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Department of Agriculture
ABARES

Australian farm survey results 2011–12 to 2013–14

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The ABARES Regional Outlook conferences are one-day events held in regional towns in each state and the Northern Territory.

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2014 locations and dates

Tasmania	Launceston	30 April
South Australia	Kadina	12 June
Northern Territory	Katherine	10 July
Queensland	Goondiwindi	31 July
Western Australia	Albany	21 August
Victoria	Wodonga	18 September
New South Wales	Armidale	15 October

Farm performance: broadacre and dairy farms, 2011–12 to 2013–14

Peter Martin, Paul Phillips and Walter Shafron

- Financial performance of Australian broadacre farms in 2013–14 differs markedly across states and regions. Record incomes are projected for farms in Western Australia and South Australia. However, large falls in farm incomes are projected in regions of Queensland and northern New South Wales that are subject to drought conditions.
- In 2013–14 farm cash incomes for Western Australian and South Australian broadacre farms are projected to be the highest recorded in more than 30 years as a result of record winter grain production. Farm cash income in 2013–14 is projected to average \$317 000 per farm for Western Australian broadacre farms and \$231 000 per farm for South Australian broadacre farms. These projections are more than 70 per cent above the average for the decade ending 2012–13. Average farm cash income is also projected to increase substantially in the Northern Territory because of higher turn-off of beef cattle and increased sale of beef cattle for live export.
- Overall, average farm cash income for New South Wales broadacre farms is projected to increase. This is a result of higher grain production in southern regions and increased turn-off of sheep, lambs and beef cattle as seasonal conditions become drier. However, farm cash income is projected to fall sharply in inland northern New South Wales because of large reductions in grain production.
- Queensland broadacre farm cash income is projected to decline to average a record low of \$39 000 per farm in 2013–14. The reduction in average farm business profit is projected to be even larger, from a loss of \$4900 per farm in 2012–13 to an average loss of \$77 000 per farm in 2013–14 as beef cattle and grain inventories on farms are further reduced.
- Drought and high beef cattle turn-off have contributed to a projected decline in beef industry farm cash income nationally to an average \$44 000 per farm in 2013–14 as increased fodder costs and lower saleyard prices more than offset the effect of increased numbers of beef cattle sold. If realised, average beef industry farm cash income would be around 30 per cent below the 10-year average to 2012–13.
- In contrast, grains industry farm cash income is projected to increase to average \$325 000 per farm in 2013–14 as a result of a large increase in grain production in Western Australia and South Australia. This is despite reductions in grain production in northern New South Wales and Queensland. If realised, average grains industry farm cash income would be around 70 per cent above the 10-year average to 2012–13.

- Farm cash income is projected to increase for dairy farms in all states in 2013–14 as farmgate milk prices rise. At the national level, average farm cash income for dairy farms is projected to increase from an average of \$44 200 in 2012–13 to an average of \$129 000 per farm in 2013–14.
- Farm business debt is estimated to have declined slightly for broadacre farms each year since 2008–09 to an average of \$487 000 per farm at 30 June 2013. Higher farm cash incomes, particularly in Western Australia and South Australia, provide opportunities for significant debt reductions in some regions. However, debt is likely to increase in regions affected by drought in 2013–14. Debt for dairy industry farms rose in 2012–13 as a result of low farm cash incomes and further increases in the average herd size and intensification of dairy production.

Overview

ABARES Australian Agricultural and Grazing Industries Survey (AAGIS) projects an overall increase in average incomes of Australian broadacre farms in 2013–14. Large increases in grain production are projected to result in incomes for Western Australian and South Australian farms being the highest recorded in more than 30 years. Incomes of Victoria, Tasmania and of New South Wales, taken as a whole, are projected to remain relatively similar to those recorded in 2012–13. In contrast, a sharp decline is projected for incomes in Queensland and northern New South Wales broadacre farms as a result of drought.

Drought conditions in Queensland and northern New South Wales follow on from the generally drier seasonal conditions in 2012–13. Drier conditions in 2012–13 reduced grain production in all states relative to the record production in 2011–12. Fortunately, these reductions were more than offset by higher prices for grains, oilseeds and pulses, resulting in an increase in incomes for most grain producing farms.

The outcome for livestock producers in 2012–13 was less favourable. Beef cattle numbers increased during the three very wet years to 2011–12. This was followed by a well below average wet season in northern Australia and generally drier seasonal conditions across most other regions that resulted in less abundant grazing in 2012–13. Turn-off of beef cattle, sheep and lambs increased and herd and flock rebuilding slowed. Lower wool prices and the increase in livestock turn-off reduced beef cattle, sheep and lamb prices, resulting in incomes for beef cattle and sheep farms declining in most regions.

According to ABARES Australian Dairy Industry Survey (ADIS), incomes for dairy farms were also affected by drier seasonal conditions in 2012–13. Increased expenditure on fodder and a large reduction in prices received for milk resulted in a large reduction in reported income in all regions.

In 2013–14 incomes are projected to increase for dairy farms in all states as a result of higher milk prices. This is despite reductions in milk production and increased expenditure on fodder resulting from the drier conditions.

Financial pressure increased on farm businesses in several industries and regions during 2012–13 as a result of the combination of low commodity prices, dry seasonal conditions, high farm debt and erosion of farm equity through reductions in land values. Those affected include the beef industry in northern Australia, grain producers in the Western Australian wheat belt and dairy farmers in Western Victoria. Higher farm incomes are projected for many of these farms in 2013–14, reducing some of this financial pressure. However, financial pressure will increase in other regions and industries in 2013–14, particularly those subject to prolonged drought conditions.

Broadacre sector of Australian agriculture

The sector includes five industry types:

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

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

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

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

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

Farm production

2012–13

The total area sown to winter grain, oilseed and pulse crops decreased by 2 per cent in 2012–13 compared with the area planted in 2011–12. The area planted to winter crops increased in New South Wales, Queensland and South Australia but drier seasonal conditions resulted in a reduction in Victoria and Western Australia.

Below average rainfall through winter and spring reduced winter crop yields in all states in 2012–13, with the largest reductions in winter crop production occurring in Western Australia and Victoria. Frost and late season rainfall further lowered yields and quality of crops in some regions.

Total winter crop production declined to around 38 million tonnes in 2012–13, a reduction of 18 per cent on the record production of 46 million tonnes in 2011–12.

Production of grain sorghum, the main summer crop on broadacre farms, declined by 10 per cent compared with 2011–12.

Average to below average rainfall for most broadacre farms in 2012–13 resulted in reduced pasture growth compared with the very wet years of 2010–11 and 2011–12. Relatively drier seasonal conditions and high stock numbers in northern beef cattle regions led to a large increase in turn-off of beef cattle in 2012–13 and a slowing in the rate of increase in herd size.

Similarly, drier seasonal conditions in southern Australia resulted in increased turn-off of sheep and lambs, lower sale prices and a slowing rate of increase in flock size. Prices for sheep and lambs were historically high in 2010–11 and 2011–12.

Milk production in 2012–13 declined in all states except Western Australia, declining by 3 per cent in Victoria and by 4 per cent in Queensland and Tasmania.

2013–14

The total area sown to winter grain, oilseed and pulse crops is estimated to have increased by 1 per cent in 2013–14 compared with the area planted in 2012–13, with most of this increase occurring in South Australia and Western Australia.

Total winter crop production is estimated to have increased by 17 per cent in 2013–14 to 44 million tonnes, the second largest winter crop on record. Winter crop production in Western Australia is estimated to have increased by 55 per cent in 2013–14 to a record 17.5 million tonnes. In South Australia, production is estimated to have increased by 31 per cent and in Victoria by 3 per cent. Dry seasonal conditions are estimated to have resulted in the winter crop declining by 14 per cent in New South Wales and by 20 per cent in Queensland.

Continuation of dry seasonal conditions through summer resulted in the area planted to grain sorghum in 2013–14 falling and forecast grain sorghum production declining by around 36 per cent, compared with 2012–13.

Drought conditions in Queensland, northern New South Wales and northern pastoral South Australia and the extension of dry conditions to more southern regions are expected to have further increased turn-off of beef cattle in 2013–14.

Drier seasonal conditions are expected to result in increased sheep turn-off and a reduction in average flock size. Wool production is expected to decline by around 4 per cent, while wool prices are expected to increase by 3 per cent.

Milk production is forecast to decline by around 1 per cent in 2013–14, with some reduction expected in all states.

Farm receipts

2012–13

Overall, average total cash receipts for broadacre farms declined by 1 per cent in 2012–13 compared with 2011–12.

Average crop receipts increased by 8 per cent as higher grain, oilseed and pulse prices more than offset lower grain production.

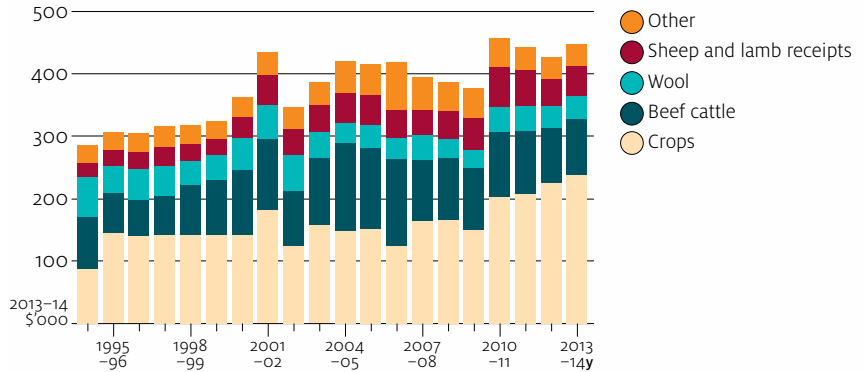
Lower saleyard prices for sheep and lambs more than offset increases in the number of sheep and lambs sold. This resulted in a reduction of around 25 per cent in average sheep and lamb receipts per farm.

Lower wool prices and a small reduction in wool sold per farm resulted in a reduction in average wool receipts for broadacre farms of around 12 per cent.

Reduction in the average price received for beef cattle sold more than offset an increase in cattle turn-off in 2012–13 and resulted in a decline in average beef cattle receipts of around 10 per cent.

At the national level, average total cash receipts for dairy farms declined by 9 per cent in 2012–13 with lower farmgate milk prices and reduced production.

Farm cash receipts, broadacre industries



y ABARES provisional estimate.

2013-14

Overall, average total cash receipts for broadacre farms are projected to increase by around 7 per cent in 2013–14 compared with 2012–13.

In 2013–14 average crop receipts are projected to increase by around 8 per cent as a result of increased winter grain production and despite low overall receipts from summer crops.

Large increases in beef cattle turn-off are expected to result in overall receipts for beef cattle rising. This is despite a reduction of around 6 per cent in the average price received for beef cattle sold as a result of lower saleyard prices.

Higher saleyard prices for sheep and lambs and an increase in the number of sheep sold are projected to result in an increase of around 15 per cent in average sheep and lamb receipts per farm. Overall, little change is expected in receipts from wool for broadacre farms, with a small reduction in wool production offset by slightly higher wool prices.

At the national level, receipts for dairy farms are projected to increase by around 17 per cent, on average, with higher milk prices expected in all states, compared with 2012–13. The largest increases in projected milk prices are for Victoria, Tasmania, South Australia and southern New South Wales. Only a small reduction is expected in milk production.

Major financial performance indicators

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

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

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

Farm business profit:

farm cash income + change in trading stocks – depreciation – imputed labour costs

Profit at full equity: return produced by all the resources used in the business

farm business profit + rent + interest + finance lease payments – depreciation on leased items

Rate of return: return to all capital used $\frac{\text{profit at full equity}}{\text{total opening capital}} \times 100$

Farm survey methodology

Broadacre and dairy farms accounted for 63 per cent of commercial-scale Australian farm businesses (ABS 2012) and for an estimated 62 per cent of the total gross value of Australian agricultural production in the five years to 2012–13. These farms are also responsible for managing more than 90 per cent of the total area of agricultural land in Australia and account for the majority of Australia's family owned and operated farms. Located in all regions across Australia, these farms form a vital part of rural communities and local economies.

Each year, as part of its annual farm survey program, ABARES interviews operators of around 1600 broadacre farm businesses in its Australian Agricultural and Grazing Industries Survey (AAGIS) and 300 dairy farm businesses in the Australian Dairy Industry Survey (ADIS). The AAGIS is targeted at commercial-scale broadacre farms—those that grow grains or oilseeds or run sheep or beef cattle and that have an estimated value of agricultural output exceeding \$40 000. Broadacre industries covered in this survey include wheat and other crops, mixed livestock–crops, sheep, and beef and sheep–beef industries. The ADIS is targeted at commercial-scale milk producing farms.

The information collected provides a basis for analysing the current financial position of farmers in these industries and expected changes in the short term. Data from the AAGIS and ADIS were analysed to gain insights into the performance of Australian broadacre and dairy farms in 2012–13, including projected farm financial performance in 2013–14.

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

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

continued...

Farm survey methodology continued

Data provided in this chapter were collected through on-farm interviews and incorporate detailed farm financial accounting information.

The estimates presented have been calculated by appropriately weighting the data collected from each sample farm. Sample weights are calculated so estimates of numbers of farms, areas of crops and numbers of livestock in various geographic regions and industries correspond as closely as possible with the most recently available ABS data, as collected in agricultural censuses and updated annually with data collected in agricultural commodity surveys.

Estimates for 2011–12 and all earlier years are final. All data from farmers, including accounting information, have been reconciled. Final production and population information from the ABS has been included and no further change is expected in the estimates.

The 2012–13 estimates are preliminary, based on full production and accounting information from farmers. However, editing and addition of sample farms may be undertaken and ABS production benchmarks may also change.

The 2013–14 projections are based on data collected through on-farm interviews and telephone interviews between November 2013 and February 2014. The estimates include crop and livestock production, receipts and expenditure up to the date of interview, together with expected production, receipts and expenditure for the remainder of the financial year. Modifications have been made to expected receipts and expenditure for the remainder of 2013–14 where significant price changes have occurred since the interview.

Farm costs**2012–13**

For broadacre farms, average total cash costs decreased by 1 per cent in 2012–13 as interest payments fell and expenditure on purchase of sheep and cattle was reduced from a near record in 2011–12. This was despite a large increase in expenditure on fodder purchase in Queensland.

For dairy industry farms in all states, fodder expenditure increased as a result of drier seasonal conditions and higher fodder prices. Small increases were recorded in most other categories of farm cash costs, including interest payments. Overall average total cash costs for the Australian dairy industry increased by 10 per cent in 2012–13 compared with 2011–12.

2013–14

At the national level, average total cash costs per broadacre farm are projected to increase by around 5 per cent compared with 2012–13. Purchases of beef cattle and sheep are expected to slow further in all eastern states in 2013–14 in response to drier seasonal conditions. In addition, lower interest rates are projected to result in a small reduction in interest payments. Reductions in these cost items are expected to be more than offset by a large increase in expenditure on fodder in Queensland and New South Wales and by increased crop handling and marketing expenses resulting from the much larger winter crop in South Australia and Western Australia. Expenditure on repairs and maintenance is also expected to rise substantially in Western Australia and South Australia as farmers respond to increased farm receipts.

For dairy industry farms in most states, increases are expected in fodder expenditure and repairs and maintenance. Overall, average total cash costs are expected to increase by around 2 per cent in 2012–13, despite reductions in expenditure on interest payments and purchase of cattle.

Major cash costs



Farm income and profit

Nationally, average farm cash income for broadacre farms has been relatively high in recent years compared with incomes recorded historically. Farm cash income declined only slightly from \$112 200 in 2011–12 to \$111 400 in 2012–13. In 2013–14 farm cash income is projected to rise to average \$124 000 per farm, around 43 per cent above the 10-year average to 2012–13 of \$87 100 (in real terms). However, major differences exist in average farm cash incomes across industries, states and regions.

For the dairy industry, farm financial performance is also projected to rise substantially in 2013–14. Nationally, average farm cash income for dairy farms was \$143 360 per farm in 2011–12. This declined to \$44 200 per farm in 2012–13 and is projected to increase to average \$129 000 per farm in 2013–14. Projected farm cash income in 2013–14 is expected to be around 27 per cent above the 10-year average to 2012–13 of \$101 600 (in real terms).

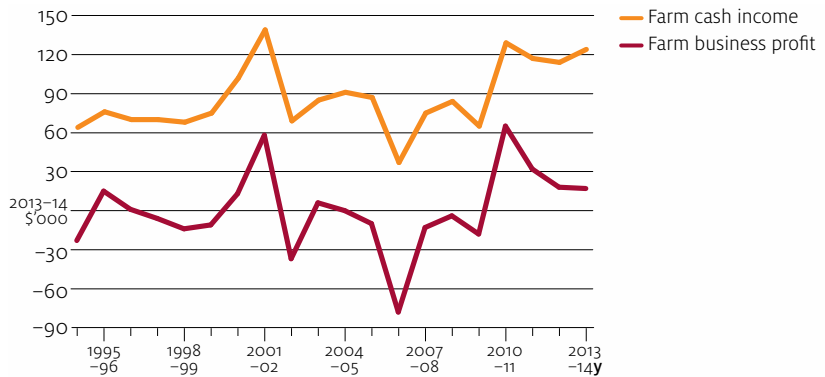
Farm cash income is a measure of cash funds generated by the farm business for farm investment and consumption after paying all costs incurred in production; this includes interest payments but excludes capital payments and payments to family workers. It is a measure of short-term farm performance because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

In 2013–14 reductions are expected in beef cattle numbers and stocks of grain in Queensland and northern New South Wales. Drier seasonal conditions are projected to result in increased cattle turn-off, higher fodder use and reduced on-farm grain stocks because of lower grain sorghum production.

Despite the large increase in farm cash income projected for 2013–14, reductions in farm inventory values are projected to result in farm business profit remaining unchanged in 2013–14, compared with 2012–13.

Farm business profit for Australian broadacre farms is expected to average \$17 000 per farm in 2013–14, about the same as in 2012–13. This compares with an average of \$68 000 per farm in 2011–12 and \$72 000 in 2010–11, two very wet years when broadacre farm financial performance on-farm was more even across states and industries, cattle numbers were increasing and grain stocks were higher.

Financial performance, all broadacre industries



y ABARES provisional estimate.

