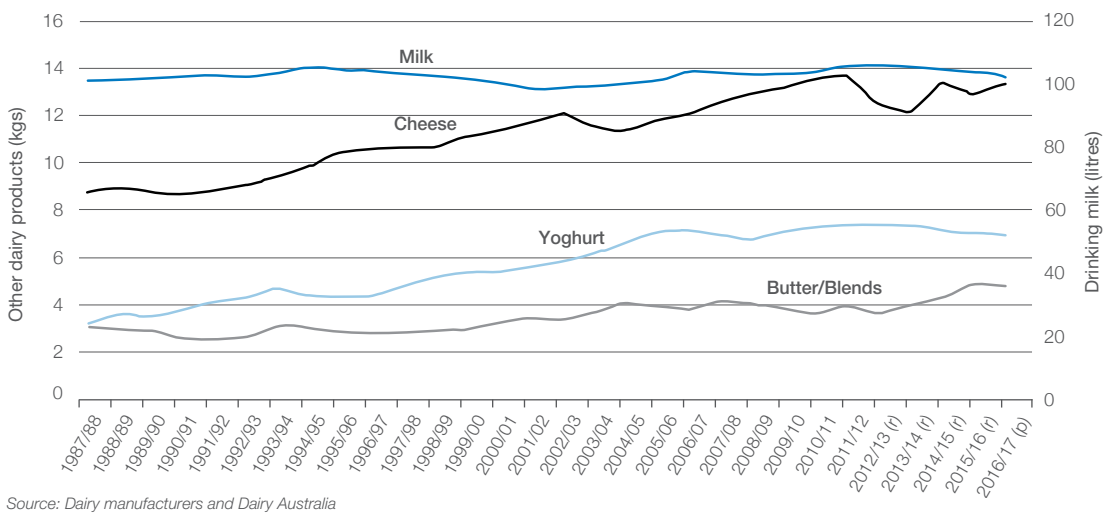
Yoghurt is a healthy snack for consumers, combining both convenience and health attributes, with per capita consumption of 7.0 kg per year. In recent years, a greater desire for more natural healthy products and an increased awareness around the health risks of sugar has seen consumers transition away from sweetened and flavoured yoghurt varieties towards Greek and natural style yoghurts

Table 18 Per capita consumption of major dairy products (litres/kg)

	Milk (lts)	Cheese (kgs)	Butter / Blends (kgs)	Yoghurt (kgs)
2012/13 (r)	106.6	12.5	3.7	7.4
2013/14 (r)	105.7	12.2	4.0	7.4
2014/15 (r)	105.1	13.4	4.3	7.2
2015/16 (r)	104.9	13.0	4.9	7.1
2016/17 (p)	102.7	13.4	4.8	7.0

Source: Dairy manufacturers and Dairy Australia

Figure 12 Per capita consumption (litres/kg)



Source: Dairy manufacturers and Dairy Australia

Drinking milk

Drinking milk is a widely consumed, convenient and versatile dairy product containing an outstanding package of protein, vitamins and minerals and remains a staple item in many Australian households.

Whilst UHT milk (heated to 140 degrees for two seconds) has seen increased its share of supermarket sales by volume over the past two decades, Australian consumers still overwhelmingly prefer fresh, pasteurised milk (heated to 74 degrees for 15 seconds). Unlike long-life, shelf-stable UHT which is popular in many European and Asian countries, this preference for fresh milk generally requires the existence of dairy farming close to major population centres and extensive cold-chain logistics to provide reliable, year-round fresh milk.

Regular or full cream milk has a milkfat content of around 3.4 to 3.6% whilst low-fat and skim milks are modified to contain less than 1.5% and 0.15% milkfat respectively. The cream removed during modification can be bottled as table cream or manufactured into butter or other dairy products. As the composition of milk produced changes through the course of a season, most milk is standardised to ensure a consistent taste and nutritional profile year-round. Drinking milk generally undergoes further processing in the form of homogenisation, which disperses the fat equally throughout the milk, rather than allowing it to separate at the top.

In line with changing consumer attitudes towards fat, the share of fresh, white full cream milk as a percentage of the total fresh white milk market has climbed, while sales volumes of modified milk have declined. Whilst white (unflavoured) milk still accounts for the overwhelming majority of drinking milk sold, flavoured milk has increased its market share of the drinking milk market and is an important source of revenue due to higher unit prices. Flavoured milk sales remain distinctly regional, with strong local brands and varying consumption patterns. South Australia has historically consumed between two and three times the national average of flavoured milk, with a much flatter year-round demand, whilst demand in states like Queensland tends to be seasonal.

There are a number of major players in the Australian drinking milk market, with the two largest being Lion Dairy & Drinks (with the Pura and Dairy Farmers brands) and Parmalat (with the Pauls and Harvey Fresh brands). Murray Goulburn and Fonterra Australia are relatively recent entrants to the drinking milk market after taking major supermarket private label contracts in Victoria and NSW, whilst Brownes (WA) and Norco (Queensland and northern NSW) have more localised distribution.

See Appendix 7 for more details of supermarket milk sales and average prices.

Australia exports relatively small volumes of liquid milk; however, export volumes of milk have grown significantly over recent years to almost 189 million litres of milk. This product was predominantly UHT, although some smaller companies are now air-freighting fresh milk to customers in Asia. Nearly 90% of the total volume exported went into the broader Asian region, with the remainder going towards the island countries of the Pacific region.

See Appendix 8 for more details of drinking milk exports.

Table 19 Drinking milk sales by type (million litres)

	Regular	Reduced	No fat	Flavoured	UHT	Total
1989/90	1,257	322		111	40	**1,730**
1999/00	1,099	498		173	164	**1,933**
2009/10	1,134	592	117	215	211	**2,269**
2010/11	1,140	632	109	227	208	**2,316**
2011/12	1,160	679	104	236	208	**2,387**
2012/13	1,172	690	100	240	243	**2,445**
2013/14	1,193	690	93	240	250	**2,466**
2014/15 (r)	1,244	661	87	240	257	**2,489**
2015/16 (r)	1,311	623	74	246	266	**2,520**
2016/17 (p)	1,367	570	64	247	257	**2,505**

Source: Milk processors and state milk authorities

Table 20 Drinking milk sales by state (million litres)

	NSW	VIC	QLD	SA	WA	TAS	AUST
1979/80	531	437	249	127	119	41	**1,504**
1989/90	582	449	316	150	164	47	**1,730**
1999/00	597	440	383	185	190	48	**1,933**
2009/10	708	545	499	213	247	57	**2,269**
2010/11	715	566	502	213	262	58	**2,316**
2011/12	721	582	531	221	274	58	**2,387**
2012/13	719	600	563	222	280	61	**2,445**
2013/14	711	612	584	221	279	59	**2,466**
2014/15 (r)	715	625	581	222	285	61	**2,489**
2015/16 (r)	732	637	583	222	285	61	**2,520**
2016/17 (p)	722	635	578	227	283	60	**2,505**

State figures exclude interstate traded milk prior to 2001, NSW includes ACT after June 2000.
Source: Milk processors and state milk authorities

Cheese

Australia produced approximately 337,000 tonnes of cheese in 2016/17 – down 2% on 2015/16. Production volumes were significantly less than early in the 2000s as milk production has declined since that time. Another significant factor in more recent years, has been the impact of dairy companies opportunistically changing their export product mixes to take advantage of favourable movements in international dairy commodity prices.

Cheese is a major product for the Australian dairy industry, utilising around 33% of Australian milk; and export sales of a further 167,000 tonnes, worth $847 million in 2016/17. Australia is now a major importer of cheese as well, with imports growing 26% in 2016/17 to 112,000 tonnes. Imports from New Zealand totalled 66,000 tonnes with the EU and US largely accounting for the rest of Australia's cheese imports.

There has been a long-term trend in production away from cheddar cheeses and toward non-cheddar cheese types. The non-cheddar share of total production volumes has steadily increased from 30% three decades ago, to between 45% and 50% in recent years.