Financial performance, all broadacre industries average per farm

		2011–12	2012–13 ^p		2013–14 ^y
Total cash receipts	\$	422 820	418 200	(3)	448 000
Total cash costs	\$	310 620	306 800	(3)	323 000
Farm cash income	\$	112 200	111 400	(5)	124 000
Farms with negative farm cash income	%	24	24	(7)	28
Farm business profit	\$	30 230	17 600	(32)	17 000
Farms with negative farm business profit	%	57	64	(3)	64
Profit at full equity					
– excl. cap. appreciation	\$	73 100	59 300	(10)	58 000
– incl. cap. appreciation	\$	45 290	46 000	(21)	na
Farm capital at 30 June a	\$	3 990 340	3 915 500	(3)	na
Net capital additions	\$	54 090	33 100	(40)	na
Farm debt at 30 June b	\$	501 070	487 000	(4)	486 000
Change in debt – 1 July to 30 June b	%	5	3	(44)	–1
Equity at 30 June bc	\$	3 362 570	3 298 000	(3)	na
Equity ratio bd	%	87	87	(1)	na
Farm liquid assets at 30 June b	\$	156 360	161 200	(7)	na
Farm management deposits (FMDs) at 30 June b	\$	37 820	41 200	(9)	na
Share of farms with FMDs at 30 June b	%	22	23	(7)	na
Rate of return ^e					
– excl. cap. appreciation	%	1.8	1.5	(10)	1.5
– incl. cap. appreciation	%	1.1	1.2	(21)	na
Off-farm income of owner–manager and spouse b	\$	32 140	32 100	(6)	na

a Excludes leased plant and equipment. **b** Average per responding farm. **c** Farm capital minus farm debt. **d** Equity expressed as a percentage of farm capital. **e** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **y** Provisional estimates. **na** Not available.

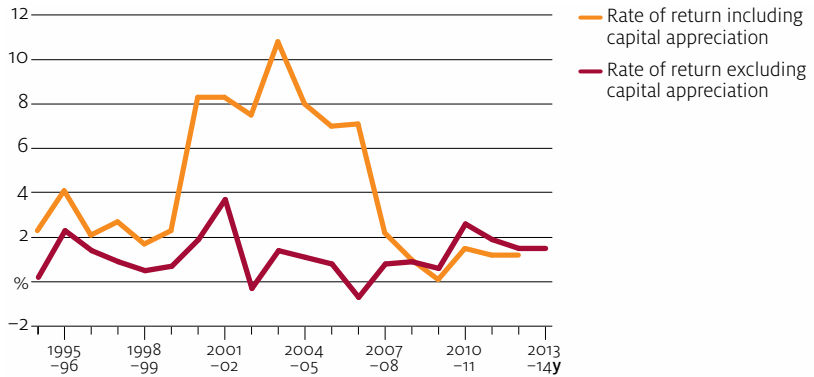
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

Rates of return

The average rate of return to total farm capital, including capital appreciation for broadacre farms, was high between 2000–01 and 2006–07 but declined after 2007–08. Strong demand for rural land during most of the 2000s resulted in a sharp increase in land values in most agricultural regions, which raised the total capital value of farms. Rapidly rising farm capital values resulted in high rates of return including capital appreciation. However, from 2007–08 increases in land values have been much smaller and reported land values declined in a number of regions in the three years to 2012–13. The reduction in reported land values during this period resulted in lower estimates of average rate of return to total farm capital, including capital appreciation for broadacre and dairy farms.

Rises in total farm capital values as a consequence of the general increase in land values during the 2000s also acted to reduce rates of return excluding capital appreciation.

Return on capital, all broadacre industries



y ABARES provisional estimate.

Average rates of return excluding capital appreciation declined slightly in 2012–13 as farm business profits decreased for broadacre farms in many regions. Overall, the average rate of return excluding capital appreciation for Australian broadacre farms is estimated to have been 1.5 per cent in 2012–13; it is expected to remain at that level in 2013–14, above the 10-year average to 2012–13 of only 1.1 per cent.

In 2013–14 rates of return excluding capital appreciation are expected to be positive across all states and the Northern Territory, except Queensland where the rate of return is projected at –0.7 per cent. The highest average rate of return excluding capital appreciation is projected for Western Australia, at 4.7 per cent.

Among the surveyed industries, the projected average rate of return excluding capital appreciation for the wheat and other crops industry is highest at 4.6 per cent. The beef industry is the lowest ranked in 2013–14, with a projected average rate of return excluding capital appreciation of –0.5 per cent. All broadacre livestock industries are expected to have recorded negative average rates of return including capital appreciation in 2012–13.

For the dairy industry, the rate of return, excluding capital appreciation, is projected to average 3.1 per cent in 2013–14, similar to that recorded in 2011–12 and up on the 1.0 per cent recorded in 2012–13. In 2013–14, as in the previous two years, the average rate of return excluding capital appreciation is expected to be highest in Tasmania at 5.0 per cent and lowest in Queensland at 0.9 per cent.

Performance, by state

Projected farm financial performance for 2013–14 and how it ranks, in historical terms, varies markedly across states and regions.

Financial performance of all broadacre industries, by state average per farm												
	Farm cash income			Farm business profit a			Rate of return excluding capital appreciation b			Rate of return including capital appreciation		
	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y
	\$	\$	\$	\$	\$	\$	%	%	%	%	%	%
New South Wales	78 700	97 600 (8)	90 000	-2 370	6 700 (118)	-15 000	1.0	1.2 (19)	0.5	0.8 (27)	1.5 (27)	na
Victoria	92 310	85 600 (11)	82 000	8 530	12 400 (68)	-2 000	1.3	1.3 (22)	0.8	1.4 (52)	1.0 (52)	na
Queensland	91 210	89 700 (12)	39 000	30 060	-4 900 (171)	-77 000	1.6	0.8 (21)	-0.7	-0.1 (46)	-0.9 (46)	na
South Australia	190 550	167 500 (15)	231 000	75 380	55 000 (41)	101 000	3.1	2.6 (20)	3.7	3.1 (32)	2.8 (32)	na
Western Australia	187 770	176 600 (16)	317 000	101 190	41 400 (67)	177 000	3.3	2.4 (22)	4.7	1.9 (31)	2.4 (31)	na
Tasmania	107 320	63 200 (14)	71 000	66 390	600 (1873)	0	1.9	0.7 (35)	0.7	2.5 (91)	1.0 (91)	na
Northern Territory	253 730	267 300 (34)	403 000	322 860	502 200 (25)	543 000	2.2	3.5 (13)	3.8	-3.3 (113)	0.9 (113)	na
Australia	112 200	111 400 (5)	124 000	30 230	17 600 (32)	17 000	1.8	1.5 (10)	1.5	1.1 (21)	1.2 (21)	na

a Defined as farm cash income plus build-up in trading stocks, less depreciation and the imputed value of operator partner and family labor. b Defined as profit at full equity, excluding capital appreciation, as a percentage of total opening capital. Profit at full equity is defined as farm business profit plus rent, interest and lease payments less depreciation on leased items. p Preliminary estimates. y Provisional estimates.

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

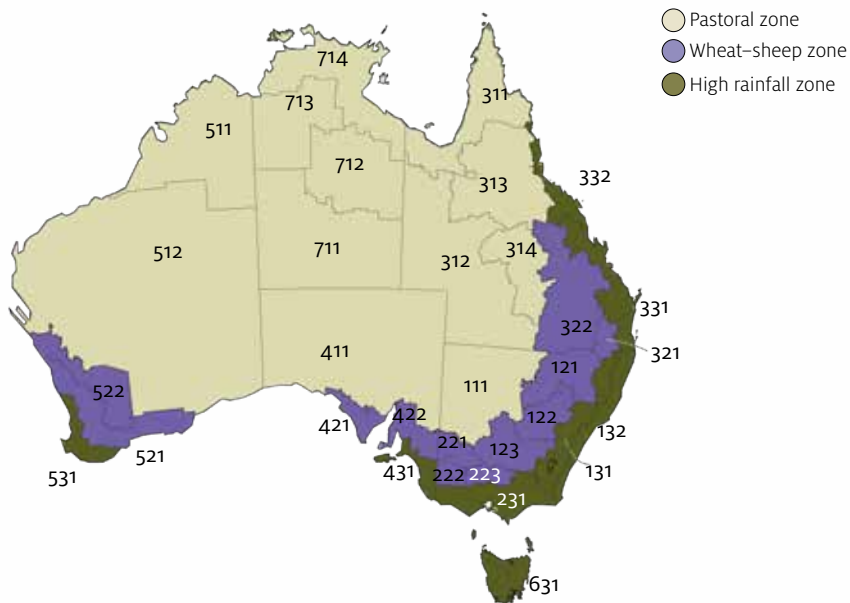
Financial performance of broadacre industries, by region average per farm

	Farm cash income		Percent of farms with negative farm cash income		Farm business profit	
	2012–13p	2013–14y	2012–13p	2013–14y	2012–13p	2013–14y
New South Wales						
111: NSW Far West	153 000	(17) 86 000	19	31	52 300	-36 000
121: NSW North West Slopes and Plains	132 800	(20) 2 000	15	44	33 400	-120 000
122: NSW Central West	91 200	(15) 128 000	19	24	-22 200	28 000
123: NSW Riverina	159 700	(13) 185 000	12	17	51 600	81 000
131: NSW Tablelands	42 400	(23) 52 000	30	42	-19 500	-48 000
132: NSW Coastal	-20 000	(45) -2 000	70	77	-57 100	-85 000
Victoria						
221: VIC Mallee	126 100	(26) 165 000	45	40	32 900	32 000
222: VIC Wimmera	157 400	(14) 150 000	5	22	63 000	44 000
223: VIC Central North	93 100	(15) 50 000	26	41	11 500	-33 000
231: VIC Southern and Eastern Victoria	55 000	(26) 59 000	26	23	-5 300	-9 000
Queensland						
311: QLD Cape York and the Gulf	84 800	(116) 55 000	41	44	56 300	216 000
312: QLD West and South West	328 000	(34) 54 000	23	16	-96 300	-197 000
313: QLD Central North	122 800	(47) -34 000	41	44	-44 700	-221 000
314: QLD Charleville – Longreach	122 100	(29) 73 000	45	38	44 300	-71 000
321: QLD Eastern Darling Downs	65 700	(33) 15 000	25	41	-2 700	-75 000
322: QLD Darling Downs and Central Highlands	115 900	(15) 45 000	16	33	24 800	-74 000
331: QLD South Queensland Coastal	17 000	(57) 50 000	51	23	-23 900	-37 000
332: QLD North Queensland Coastal	18 100	(82) 49 000	62	50	-55 600	-56 000
South Australia						
411: SA North Pastoral	188 100	(25) 211 000	12	2	54 600	92 000
421: SA Eyre Peninsula	208 900	(24) 375 000	27	5	97 000	239 000
422: SA Murray Lands and Yorke Peninsula	201 600	(26) 249 000	9	4	56 800	107 000
431: SA South East	97 700	(17) 136 000	13	18	31 100	24 000
Western Australia						
511: WA Kimberley	-141 800	(184) 664 000	44	10	-104 100	288 000
512: WA Pilbara and Southern Rangelands	101 400	(184) 234 009	45	38	94 200	118 000
521: WA Central and South Wheatbelt	225 100	(20) 442 000	18	6	78 000	302 000
522: WA North and East Wheatbelt	189 200	(33) 221 000	30	20	-2 300	13 000
531: WA South West	49 800	(29) 61 000	24	29	-16 900	-3 000
Tasmania						
	63 200	(14) 71 000	12	10	600	0
Northern Territory						
711: NT Alice Springs District	69 400	(232) 73 000	37	46	-256 800	-155 000
712: NT Barkly Tablelands	2 225 800	(23) 2 173 000	34	10	2 632 200	1 753 000
713: NT Victoria River District – Katherine	-135 400	(47) 103 000	86	56	362 500	650 000
714: NT Top End Darwin and the Gulf	-24 700	(544) 170 000	78	62	32 900	54 000

p ABARES preliminary estimates. y ABARES provisional estimates. na Not available.

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

Australian broadacre zones and regions



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

Financial performance of broadacre industries, by state average per farm

		New South Wales			Victoria		
		2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y
Total cash receipts	\$	369 820	388 400	(5) 382 000	303 990	279 700	(9) 278 000
Total cash costs	\$	291 120	290 800	(5) 292 000	211 680	194 200	(10) 196 000
Farm cash income	\$	78 700	97 600	(8) 90 000	92 310	85 600	(11) 82 000
Farms with negative farm cash income	%	31	23	(14) 35	20	25	(18) 28
Farm business profit	\$	-2 370	6 700	(118) -15 000	8 530	12 400	(68) -2 000
Farms with negative farm business profit	%	64	67	(5) 68	64	63	(8) 66
Profit at full equity							
- excl. cap. appreciation	\$	35 490	41 200	(21) 18 000	36 060	37 200	(27) 22 000
- incl. cap. appreciation	\$	27 820	53 700	(28) na	41 000	27 900	(53) na
Farm capital at 30 June a	\$	3 563 410	3 548 200	(4) na	2 902 350	2 820 700	(10) na
Net capital additions	\$	76 260	42 200	(48) na	63 650	6 600	(301) na
Farm debt at 30 June b	\$	477 350	415 200	(8) 416 000	278 170	252 400	(15) 255 000
Change in debt - 1 July to 30 June b	%	5	3	(116) 2	4	-2	(146) 2
Equity at 30 June bc	\$	3 044 240	3 064 400	(5) na	2 599 760	2 527 200	(10) na
Equity ratio bd	%	86	88	(1) na	90	91	(1) na
Farm liquid assets at 30 June b	\$	117 000	140 000	(11) na	158 350	151 100	(18) na
Farm management deposits (FMDs) at 30 June b	\$	25 860	36 000	(15) na	25 770	29 300	(17) na
Share of farms with FMDs at 30 June b	%	21	24	(14) na	18	18	(17) na
Rate of return e							
- excl. cap. appreciation	%	1.0	1.2	(19) 0.5	1.3	1.3	(22) 0.8
- incl. cap. appreciation	%	0.8	1.5	(27) na	1.4	1.0	(52) na
Off-farm income of owner-manager and spouse b	\$	33 580	39 400	(12) na	37 960	32 200	(14) na

continued...

Financial performance of broadacre industries, by state average per farm continued

		Queensland			South Australia		
		2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y
Total cash receipts	\$	368 520	358 500	(4) 325 000	517 330	497 700	(10) 580 000
Total cash costs	\$	277 310	268 800	(4) 285 000	326 790	330 100	(9) 349 000
Farm cash income	\$	91 210	89 700	(12) 39 000	190 550	167 500	(15) 231 000
Farms with negative farm cash income	%	30	33	(12) 33	11	13	(32) 9
Farm business profit	\$	30 060	-4 900	(171) -77 000	75 380	55 000	(41) 101 000
Farms with negative farm business profit	%	58	65	(5) 77	44	56	(10) 44
Profit at full equity							
- excl. cap. appreciation	\$	77 390	40 000	(21) -32 000	114 350	99 900	(24) 145 000
- incl. cap. appreciation	\$	-2 750	-43 100	(46) na	114 000	108 200	(35) na
Farm capital at 30 June a	\$	4 943 140	4 768 100	(3) na	3 742 960	3 945 500	(7) na
Net capital additions	\$	51 760	-17 600	(241) na	60 470	96 900	(53) na
Farm debt at 30 June b	\$	576 860	549 900	(8) 586 000	407 340	459 900	(12) 439 000
Change in debt - 1 July to 30 June b	%	5	1	(277) 5	-1	7	(44) -3
Equity at 30 June bc	\$	4 188 480	4 045 100	(4) na	3 200 240	3 316 000	(8) na
Equity ratio bd	%	88	88	(1) na	89	88	(1) na
Farm liquid assets at 30 June b	\$	152 150	158 200	(12) na	229 560	213 100	(15) na
Farm management deposits (FMDs) at 30 June b	\$	50 560	50 100	(19) na	65 780	57 200	(27) na
Share of farms with FMDs at 30 June b	%	24	22	(14) na	30	32	(18) na
Rate of return e							
- excl. cap. appreciation	%	1.6	0.8	(21) -0.7	3.1	2.6	(20) 3.7
- incl. cap. appreciation	%	-0.1	-0.9	(46) na	3.1	2.8	(32) na
Off-farm income of owner-manager and spouse b	\$	29 740	23 800	(12) na	25 740	27 400	(12) na

continued...

Financial performance of broadacre industries, by state average per farm continued

		Western Australia			Tasmania				
		2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y		
Total cash receipts	\$	742 230	755 100	(8) 974 000	324 300	293 200	(8) 292 000		
Total cash costs	\$	554 460	578 600	(6) 657 000	216 990	230 000	(9) 221 000		
Farm cash income	\$	187 770	176 600	(16) 317 000	107 320	63 200	(14) 71 000		
Farms with negative farm cash income	%	22	23	(19)	22	10	12	(41)	10
Farm business profit	\$	101 190	41 400	(67) 177 000	66 390	600	(1873)	0	
Farms with negative farm business profit	%	45	61	(9)	49	25	65	(10)	64
Profit at full equity									
– excl. cap. appreciation	\$	184 250	128 700	(24) 265 000	90 830	28 500	(35)	25 000	
– incl. cap. appreciation	\$	108 750	125 000	(31) na	118 030	40 100	(85)	na	
Farm capital at 1 July a	\$	5 540 650	5 381 100	(7) na	4 932 490	3 860 300	(8)	na	
Net capital additions	\$	–26 210	69 200	(45) na	82 230	25 000	(32)	na	
Farm debt at 30 June b	\$	975 280	1 088 300	(9) 1 035 000	332 270	340 500	(17)	330 000	
Change in debt – 1 July to 30 June b	%	8	6	(50)	–10	17	6	(55)	2
Equity at 30 June bc	\$	4 419 060	4 220 500	(8) na	4 551 230	3 562 100	(9)	na	
Equity ratio bd	%	82	80	(2)	na	93	91	(1)	na
Farm liquid assets at 30 June b	\$	177 230	191 400	(22) na	252 740	172 900	(18)	na	
Farm management deposits (FMDs) at 30 June b	\$	44 170	47 600	(27) na	59 400	59 700	(31)	na	
Share of farms with FMDs at 30 June b	%	19	23	(24)	na	37	41	(29)	na
Rate of return e									
– excl. cap. appreciation	%	3.3	2.4	(22)	4.7	1.9	0.7	(35)	0.7
– incl. cap. appreciation	%	1.9	2.4	(31)	na	2.5	1.0	(91)	na
Off-farm income of owner–manager and spouse b	\$	26 910	27 200	(14) na	33 080	40 800	(14)	na	

continued...