Japan remained Australia's most important overseas cheese market in 2016/17 and accounted for nearly 49% of product exports, overwhelmingly of fresh and cream cheese varieties for processing. Other significant markets include Greater China, Malaysia, South Korea and Singapore. Australian cheeses were exported to 60 countries around the world last year.

The long-term trend away from cheddar cheeses and toward non-cheddar varieties is also evident in Australia's cheese exports, with the non-cheddar share of total export sales steadily increasing from around 60% two decades ago, to more than 75% in recent years.

Table 21 Australian cheese production by type of cheese (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Cheddar	160,683	157,996	151,721	178,836	171,590	172,097
Semi hard	67,023	57,190	44,749	43,938	49,559	53,381
Hard grating	13,871	14,681	13,762	9,885	5,040	5,993
Fresh	99,024	102,342	95,764	104,992	110,767	97,496
Mould	5,930	6,103	5,504	6,491	7,300	7,775
Total cheese	**346,530**	**338,312**	**311,500**	**344,142**	**344,257**	**336,742**

Source: Dairy manufacturers

Butter

In 2016/17, Australia produced 100,000 tonnes of butter and anhydrous milkfat (AMF) in commercial butter equivalent terms (CBE). AMF is butter with the water removed, similar to ghee. It is produced mainly for export and domestic food manufacturing applications, such as bakery and confectionery. While these sectors also use butter, the majority of domestic butter sales are through retail and foodservice outlets. The manufacture of butter also results in the creation of skim milk powder as a co-product, utilising the solids non-fat component of the milk.

It is estimated that around 50% of the domestic sales of Australian dairyspreads were through supermarkets. Supermarket sales volumes increased 2.3% in 2016/17, together with a 5.2% increase in average retail prices during the year which delivered an increase in retail sales value of 7.6% over the previous year to more than $471 million. Changing consumer attitudes towards butter and saturated fats has seen butter and butter blends increase their share of the tablespreads market, at the expense of margarine.

See Appendix 7 for more details of supermarket butter and dairy blend sales.

Imports accounted for approximately a quarter of the Australian butter market by volume. In 2016/17 approximately 90% of the 34,000 tonnes of butter and butteroil imported into Australia was sourced from New Zealand.

Australian exports of butter and AMF can vary significantly from year to year, depending on milk availability during the season and local dairy company responses to international prices for competing products. Export volumes were down almost 40% last year to 21,000 tonnes, as Australian processors devoted milk into other production streams.

Australia's most important overseas markets for butter/ AMF were Singapore, Greater China, the United Arab Emirates, Malaysia and Thailand; out of approximately 50 countries.

See Appendix 8 for more details of butter and AMF exports.

Table 22 Butter and AMF production (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Butter/Butter blends (CBE)	100,551	99,035	101,705	101,641	99,015	85,869
AMF (CBE)	19,164	19,193	14,417	16,943	19,610	14,072

Source: Dairy manufacturers

Table 23 Australian exports of butter and AMF (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Butter	33,602	39,297	39,790	30,755	23,051	14,428
AMF (CBE)	14,978	14,316	9,460	11,867	10,404	6,899

Source: Dairy Australia and ABS

Other fresh and frozen dairy products

Australian manufacturers produce a range of fresh dairy products, including yoghurts, dairy desserts, chilled custards and creams, dairy dips and frozen products such as ice-cream.

Yoghurts have been a category of considerable growth for the dairy industry over the past two decades, due to their ability to meet consumer requirements for convenient, healthy snacks in an environment of time-poor lifestyles. The segment includes strong international brands, such as Ski, Yoplait and Nestlé. There is an ongoing trend within the yoghurt category, away from sweetened and flavoured varieties towards more traditional, unflavoured varieties of yoghurt, such as Greek-style yoghurts, which are perceived to be healthier and more 'natural'. Sales of these unflavoured, traditional varieties have overtaken those of sweetened and flavoured yoghurts, and now account for more than 50% of the market.

Growth in yoghurt sales has been underpinned by regular product innovation in the areas of packaging, flavour combinations and the use of probiotic cultures, as well as new products, such as drinking yoghurts and single snack servings in convenience outlets.

Dairy desserts are a low volume/high value dairy category with steadily declining volumes in recent years. Marketed as an indulgence or treat item, these products are generally targeted to adult consumers and include mousses, crème caramels and fromage frais. Children's products include fromage frais and flavoured custards that often feature popular cartoon characters on-pack.

Chilled custards, a traditional favourite, have shown marginal declines in recent years despite manufacturers expanding their product offerings into small, snack-sized, single-serve plastic cups sold in multi-packs.

Cream is an important fresh dairy product. Regular and sour creams are both used extensively as accompaniments or ingredients. Like butter, consumers remain interested in cream's superior taste and cooking functionality.

See Appendix 6 for more details on cream, custard and dairy dessert sales.

Milk powders

Australian manufacturers produce a range of milk powders. The technology used in both the production and use of powders has seen the range of specifications available from Australian manufacturers expand in line with customers' needs.

In the years up until the peak milk production season of 2001/02, the most obvious trend in local milk powder production was a steady increase in the share of whole milk powder (WMP) output. Since then, skim milk powder (SMP) production has become the predominant milk powder, now accounting for over 70% of milk powders produced in 2016/17.

The smaller milk production volumes in recent years and wider variety of markets has seen local dairy companies opportunistically changing their product mixes to take advantage of the relative movements in international dairy commodity prices. Differing market access arrangements also impact on the competitiveness of product pricing. For example, local producers will be at a competitive disadvantage where Australia may not have negotiated a Free Trade Agreement, but a competitive supplier country has already done so. This impacts on local production mixes because the bulk of Australia's milk powder production volumes are sold into export markets.

Only a small proportion of Australia's powder production is sold domestically, with local usage mainly as an ingredient in food manufacturing. Infant formula is a high-value product that has shown strong growth recently, both in Australian supermarket sales (in part due to the demand from the informal re-export trade), as well as through direct Australian exports.

Exported milk powder is often recombined into liquid milk products, particularly in tropical climates where fresh milk supplies are not readily available due to insufficient local production and/or limited development of cold chain distribution facilities. It is also used in bakery products (improving the volume and binding capacity of bread, and ensuring crisper pastry and biscuits), confectionery and milk chocolates, processed meats, ready-to-cook meals, baby foods, ice-cream, yoghurt, health foods and reduced-fat milks. Industrial grade powder is used for stockfeed.

The major export markets for Australian milk powders are concentrated in Asia, with almost 90% of SMP and WMP exports destined for the region in 2016/17.

See Appendix 8 for more details on milk powder exports.

Indonesia was the largest single export market for Australian-produced SMP in 2015/16, followed by Greater China, Malaysia, Singapore, and the Philippines out of some 35 export destinations.

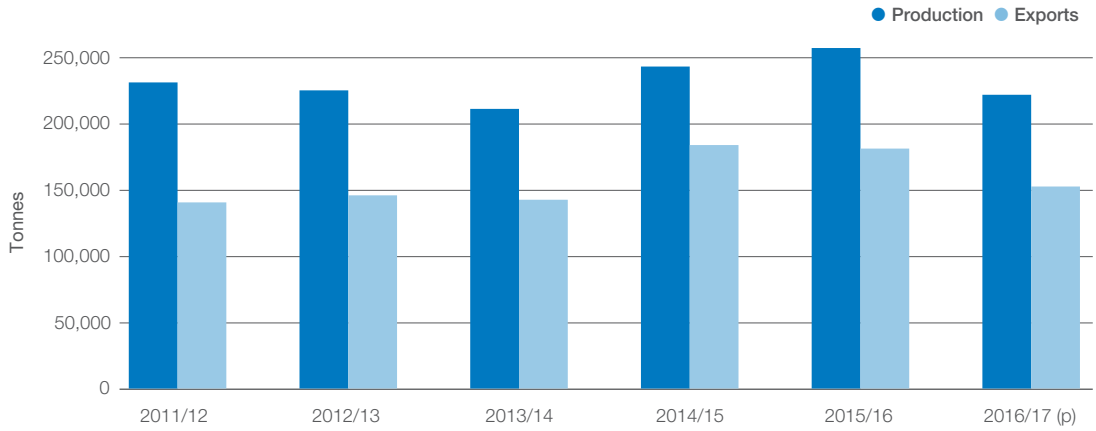
Greater China was the largest single export market for Australian-produced WMP, followed by, Sri Lanka, Singapore, Bangladesh, and Thailand, out of a total of 55 export destinations.