Financial performance of broadacre industries, by state average per farm continued

		Northern Territory			Australia		
		2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$	1 937 910	1 572 300	(13) 1 796 000	422 820	418 200	(3) 447 000
Total cash costs	\$	1 684 180	1 305 000	(12) 1 392 000	310 620	306 800	(3) 323 000
Farm cash income	\$	253 730	267 300	(34) 403 000	112 200	111 400	(5) 124 000
Farms with negative farm cash income	%	54	66	(15) 48	24	24	(7) 28
Farm business profit	\$	322 860	502 200	(25) 543 000	30 230	17 600	(32) 17 000
Farms with negative farm business profit	%	45	57	(16) 54	57	64	(3) 64
Profit at full equity							
– excl. cap. appreciation	\$	446 620	577 900	(22) 617 000	73 100	59 300	(10) 58 000
– incl. cap. appreciation	\$	–683 080	139 600	(119) na	45 290	46 000	(21) na
Farm capital at 30 June ^a	\$	19 373 600	16 382 300	(13) na	3 990 340	3 915 500	(3) na
Net capital additions	\$	–129 140	52 400	(31) na	54 090	33 100	(40) na
Farm debt at 30 June ^b	\$	1 725 590	1 233 900	(30) 1 186 000	501 070	487 000	(4) 486 000
Change in debt – 1 July to 30 June ^b	%	7	11	(46) –4	5	3	(44) –1
Equity at 30 June ^{bc}	\$	7 051 790	6 435 400	(15) na	3 362 570	3 298 000	(3) na
Equity ratio ^{bd}	%	80	84	(4) na	87	87	(1) na
Farm liquid assets at 30 June ^b	\$	43 830	55 600	(39) na	156 360	161 200	(7) na
Farm management deposits (FMDs) at 30 June ^b	\$	1 600	1 900	(137) na	37 820	41 200	(9) na
Share of farms with FMDs at 30 June ^b	%	1	1	(137) na	22	23	(7) na
Rate of return ^e							
– excl. cap. appreciation	%	2.2	3.5	(13) 3.8	1.8	1.5	(10) 1.5
– incl. cap. appreciation	%	–3.3	0.9	(113) na	1.1	1.2	(21) na
Off-farm income of owner–manager and spouse ^b	\$	46 050	47 400	(39) na	32 140	32 100	(6) na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^y Provisional estimates.
na Not available.

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

New South Wales

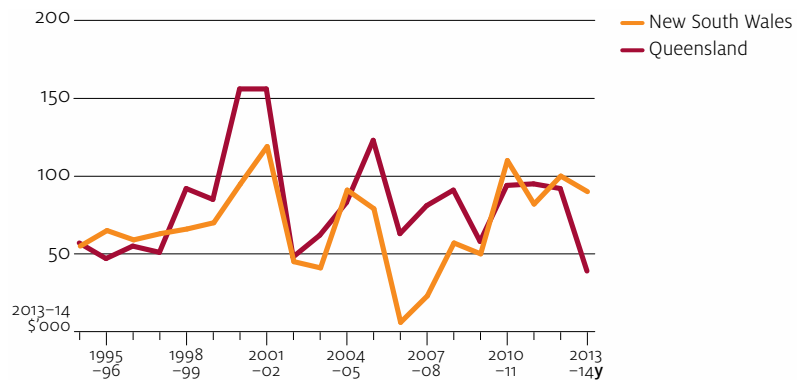
Increases in average farm cash income are expected for grains and sheep farms in southern regions, the Riverina and Central Western New South Wales as a result of increased grain production and higher sheep and lamb prices.

Farm cash incomes are projected to decline as drought conditions reduce crop production for farms in the North West Slopes and Plains and Far West New South Wales and the New South Wales Tablelands. Incomes for beef and sheep farms are projected to decline as result of lower saleyard prices for cattle and despite an increase in the number of sheep, lambs and cattle expected to be sold. However, expenditure on fodder purchases is expected to increase. The proportion of farms recording negative farm cash incomes is projected to exceed 30 per cent in all northern regions.

Overall, with increased incomes in the south and reduced incomes in the north, average farm cash income for New South Wales broadacre farms is projected to decline only slightly in 2013–14, compared with 2012–13. On average, farm cash income for broadacre farms in New South Wales is projected to average \$90 000 per farm in 2012–13, still around 40 per cent above the 10-year average to 2012–13.

Farm business profits are projected to decline to an average loss of \$15 000 per farm as sheep and beef cattle numbers and stocks of grain and fodder on-farm are reduced.

Farm cash income all broadacre farms, New South Wales and Queensland



y ABARES provisional estimate.

Victoria

Overall, receipts from sheep, lambs and wool are projected to increase in 2013–14 mainly because of higher prices and increased winter crop production. Average farm cash income for broadacre farms is projected to be similar to that recorded in 2012–13 in the Wimmera and in Southern and Eastern Victoria. Increased cattle turn-off in the southern areas will be largely offset by increases in cash costs, but a small reduction in cattle numbers will reduce farm business profit slightly. Increased winter crop production is projected to raise average farm cash income in the Mallee region, although farm cash incomes vary greatly in this region. Farm cash income in the Central North is projected to decline.

On average, farm cash income for broadacre farms in Victoria is projected to decline slightly to \$82 000 per farm in 2013–14 but is around 12 per cent above the 10-year average to 2012–13.

Queensland

Average farm cash incomes are projected to decline in all regions of Queensland in 2013–14 except coastal regions. Negative farm cash incomes were recorded for many farms in most regions in 2012–13 and this proportion is expected to rise in 2013–14. As cattle numbers reduce, business profit is expected to be negative in all regions in 2013–14, except Cape York.

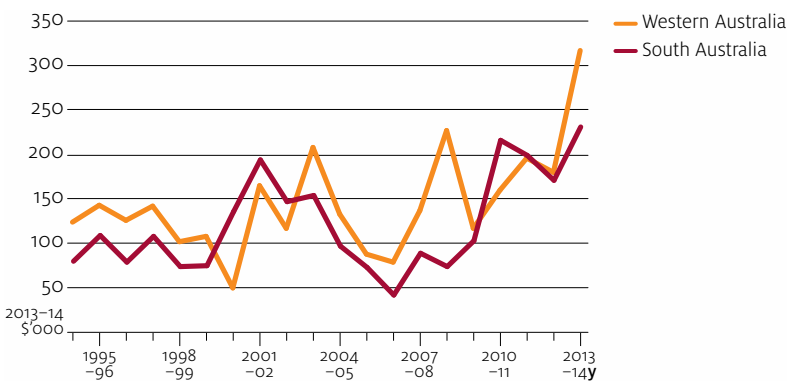
Average crop receipts for Queensland broadacre farms are expected to decline by 35 per cent in 2013–14 as production of winter and summer crops is severely reduced. Receipts from beef cattle are projected to decline as a result of lower saleyard prices and despite an increase in turn-off. Receipts from beef cattle typically account for around 70 per cent of average total cash receipts in Queensland.

Average total cash costs are projected to increase by around 6 per cent in 2013–14, mainly as a result of a projected increase of around 90 per cent in expenditure on fodder and despite a further decline in beef cattle purchase expenditure.

Farm cash income for broadacre farms in Queensland is projected to decline to average \$39 000 per farm; this is the lowest average farm cash income recorded for Queensland broadacre farms in the 37 years the AAGIS survey has operated and around half the 10-year average to 2012–13.

Reduction in beef cattle numbers and in grain and fodder stocks is expected to result in a further decline in farm business profit, from a loss of \$4900 in 2012–13 to a loss of \$77 000 in 2013–14.

Farm cash income, all broadacre farms, South Australia and Western Australia



y ABARES provisional estimate.

South Australia

South Australian broadacre farm cash incomes are projected to increase to average \$231 000 per farm in 2013–14, around 85 per cent above the 10-year average to 2012–13. This is the highest average farm cash income recorded for South Australian broadacre farms in the 37 years the AAGIS has operated.

A 30 per cent increase in winter crop production and higher sheep and lamb prices has resulted in projected average farm cash income and business profit increasing in all South Australian regions, with the largest increase expected in the Eyre Peninsula. Drier seasonal conditions in the Northern Pastoral region have resulted in increased cattle turn-off and farm receipts.

Overall, crop receipts in 2013–14 are projected to increase by around 24 per cent, sheep and lamb receipts by 9 per cent and beef cattle receipts by 4 per cent. Wool receipts are also expected to be higher. Overall, average total cash costs are projected to increase by around 6 per cent, with the largest increase expected in repairs and maintenance as producers make use of higher cash flow.

Western Australia

Record winter grain production in Western Australia and strong grain prices are projected to result in a large increase in average farm cash income in the Central and Southern Wheatbelt. More modest increases are expected in the Northern and Eastern Wheatbelt. An increase in crop receipts was augmented by increased receipts from sheep and lambs as prices increased.

In the northern pastoral regions of the Kimberley and Pilbara, increased sales of beef cattle for live export are projected to increase farm receipts and raise average farm cash income. An increase in beef cattle numbers is projected to result in an even larger improvement in average business profits.

Overall, Western Australian broadacre farm cash incomes are projected to increase to average \$317 000 per farm in 2013–14—around double the 10-year average to 2012–13. This is the highest average farm cash income recorded for Western Australian broadacre farms in the 37 years the AAGIS has operated.

Tasmania

Tasmanian broadacre farm cash incomes are projected to increase by around 12 per cent to average \$71 000 per farm in 2013–14, mainly due to lower interest payments and reductions in expenditure on purchases of beef cattle and sheep. If realised, this would be around 4 per cent above the 10-year average to 2012–13. Receipts from wool and sheep are expected to remain similar to those in 2012–13. An increase in beef cattle receipts, mainly because of higher cattle turn-off, is projected to be offset by reduced crop receipts.

Northern Territory

Many farm businesses in the upper Northern Territory derive most of their total cash receipts from selling cattle for live export to Indonesia. Reliance is highest in the Top End–Gulf of Carpentaria and Victoria River–Katherine regions and is also relatively high in the Barkly–Tennant Creek region. The numbers of cattle sold for live export to Indonesia declined between 2009–10 and 2012–13, before rebounding strongly in 2013–14.

In 2012–13 farm cash income increased slightly to average \$267 300 per farm as purchases of cattle were sharply reduced. This was despite a reduction in beef cattle receipts as a result of a reduction in the numbers of cattle sold or transferred to stations interstate.

In 2013–14 drier seasonal conditions, particularly in the Alice Springs District, and an increase in live cattle exports led to increased cattle turn-off, higher farm receipts and a rise in average farm cash income and business profit.

Performance, by industry

Farm financial performance in 2011–12 and projected for 2012–13 and how it is ranked, in historical terms, also varies markedly across industries.

Financial performance, by industry average per farm

	Farm cash income			Farm business profit		
	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y
	\$	\$	\$	\$	\$	\$
Wheat and other crops	238 120	280 600	325 000	84 480	121 000	160 000
Mixed livestock crops	105 160	126 700	142 000	3 060	13 300	21 000
Beef industry	67 000	47 700	44 000	16 080	-18 000	-43 000
Sheep	73 260	63 900	71 000	22 330	-7 800	-12 000
Sheep beef	111 540	57 100	71 000	56 770	-4 000	-13 000
All broadacre industries	112 200	111 400	124 000	30 230	17 600	17 000
Dairy	143 360	44 200	129 000	64 960	-33 500	48 000

	Rate of return – excluding capital appreciation a			Rate of return – including capital appreciation a		
	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y
	%	%	%	%	%	%
Wheat and other crops	3.5	4.1	4.6	3.7	4.8	na
Mixed livestock crops	1.4	1.6	1.8	0.4	1.8	na
Beef industry	1.1	0.2	-0.5	0.1	-0.9	na
Sheep	1.6	0.4	0.2	0.2	-0.3	na
Sheep beef	1.9	0.5	0.2	1.8	-0.6	na
All broadacre industries	1.8	1.5	1.5	1.1	1.2	na
Dairy	3.8	1.0	3.1	0.7	0.7	na

a Defined as profit at full equity, excluding capital appreciation, as a percentage of total opening capital. Profit at full equity is defined as farm business profit plus rent, interest and lease payments less depreciation on leased items. p Preliminary estimates. y Provisional estimates. na Not available.

Wheat and other crops industry

Average farm cash income for the wheat and other crops industry increased in 2012–13 to average \$280 600 per farm, with reduced grain and oilseed production more than offset by higher prices for most grains and oilseeds.

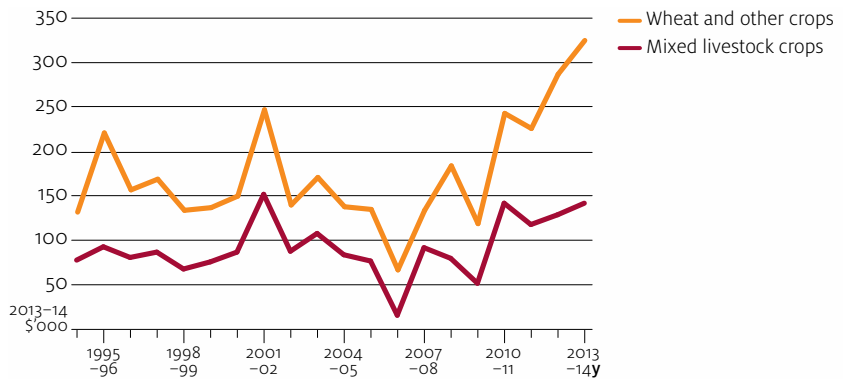
In 2013–14 farm cash income for the wheat and other crops industry is projected to increase to average \$325 000 per farm, mainly as a result of large increases in grain production in Western Australia and South Australia. This is despite reductions in grain production in northern New South Wales and Queensland.

In 2013–14 crop receipts are projected to increase by 10 per cent, while total cash costs are projected to increase by around 5 per cent. Expenditure is projected to increase in most cost categories with the exception of interest payments.

If realised, 2013–14 farm cash income will be around 90 per cent above the 10-year average to 2012–13. This is the highest average recorded for wheat and other crops industry farms in the 37 years the AAGIS has operated.

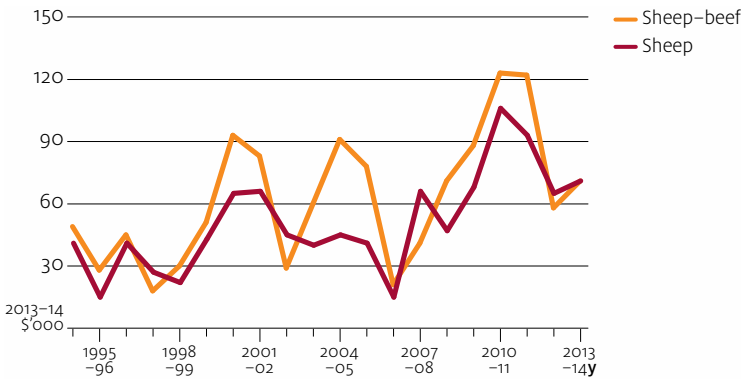
Of industries surveyed in 2013–14, wheat and other crops industry farms are projected to record the highest average rate of return excluding capital appreciation of 4.8 per cent, although rates vary across the states and territories. Wheat and other crops industry farms surveyed recorded the highest average rate of return among broadacre industries in 19 of the past 20 years.

Farm cash income, grains industries



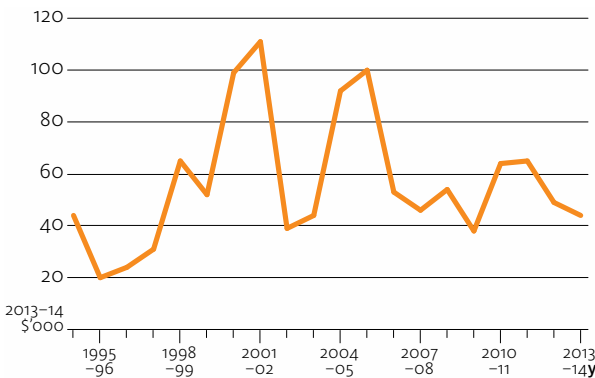
2013–14 y ABARES provisional estimate.

Farm cash income, sheep industries



2013-14 ABARES provisional estimate.

Farm cash income, beef industry



2013-14 ABARES provisional estimate.

Mixed livestock-crops industry

Average farm cash income for the mixed livestock-crops industry increased in 2012–13 to average \$126 700. Overall, crop receipts increased by an average of 19 per cent in this industry, while receipts from sheep and wool declined as a result of lower prices. Total cash costs also rose only slightly despite a reduction in expenditure on livestock purchases and interest payments.

In 2013–14 overall crop receipts are projected to increase by around 5 per cent for farms in this industry. Reductions in crop receipts in Queensland and northern New South Wales were more than offset by increased crop production in South Australia, Western Australia and southern New South Wales and increased receipts from sheep, lambs and beef cattle.

Total cash costs are projected to increase by around 4 per cent, mainly because of projected increases in expenditure on fodder, fuel and repairs and maintenance. This is despite reduced expenditure on sheep and cattle purchases and interest payments.

Average farm cash income for mixed livestock–crops industry farms is projected to increase to an average of \$142 000 per farm in 2013–14, around 60 per cent above the 10-year average to 2012–13.

Sheep industry

In 2012–13 lower prices for adult sheep, lambs and wool resulted in a decline in average farm cash income for sheep industry farms to \$63 900 per farm.

In 2013–14 farm cash income for sheep industry farms is projected to increase to average \$71 000 per farm as sheep and lamb prices rebound. If achieved, farm cash income for sheep industry farms would still be around 25 per cent above the 10-year average to 2012–13 of \$57 000 per farm.

Sheep–beef industry

In 2012–13 receipts from the sale of sheep and lambs declined with lower prices for adult sheep, lambs and wool. The reduction in receipts was compounded by reduced receipts from beef cattle; many sheep–beef industry farms in Queensland regions were affected by dry seasonal conditions in 2012–13. Farm cash income for sheep–beef industry farms declined to average \$57 100 per farm.

In 2013–14 farm cash income for sheep–beef industry farms is projected to increase to average \$71 000 per farm as a result of higher sheep, lamb and wool prices. If achieved, this would be around 6 per cent below the 10-year average to 2012–13.

Beef industry

In 2012–13 drier seasonal conditions and relatively high beef cattle numbers in northern Australia led to an increase in net cattle turn-off and a slowing in the rate of increase in herd sizes in both northern and southern Australia. Lower average sale prices for beef cattle resulted in average beef cattle receipts declining by 15 per cent for beef industry farms. Reduction in expenditure on beef purchases and lower interest payments partly offset the reduction in beef cattle receipts and increased fodder expenditure, resulting in average farm cash income for beef industry farms declining to average \$47 700 per farm in 2012–13.

In 2013–14 expansion of drought conditions is projected to lead to a further increase in cattle turn-off, particularly in Queensland and northern New South Wales. This will more than offset reductions in saleyard prices for cattle, resulting in a small increase in farm receipts. This increase is projected to be more than offset by increased expenditure on fodder, fuel and freight costs, resulting in average farm cash income for beef industry farms declining to \$44 000 per farm, around 30 per cent below the 10-year average to 2012–13.

In addition, reduction of cattle numbers on farms is projected to result in a further reduction in the value of on-farm inventories and a reduction in farm business profit for beef industry farms, representing an average loss of \$43 000 per farm in 2013–14.

Dairy industry

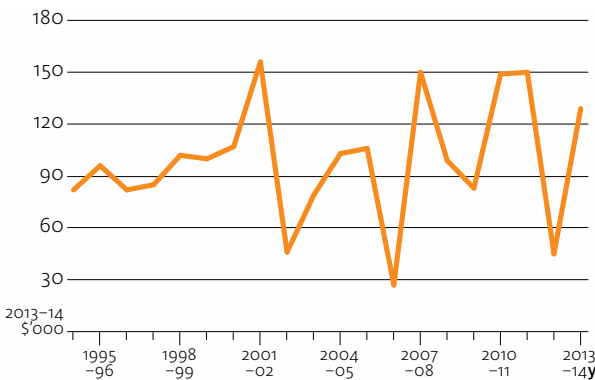
In 2012–13 a reduction in farmgate milk prices (averaging 7 per cent nationally) and a reduction in milk production, together with increased cash costs (averaging 12 per cent nationally) driven mainly by increased expenditure on fodder, resulted in reduced farm cash incomes for dairy farms in all states. Nationally, average farm cash income declined from \$143 360 in 2011–12 to just \$44 200 in 2012–13. An estimated 33 per cent of dairy farms recorded negative farm cash incomes in 2012–13, 38 per cent in Victoria and 41 per cent in Tasmania.

In 2013–14 average farm cash incomes are projected to rebound strongly with large increases in milk prices for milk producers in southern New South Wales, South Australia, Victoria and Tasmania and smaller increases forecast for producers in other states and regions.

Average farm cash income is projected to increase to \$112 000 per farm in New South Wales, \$127 000 per farm in Victoria, \$138 000 in Western Australia, \$189 000 in South Australia and \$210 000 in Tasmania. In Queensland, farm cash income is projected to increase only slightly to an average of \$80 000 per farm.

When variations to projected farm cash incomes for dairy farms across Australia are taken into account, the overall average farm cash income for Australian dairy farms is projected to increase to average \$129 000 per farm in 2013–14, around 29 per cent above the 10-year average to 2012–13.

Farm cash income, dairy industry



y ABARES provisional estimate.

Financial performance, dairy industry average per farm

		2011–12	2012–13 ^p		2013–14 ^y
Total cash receipts	\$	630 060	577 300	(9)	674 000
Total cash costs	\$	486 700	533 100	(10)	545 000
Farm cash income	\$	143 360	44 200	(26)	129 000
Farms with negative farm cash income	%	13	33	(23)	17
Farm business profit	\$	64 960	–33 500	(28)	48 000
Farms with negative farm business profit	%	36	68	(7)	39
Profit at full equity					
– excl. cap. appreciation	\$	132 370	35 200	(32)	114 000
– incl. cap. appreciation	\$	24 250	25 200	(92)	na
Farm capital at 30 June ^a	\$	3 436 930	3 740 500	(7)	na
Net capital additions	\$	78 390	96 400	(56)	na
Farm debt at 30 June ^b	\$	709 460	783 700	(7)	771 000
Change in debt - 1 July to 30 June ^b	%	2	4	(46)	1
Equity at 30 June ^{bc}	\$	2 746 010	2 943 600	(6)	na
Equity ratio ^{bd}	%	80	79	(2)	na
Farm liquid assets at 30 June ^b	\$	158 600	184 400	(20)	na
Farm management deposits (FMDs) at 30 June ^b	\$	28 090	25 500	(35)	na
Share of farms with FMDs at 30 June ^b	%	19	14	(29)	na
Rate of return ^e					
– excl. cap. appreciation	%	3.8	1.0	(29)	3.1
– incl. cap. appreciation	%	0.7	0.7	(91)	na
Off-farm income of owner–manager and spouse ^b	\$	17 480	20 600	(17)	na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Rate of return to farm capital at 1 July. ^p ABARES preliminary estimates. ^y ABARES provisional estimates. **na** Not available.

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

Financial performance, by industry, broadacre and dairy industries average per farm

	Wheat and other crops industry			Mixed livestock–crops industry		
	2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$ 876 480	949 400	⁽⁵⁾ 1 024 000	446 970	473 500	⁽⁶⁾ 504 000
Total cash costs	\$ 638 360	668 800	⁽⁵⁾ 700 000	341 810	346 800	⁽⁶⁾ 362 000
Farm cash income	\$ 238 120	280 600	⁽⁸⁾ 325 000	105 160	126 700	⁽¹⁰⁾ 142 000
Farms with negative farm cash income	% 17	19	⁽¹⁵⁾ 23	32	17	⁽¹⁹⁾ 19
Farm business profit	\$ 84 480	121 000	⁽¹⁹⁾ 160 000	3 060	13 300	⁽⁸⁹⁾ 21 000
Farms with negative farm business profit	% 44	48	⁽⁸⁾ 52	61	60	⁽⁷⁾ 50
Profit at full equity						
– excl. cap. appreciation	\$ 176 390	213 500	⁽¹¹⁾ 250 000	52 340	64 700	⁽²⁰⁾ 72 000
– incl. cap. appreciation	\$ 185 970	249 300	⁽¹⁵⁾ na	14 580	70 300	⁽²⁶⁾ na
Farm capital at 30 June a	\$ 5 113 220	5 340 400	⁽⁵⁾ na	3 785 900	3 976 000	⁽⁵⁾ na
Net capital additions	\$ 107 800	118 400	⁽²⁶⁾ na	49 870	26 500	⁽¹²⁴⁾ na
Farm debt at 30 June b	\$ 1 077 400	1 099 600	⁽⁸⁾ 1 036 000	565 500	569 800	⁽⁸⁾ 576 000
Change in debt – 1 July to 30 June b	% 6	2	⁽⁸⁹⁾ –6	4	4	⁽⁷⁵⁾ –2
Equity at 30 June bc	\$ 4 013 250	4 212 200	⁽⁷⁾ na	3 149 990	3 338 900	⁽⁵⁾ na
Equity ratio bd	% 79	79	⁽²⁾ na	85	85	⁽¹⁾ na
Farm liquid assets at 30 June b	\$ 190 160	198 900	⁽¹¹⁾ na	129 900	147 700	⁽¹³⁾ na
Farm management deposits (FMDs) at 30 June b	\$ 61 930	70 200	⁽¹⁶⁾ na	37 530	48 000	⁽¹⁷⁾ na
Share of farms with FMDs at 30 June b	% 28	30	⁽¹³⁾ na	29	32	⁽¹⁵⁾ na
Rate of return ^e						
– excl. cap. appreciation	% 3.5	4.1	⁽¹⁰⁾ 4.6	1.4	1.6	⁽¹⁹⁾ 1.8
– incl. cap. appreciation	% 3.7	4.8	⁽¹⁴⁾ na	0.4	1.8	⁽²⁷⁾ na
Off-farm income of owner–manager and spouse b	\$ 26 760	31 100	⁽¹³⁾ na	31 870	28 000	⁽¹¹⁾ na

continued...

Financial performance, by industry, broadacre and dairy industries average per farm continued

	Sheep industry			Beef industry		
	2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$ 231 440	241 000	(9) 247 000	265 140	229 600	(5) 246 000
Total cash costs	\$ 158 180	177 200	(10) 176 000	198 140	181 900	(5) 202 000
Farm cash income	\$ 73 260	63 900	(17) 71 000	67 000	47 700	(14) 44 000
Farms with negative farm cash income	% 23	22	(21) 23	28	35	(10) 40
Farm business profit	\$ 22 330	-7 800	(137) -12 000	16 080	-18 000	(32) -43 000
Farms with negative farm business profit	% 60	63	(10) 62	64	75	(4) 80
Profit at full equity						
- excl. cap. appreciation	\$ 39 360	11 600	(96) 6 000	43 120	6 700	(92) -18 000
- incl. cap. appreciation	\$ 6 150	-9 100	(221) na	5 460	-35 900	(36) na
Farm capital at 30 June a	\$ 2 507 540	2 680 100	(7) na	4 163 280	3 812 100	(4) na
Net capital additions	\$ 13 090	-700	(3673) na	85 570	-2 000	(1640) na
Farm debt at 30 June b	\$ 197 980	219 100	(25) 221 000	314 960	297 000	(8) 320 000
Change in debt - 1 July to 30 June b	% 4	6	(103) 2	5	3	(110) 6
Equity at 30 June bc	\$ 2 271 860	2 396 600	(8) na	3 594 770	3 291 800	(4) na
Equity ratio bd	% 92	92	(2) na	92	92	(1) na
Farm liquid assets at 30 June b	\$ 179 590	173 200	(22) na	151 750	163 400	(12) na
Farm management deposits (FMDs) at 30 June b	\$ 38 020	37 000	(23) na	27 080	28 800	(18) na
Share of farms with FMDs at 30 June b	% 20	23	(18) na	17	17	(17) na
Rate of return ^e						
- excl. cap. appreciation	% 1.6	0.4	(93) 0.2	1.1	0.2	(90) -0.5
- incl. cap. appreciation	% 0.2	-0.3	(222) na	0.1	-0.9	(36) na
Off-farm income of owner-manager and spouse b	\$ 36 070	30 700	(15) na	32 750	35 500	(11) na

continued...

Financial performance, by industry, broadacre and dairy industries average per farm continued

		Sheep–beef industry			Dairy industry		
		2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$	358 080	233 800 (24)	255 000	630 060	577 300 (9)	674 000
Total cash costs	\$	246 540	176 700 (23)	184 000	486 700	533 100 (10)	545 000
Farm cash income	\$	111 540	57 100 (34)	71 000	143 360	44 200 (26)	129 000
Farms with negative farm cash income	%	14	16 (33)	21	13	33 (23)	17
Farm business profit	\$	56 770	–4 000 (345)	–13 000	64 960	–33 500 (28)	48 000
Farms with negative farm business profit	%	38	63 (11)	67	36	68 (7)	39
Profit at full equity							
– excl. cap. appreciation	\$	86 300	15 600 (104)	6 000	132 370	35 200 (32)	114 000
– incl. cap. appreciation	\$	79 690	–19 000 (154)	na	24 250	25 200 (92)	na
Farm capital at 30 June ^a	\$	4 434 100	3 376 300 (14)	na	3 436 930	3 740 500 (7)	na
Net capital additions	\$	–101 180	58 600 (88)	na	78 390	96 400 (56)	na
Farm debt at 30 June ^b	\$	379 880	248 600 (31)	257 000	709 460	783 700 (7)	771 000
Change in debt – 1 July to 30 June ^b	%	8	3 (301)	3	2	4 (46)	1
Equity at 30 June ^{bc}	\$	3 879 960	2 964 200 (13)	na	2 746 010	2 943 600 (6)	na
Equity ratio ^{bd}	%	91	92 (2)	na	80	79 (2)	na
Farm liquid assets at 30 June ^b	\$	142 960	101 000 (24)	na	158 600	184 400 (20)	na
Farm management deposits (FMDs) at 30 June ^b	\$	22 210	20 600 (27)	na	28 090	25 500 (35)	na
Share of farms with FMDs at 30 June ^b	%	14	14 (30)	na	19	14 (29)	na
Rate of return ^e							
– excl. cap. appreciation	%	1.9	0.5 (96)	0.2	3.8	1.0 (29)	3.1
– incl. cap. appreciation	%	1.8	–0.6 (157)	na	0.7	0.7 (91)	na
Off-farm income of owner–manager and spouse ^b	\$	33 240	34 000 (16)	na	17 480	20 600 (17)	na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^y Provisional estimates. ^{na} Not available.

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

Financial performance, dairy industry, by state average per farm

		New South Wales			Victoria				
		2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y		
Total cash receipts	\$	713 500	694 500	(4)	759 000	583 330	523 500	(14)	629 000
Total cash costs	\$	553 980	629 800	(4)	647 000	441 540	492 000	(15)	502 000
Farm cash income	\$	159 510	64 600	(24)	112 000	141 790	31 500	(52)	127 000
Farms with negative farm cash income	%	11	23	(15)	24	16	38	(29)	14
Farm business profit	\$	63 550	-13 700	(120)	16 000	67 030	-40 100	(32)	51 000
Farms with negative farm business profit	%	31	72	(10)	59	38	70	(10)	35
Profit at full equity									
- excl. cap. appreciation	\$	122 360	42 000	(39)	70 000	130 310	27 100	(58)	115 000
- incl. cap. appreciation	\$	-59 030	41 000	(78)	na	9 540	29 700	(104)	na
Farm capital at 30 June a	\$	3 889 800	3 896 300	(5)	na	2 988 710	3 371 100	(11)	na
Net capital additions	\$	111 180	61 600	(47)	na	80 330	50 000	(104)	na
Farm debt at 30 June b	\$	655 970	683 100	(11)	678 000	644 610	747 800	(10)	754 000
Change in debt - 1 July to 30 June b	%	4.0	3.0	(188)	1.0	3.0	5.0	(55)	1.0
Equity at 30 June bc	\$	3 229 510	3 069 400	(6)	na	2 360 640	2 619 000	(9)	na
Equity ratio bd	%	83	82	(2)	na	79	78	(3)	na
Farm liquid assets at 30 June b	\$	162 460	542 800	(24)	na	181 830	161 900	(31)	na
Farm management deposits (FMDs) at 30 June b	\$	28 580	34 200	(37)	na	30 470	23 900	(54)	na
Share of farms with FMDs at 30 June b	%	26	19	(37)	na	19	13	(44)	na
Rate of return e									
- excl. cap. appreciation	%	3.1	1.1	(40)	1.8	4.3	0.8	(54)	3.5
- incl. cap. appreciation	%	-1.5	1.1	(79)	na	0.3	0.9	(103)	na
Off-farm income of owner-manager and partner b	\$	16 130	22 300	(19)	na	20 020	22 800	(20)	na

continued...

Financial performance, dairy industry, by state average per farm continued

		Queensland			Western Australia		
		2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$	482 650	456 800	(4) 473 000	899 120	1 002 700	(8) 999 000
Total cash costs	\$	375 890	377 600	(5) 393 000	787 600	869 300	(9) 860 000
Farm cash income	\$	106 770	79 200	(19) 80 000	111 520	133 400	(22) 138 000
Farms with negative farm cash income	%	11	14	(61) 33	7	6	(49) 10
Farm business profit	\$	20 940	-8 500	(162) -2 000	24 120	75 700	(36) 22 000
Farms with negative farm business profit	%	44	63	(16) 46	32	49	(21) 51
Profit at full equity							
- excl. cap. appreciation	\$	45 670	18 700	(65) 25 000	112 020	175 600	(16) 114 000
- incl. cap. appreciation	\$	6 000	-44 200	(210) na	41 050	19 000	(597) na
Farm capital at 30 June ^a	\$	3 125 680	2 875 800	(5) na	9 325 180	11 255 100	(14) na
Net capital additions	\$	60 780	15 300	(162) na	106 790	1 601 600	(99) na
Farm debt at 30 June ^b	\$	276 490	306 000	(17) 334 000	987 370	1 106 100	(19) 1 008 000
Change in debt - 1 July to 30 June ^b	%	1.0	3.0	(150) -2.0	3.0	1.0	(401) -11.0
Equity at 30 June ^{bc}	\$	2 845 100	2 564 700	(6) na	8 442 710	10 149 000	(15) na
Equity ratio ^{bd}	%	91	89	(2) na	90	90	(2) na
Farm liquid assets at 30 June ^b	\$	99 250	94 600	(27) na	104 950	89 500	(31) na
Farm management deposits (FMDs) at 30 June ^b	\$	22 180	27 300	(51) na	17 270	21 500	(67) na
Share of farms with FMDs at 30 June ^b	%	13	13	(53) na	11	10	(81) na
Rate of return ^e							
- excl. cap. appreciation	%	1.5	0.6	(67) 0.9	1.2	1.8	(22) 1.1
- incl. cap. appreciation	%	0.2	-1.5	(207) na	0.4	0.2	(594) na
Off-farm income of owner-manager and partner ^b	\$	7 510	17 100	(29) na	8 250	7 300	(20) na

continued...

Financial performance, dairy industry, by state average per farm continued

		South Australia			Tasmania		
		2011–12	2012–13 ^p	2013–14 ^y	2011–12	2012–13 ^p	2013–14 ^y
Total cash receipts	\$	875 690	805 000	(5) 906 000	909 430	804 600	(7) 1 024 000
Total cash costs	\$	680 210	716 300	(5) 717 000	752 100	769 900	(9) 813 000
Farm cash income	\$	195 480	88 700	(31) 189 000	157 340	34 700	(89) 210 000
Farms with negative farm cash income	%	6	14	(38) 13	1	41	(30) 17
Farm business profit	\$	89 430	–32 300	(86) 80 000	103 730	–73 500	(41) 124 000
Farms with negative farm business profit	%	39	54	(20) 23	13	65	(18) 32
Profit at full equity							
– excl. cap. appreciation	\$	180 120	53 400	(52) 157 000	265 450	65 700	(40) 269 000
– incl. cap. appreciation	\$	130 390	52 400	(53) na	282 590	24 500	(179) na
Farm capital at 1 July a	\$	4 245 080	4 539 800	(7) na	4 935 730	5 118 200	(11) na
Net capital additions	\$	37 640	37 400	(73) na	37 730	207 400	(62) na
Farm debt at 30 June b	\$	1 049 390	1 103 100	(17) 1 051 000	1 737 520	1 635 700	(14) 1 671 000
Change in debt – 1 July to 30 June b	%	0.0	3.0	(74) 1.0	–2.0	2.0	(54) 2.0
Equity at 30 June bc	\$	3 192 660	3 478 500	(9) na	3 198 210	3 482 300	(13) na
Equity ratio bd	%	75	76	(5) na	65	68	(5) na
Farm liquid assets at 30 June b	\$	76 680	118 000	(21) na	47 290	27 900	(30) na
Farm management deposits (FMDs) at 30 June b	\$	25 190	60 600	(32) na	14 400	3 600	(80) na
Share of farms with FMDs at 30 June b	%	16	34	(25) na	9	2	(81) na
Rate of return ^e							
– excl. cap. appreciation	%	4.2	1.2	(53) 3.4	5.5	1.3	(40) 5.0
– incl. cap. appreciation	%	3.1	1.2	(54) na	5.9	0.5	(182) na
Off-farm income of owner–manager and partner b	\$	20 920	19 200	(19) na	6 730	6 300	(37) na

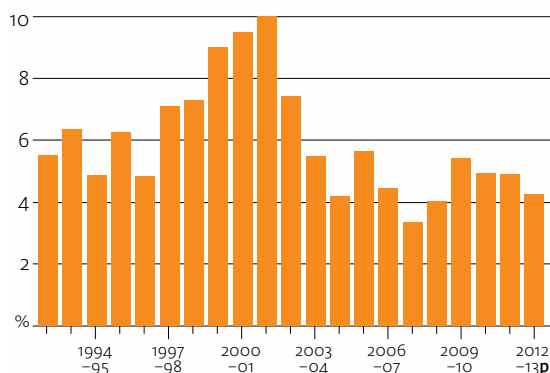
a Excludes leased plant and equipment. **b** Average per responding farm. **c** Farm capital minus farm debt. **d** Equity expressed as a percentage of farm capital. **e** Rate of return to farm capital at 1 July. **p** Preliminary estimates. **na** Not available.