Table 24 Australian production of milk powders (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Skim milk powder	230,286	224,061	210,964	242,266	255,792	222,109
Whole milk powder*	140,424	108,838	126,322	96,840	66,125	59,982

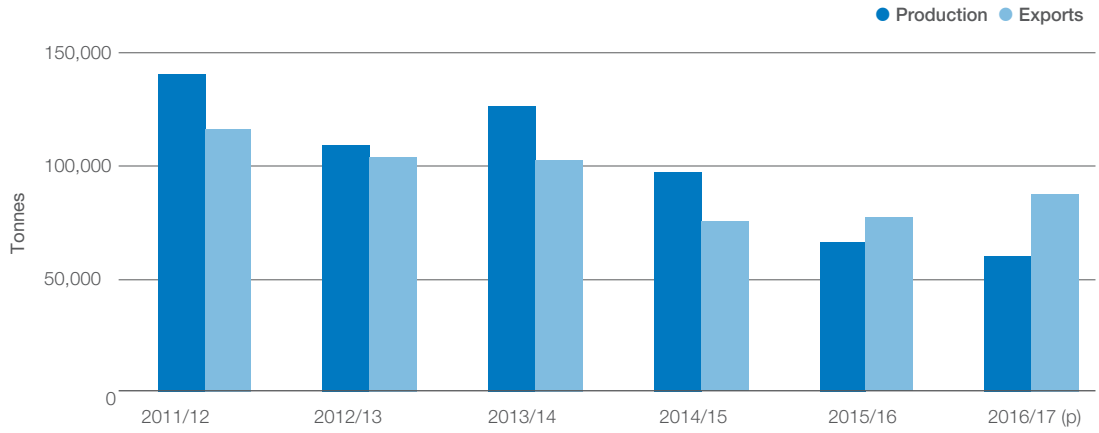
**Includes infant powders*
Source: Dairy manufacturers

Figure 13 Australian production and exports of skim milk powder (tonnes)



Source: Dairy manufacturers and ABS

Figure 14 Australian production and exports of whole milk powder (tonnes)



Source: Dairy manufacturers and ABS

Table 25 Australian exports of skim milk powder by region (tonnes)

	2011/12	2012/13	2013/14	2014/15 (r)	2015/16 (r)	2016/17 (p)
Asia	111,396	109,232	107,956	150,124	147,843	136,117
Middle East	23,529	28,313	31,429	26,927	23,249	14,057
Africa	2,083	3,830	1,392	386	5,829	1,428
Pacific	2,612	3,478	1,584	5,376	3,857	1,775
Americas	889	1,331	244	1,473	552	47
Europe	810	732	563	540	43	0
TOTAL	**141,318**	**146,916**	**143,169**	**184,825**	**181,374**	**153,425**

Source: Dairy Australia and ABS

Table 26 Australian exports of whole milk powder by region* (tonnes)

	2011/12	2012/13	2013/14	2014/15 (r)	2015/16 (r)	2016/17 (p)
Asia	68,022	76,572	91,226	57,963	62,548	77,315
Middle East	31,619	9,488	3,872	6,510	5,050	4,158
Africa	4,629	5,744	3,344	2,761	368	243
Pacific	1,629	1,995	1,371	1,634	4,348	2,090
Americas	9,782	8,545	2,089	6,031	4,227	3,063
Europe	429	1,468	345	230	511	104
Total	**116,110**	**103,812**	**102,247**	**75,129**	**77,053**	**86,973**

**Includes infant powders*
Source: Dairy Australia and ABS

Whey products and casein

Whey is a by-product of the cheese making process. Traditionally, this product was disposed of in liquid form. However, recognition of the value of whey's components and properties has led to its use in a variety of applications

Food-grade whey powder is used in the manufacture of ice-cream, bakery products (cakes, biscuits), chocolate flavouring, infant formula, yoghurt, beverages and processed meat. Industrial uses include animal feed (for pigs, horses and poultry), calf milk replacer and even as a carrier for herbicides.

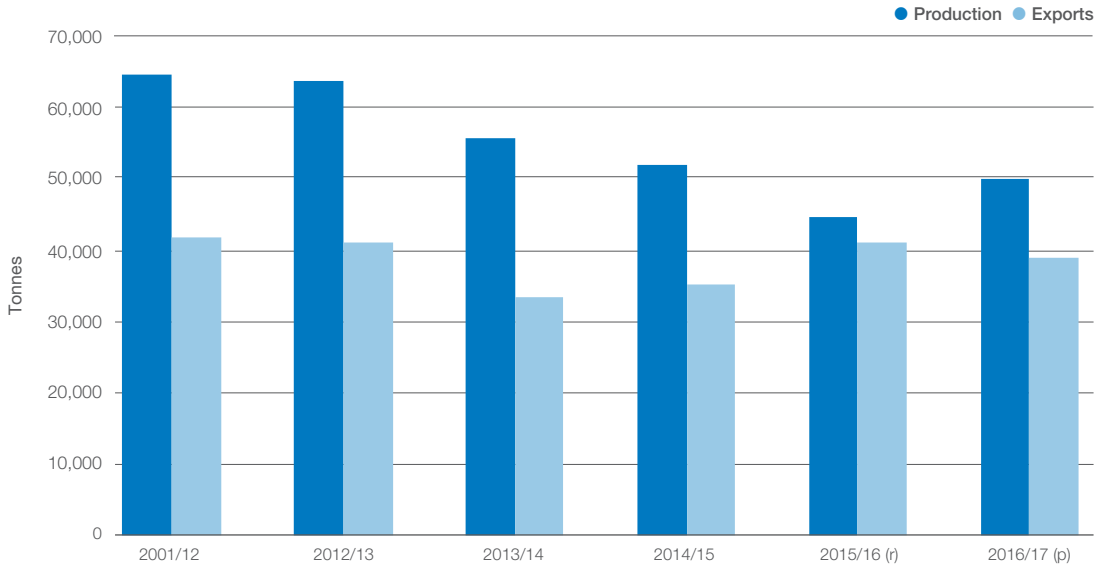
Whey protein concentrates are used in snack foods, juices, confectionery, ice-cream, biscuits, processed meats, (milk) protein drinks, desserts, infant foods and dietetic products. Products such as cosmetics, skin creams, bath salts and detergents also contain protein concentrates.

Australia's whey production is also used domestically in the manufacture of infant formula, biscuits and ice-cream. The remainder is exported, with Singapore, Greater China, Japan, Indonesia, and Malaysia being the largest export markets for Australian whey powders in 2015/16.

Casein and caseinates are used as binding ingredients, emulsifiers and milk substitutes in processed foods such as noodles, chocolate, sweets, mayonnaise, ice-cream and cheese manufacture. Industrial uses of casein and caseinates include: plastics (buttons, knitting needles); the manufacture of synthetic fibres and chemicals (plants, glues, glazed paper, putty and cosmetics); a nutritional supplement and binder in calf milk replacers; and a range of other technical applications.

Australia is no longer a significant producer of casein and imports the vast majority of its requirements; mainly from New Zealand (over 75% of the total volume), with the balance from Europe in 2016/17.

Figure 15 Production and exports of whey products (tonnes)



Source: Dairy manufacturers and ABS

Industry organisations and structure

Dairy Australia

- is the industry-owned national services body
- is funded through the Dairy Service Levy with matching funding from the Australian Government on research and development activities
- invests in essential activities across the dairy supply chain to deliver the best outcomes for dairy farmers, the dairy industry and the broader community
- focuses investment on pre- and post-farmgate research, development, extension and industry services. This includes education, trade policy, information, issues management, technological innovation, promoting the health and nutrition benefits of dairy products and marketing of the industry.