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

Farm investment

Producers' capacity to generate farm income will be influenced by their past investments in additional land to expand the scale of their farming activities and in new infrastructure, plant and machinery to boost productivity in the longer term.

Proportion of farms acquiring land



p ABARES preliminary estimate.

Over the decade to 2012–13 broadacre and dairy farmers invested heavily in land, plant and machinery. In 2012–13 new investment remained relatively high in historical terms.

The proportion of broadacre and dairy farms acquiring land remained relatively low in 2012–13 at around 4 per cent, below the 10-year average to 2012–13 of 6 per cent.

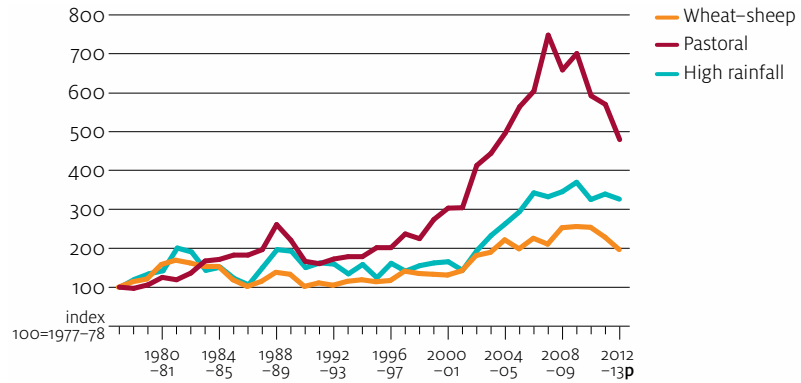
Land values reported for broadacre and dairy farms have declined in some regions since 2009–10, particularly in the pastoral zone of northern Australia. Reported land values remained relatively flat in the high rainfall and wheat–sheep zones in 2010–11 and 2011–12, before declining slightly in 2012–13. Reported land values in 2012–13 were up to 40 per cent below those reported in 2007–08 in some pastoral regions of northern Australia, particularly where very large increases were recorded over the previous decade. Much smaller reductions in reported land values of around 7 per cent occurred in the wheat–sheep zone and of around 3 per cent in the high rainfall zone.

Average land prices for broadacre farms increased sharply, relative to the cash receipts per hectare generated by farming activity between 2001–02 and 2007–08 and then declined slightly to 2012–13.

On broadacre farms, the ratio of average land price per hectare to total cash receipts per hectare doubled from an average of 5:1 in the three years to 2001–02 to 10:1 in the three years to 2009–10. This ratio more than doubled across all agricultural zones and industries. The ratio increased from 7:1 to 14:1 in the high rainfall zone and from 4:1 to 8:1 in the wheat–sheep zone. The largest increase was reported in the pastoral zone, where the ratio increased from 4:1 to 9:1.

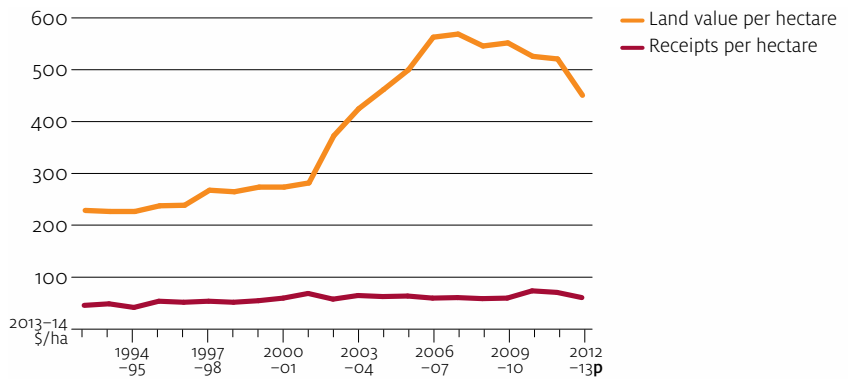
Average receipts per hectare have risen in recent years in the wheat–sheep zone and are projected to increase further in southern and western cropping regions in 2013–14, reducing the gap between land values and returns per hectare.

Land prices for broadacre farms, by zone



p ABARES preliminary estimate.

Land prices and receipts per hectare, broadacre farms



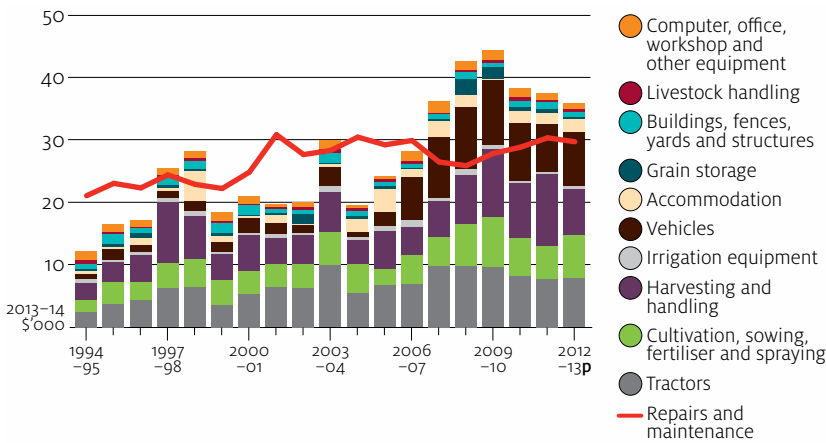
p ABARES preliminary estimate.

Only a relatively small proportion of farms buy land in any one year, but most producers make some annual investment in plant, vehicles, machinery and/or infrastructure. However, typically, because of the much larger average value of land transactions, the value of land purchases dominates total investment.

Net investment in plant, vehicles, machinery and farm infrastructure for broadacre farms has been historically high since 2007–08, with much of this investment occurring on grain producing farms.

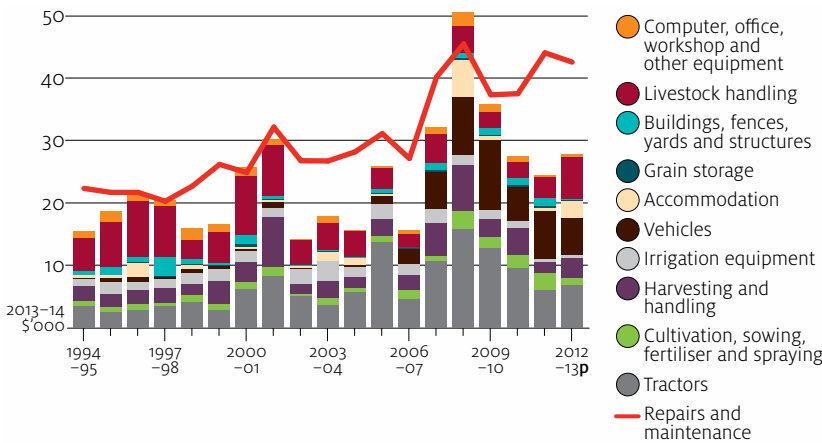
Net investment is the difference between the total value of plant, vehicles, machinery and farm infrastructure purchased and the total value of those items sold or disposed of. In addition to acquiring new capital items and replacing old items, ongoing maintenance and repair of existing plant, vehicles, machinery and farm infrastructure is needed. This expenditure is recorded in ABARES surveys as the cash cost of repairs and maintenance. Most reported annual expenditure on repairs and maintenance is actually the capital cost of replacing and upgrading items of farm capital, such as fencing, stockyards and watering facilities. Annual expenditure on repairs and maintenance is strongly correlated with farm income. Expenditure on repairs and maintenance rises in years of high farm cash income and falls in years of lower farm cash incomes.

Composition of non-land net capital additions, broadacre farms



p ABARES preliminary estimate.

Composition of non-land net capital additions, dairy farms



p ABARES preliminary estimate.

In the three years to 2012–13, investment in crop growing plant and machinery has continued at a high level, but investment in equipment related to livestock production or used more generally across all farm activities has declined in real terms.

Investment by broadacre farms in motor vehicles, tractors and crop harvesting and handling equipment each accounted for around 23 per cent of average total net capital additions; cultivation sowing and planting equipment accounted for a further 16 per cent; buildings, accommodation, yards and watering facilities 10 per cent; computing and workshop equipment 3 per cent; and livestock handling equipment 1 per cent.

Overall, the pattern of investment in plant, vehicles, machinery and farm infrastructure differs for dairy industry farms. Net capital investment peaked for dairy industry farms in 2008–09 and expenditure on repairs and maintenance was at a record level in 2008–09. Farm cash incomes were historically high for dairy farms in 2007–08 and remained relatively high in 2008–09. Combined with the government's investment allowance, this resulted in record net capital investment in plant, vehicles, machinery and farm infrastructure. Net investment declined from 2010–11 but remained relatively high in real terms even with much lower farm incomes in 2012–13. Much of this new investment was on larger and better performing dairy farm businesses.

In the three years to 2012–13 tractors each accounted for around 30 per cent of average total net capital additions for dairy farms; motor vehicles for 25 per cent; livestock handling equipment accounted for 16 per cent; crop harvesting and handling equipment 12 per cent; cultivation sowing and planting equipment accounted for 8 per cent; buildings, accommodation, yards and watering facilities 8 per cent; and computing and workshop equipment 3 per cent.

Most of the rising trend in real expenditure on net capital additions and repairs and maintenance over the past 20 years for both broadacre and dairy farms is due to an increase in the average scale of operations of farms, increased production of crops and increased intensification of enterprises.

Farm debt

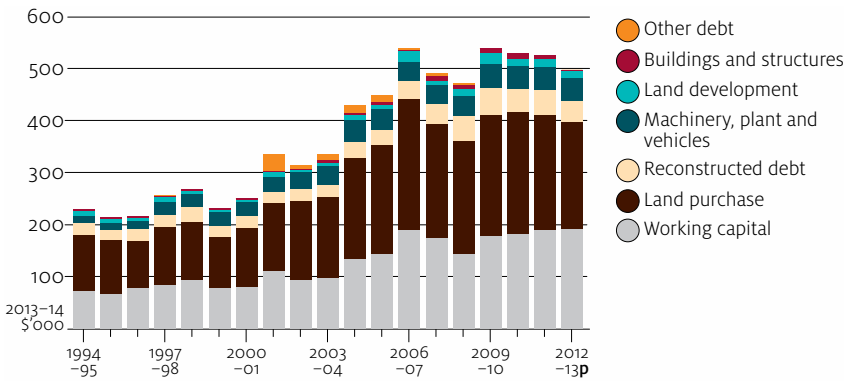
Debt is an important source of funds for farm investment and ongoing working capital for the broadacre and dairy industries, as more than 95 per cent of farms in these sectors are family owned and operated. Funding of family farms for expansion and improvement is limited to the funds available to the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

Farm business debt more than doubled in real terms in the decade to 2009. According to the Reserve Bank of Australia, total bank lending to the rural sector declined slightly from \$63.4 billion at 30 June 2009 to \$60.7 billion at 30 June 2013, in real terms (ABARES 2014).

The annual change in average farm business debt is the balance between the amount of principal repaid over the year and the increase in principal owed (new borrowing). The increase in average farm debt is a result of increased borrowing and a reduced rate of principal repayment.

Interest rates farmers paid were high in the early 1990s but declined through the mid and late 1990s. Lower interest rates and increased lending fuelled the boom in land prices, raising farm equity (net wealth) and inducing lenders to provide more finance. This continued in some regions until the correction in land values after 2009. In addition, debt servicing was supported by provision of interest subsidies to farmers in drought through the exceptional circumstances arrangements. For many regions this assistance was sustained for most of the 2000s.

Composition of farm business debt, broadacre farms



p ABARES preliminary estimate.

Average debt per farm more than doubled (in real terms) for broadacre farms between 2000–01 and 2009–10, from an average of \$266 000 per farm in 2000–01 to \$546 000 per farm in 2009–10. The largest contribution to this increase in average broadacre farm debt was borrowing to fund new on-farm investment, particularly purchase of land, machinery and vehicles. Debt to fund land purchase accounts for the largest share of debt, an estimated 41 per cent of average debt for broadacre farms in 2012–13.

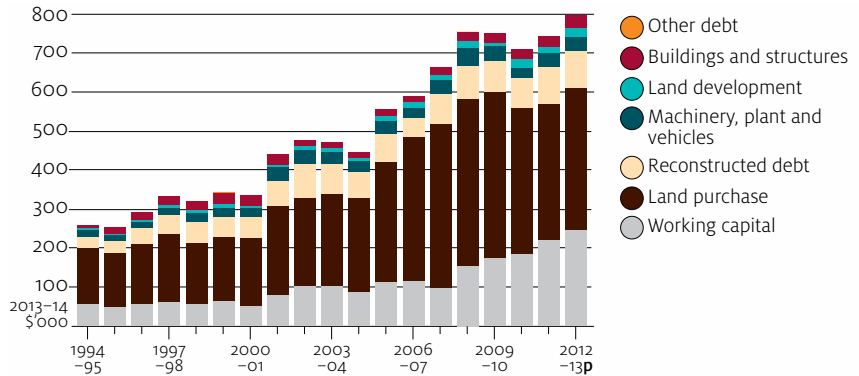
In addition to low interest rates, several other factors contributed to the growth in debt over this period. Structural adjustment resulted in broadacre farmers changing the mix of commodities produced and increasing farm size.

An increase in the average size of farm enterprises resulted in higher borrowing for ongoing working capital. Around 25 per cent of the increase in average broadacre farm debt during the 2000s can be attributed to an increase in the average scale of farm enterprises on broadacre farms, particularly for grains industry farms (ABARES 2013b).

Factors that contributed to increased working capital debt include movement away from less input-intensive wool production into more intensive cropping, changes in grain payment methods, higher variability in crop incomes compared with livestock incomes and movement to more intensive production technologies involving greater use of purchased inputs (such as herbicides).

In addition, loan repayment slowed and borrowing to meet working capital requirements increased for producers during the 2000s, as drought in many regions reduced farm cash incomes. The increase in working capital debt was particularly large in 2006–07, the year in which farm cash incomes were reduced most by drought. Working capital debt accounted for 38 per cent of average farm debt for broadacre farms in 2012–13.

Composition of farm business debt, dairy farms



p ABARES preliminary estimate.

Average dairy farm debt increased from \$345 000 per farm in 2000–01 to \$747 000 per farm in 2009–10. The main reason for this is an increase in average farm size. An increase in average debt per farm would probably have occurred as a result of the exit of small farms from the dairy industry even without additional borrowing. Many of these small farms had little or no debt and their exit from the industry raised the average debt for the remaining farms.

Borrowing has increased for land purchase, in particular, and for on-farm investment. Demand for ongoing working capital has also risen with increases in average herd size and mechanisation and intensification of dairy enterprises.

For dairy farms, the increase in average debt per farm, over time, is modest relative to the increase in the size of the average dairy herd or average litres of milk produced per farm (a measure of capacity to generate income to service debt). Average debt per litre of milk produced increased by 19 per cent (in real terms) between 1998–99 and 2011–12 (ABARES 2013b).

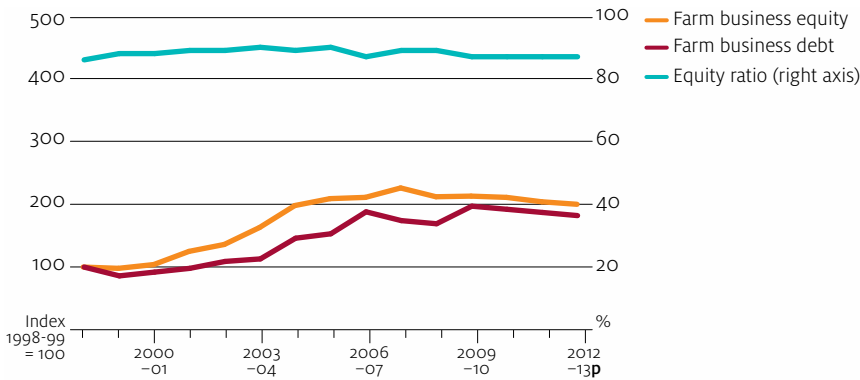
Growth in average debt per farm business in the broadacre and dairy industries has slowed in recent years as a result of a reduction in new borrowing and continued debt repayments.

Broadacre debt is estimated to have declined to an average of \$487 000 per farm in 2012–13. However, dairy industry debt increased, with working capital debt making up most of this increase as low milk prices resulted in around one-third of dairy farms recording negative farm cash incomes in 2012–13.

Farm equity

The decline of land values since 2007–08 has reduced farm equity in some regions and prompted financial institutions to tighten lending, restricting access of some farm businesses to further finance.

Change in farm business debt and equity, broadacre farms



p ABARES preliminary estimate.

On average, farm business equity remains strong for broadacre farms, declining only slightly after the large increase through the 2000s. The average equity ratio for broadacre farms at 30 June 2013 was an estimated 87 per cent, unchanged from 30 June 2012. Around 82 per cent of farms had equity ratios exceeding 80 per cent at 30 June 2013. In some regions farm equity is estimated to have fallen significantly over the three years to June 2013, mainly as a consequence of reported reductions in land values. However, in other regions, farm equity has strengthened because of reduced farm debt and increased capital investment.

At the national level, the average equity ratio for dairy farms has declined slightly since 2004–05 as debt levels have increased. However, the average farm equity ratio remains relatively high, averaging 79 per cent at 30 June 2013, down 1 per cent from 30 June 2012. Change in farm equity ratios over time should be considered against the background of the increase in average farm size. Equity ratios are typically lower for larger farms because they are generally able to service larger debts.

Distribution of farms by debt and equity

The proportion of broadacre farms with relatively high debt varies across jurisdictions and industries.

Around 32 per cent of broadacre farms in Western Australia and around 37 per cent of Northern Territory farms carried in excess of \$1 million in debt at 30 June 2013. The high proportion of farms with debt exceeding \$1 million reflects a high proportion of larger businesses in those jurisdictions.

Around 47 per cent of Tasmanian dairy farms, 43 per cent of Western Australian and 39 per cent of South Australian dairy farms carried in excess of \$1 million in debt at 30 June 2012. The high proportion of farms with debt exceeding \$1 million in these states reflects a greater number of larger businesses in those jurisdictions and a high level of new investment on these larger farms in recent years. New investment in large dairy operations has occurred mostly in northern Tasmania, Western Victoria and South Australia.

In contrast, 65 per cent of beef farms and 68 per cent of sheep-beef farms nationally were recorded as having less than \$100 000 in debts at 30 June 2013. Many of these businesses were relatively small. The number of dairy farms with less than \$100 000 in debts has declined from 21 per cent at 30 June 2012 to 14 per cent at 30 June 2013.

Much of the aggregate broadacre and dairy sector debt is held by a relatively small proportion of mostly larger farms. Around 70 per cent of aggregate broadacre sector debt, at 30 June 2013, was held by just 12 per cent of farms. On average, these were much larger farm businesses that in aggregate produced around 46 per cent of the total value of broadacre farm production in 2012–13. Similarly, around 45 per cent of aggregate dairy sector debt at 30 June 2013 was held by 10 per cent of farms.

Distribution of broadacre farms by state, by farm business debt and equity ratio at 30 June 2013 ^{pa}

		New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australia
Farm business debt b									
<\$100 000	%	47 (8)	67 (6)	55 (6)	48 (14)	41 (17)	66 (9)	36 (38)	53 (4)
\$100 000 and <\$250 000	%	17 (18)	11 (24)	7 (28)	9 (46)	8 (49)	5 (67)	1 (137)	12 (12)
\$250 000 and <\$500 000	%	14 (18)	7 (23)	10 (21)	10 (29)	8 (34)	11 (39)	9 (84)	10 (11)
\$500 000 and <\$1m	%	11 (17)	8 (21)	13 (18)	20 (24)	12 (30)	7 (42)	17 (66)	12 (9)
\$1m and <\$2m	%	7 (20)	5 (31)	8 (18)	10 (19)	13 (25)	8 (30)	15 (39)	8 (10)
≥\$2m	%	4 (17)	2 (28)	6 (15)	4 (33)	19 (12)	4 (33)	22 (34)	6 (7)
Total	%	100	100	100	100	100	100	100	100
Average farm debt									
at 30 June	\$'000	415 (8)	252 (15)	550 (8)	460 (12)	1 088 (9)	341 (17)	1 234 (30)	487 (4)
Farm business equity ratio bc									
≥90 per cent	%	66 (5)	78 (4)	69 (4)	58 (11)	53 (11)	80 (5)	46 (23)	67 (3)
80 and <90 per cent	%	16 (15)	12 (20)	15 (17)	21 (24)	12 (31)	8 (35)	31 (30)	15 (9)
70 and <80 per cent	%	8 (25)	6 (23)	6 (27)	12 (27)	13 (23)	10 (36)	13 (58)	8 (11)
60 and <70 per cent	%	5 (28)	3 (32)	7 (22)	5 (42)	10 (30)	0 (67)	5 (76)	6 (13)
<60 per cent	%	5 (28)	2 (34)	3 (25)	4 (57)	12 (23)	2 (50)	5 (93)	5 (14)
Total	%	100	100	100	100	100	100	100	100
Average farm business equity ratio									
at 30 June	%	89 (1)	91 (1)	87 (1)	89 (2)	80 (2)	92 (1)	85 (4)	87 (1)
Population of farms	no.	17 800	12 200	9 400	6 400	6 400	900	200	53 300

a Excludes debt for large corporate farms. b Average per responding farm. c Equity ratio defined as total owned business capital at 30 June less debt as a percentage of total owned business capital. p ABARES preliminary estimates. Business capital at 30 June less debt as a percentage of total owned business capital.

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

Distribution of broadacre farms by industry, by farm business debt and equity ratio at 30 June 2013 ^{pa}
percentage of farms

		Wheat and other crops	Mixed- livestock crops	Sheep	Beef	Sheep- beef	Australia
Farm business debt ^b							
<\$100 000	%	33 (14)	39 (12)	58 (10)	65 (5)	68 (10)	53 (4)
\$100 000 and <\$250 000	%	6 (35)	16 (21)	15 (26)	12 (20)	6 (55)	12 (12)
\$250 000 and <\$500 000	%	13 (22)	11 (22)	14 (22)	7 (26)	10 (35)	10 (11)
\$500 000 and <\$1m	%	16 (25)	16 (18)	9 (42)	9 (17)	9 (30)	12 (9)
\$1m and <\$2m	%	15 (14)	13 (20)	3 (86)	4 (23)	5 (91)	8 (10)
≥\$2m	%	17 (10)	6 (17)	1 (95)	3 (18)	1 (64)	6 (7)
Total	%	100	100	100	100	100	100
Average farm debt							
at 30 June	\$'000	1 100 (8)	570 (8)	217 (27)	297 (8)	249 (31)	487 (4)
Farm business equity ratio ^{bc}							
≥90 per cent	%	47 (9)	57 (8)	71 (7)	79 (3)	76 (9)	67 (3)
80 and <90 per cent	%	19 (20)	20 (17)	12 (26)	11 (17)	14 (45)	15 (9)
70 and <80 per cent	%	13 (19)	9 (20)	11 (29)	4 (30)	6 (36)	8 (11)
60 and <70 per cent	%	8 (21)	8 (26)	4 (64)	4 (23)	4 (60)	6 (13)
<60 per cent	%	13 (19)	6 (35)	2 (138)	1 (28)	1 (120)	5 (14)
Total	%	100	100	100	100	100	100
Average farm business							
equity ratio at 30 June	%	80 (2)	86 (1)	91 (2)	91 (1)	92 (2)	87 (1)
Population of farms	no.	9 800	11 800	8 100	17 900	5 700	53 300

^a Excludes debt for large corporate farms. ^b Average per responding farm. ^c Equity ratio defined as total owned business capital at 30 June less debt as a percentage of total owned business capital. ^p ABARES preliminary estimates.

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

Debt servicing

For the broadacre and dairy industries, the proportion of farm receipts needed to fund interest payments rose substantially between 2001–02 and 2007–08. This was the result of a large increase in farm debt and reduced farm receipts, arising from extended drought conditions. Interest rate subsidies paid to farm businesses as drought assistance partially offset the increase in interest paid over this period.

Distribution of dairy farms, by farm business debt and equity ratio at 30 June 2013 ^{pa}

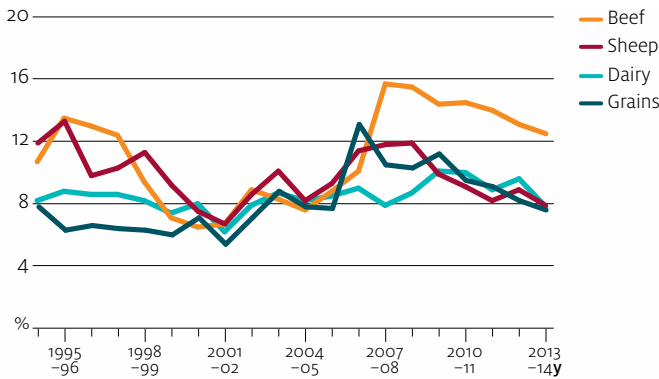
		New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Australia
Farm business debt ^b								
<\$100 000	%	33 (23)	7 (77)	44 (26)	20 (50)	38 (32)	0 (0)	14 (28)
\$100 000 and <\$250 000	%	14 (46)	13 (49)	26 (40)	8 (75)	2 (88)	22 (51)	14 (32)
\$250 000 and <\$500 000	%	20 (39)	34 (27)	6 (64)	13 (62)	7 (49)	0 (0)	26 (24)
\$500 000 and <\$1m	%	12 (38)	22 (32)	16 (33)	20 (46)	10 (80)	31 (40)	20 (24)
\$1m and <\$2m	%	14 (33)	18 (29)	8 (51)	20 (44)	24 (42)	7 (82)	16 (22)
≥\$2m	%	8 (26)	8 (37)	1 (79)	19 (29)	19 (31)	40 (23)	10 (21)
Total	%	100	100	100	100	100	100	100
Average farm debt								
at 30 June	\$'000	683 (11)	748 (10)	306 (17)	1 103 (17)	1 106 (19)	1 636 (14)	784 (7)
Farm business equity ratio ^{bc}								
≥90 per cent	%	48 (15)	21 (37)	74 (8)	33 (33)	63 (15)	22 (51)	30 (19)
80 and <90 per cent	%	17 (35)	24 (30)	10 (46)	23 (41)	20 (43)	9 (51)	21 (23)
70 and <80 per cent	%	16 (43)	36 (24)	4 (28)	18 (42)	11 (49)	4 (60)	28 (21)
60 and <70 per cent	%	8 (36)	4 (37)	9 (47)	5 (76)	6 (43)	28 (40)	7 (21)
<60 per cent	%	11 (37)	15 (36)	2 (89)	22 (38)	0 (0)	38 (33)	15 (26)
Total	%	100	100	100	100	100	100	100
Average farm business								
equity ratio at 30 June	%	83 (2)	79 (3)	89 (3)	76 (5)	96 (7)	69 (5)	80 (2)
Population of farms	no.	750	4 840	590	300	180	440	7 090

a Excludes debt for large corporate farms. b Average per responding farm. c Equity ratio defined as total owned business capital at 30 June less debt as a percentage of total owned business capital. p ABARES preliminary estimates. Business capital at 30 June less debt as a percentage of total owned business capital.

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

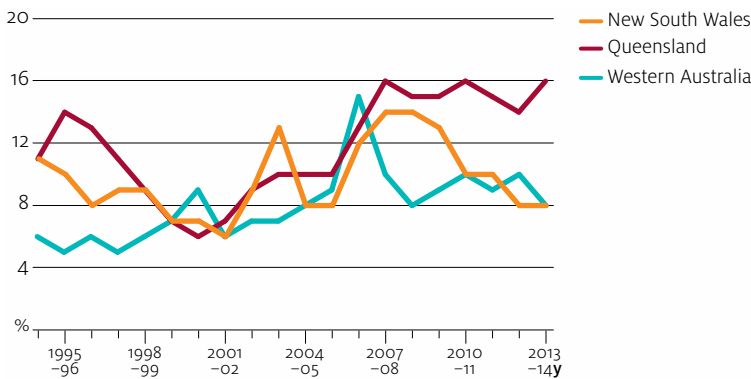
Higher farm receipts since 2009–10 and reductions in interest resulted in a decline in the average proportion of farm receipts needed to fund interest payments for grains, dairy and sheep industry farms. However, much larger increases in borrowing through the 2000s and a reduction in farm receipts in more recent years has resulted in the proportion of receipts needed to fund interest payments remaining historically high for the beef industry. Borrowing by northern beef industry farms was particularly high through the 2000s (ABARES 2013a). The proportion of farm receipts needed to fund interest payments peaked at almost 16 per cent in 2007–08 as northern cattle producers restocked after the cessation of drought and is projected to be around 13 per cent in 2013–14.

Ratio of interest payments to total cash receipts, farms with debt, by industry



y ABARES provisional estimate.

Ratio of interest payments to total cash receipts, farms with debt, by state

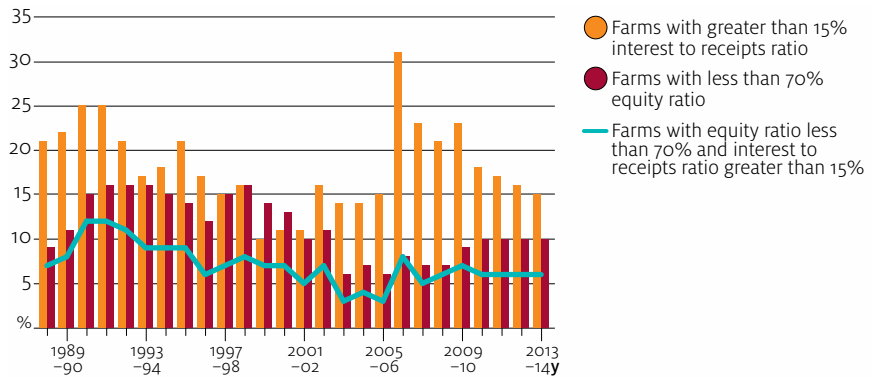


y ABARES provisional estimate.

In 2012–13 the ratio of interest payments to farm receipts is projected to reduce further in some regions and industries, declining to 6 per cent for Western Australian and South Australian broadacre farms. The proportion of farm receipts needed to meet interest payments is projected to rise in drought affected regions, with the average for Queensland broadacre farms projected to be around 16 per cent and around one-third of Queensland farms projected to record negative farm cash incomes.

Farm cash incomes for broadacre and dairy farms have been highly variable over the past decade. Mechanisms farm businesses use to manage income variability include holding liquid financial assets (such as farm management deposits) and maintaining high farm equity to provide a reserve of credit to manage income downturns. Credit reserves are unused borrowing capacity, such as an overdraft. Maintaining a credit reserve avoids costs of liquidating farm assets to meet cash demands and reacquiring those assets once the adversity has passed.

Debt servicing and borrowing capacity, all broadacre farms



y ABARES provisional estimate.

Critical to maintaining credit reserves is a lender's willingness to provide loans. Financial institutions lend to farm businesses on the basis of the equity farmers have in their businesses and the capacity of the business to service increased debt long term. Most businesses that institutional lenders allow to operate with an equity ratio of less than 70 per cent are large operations that mostly generate high farm cash incomes or have access to substantial off-farm assets or income.

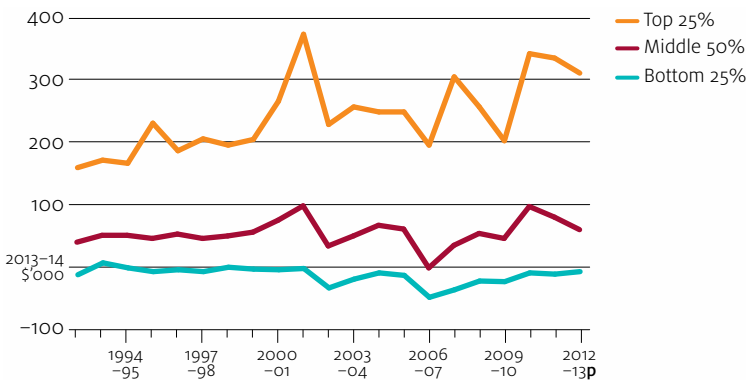
The proportion of broadacre farms with relatively low additional borrowing capacity (equity ratio of less than 70 per cent) and relatively high debt servicing commitments (interest to receipts ratio exceeding 15 per cent) peaked at 8 per cent in 2006–07 and reached 7 per cent in 2009–10 before declining slightly to an estimated 6 per cent in 2012–13. This is well below the highs of around 12 per cent recorded in the early 1990s, when interest rates were high and farm cash incomes were uniformly low across all industries.

In 2013–14 the proportion of broadacre farms with relatively low additional borrowing capacity and relatively high debt servicing commitments is projected to increase only slightly at the national level, mainly as a result of expected reductions in debt in Western Australia and South Australia. However, in Queensland, the proportion is projected to increase to 11 per cent, the highest recorded since 1997–98, when beef cattle prices were at record lows and interest rates were 60 per cent higher than in 2013–14.

High performing farms

Farm businesses can be classified into performance categories, based on the rate of return (excluding capital appreciation) to all capital used in the business. Rate of return to total farm capital is a relatively complete measure of farm financial performance that values all farm inputs and is not as strongly correlated with farm size as many other financial performance measures. To reduce the effect of changes in commodity prices, seasonal conditions and other year-specific effects on farm performance, three-year moving average rates of return have been calculated for each sample farm in the ABARES farm survey database of broadacre farms. Farms have been classified into performance groups on the basis of these averages. Farms have been classified into the top performing 25 per cent of farms by rate of return, middle performing 50 per cent and bottom performing 25 per cent.

Farm cash income, all broadacre farms



p ABARES preliminary estimate.

Substantial differences exist for each of the financial performance measures between the average financial performance of top performing farms and those of middle and bottom performing farms.

ABARES analysis indicates that the gap between top and bottom performing farms has increased over time. While the bottom performing broadacre farms have struggled to generate positive farm cash incomes over the past two decades, the top 25 per cent of farms have generated cash incomes exceeding \$200 000 (in real terms) in 13 of the past 20 years.

Over the 20 years to 2012–13, the top performing 25 per cent of farms recorded average rates of return to capital used (excluding capital appreciation) of 5.9 per cent a year, much higher than the average annual rate of return of 1.1 per cent a year for all broadacre farms. The rate of return for top performing farms in 2012–13 averaged 4.9 per cent and is projected to average 5.7 per cent in 2013–14.

These high performing farms account for a large share of the total value of agricultural production. For example, they accounted for 54 per cent of the value of output from all broadacre farms. In contrast, the bottom performing 25 per cent of farms accounted for just 8 per cent.

They also account for most new investment. Over the three years to 2012–13, top performing farms accounted for 64 per cent of net capital additions on broadacre farms. In contrast, the bottom performing 25 per cent of farms accounted for just 2 per cent. Relatively high rates of new investment for high performing farms are likely to support significant productivity gains to improve farm cash incomes in real terms over the longer term, as well as increases in aggregate farm production.

High performing farms dominate land purchases and account for a high proportion of aggregate sector debt. For example, they accounted for 54 per cent of aggregate broadacre sector debt and around 58 per cent of aggregate debt in the northern beef industry (in Queensland, the Northern Territory and northern Western Australia).