Dairy Australia is one of a number of regional and national organisations that support the Australian dairy industry. It is essential that these organisations work together to help achieve the dairy industry vision. In addition to contributing to the funding, planning and management of the eight Regional Development Programs, Dairy Australia is committed to working closely with state and national representational bodies to collectively deliver on this goal.

The structure of Australian dairy industry organisations

Australian Dairy Industry Council Inc. (ADIC)

National level

Australian Dairy Farmers Ltd (ADF)

Australian Dairy Products Federation Inc. (ADPF)

Dairy Australia Ltd

State/regional level

Representational bodies

State Dairy Farmer Organisations

NSW Farmers' Association (Dairy Committee)

Queensland Dairyfarmers' Organisation

South Australian Dairyfarmers' Association

Tasmanian Farmers and Graziers Association (Dairy Council)

Victorian Farmers Federation (United Dairyfarmers of Victoria)

Western Australian Farmers Federation (Dairy Council)

Dairy Connect

Services bodies

Regional Development Programs

Dairy NSW

DairySA

DairyTas

GippsDairy

Murray Dairy

Subtropical Dairy

Western Dairy

WestVic Dairy

Industry levies

Dairy services

Dairy Australia is funded by farmer-paid levies that are imposed on the fat and protein content of all milk produced in Australia.

The Australian Government matches expenditure on the industry's research and development activities that meet established criteria.

Animal Health Australia

Australian dairy farmers also contribute to the funding of Animal Health Australia (AHA), as do farmers in all other livestock industries. AHA is a non-profit public company limited by guarantee. Members include the Australian, state and territory governments, and key commodity and interest groups. AHA's task is to facilitate partnerships between governments and livestock industries, and provide a national approach to animal health systems. The Animal Health Levy is the dairy industry's contribution to AHA programs.

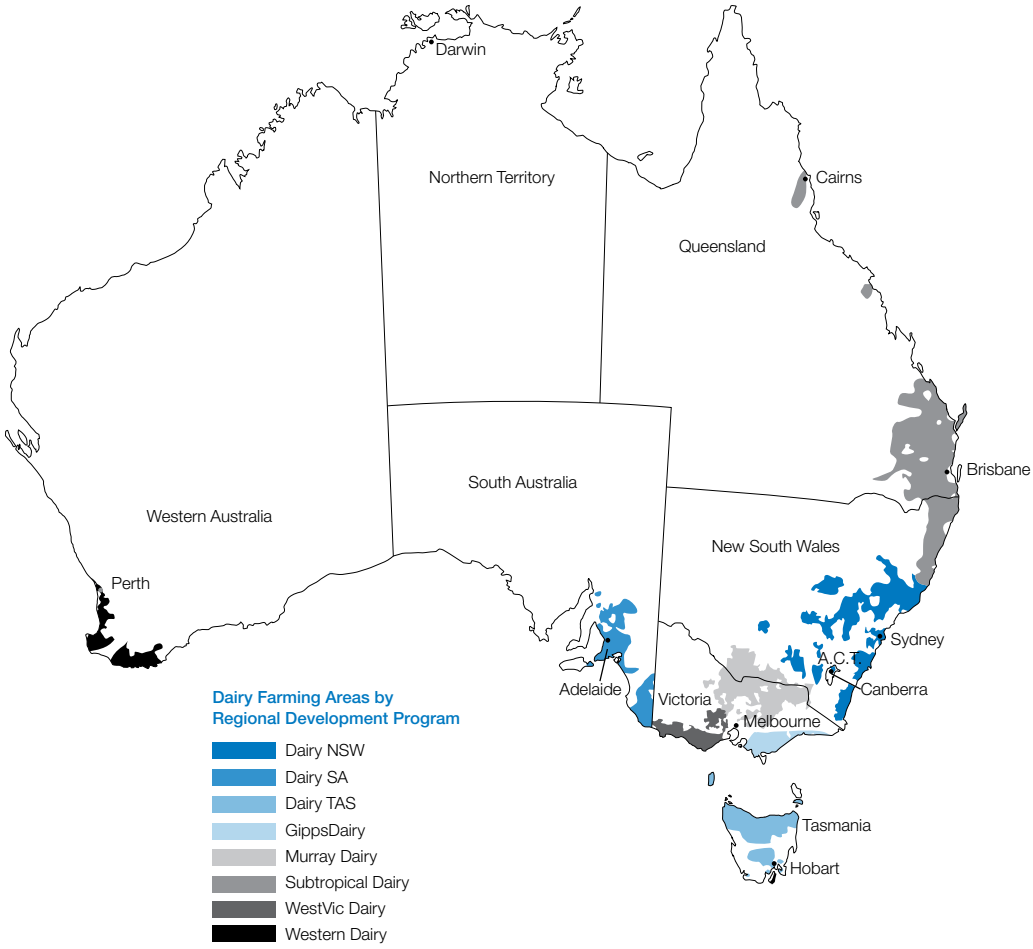
Table 27 Average rate of milk levies for 2016/17

	Milkfat (¢/kg)	Protein (¢/kg)	Milk* (¢/litre)	Milksolids (¢/kg)
Animal health	0.0580	0.1385	0.007	0.09
Dairy services	2.8683	6.9914	0.355	4.73

**Based on average 2016/17 Australian milk composition of 4.10% milkfat and 3.39% protein*

Appendices

Appendix 1 Dairying regions



Appendix 2 Australian industry footprint 2016/17

Table A1 2016/17 Australian State/Region breakdown

	QLD	NSW	VIC	SA	WA	TAS	AUST
Dairy farms*	410	661	3,889	241	148	440	**5,789**
Cows in milk & dry ('000)**	87	165	995	65	55	145	**1,512**
People employed on farm (fulltime and part-time)	1,400	1,600	19,200	400	900	1,000	**24,500**
People employed in dairy product manufacturing (fulltime and part-time)	1,700	3,000	10,100	900	1,000	900	**17,600**
People working in dairy (fulltime and part-time)	3,100	4,600	29,300	1,300	1,900	1,900	**42,100**
Volume of milk produced (ML)***	418	1,121	5,773	487	380	835	**9,015**
Share of state milk production (%)	100	100	100	100	100	100	
Share of national milk production (%)	4.6	12.4	64.0	5.4	4.2	9.3	**100**
Value of milk leaving farms ($M)	$251	$549	$2,194	$181	$192	$326	**$3,685**
Value of dairy products exported* ($M)	$56	$218	$2,055	$63	$78	$546	**$3,017**
Share of national dairy exports - value (%)	2	7	68	2	3	18	**100**
Volume of dairy products exported ('000)	13	60	610	12	60	41	**797**
Share of national dairy exports - volume (%)	2	8	76	2	7	5	**100**

Source: * State milk authorities
Source: ** ABS and Dairy Australia
Source: Employment estimates based on state level averages from ABS Labor Force Statistics, August 2016- May 2017 Quarters: split on the basis of milk production within states
*Source: *** Dairy manufacturers*
Source: ABS export data: split on the basis of milk production

	Sub-tropical Dairy	Dairy NSW	Murray Dairy	Gipps Dairy	WestVic Dairy	DairySA	Western Dairy	DairyTas	AUST
Dairy farms*	543	436	1,381	1,328	1,272	241	148	440	**5,789**
Cows in milk & dry ('000)**	108	117	328	341	353	65	55	145	**1,512**
People employed on farm (fulltime and part-time)	1,600	1,100	6,100	6,600	6,800	400	900	1,000	**24,500**
People employed in dairy product manufacturing (fulltime and part-time)	2,100	2,100	3,600	3,500	3,500	900	1,000	900	**17,600**
People working in dairy (fulltime and part-time)	3,700	3,200	9,700	10,100	10,300	1,300	1,900	1,900	**42,100**
Volume of milk produced (ML)***	562	794	1,929	1,977	2,050	487	380	835	**9,015**
Share of state milk production (%)	113	71	47	34	36	100	100	100	
Share of national milk production (%)	6.2	8.8	21.4	21.9	22.7	5.4	4.2	9.3	**100.0**
Value of milk leaving farms ($M)	$410	$108	$946	$751	$779	$181	$192	$326	**$3,685**
Value of dairy products exported* ($M)	$84	$154	$657	$704	$730	$63	$78	$546	**$3,017**
Share of national dairy exports - value (%)	3	5	22	23	24	2	3	18	**100**
Volume of dairy products exported ('000)	21	43	194	209	217	12	60	41	**797**
Share of national dairy exports - volume (%)	3	5	24	26	27	2	7	5	**100**