Despite accounting for a high proportion of debt, high performing farms have less difficulty servicing debt than the average for the sector. For example, in the three years to 2011–12, the proportion of farm receipts consumed to service interest payments averaged 8 per cent for high performing broadacre farms and 12 per cent for bottom performing farms.

Operators of top performing farms earn much higher household incomes and generally derive a much larger proportion of their total household income from the farm business than bottom performing farms. High performing farms are found across all farm sizes and in most regions of Australia.

Bottom performing farms are predominantly smaller farms in the beef or sheep industries. Around 85 per cent of bottom performing farms generated less than \$150 000 in annual farm receipts, in the three years to 2011–12. Around 47 per cent of these farms derived more than 50 per cent of their household cash income off-farm. The operators of these farms appear to be mostly supplementing the small cash income their farm can generate with off-farm income to support the household, rather than the off-farm income supporting the farm's operation. Only 17 per cent of households earned more than \$75 000 in off-farm income. This is not a substantially larger proportion than the 12 per cent of households operating top performing farms that earn more than \$75 000 in off-farm income.

Bottom performing farms are much more likely to be run by older farmers, with 52 per cent of these farms operated by farmers over 65 years of age. These older farmers derive most of their off-farm income from investments, superannuation or pensions, while younger farmers derive most of their off-farm income from wages and salaries.

Productivity in the broadacre and dairy industries

Emily M Gray, Robert Leith and Alistair Davidson

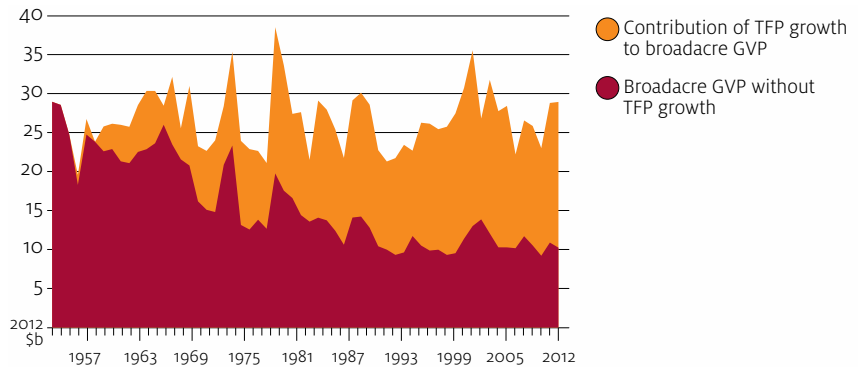
Summary

- Productivity in the broadacre industries grew at an average rate of 1 per cent a year between 1977–78 and 2011–12.
- Between 1977–78 and 2011–12, across the broadacre industries as a whole, average annual productivity growth was largely driven by declines in overall resource use (–1.0 per cent), rather than gains in production (0.0 per cent).
- Although broadacre productivity growth stalled between 1999–2000 and 2011–12, primarily because of drought-induced reductions in output across all industries, relatively strong productivity growth was realised by cropping specialists (1.0 per cent) and sheep specialists (1.2 per cent).
- Dairy productivity growth averaged 1.6 per cent a year between 1978–79 and 2011–12, and it grew most strongly in the decade since deregulation in 2000.
- Wide-reaching policy reforms over many years have, in part, underpinned agricultural productivity growth in Australia.
- Identifying new reform opportunities to boost productivity growth remains an objective of government and industry stakeholders. To ensure such reforms deliver maximum productivity payoffs, their design should allow normal structural adjustment and eliminate unnecessary regulatory burdens.

Introduction

Productivity growth is a key mechanism by which agricultural industries remain competitive and farmers maintain profitability. Productivity growth reflects improvements in the efficiency with which farmers combine market inputs (land, labour, capital, materials and services) to produce outputs (such as crops, livestock and wool). As a result of higher productivity, Australian farmers have increased output using relatively fewer inputs, producing almost three times more output than would have been the case had there been no productivity growth over the past 50 years (Figure 1).

FIGURE 1 Contribution of total factor productivity growth to gross value of broadacre production, 1952–53 to 2011–12



Industry productivity growth reflects aggregate effects of improvements in on-farm efficiency and effects of ongoing adjustments in industry structure. The latter have resulted in more efficient resource use across farms over time. Exporting and import-competing industries face limitations to land availability, water and other resources. Their ability to remain competitive will largely depend on their capacity to maintain and improve productivity relative to competitors.

However, stakeholders concerned with the future of farming in Australia have stressed the greater importance of profitability in ensuring long-term viability of farm businesses. Profitability is important to attract investment and other resources into agriculture and for farmers to:

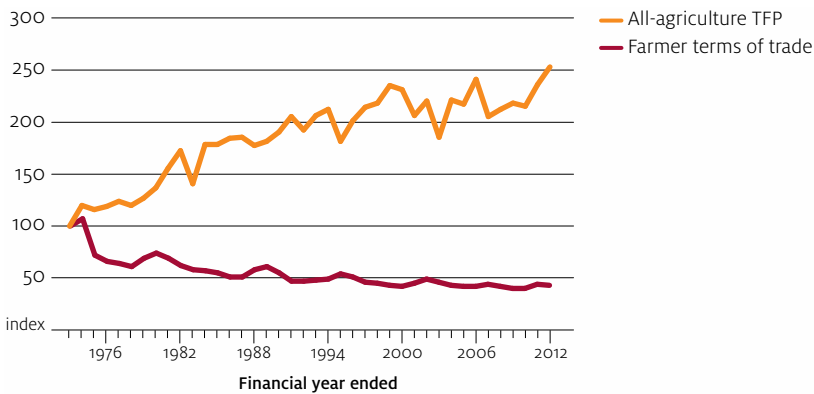
- meet ongoing expenditures on farm inputs and debt servicing obligations
- finance investments in new technologies
- earn a return on their entrepreneurial ability and capital investment (Ashton et al. forthcoming).

For these reasons, profitability is generally a farmer's main objective, rather than higher productivity. However, in the long run, productivity growth is the key mechanism by which farmers maintain profits. With some important profit drivers largely beyond farmers' control, such as seasonal conditions and market prices, farmers' choice of enterprise and use of farm inputs largely determine profitability. Through continuously adopting new technologies (such as improved inputs) and management practices, farmers can reduce their unit costs of production and input use over time (that is, increase productivity) to maintain profits.

More particularly, technological progress allows farmers to substitute more advanced inputs for relatively costly ones, resulting in lower input use over time. This allows farmers to lower their cost base by using more efficient combinations of inputs. For example, by adopting improved capital technologies and agricultural chemicals, farmers have reduced their use of other inputs, such as labour. Similarly, by adopting improved management practices, farmers have reduced a range of inputs. Such cost-saving technological improvements constitute productivity growth.

Increasing productivity is not the only pathway to higher profit. At times, improvements in the terms of trade may induce farmers to choose a less efficient (productivity decreasing) output mix or scale of operations. For example, farmers may expand cropping into relatively marginal land to take advantage of fortuitous market conditions. However, such periods of high commodity prices tend to be temporary. Productivity growth remains the main means of sustaining farm profitability against the declining trend in the farmer terms of trade (Figure 2).

FIGURE 2 All agriculture total factor productivity and farmer terms of trade, 1972–73 to 2011–12



Trends in agricultural productivity

Total factor productivity (TFP) is the key indicator ABARES uses to measure productivity of the broadacre and dairy industries. TFP is defined as the ratio of total market outputs produced (such as crops, livestock and wool) to total market inputs used (land, labour, capital, materials and services). In 2013 ABARES developed a measure of long-term TFP growth that includes all agricultural industries. From 1948–49 to 2011–12 agricultural productivity growth in Australia averaged 2.1 per cent a year, mainly reflecting strong output expansion (2.6 per cent a year on average) and a smaller increase in input use (0.5 per cent a year on average). See Box 1 for an overview of ABARES productivity estimates.

Compared with single input or partial factor productivity (PFP) measures (such as labour productivity or crop yield per hectare), TFP is better for evaluating overall productivity performance of agricultural industries. This is because PFP measures attribute the combined effects of changes in all aspects of farm production systems solely to one input. This may result in a misleading assessment of the drivers of productivity growth.

Box 1 ABARES productivity estimates

ABARES has published statistics and analysed the productivity of Australia's broadacre (non-irrigated cropping and grazing) and dairy industries since the early 1990s using data collected through its national farm survey program. ABARES has applied a consistent methodology to the annual surveys of broadacre farms since 1977–78 and of dairy farms since 1978–79.

ABARES estimates TFP as the ratio of a quantity index of total market outputs relative to a quantity index of market inputs. Multiple outputs and inputs are aggregated across farms to the industry level using the Fisher index and then TFP is calculated by taking a ratio of total outputs to total inputs. Annual TFP growth rates (percentage change over time) are estimated by fitting an exponential trend line. For a more detailed description of the ABARES TFP index methodology, see Zhao, Sheng & Gray 2012.

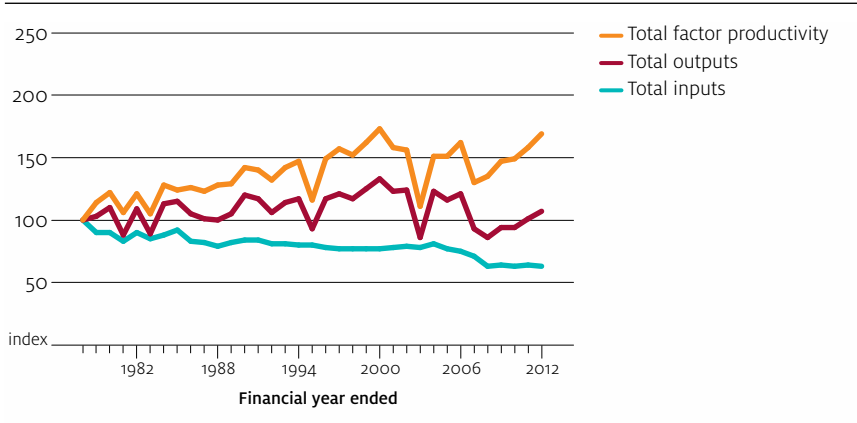
The broadacre and dairy industries are defined by the Australian and New Zealand Standard Industrial Classification described in the Survey methods and definitions section (page 65).

In 2013 ABARES developed a growth-accounting based measure of Australian agricultural TFP. The ABARES all agriculture TFP index includes all agricultural industries, and uses growth accounting and national accounts data to estimate long-term total factor productivity of Australia's agriculture industry. Industries included in the all agriculture index are the cropping industries (grains, oilseeds, vegetables and melons, fruits and nuts, cotton, tobacco and other horticulture, and other crops), livestock industries (red meat, poultry, eggs, wool, milk and dairy products, and other livestock products) and other outputs.

Broadacre productivity growth

At the industry level, productivity growth is driving output growth in broadacre agriculture, with aggregate input use declining. Between 1977–78 and 2011–12 broadacre TFP growth averaged around 1.0 per cent a year. Over this period, the broadacre industry maintained output levels (output growth close to zero), despite reducing input use (–1.0 per cent a year on average) (Figure 3).

FIGURE 3 Trends in broadacre total factor productivity, total inputs and total outputs, 1977–78 to 2011–12



Comparisons of outputs and input use at the industry and farm levels suggest that ongoing structural adjustment was an important source of productivity growth in broadacre agriculture between 1977–78 and 2011–12 (Table 1). In contrast to industry trends, individual broadacre farms on average increased outputs (1.8 per cent a year) by using more inputs (0.8 per cent a year), as well as through productivity growth. Reflecting the trend toward fewer, larger farms in the broadacre industry, more efficient farms were able to expand and increase productivity by purchasing resources (particularly land) released by exiting or downsizing farms.

TABLE 1 Average productivity, output and input growth in broadacre industries, 1977–78 to 2011–12 (% a year)

	Productivity growth	Output growth	Input growth
Industry	1.0	0.0	–1.0
Average farm	1.0	1.8	0.8

Note: The average per farm output and input use are derived by dividing the industry gross output and input series by the number of farms, assuming that all farms are identical. On average, the number of broadacre farms declined by around 1.8 per cent a year between 1977–78 and 2011–12.

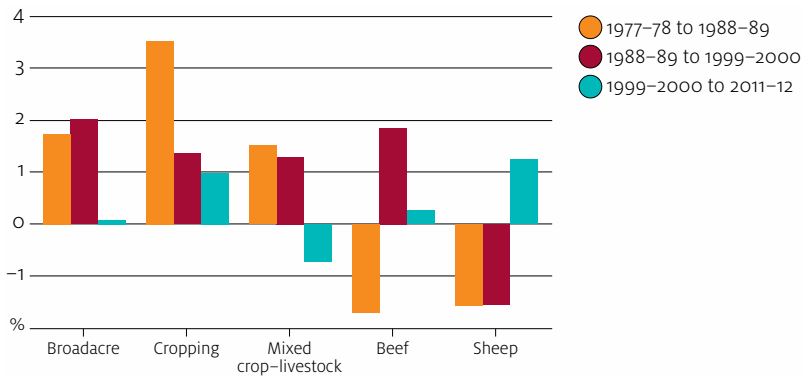
Across the broadacre industries, average productivity growth in the cropping industry has exceeded that of the livestock industries (Table 2). TFP growth of cropping specialists averaged 1.6 per cent a year between 1977–78 and 2011–12, higher than beef (0.8 per cent), mixed crop–livestock (0.9 per cent) and sheep (0.1 per cent) farms. This may reflect differences in the capacity of cropping and livestock farms to substitute to lower cost input combinations. In particular, advances in machinery, agricultural chemicals and crop varieties have allowed cropping farms to substitute capital and materials (such as crop chemicals and fertiliser) for labour, such that input use has fallen relatively more than for livestock farms.

TABLE 2 Average annual broadacre productivity growth, by industry, 1977–78 to 2011–12 (%)

	All broadacre	Cropping	Mixed crop–livestock	Beef	Sheep
Total factor productivity					
Productivity	1.0	1.6	0.9	0.8	0.1
Outputs	0.0	2.6	–0.8	0.5	–2.6
Inputs	–1.0	1.0	–1.7	–0.3	–2.6
Partial factor productivity					
Land	1.0	1.4	0.4	0.9	–0.2
Labour	2.2	3.3	2.0	1.3	0.8
Capital	1.6	2.8	2.0	0.4	1.3
Materials	–1.8	–1.5	–1.6	–1.8	–2.0
Services	0.9	1.9	0.9	0.4	0.2
Input use					
Land	–0.9	1.2	–1.3	–0.3	–2.4
Labour	–2.1	–0.7	–2.8	–0.8	–3.3
Capital	–1.5	–0.2	–2.8	0.2	–3.8
Materials	1.9	4.1	0.8	2.3	–0.6
Services	–0.9	0.8	–1.7	0.2	–2.7

However, in recent years the gap between the productivity growth rates of the cropping and livestock industries has narrowed (Figure 4). More specifically, TFP among cropping specialists and mixed crop–livestock farms has been growing more slowly, whereas the growth rate in the livestock industries has been increasing. Among other factors, while poor seasonal conditions over much of the 2000s affected all broadacre industries, significant falls in cropping industry output were not accompanied by similar declines in input use.

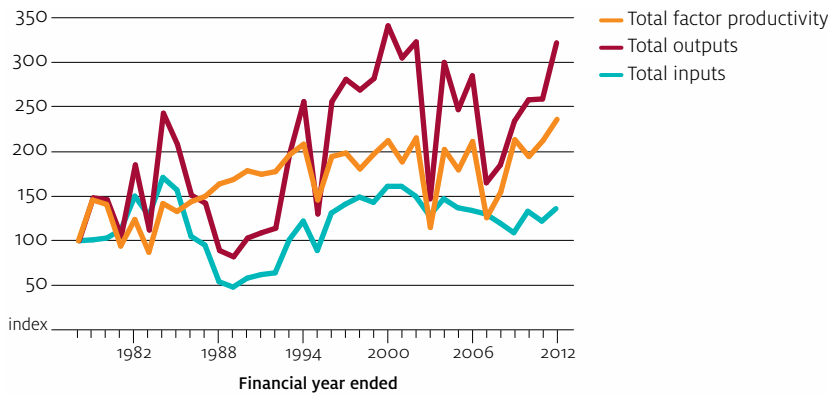
FIGURE 4 Broadacre total factor productivity growth, by period



Cropping industry productivity

Cropping industry TFP increased at an average annual rate of 1.6 per cent from 1977-78 to 2011-12. Despite periods of extreme volatility, total output from specialist cropping farms grew on average at around 2.6 per cent a year over this period, as a result of increasing input use (1.0 per cent a year) and productivity growth (Figure 5).

FIGURE 5 Trends in cropping specialists' total factor productivity, total inputs and total outputs, 1977-78 to 2011-12



Technical change, through growers' adoption of new technologies and management practices, has been the main driver of long-term productivity growth of cropping specialists (Hughes et al. 2011). In workshops on grains industry productivity held across Australia in 1999 and 2009 (see Jackson 2010; Knopke, O'Donnell & Shepherd 2000), growers and other industry stakeholders identified breakthrough cropping system technologies and knowledge that drove higher cropping productivity, including:

- greater understanding of cropping systems, such as plant physiology and determinants of soil fertility
- improved crop rotations that provided better pest and weed control
- larger and more sophisticated machinery
- improved crop varieties, such as those with better disease resistance.

While these advances in technology individually contributed to productivity growth, they also facilitated development and use of more efficient farming systems such as conservation farming. This allowed farmers to substitute capital and intermediate inputs (crop chemicals and fertiliser) for labour—reflected in the strong growth in cropping labour and capital PFP—and substantially increase material inputs use (Table 2). Conservation farming also yielded productivity benefits for some farmers through improved soil quality and structure, water holding capacity and sowing timing flexibility.

However, the rate of productivity growth of cropping specialists has slowed in recent decades (Figure 4). While diminished public R&D intensity is likely to have played a role (Sheng, Mullen & Zhao 2011), drought conditions across Australia had a significant effect on the cropping industry, reducing the output of cropping specialists by around 13 per cent relative to conditions before 2000 (Hughes et al. 2011).