Source: * State milk authorities
Source: ** ABS and Dairy Australia
Source: Employment estimates based on state level averages from ABS Labor Force Statistics, August 2016- May 2017 Quarters: split on the basis of milk production within states
*Source: *** Dairy manufacturers*
Source: ABS export data: split on the basis of milk production

Appendix 3 Grain prices

Table A2 Indicative Australian grain prices ($ per tonne)

	NSW	VIC	QLD	SA	WA	TAS
Barley						
1999/00	141	140	136	135	138	
2009/10	220	170	234	145	151	236
2010/11	238	225	251	222	251	290
2011/12	208	210	220	201	230	266
2012/13	284	258	297	238	270	342
2013/14	282	253	345	222	250	325
2014/15	284	267	330	247	269	339
2015/16	247	253	284	206	248	331
2016/17	192	188	239	164	203	259
Sorghum						
1999/00	130	152	125			
2009/10	226	250	211			
2010/11	256	292	234			
2011/12	219	267	210			
2012/13	284	293	279			
2013/14	327	332	336			
2014/15	321	289	319			
2015/16	275	274	279			
2016/17	241	294	256			
Triticale						
1999/00	139	141		136	133	
2009/10	227	204		157	169	
2010/11	234	228		216	242	
2011/12	215	202		194	215	
2012/13	296	273		252	274	
2013/14	295	266		237	259	
2014/15	289	269		252	268	
2015/16	266	264		244	260	
2016/17	214	203		183	210	
Wheat						
1999/00	154	158	141	152	146	
2009/10	235	221	235	203	219	285
2010/11	266	253	271	247	301	320
2011/12	226	211	232	203	239	273
2012/13	306	286	305	270	301	360
2013/14	310	286	357	258	284	353
2014/15	294	280	343	254	285	349
2015/16	279	284	310	257	287	360
2016/17	230	224	265	198	243	286

Source: Dairy Australia

Appendix 4 Milk production

Figure A1 Seasonality of milk production 2016/17 (million litres)

Source: Dairy manufacturers

Appendix 5 Manufacturing processes

The milkfat and solids contained in manufacturing milk can be used to produce a wide variety of dairy products. There are four major production processes. The first two are for butter / skim milk powder production and butter/ casein production which are joint product processes. The other two are whole milk powder production and cheese production. Furthermore, for each of these separate product lines, numerous other dairy products can be made from the residual milk components.

The first step in making butter is to separate whole milk into cream and skim milk. The liquid skim milk is evaporated and spray dried to produce skim milk powder (SMP). The cream is churned until the fat globules form into solid butter, and leaving a liquid by-product, buttermilk. This liquid can be dried to make buttermilk powder (BMP).

There are various ways of making casein. A common method is to set the skim milk by mixing with acid to produce curd. The curd is shaken to remove large clumps. The remaining liquid whey by-product is removed and the curd is repeatedly rinsed in water and then drained. Excess moisture is extracted by pressing the curd. It is then milled and dried. The curd is broken down to particle size by grinding it and passing it through a sieve.

Whole milk powder (WMP) is made by evaporating milk that has had some of the cream removed. The evaporated milk is concentrated and dried either by roller or spray process to form a powder. Spray drying is more commonly used and involves spraying a fine mist of concentrated milk into a current of hot air to form granules of powder. The granules can be treated with steam to 'instantise' the powder and make it easier to reconstitute into milk.

Cheese production techniques vary substantially. To make cheddar cheese, some of the cream is removed from the pasteurised milk. Starter culture is added to the milk to produce both acid and flavour. Then rennet is added to form curd and whey. The curd is cut, heated and stirred to allow the whey to drain. A process called cheddaring then takes place, and involves the curd being allowed to mat together, before it is milled, salted, pressed and packed. The cheese is stored to develop the desired maturity and flavour. The longer it is stored, the stronger the flavour. Mild cheddar is matured for about three months, semi-matured cheddar for three to six months and mature or tasty cheddar for up to a year.

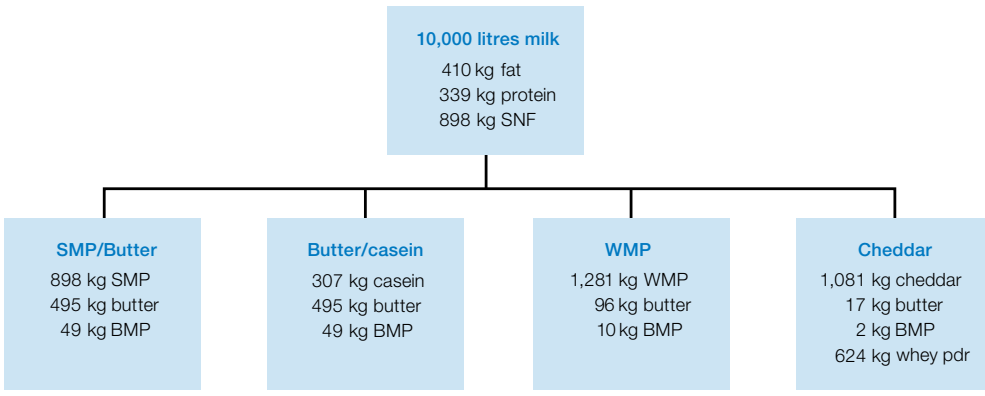
The liquid whey extracted during cheese manufacture contains protein, lactose and a little fat. It can be dried to make products for pharmaceutical purposes, as a useful supplement in stock feed, and in the manufacture of ice-cream.

The cream from the standardisation of milk for whole milk powder, casein and cheddar production can be used to make butter and BMP.

Table A3 Product composition

	% fat	% SNF
Skim milk powder	1.0	94.5
Butter	80.5	2.0
Ghee	99.6	0.1
Casein	1.5	88.5
Whole milk powder	26.0	70.4
Cheddar cheese	33.0	31.0
Gouda	31.5	23.5
Edam	21.2	31.8
Parmesan	21.8	46.2
Cottage cheese	4.0	16.0
Brie	25.0	25.0
Mozzarella	23.1	30.9

Figure A2 Product yield from 10,000 litres of milk 2016/17



Source: Dairy Australia

Table A4 Australian cheese production by state (tonnes)

	NSW	VIC	QLD	SA	WA	TAS	AUST
1989/90	14,198	103,216	12,842	22,774	4,129	18,172	**175,331**
1999/00	26,441	239,029	26,011	40,782	7,680	33,399	**373,342**
2005/06	21,140	268,925	7,308	31,394	6,411	37,638	**372,816**
2006/07	22,690	266,102	4,542	29,503	2,618	38,183	**363,638**
2007/08	24,591	268,206	2,888	18,350	2,547	44,340	**360,922**
2008/09	26,584	245,028	2,273	16,774	3,985	47,959	**342,603**
2009/10	26,138	260,060	1,111	14,736	4,240	43,354	**349,639**
2010/11	28,297	247,806	1,467	15,304	3,638	42,144	**338,657**
2011/12	25,174	260,342	909	12,192	1,656	46,257	**346,530**
2012/13	24,073	266,493	831	5,865	2,102	38,948	**338,312**
2013/14	23,382	239,631	670	7,283	1,988	38,545	**311,499**
2014/15	23,157	269,948	610	8,071	2,082	40,274	**344,142**
2015/16	23,081	280,280	618	4,287	2,305	33,685	**344,256**
2016/17 (p)	23,484	270,709	650	4,213	2,220	35,466	**336,742**

Source: Dairy manufacturers

Table A5 Australian production of dairy products (tonnes)

	Butter*	AMF (CBE)	SMP	WMP**	Whey products
1989/90	78,053	26,105	130,976	56,476	19,895
1999/00	110,325	71,295	236,322	186,653	66,258
2005/06	92,850	52,904	205,495	158,250	98,436
2006/07	101,666	31,434	191,475	135,364	86,198
2007/08	99,202	28,416	164,315	141,974	82,652
2008/09	109,753	38,742	212,030	147,544	81,136
2009/10	100,134	28,245	190,233	126,024	79,094
2010/11	96,326	26,160	222,484	151,269	61,488
2011/12	100,551	19,164	230,286	140,424	64,645
2012/13	99,035	19,193	224,061	108,838	63,440
2013/14	101,705	14,417	210,964	126,322	55,506
2014/15	101,641	16,943	242,266	96,840	51,806
2015/16	99,015	19,610	255,792	66,125	44,669
2016/17 (p)	85,869	14,072	222,109	59,982	49,937

**Includes butter blends as CBE*
***Includes infant powders*
Source: Dairy manufacturers

Table A6 Australian cheese production by variety (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Cheddar						
Cheddar [1]	135,540	126,551	132,669	153,208	149,863	150,673
Reduced fat cheddar	18,885	25,708	12,681	18,275	15,360	10,574
Other cheddar type cheese [2]	6,258	5,737	6,371	7,353	6,367	10,849
Total cheddar	**160,683**	**157,996**	**151,721**	**178,836**	**171,590**	**172,096**
Semi hard						
Mozzarella and pizza	50,431	43,933	35,269	36,148	41,133	46,949
Other stretch curd and shredding	1,852	1,143	763	769	1,796	2,335
Other semi hard cheese [3]	14,740	12,114	8,717	7,020	6,631	4,097
Total semi hard cheese	**67,023**	**57,190**	**44,749**	**43,937**	**49,560**	**53,381**
Hard grating						
All types [4]	13,871	14,681	13,762	9,885	5,040	5,993
Total	**13,871**	**14,681**	**13,762**	**9,885**	**5,040**	**5,993**
Fresh						
Cream cheese and neufchatel	81,210	84,513	76,975	90,443	93,403	79,396
Fetta	5,707	5,684	7,853	4,773	7,229	7,821
Ricotta	6,487	6,965	5,730	5,987	7,373	7,313
Other fresh types [5]	5,620	5,180	5,205	3,789	2,762	2,967
Total	**99,024**	**102,342**	**95,764**	**104,993**	**110,767**	**97,497**
Mould ripened						
Blue vein	680	627	513	536	603	664
Brie and camembert	4,914	5,118	4,591	5,539	5,960	6,452
Other mould ripened	336	358	399	416	737	659
Total mould ripened	**5,930**	**6,103**	**5,504**	**6,491**	**7,300**	**7,775**
Total cheese	**346,531**	**338,311**	**311,499**	**344,142**	**344,257**	**336,742**

(1) Includes: Vintage
(2) Includes: Cheedam, Colby, Cheshire, Gloucester, Lancashire, Leicester, Nimbin and semi processed cheddar
(3) Includes: Edam, Gouda, Swiss, Emmenthal, Fontina, Raclette,Havarti, Samsoe, Tilsit, Buetten, Vacherin, Bakers, Casalinga, Goya
(4) Includes: Parmesan, Pecorino, Romano, Fresh Pecorino, Melbourno, Pepato, Parmagiano
(5) Includes: Cottage, Quark, Stracchino, Mascarpone
Source: Dairy manufacturers

Appendix 6 Domestic sales

Table A7 Dairy company domestic sales* (tonnes)

Major dairy products - excl drinking milk	Sales channel	2014/15 (r)	2015/16 (r)	2016/17 (p)
Butter	Grocery	53,176	55,744	55,531
	Non-grocery	23,772	20,804	25,053
Butter total		**76,948**	**76,548**	**80,584**
Cheese	Grocery	136,890	129,122	133,490
	Non-grocery	131,709	116,078	130,821
Cheese total		**268,599**	**245,200**	**264,311**
Cream	Grocery	60,655	63,181	62,944
	Non-grocery	68,116	64,950	79,286
Cream total		**128,771**	**128,131**	**142,230**
Custard	Grocery	20,619	21,611	21,431
	Non-grocery	2,609	1,876	2,120
Custard total		**23,228**	**23,487**	**23,551**
Dairy desserts	Grocery	11,288	9,608	9,944
	Non-grocery	207	146	134
Dairy desserts total		**11,495**	**9,755**	**10,078**
Milk powder	Grocery	13,148	17,124	11,785
	Non-grocery	42,156	39,985	58,776
Milk powder total		**55,304**	**57,109**	**70,561**
Yoghurt	Grocery	117,601	118,213	119,195
	Non-grocery	14,746	12,348	11,981
Yoghurt total		**132,347**	**130,560**	**131,176**

**This data is dairy company wholesale sales to distributors/warehouses/retailers*
**Grocery refers to major supermarket chains*
**Non-grocery refers to other retailers including convenience stores, the food service and industrial channels*
Source: Dairy manufacturers

Appendix 7 Supermarket sales

Milk

Table A8 Supermarket milk sales by state (million litres)

	NSW	VIC	QLD	SA	WA	TAS	AUST
2014/15 (r)	381	341	334	124	141	36	**1,357**
2015/16 (r)	389	348	337	124	145	37	**1,380**
2016/17 (p)	401	357	350	125	145	37	**1,415**

Source: Information Resources (Australia) Pty Ltd

Table A9 Supermarket milk sales by type (million litres)

	Regular	Reduced fat	No fat	Flavoured	UHT	AUST
2014/15 (r)	603	402	46	109	197	**1,357**
2015/16 (r)	647	379	40	120	194	**1,380**
2016/17 (p)	705	356	37	129	189	**1,415**

Source: Information Resources (Australia) Pty Ltd

Table A10 Supermarket milk sales – Branded vs private label (million litres)

	2014/15 (r)		2015/16 (r)		2016/17 (p)	
	Million litres	Price/litre	Million litres	Price/litre	Million litres	Price/litre
Branded milk						
Regular whole	183	$1.86	202	$1.84	274	$1.80
Reduced fat	158	$2.04	148	$2.01	165	$1.96
No fat	40	$2.03	34	$2.02	31	$2.02
Flavoured	104	$3.81	114	$3.71	126	$3.61
UHT	131	$1.50	122	$1.53	118	$1.56
Total branded milk	**616**	**$2.17**	**620**	**$2.17**	**714**	**$2.13**
Private label						
Regular whole	419	$1.02	445	$1.03	431	$1.04
Reduced fat	244	$1.01	231	$1.02	191	$1.03
Low fat	6	$1.24	6	$1.24	5	$1.23
Flavoured	5	$1.88	6	$1.76	3	$1.75
UHT	67	$0.99	72	$0.95	71	$0.94
Total private label milk	**741**	**$1.02**	**760**	**$1.02**	**701**	**$1.03**
Total milk	**1,357**	**$1.54**	**1,380**	**$1.54**	**1,415**	**$1.58**

Source: Information Resources (Australia) Pty Ltd

Dairy spreads

Table A11 Supermarket dairy spreads sales by type (tonnes)

	2014/15 (r)		2015/16 (r)		2016/17 (p)	
	Tonnes	Price per kg	Tonnes	Price per kg	Tonnes	Price per kg
Dairy						
Butter	24,724	$8.45	25,937	$8.35	26,544	$8.92
Blends	21,641	$9.74	22,366	$9.89	22,884	$10.23
Ghee	0	$0.00	0	$0.00	0	$0.00
Total dairy spreads	**46,365**	**$9.05**	**48,303**	**$9.06**	**49,428**	**$9.53**

Source: Information Resources (Australia) Pty Ltd

Table A12 Supermarket dairy spreads sales by pack size (tonnes)

	2014/15 (r)		2015/16 (r)		2016/17 (p)	
	Tonnes	Price per kg	Tonnes	Price per kg	Tonnes	Price per kg
250 gram	12,954	$9.25	13,671	$9.27	14,220	$9.93
375 gram	4,977	$13.27	5,228	$13.30	4,875	$13.90
500 gram	28,103	$8.15	29,147	$8.09	29,316	$8.50
Other sizes	330	$14.12	256	$20.99	1,018	$12.53
Total dairy spreads	**46,365**	**$9.05**	**48,303**	**$9.06**	**49,428**	**$9.53**

Source: Information Resources (Australia) Pty Ltd

Table A13 Supermarket dairy spreads sales by form (tonnes)

	2014/15 (r)		2015/16 (r)		2016/17 (p)	
	Tonnes	Price per kg	Tonnes	Price per kg	Tonnes	Price per kg
Pats	21,364	$7.41	22,535	$7.28	23,113	$7.92
Tubs	25,001	$10.45	25,768	$10.61	26,315	$10.95
Total dairy spreads	**46,365**	**$9.05**	**48,303**	**$9.06**	**49,428**	**$9.53**

Source: Information Resources (Australia) Pty Ltd

Appendix 8 Australian exports

Table A14 Australian exports of cheese (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
China, Hong Kong	11,482	14,474	19,552	17,945	21,207	24,530
Indonesia	3,256	3,296	2,875	2,757	2,809	3,989
Japan	95,558	103,870	73,598	85,808	90,635	81,371
Korea, South	7,302	6,979	4,841	5,318	7,942	10,408
Malaysia	6,762	5,819	7,907	7,536	7,841	8,384
Philippines	2,344	3,041	2,655	3,556	4,922	4,278
Singapore	5,773	4,900	5,364	5,381	5,401	5,310
Taiwan	3,759	4,048	3,072	3,638	3,863	4,183
Thailand	2,700	2,333	2,848	3,016	2,845	3,508
Other Asia	1,337	1,149	1,218	1,312	1,579	1,623
Total Asia	**140,273**	**149,909**	**123,930**	**136,267**	**149,044**	**147,584**
Middle East						
Saudi Arabia	3,917	2,952	4,203	3,005	2,076	761
U.A.E.	1,284	1,315	1,588	1,697	1,530	1,492
Other Middle East	5,235	5,794	6,082	5,026	4,591	4,421
Total Middle East	**10,436**	**10,061**	**11,873**	**9,728**	**8,197**	**6,674**
Africa						
Algeria	0	0	0	0	0	0
Egypt	675	122	138	157	34	0
Other Africa	2,729	3,485	2,971	2,579	3,168	2,741
Total Africa	**3,404**	**3,607**	**3,109**	**2,736**	**3,202**	**2,741**
Pacific						
New Zealand	2,035	2,283	2,177	2,267	2,960	3,444
Others	522	815	703	825	1,057	1,138
Total Pacific	**2,557**	**3,098**	**2,880**	**3,092**	**4,017**	**4,582**
Americas						
Caribbean	1,071	399	508	589	69	42
United States	572	2,753	1,891	4,577	6,163	4,605
Others	329	370	349	445	365	225
Total Americas	**1,972**	**3,522**	**2,748**	**5,611**	**6,597**	**4,872**
Europe						
Eastern Europe	550	804	2,110	81	0	0
EU 27	1,671	3,060	3,789	162	265	343
Other Europe	0	0		0	0	0
Total Europe	**2,221**	**3,864**	**5,899**	**243**	**265**	**343**
Total	**160,863**	**174,061**	**150,439**	**157,677**	**171,322**	**166,796**

Source: Dairy Australia and ABS

Table A15 Australian exports of whole milk powder* (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
Bangladesh	4,708	4,941	9,180	8,581	6,225	4,814
China, Hong Kong	5,935	17,598	31,633	6,896	26,364	32,989
Indonesia	9,357	5,469	6,930	2,414	795	917
Japan	2,572	5,767	326	12	2	2
Malaysia	4,857	4,827	3,885	3,322	1,919	2,978
Philippines	570	471	385	690	252	396
Singapore	17,926	14,298	16,238	13,528	8,138	8,942
Sri Lanka	11,120	11,459	13,547	12,097	12,776	10,697
Taiwan	2,977	3,920	3,125	2,477	1,982	1,955
Thailand	2,132	2,804	2,740	2,061	1,387	3,617
Others	5,868	5,018	3,237	5,885	2,707	10,008
Total Asia	**68,022**	**76,572**	**91,226**	**57,963**	**62,547**	**77,315**
Africa	**4,629**	**5,744**	**3,344**	**2,761**	**368**	**243**
Americas	**9,782**	**8,545**	**2,089**	**6,031**	**4,227**	**3,063**
Europe	**429**	**1,468**	**345**	**230**	**511**	**104**
Middle East	**31,619**	**9,488**	**3,872**	**6,510**	**5,050**	**4,158**
Pacific	**1,629**	**1,995**	**1,371**	**1,634**	**4,350**	**2,090**
Total	**116,110**	**103,812**	**102,247**	**75,129**	**77,053**	**86,973**

**Also includes infant powder*
Source: Dairy Australia and ABS

Table A16 Australian exports of butter* (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
China, Hong Kong	4,099	3,622	3,944	4,924	4,441	3,130
Japan	1,960	1,136	348	587	437	381
Korea, South	1,578	1,551	1,181	1,477	2,334	1,531
Malaysia	2,303	1,385	2,082	2,650	2,446	2,066
Singapore	4,048	4,292	5,594	5,199	3,476	2,611
Taiwan	1,758	1,594	1,159	1,871	1,623	1,124
Others	1,823	2,248	1,475	1,197	1,335	963
Total Asia	**17,569**	**15,828**	**15,783**	**17,904**	**16,092**	**11,807**
Middle East	**6,499**	**10,727**	**4,137**	**7,310**	**3,658**	**1,002**
Africa	**2,662**	**2,739**	**587**	**2,039**	**1,026**	**306**
Pacific	**848**	**356**	**658**	**1,252**	**691**	**847**
Americas	**20**	**811**	**72**	**995**	**1,225**	**270**
Europe	**6,007**	**8,835**	**18,554**	**1,257**	**360**	**196**
Total	**33,602**	**39,296**	**39,791**	**30,757**	**23,052**	**14,428**

**Includes butter blends converted at the rate of 1 kg butter blend = 0.7 kg butter*
Source: Dairy Australia and ABS

Table A17 Australian exports of skim milk powder (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
China, Hong Kong	16,632	10,708	22,814	17,746	19,873	23,938
Indonesia	20,919	21,578	25,586	39,684	40,812	36,541
Japan	579	1,553	3,222	8,359	1,637	3,110
Malaysia	10,830	13,392	11,378	17,641	19,179	18,880
Philippines	10,348	10,861	8,251	13,973	10,304	8,612
Singapore	18,772	18,446	12,567	15,368	14,422	14,571
Taiwan	6,474	4,890	3,542	1,442	1,563	1,536
Thailand	9,552	12,115	10,177	11,317	10,471	6,728
Others	17,290	15,688	10,420	24,594	29,583	22,201
Total Asia	**111,396**	**109,232**	**107,957**	**150,124**	**147,844**	**136,117**
Africa	**2,083**	**3,830**	**1,392**	**386**	**5,829**	**1,428**
Americas	**889**	**1,331**	**244**	**1,473**	**552**	**47**
Europe	**810**	**732**	**563**	**540**	**43**	**0**
Middle East	**23,529**	**28,313**	**31,429**	**26,927**	**23,249**	**14,057**
Pacific	**2,612**	**3,478**	**1,584**	**5,376**	**3,857**	**1,775**
Total	**141,319**	**146,916**	**143,169**	**184,826**	**181,374**	**153,424**

Source: Dairy Australia and ABS

Table A18 Australian exports of butter oil (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
Bangladesh	202	50	202	101	218	151
Indonesia	72	50	302	410	86	84
Malaysia	1,210	545	687	907	974	554
Philippines	1,150	50	102	101	50	134
Singapore	332	166	240	128	69	193
Others	4,723	2,724	3,476	3,013	3,039	3149
Total Asia	**7,689**	**3,585**	**5,009**	**4,660**	**4,436**	**4,265**
Middle East	**720**	**1,008**	**386**	**829**	**446**	**101**
Africa	**198**	**429**	**86**	**101**	**67**	**66**
Americas	**3,152**	**5,015**	**517**	**3,512**	**3,007**	**671**
Europe	**254**	**1,432**	**1,530**	**433**	**363**	**436**
Pacific	**44**	**55**	**87**	**19**	**54**	**14**
Total	**12,057**	**11,524**	**7,615**	**9,554**	**8,375**	**5,553**

Actual product weight (not CBE)
Source: Dairy Australia and ABS

Table A19 Australian exports of liquid milk ('000 litres)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia						
Singapore	30,919	31,762	30,474	33,254	36,590	40,103
Philippines	4,423	2,901	8,307	7,937	10,273	13,743
Malaysia	3,960	5,689	7,266	4,454	13,572	15,700
Indonesia	342	386	426	367	370	310
Hong Kong	15,047	16,520	14,440	13,716	14,077	14,665
China	7,154	21,035	25,061	54,507	70,971	68,525
Other Asia	13,214	13,139	16,646	17,403	15,702	18,821
Total Asia	**75,059**	**91,432**	**102,620**	**131,638**	**161,555**	**171,867**
Africa	**732**	**1,023**	**659**	**766**	**606**	**593**
Pacific	**10,712**	**11,285**	**12,596**	**14,650**	**16,115**	**15,651**
Others	**1,220**	**2,737**	**2,256**	**645**	**1,002**	**1,037**
Total	**87,723**	**106,477**	**118,131**	**147,699**	**179,278**	**189,148**

Source: Dairy Australia and ABS

Table A20 Australian exports of whey products* (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Asia	33,765	32,415	26,278	29,708	35,065	35,288
Europe	1,793	2,219	1,462	579	16	20
Other	6,181	6,282	5,567	4,769	5,740	3,501
Total	**41,739**	**40,916**	**33,307**	**35,056**	**40,821**	**38,809**

**Includes whey protein concentrate*
Source: Dairy Australia and ABS

Table A21 Australian exports of live dairy heifers (cows) by market

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17 (p)
Asia						
China	55,114	59,235	78,775	62,574	56,145	59,109
Indonesia	658	3,406	800	1,514	1,307	1,203
Malaysia	355	1,085	1110	2,124	2,132	1,346
Pakistan	2,785	8,327	6,425	1,989	3,507	6,502
Vietnam	496		440	3,383	2,755	1,735
Other Asia	811	2,873	1,166	1,338	2,558	2,279
Total Asia	**60,219**	**74,926**	**88,716**	**72,922**	**68,404**	**72,174**
Europe	**4,855**	**8,385**	**3,595**			
Middle East	**202**	**4,111**	**29**	**283**	**3,503**	**633**
Others						**4**
Total	**65,276**	**87,422**	**92,340**	**73,205**	**71,907**	**72,811**

Source: Dairy Australia and ABS

Table A22 Australian exports of live dairy heifers (cows) by state

	NSW	VIC	QLD	SA	WA	TAS	AUST
2005/06	1,008	30,396		2,106	4,411		**37,921**
2006/07	385	26,077		1,276	3,812		**31,550**
2007/08	36	50,395	76	4,255	4,543		**59,305**
2008/09	434	38,896	523	3,426	619		**43,898**
2009/10	932	73,640	27	765	5,786		**81,150**
2010/11	219	61,817	978		12,081	103	**75,198**
2011/12	806	57,926	304	3,130	2,656	454	**65,276**
2012/13	305	69,359	620	2,282	12,188	2,668	**87,422**
2013/14		89,640	1,171	4	1,525		**92,340**
2014/15	910	64,638	122		7,535		**73,205**
2015/16	242	69,486		230	1,949		**71,907**
2016/17 (p)	**647**	**70,395**			**1,769**		**72,811**

Source: Dairy Australia and ABS

Appendix 9 Australian imports

Table A23 Australian imports of dairy products from New Zealand and other countries (tonnes)

	New Zealand	Other	Total 2015/16 (r)	New Zealand	Other	Total 2016/17 (p)
Skim milk powder	2,061	5,483	**7,544**	4,105	3,479	**7,584**
Buttermilk powder	110	2,426	**2,536**	424	2,354	**2,778**
Whole milk powder*	37,091	7,621	**44,712**	42,296	8,890	**51,186**
Whey powder and concentrates	1,402	10,915	**12,317**	1,567	13,733	**15,300**
Condensed milk	46	3,640	**3,686**	180	4,505	**4,685**
Milk	2,731	176	**2,907**	1,959	376	**2,335**
Cream	2,626	72	**2,698**	2,903	35	**2,938**
Yoghurt	965	1,001	**1,966**	638	1,275	**1,913**
Butter**	17,210	1,411	**18,621**	24,480	2,572	**27,052**
Butter oil	3,980	832	**4,812**	5,927	787	**6,714**
Cheese	55,030	34,297	**89,327**	65,723	46,397	**112,120**
Casein	725	146	**871**	795	224	**1,019**
Caseinates	907	330	**1,237**	953	314	**1,267**
Lactose	4,526	18,888	**23,413**	3,579	16,135	**19,714**
Ice cream ('000 lts)	1,642	18,277	**19,919**	1,490	19,092	**20,582**

**Includes infant powder*
***Includes butter blends converted at the rate of 1 kg butter blend = 0.7 kg butter*
Source: ABS

Table A24 Australian cheese imports by country (tonnes)

	2011/12	2012/13	2013/14	2014/15	2015/16 (r)	2016/17 (p)
Austria	812	796	746	584	678	600
Bulgaria	1,246	1,470	1,312	1,476	1,293	1,276
Denmark	1,924	2,071	2,133	1,529	2,042	1,990
France	1,076	1,391	1,690	1,775	1,911	2,047
Germany	1,034	1,791	1,326	1,566	2,271	2,481
Greece	1,513	1,941	1,761	2,110	2,104	2,068
Italy	3,557	3,692	3,981	4,222	4,150	4,834
Netherlands	2,164	2,364	2,307	2,024	2,601	2,979
Poland	506	414	530	595	795	840
United Kingdom	233	375	463	625	1,129	1,438
Other	814	1,264	1,543	1,764	2,112	3,294
Total EU	**14,879**	**17,569**	**17,792**	**18,270**	**21,086**	**23,847**
New Zealand	**46,741**	**43,573**	**39,623**	**45,235**	**55,030**	**65,723**
United States	**12,079**	**10,246**	**16,200**	**16,709**	**11,658**	**20,978**
Norway	**1,990**	**1,789**	**1,787**	**1,745**	**1,134**	**1,090**
Switzerland	**170**	**185**	**196**	**180**	**208**	**210**
Other	**385**	**330**	**219**	**257**	**210**	**272**
Total Cheese Imports	**76,244**	**73,692**	**75,817**	**82,396**	**89,326**	**112,120**

Source: ABS (excludes goats cheese)

Acronyms

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
ADC	Australian Dairy Corporation
ADHIS	Australian Dairy Herd Improvement Service
AMF	Anhydrous milk fat
AUD	Australian dollar
AUST	Australia
BMP	Buttermilk powder
CAGR	Compound annual growth rate
CBE	Commercial butter equivalent, a unit of conversion of AMF to butter (1kg butter = 0.805 kg AMF)
CEO	Chief Executive Officer
cpl	Cents per litre
DA	Dairy Australia
DFMP	Dairy Farm Monitoring Project
EU	European Union
FNQ	Far north Queensland
Gipps	Gippsland
MD	Murray Dairy (including northern Victoria and NSW Riverina)
ML	Million litres
n.a.	Data not available
NCE	Natural cheddar equivalent – unit of conversion of processed cheddar, pastes and spreads to natural cheddar (1 kg processed product weight = 0.806 kg natural cheddar)
NDFS	National Dairy Farmers' Survey
(e)	Estimated data
(p)	Provisional data
(r)	Revised data
QDAS	Queensland Dairy Accounting Scheme
SEQ	South-east Queensland/north-east New South Wales
SMP	Skim milk powder
SNF	Solids non fat
TMR	Total mixed ration
UHT	Milk subjected to ultra-high temperature treatment to extend shelf life
USD	US dollar
WMP	Whole milk powder
WPC	Whey protein concentrate
WV	Western Victoria
YTD	Year to date

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