Productivity growth rates are converging across the three agroecological regions defined by the Grains Research and Development Corporation (GRDC 2011) (Table 3). Between 1977–78 and 2011–12 cropping specialists in the southern region achieved on average annual TFP growth of 1.7 per cent, while those in the northern region achieved average TFP growth of 1.6 per cent a year. Cropping specialists in the western region achieved on average annual TFP growth of 1.5 per cent. However, the agroecological regions differ in average climate, soil fertility, water holding properties and geography, all of which bear on farmers' capacities to improve their cropping systems. For example, cropping specialist farms in the southern region tend to be more sensitive to variations in winter rainfall (Hughes et al. 2011), while the yields of cropping specialist farms in the western region depend heavily on good winter rain because spring rainfall is generally unreliable.

TABLE 3 Average annual cropping total factor productivity growth, by region, 1977–78 to 2011–12 (%)

	Productivity growth	Output growth	Input growth
All cropping specialists	1.6	2.6	1.0
Southern region	1.7	3.1	1.4
Northern region	1.6	1.2	-0.5
Western region	1.5	3.7	2.2

Note: All cropping specialists also includes cropping specialists from outside the Grains Research and Development Corporation agroecological regions.

Beef industry productivity

Beef industry productivity increased at an average annual rate of 0.8 per cent between 1977–78 and 2011–12, driving output growth of around 0.5 per cent a year on average. Over the same period, beef specialists reduced inputs by around 0.3 per cent a year on average (Table 2). Several factors contributed to higher productivity across the beef industry. In particular, improved pastures, herd genetics and disease management increased branding rates (calves marked as a percentage of cows mated) and reduced mortalities, thereby increasing productivity (ABARE 2006).

Despite these common factors, production systems and productivity growth rates in the northern and southern beef regions differ considerably, as a result of differences in climate, pastures, industry infrastructure and proximity to markets (Martin et al. 2013). Long-run TFP growth in the northern region (0.9 per cent a year) exceeded that in the southern region (0.1 per cent a year) (Table 4). In the northern region, the brucellosis and tuberculosis eradication campaigns of the 1980s led to improvements in cattle management systems, including improved grazing and land management practices and better mustering techniques. In addition, expansion of the feedlot sector and live export trade led to a shift in herd structure, to a higher proportion of *Bos indicus* breeds and more breeder operations; this was aimed at increasing turn-off of smaller and younger cattle for the live export market (Gleeson et al. 2003).

TABLE 4 Average annual beef total factor productivity growth, by region, 1977–78 to 2011–12 (%)

	Productivity growth	Output growth	Input growth
All beef specialists	0.8	0.5	-0.3
Southern region	0.1	0.7	0.5
Northern region	0.9	0.5	-0.5

Although better pasture and herd management practices also resulted in improved productivity in the southern beef industry, the smaller scale of operations in many areas may have constrained productivity growth. In addition, drought has, in recent years, affected properties in the southern region to a greater extent.

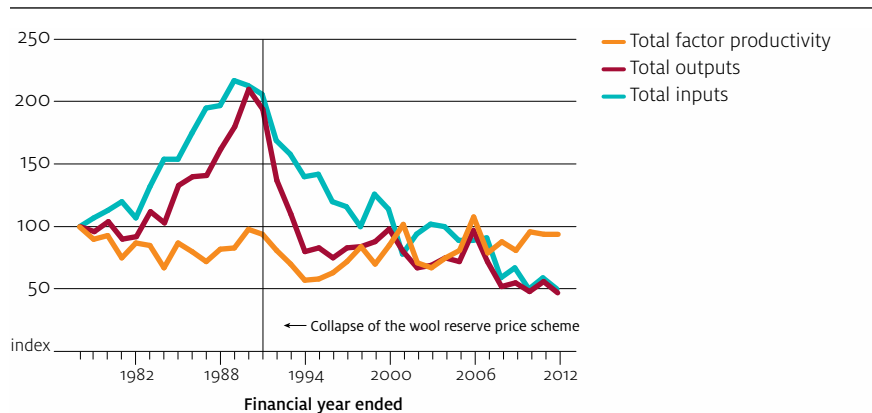
Sheep industry productivity

Interpreting long-run productivity growth rates for the sheep industry is complicated by the collapse of the Wool Reserve Price Scheme in 1991. ABARES total factor productivity estimates suggest that the Australian sheep industry only marginally improved its productivity between 1977–78 and 2011–12 (0.1 per cent a year on average) (Table 5). However, the long-run growth rate obscures strong growth following several years of acute adjustment in the early 1990s (Figure 6). Following the collapse of the scheme, there was a significant shift in industry structure, as many producers left the wool industry or turned to cropping and slaughter lamb production.

TABLE 5 Average annual sheep total factor productivity growth, by region, 1977–78 to 2011–12 (%)

	Productivity growth	Output growth	Input growth
All sheep	0.1	-2.6	-2.6
Pastoral zone	0.4	-2.2	-2.6
Wheat–sheep zone	0.8	-1.4	-2.2
High rainfall zone	-0.1	-3.6	-3.4

Following the collapse of the scheme, changes in the composition of the sheep flock and land management practices delivered significant productivity growth. Initially, on-farm productivity growth appears to have slowed, as farmers adjusted their enterprises to increase sheep meat production. However, sheep industry productivity increased at an average rate of 1.4 per cent a year after the scheme collapsed; this is in contrast to declines in productivity growth in earlier periods (Figure 4). For example, during the 1980s negative productivity growth coincided with rapid industry expansion in response to strong global demand and rising wool prices (Dahl, Leith & Gray 2013).

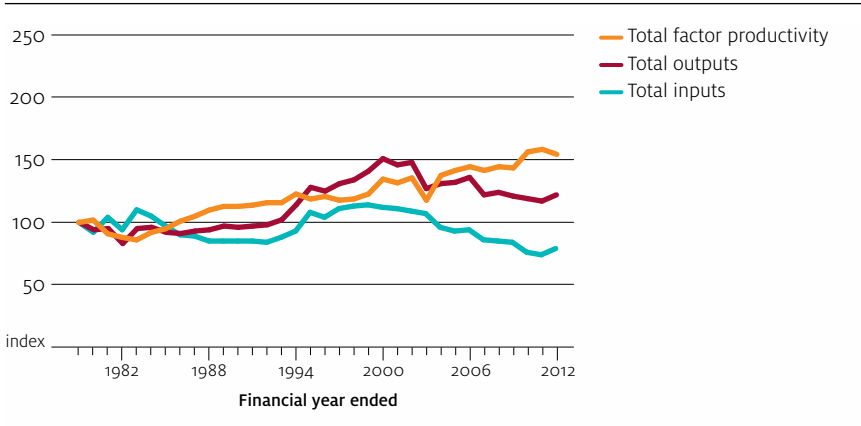
FIGURE 6 Trend in sheep industry total factor productivity, total inputs and total outputs, 1977–78 to 2011–12

Other factors have also contributed to increased sheep industry productivity since the collapse of the Wool Reserve Price Scheme, including advances in animal breeding and genetics and improved herd, disease and fodder management. In particular, the strong shift to prime lamb production was characterised by a higher proportion of ewes in flocks and use of non-merino rams (leading to a higher incidence of twinning). In addition, increased use of improved pasture species and fodder crops has improved ewe fertility and reduced lamb mortality, leading to higher lamb turn-off rates and to higher average slaughter weights (ABARE 2007).

Dairy industry productivity

Ongoing structural adjustment has transformed the dairy industry, driving productivity growth. Productivity growth averaged 1.6 per cent a year from 1978–79 to 2011–12, growing most strongly in the decade since deregulation (Figure 7). As with broadacre agriculture, productivity growth drove growth in total outputs (1.3 per cent a year on average), while input use declined (–0.3 per cent a year on average).

FIGURE 7 Trends in dairy total factor productivity, total inputs and total outputs, 1978–79 to 2011–12



Dairy industry reform began in the early 1970s, culminating in July 2000 with the removal of all price support to dairy farmers. Before deregulation in July 2000, total output of the industry increased as a result of productivity growth and growth in total inputs used. Since industry price supports were removed in 2000, industry output and input use have trended downward, with productivity gains occurring as input contracted more rapidly than output. Many smaller producers have exited the industry, and the production share of small operations remaining in the industry has gradually declined (Dahl, Leith & Gray 2013). In contrast to industry trends, individual dairy farms on average continued to expand their use of inputs, although at a slower rate than in the decades before deregulation (Table 6).

TABLE 6 Dairy input, output and productivity growth (%) average per farm

	Productivity	Output	Input
1979 to 2012 a	1.6	4.3	2.7
1979 to 2000	1.7	4.4	2.7
2001 to 2012	1.9	3.2	1.3

a Financial year ended.

Note: The average per farm output and input use are derived by dividing the industry gross output and input series by the number of farms, assuming that all farms are identical.

From 1978–79 to 2011–12, in response to adjustment pressures, dairy farmers increased the size and intensity of their production systems (Table 7). Greater automation of milk production, improved milking shed design and equipment, genetics, soil and feed testing, artificial insemination and mastitis control programs also increased productivity (Dahl, Leith & Gray 2013; Mackinnon, Oliver & Ashton 2010).

TABLE 7 Growth in average annual dairy industry partial factor productivity and input use, 1978–79 to 2011–12 (%)

	Land	Labour	Capital	Materials	Services
PFP	2.6	3.7	2.9	-2.5	0.8
Input use	-1.2	-2.3	-1.6	3.8	0.5

All milk-producing states recorded positive average productivity growth, with strongest growth in Tasmania (2.0 per cent a year) and Western Australia (1.9 per cent a year) (Table 8). Tasmania and Western Australia have the highest proportion of large dairy farms based on milk production, with production from more than 50 per cent of dairy farms in those states exceeding 1.5 million litres of milk in 2011–12 (Dharma & Dahl 2013).

TABLE 8 Average annual dairy industry productivity growth, by state, 1978–79 to 2011–12 (%)

	Productivity growth	Output growth	Input growth
Australia	1.6	1.3	-0.3
New South Wales	1.7	0.2	-1.5
Victoria	1.3	1.8	0.5
Queensland	1.8	-0.8	-2.6
South Australia	1.6	1.2	-0.4
Western Australia	1.9	1.0	-0.9
Tasmania	2.0	2.2	0.2

Policies for future productivity growth

Growth in global food demand presents a significant opportunity for Australian agriculture, as populations and incomes increase in key developing economies. Australia's ability to make the most of these opportunities depends on maintaining competitiveness; productivity improvements will be a key contributor. However, slowing productivity growth in some industries—and relative to key competitors for export markets (Nossal & Sheng 2013)—has implications for competitiveness and profitability over the long run.

Wide-reaching policy reforms over many years have underpinned agricultural productivity growth in Australia. In the past, governments deregulated statutory marketing arrangements (including for dairy, wheat and sugar) and removed subsidies for inputs (including fertiliser subsidies and concessional credit) (ABARES 2014). These and other reforms resulted in more efficient resource use across farms and strengthened incentives for farmers to better manage risk and improve productivity. In particular, reforms allowed farmers to adopt innovative marketing approaches and removed impediments to more efficient farmers expanding their operations.

Gains from reducing these inefficiencies (known as resource reallocation effects) contributed significantly to productivity growth, particularly in dairy and broadacre agriculture. Recent ABARES modelling suggests that efficiency gains from the reallocation of resources accounted for around one-quarter (26 per cent a year) of productivity growth between 1977–78 and 2009–10.

To ensure farmers continue to realise the long-term benefits of ongoing resource reallocation, future policy responses should not impede normal structural adjustment. This is because more efficient resource use across farms increases industry productivity independent of other productivity improvements farmers may be pursuing, such as adopting new varieties or management practices.

Identifying new reform opportunities to boost productivity growth remains an objective of government and industry stakeholders. The scope and extent of Australia's past agricultural reforms mean that the majority of measures likely to distort efficient resource allocations have been addressed. However, policy reform in other areas could contribute to productivity growth in the agriculture sector. Various reviews of federal policies have pointed to reform opportunities in the agriculture sector, including the agricultural innovation system (Productivity Commission 2011), biosecurity arrangements (Beale et al. 2008) and agricultural and veterinary chemical regulation (Productivity Commission 2008). Other economy-wide reforms have also been proposed (Banks 2010, 2012; OECD 2012). For example, reform of infrastructure governance and pricing, labour markets and taxation is likely to deliver direct productivity pay-offs to many agricultural industries.

Efforts to improve Australia's regulations are also likely to promote agricultural productivity growth. In particular, the Australian Government's deregulation agenda aims to reduce the burden of unnecessary regulation (Office of Deregulation 2013). Reducing unnecessary regulation is an important part of the policy reform process to improve competitiveness and performance across the whole economy. In agriculture, regulation can stifle innovation and restrict farmers' ability to manage their businesses. Although regulations can be effective in achieving specific policy objectives, over time they can become unnecessarily burdensome.

Scope also exists to build on individual state government initiatives directed at reducing red tape, although this is likely to require greater coordination between jurisdictions. A recent ABARES study (Gibbs, Harris-Adams & Davidson 2013) found that industry stakeholders believed interjurisdictional inconsistencies contributed to regulatory burdens in about a third of the cases examined. Inconsistent regulation imposes burdens on businesses where they must establish and operate systems to comply with multiple jurisdictional requirements.

Greater effort to reduce unnecessary regulatory inconsistencies is likely to benefit rural businesses operating in multiple jurisdictions. Such efforts could involve a joint assessment to identify overlaps and inconsistencies. State and territory governments are also progressing reform. However, additional insights into the burden that regulations impose on farmers may be gained from adopting a consistent and coordinated approach across jurisdictions.

Survey methods and definitions

ABARES has conducted surveys of selected Australian agricultural industries since the 1940s. These surveys provide a broad range of information on the economic performance of farm business units in the rural sector. This comprehensive set of information is widely used for research and analysis that forms the basis of many publications, briefing material and industry reports.

Two annual agricultural surveys currently undertaken are:

- Australian Agricultural and Grazing Industries Survey (AAGIS)
- Australian Dairy Industry Survey (ADIS).

Definitions of industries

Industry definitions are based on the 2006 Australian and New Zealand Standard Industrial Classification (ANZSIC06). This classification is in line with an international standard applied comprehensively across Australian industry, permitting comparisons between industries, both within Australia and internationally. Farms assigned to a particular ANZSIC have a high proportion of their total output characterised by that class. Further information on ANZSIC and on farming activities included in each of these industries is provided in Australian and New Zealand Standard Industrial Classification (ABS 2006).

- The five broadacre industries covered by AAGIS are:
- Wheat and other crops industry (ANZSIC06 Class 0146 and 0149)
 - farms engaged mainly in growing rice, other cereal grains, coarse grains, oilseeds and/or pulses
- Mixed livestock–crops industry (ANZSIC06 Class 0145)
 - farms engaged mainly in running sheep or beef cattle, or both, and growing cereal grains, coarse grains, oilseeds and/or pulses
- Sheep industry (ANZSIC06 Class 0141)
 - farms engaged mainly in running sheep
- Beef industry (ANZSIC06 Class 0142)
 - farms engaged mainly in running beef cattle
- Sheep–beef industry (ANZSIC06 Class 0144)
 - farms engaged mainly in running both sheep and beef cattle.

ADIS covers farms that are engaged in dairying.

Target populations

The AAGIS is designed from a population list drawn from the Australian Business Register (ABR) and maintained by the Australian Bureau of Statistics (ABS). The ABR comprises businesses registered with the Australian Taxation Office. The ABR-based population list provided to ABARES consists of agricultural establishments with their corresponding geography code (currently Australian Statistical Geography Standard), ANZSIC, and a size of operation variable.

The population list for the ADIS is a list of dairy farms that have paid levies based on their milk deliveries, sourced from the Levies Revenue Service. This list is provided by Dairy Australia and consists of dairy businesses with their corresponding region and total milk production. The design measure for ADIS is total milk production for each dairy business on the frame.

ABARES surveys target farming establishments that make a significant contribution to the total value of agricultural output (commercial farms). Farms excluded from ABARES surveys will be the smallest units, and in aggregate, will contribute less than 2 per cent to the total value of agricultural production for the industries covered by the surveys.

The size of operation variable used in ABARES survey designs is usually 'estimated value of agricultural operations' (EVAO). However, in some surveys in recent years other measures of agricultural production have also been used. EVAO is a standardised dollar measure of the level of agricultural output. A definition of EVAO is given in *Agricultural Industries: Financial Statistics* (ABS 2001 cat. no. 7506.0). Since 2004-05 the ABARES survey has included establishments classified as having an EVAO of \$40 000 or more. Between 1991-92 and 2003-04 the survey included establishments with an EVAO of \$22 500 or more. Between 1987-88 and 1990-91 the survey included establishments with an EVAO of \$20 000 or more. Before 1987-88 the survey included establishments with an EVAO of \$10 000 or more.

Survey design

The target population is grouped into strata defined by ABARES region, ANZSIC and size of operation. The sample allocation is a compromise between allocating a higher proportion of the sample to strata with high variability in the size variable, and an allocation proportional to the population of the stratum.

A large proportion of sample farms is retained from the previous year's survey. The sample chosen each year maintains a high proportion of the sample between years to accurately measure change while meeting the requirement to introduce new sample farms. New farms are introduced to account for changes in the target population, as well as to reduce the burden on survey respondents.

The sample size for AAGIS is usually around 1600 farms and for ADIS around 300.

The main method of collection for both surveys is face-to-face interviews with the owner-manager of the farm. Detailed physical and financial information is collected on the operations of the farm business during the preceding financial year. Respondents to the AAGIS and ADIS are also contacted by telephone in October each year to obtain estimates of projected production and expected receipts and costs for the current financial year. ABARES surveys also allow supplementary questionnaires to be attached to the main or to the telephone surveys. These additional questions help address specific industry issues, such as grain cost of production, livestock management practices and adoption of new technologies on dairy farms.

Sample weighting

ABARES survey estimates are calculated by appropriately weighting the data collected from each sample farm and then using the weighted data to calculate population estimates. Sample weights are calculated so that population estimates from the sample for numbers of farms, areas of crops and numbers of livestock correspond as closely as possible to the most recently available ABS estimates from data collected from Agricultural Census and Surveys.

The weighting methodology for AAGIS and ADIS uses a model-based approach, with a linear regression model linking the survey variables and the estimation benchmark variables. The details of this method are described in Bardsley and Chambers (1984).

For AAGIS, the benchmark variables provided by the ABS include:

- total number of farms in scope
- area planted to wheat, rice, other cereals, grain legumes (pulses) and oilseeds
- closing numbers of beef and sheep.

For ADIS, the benchmark variables provided by Dairy Australia are:

- total number of in-scope dairy farms
- total milk production.

Generally, larger farms have smaller weights and smaller farms have larger weights. This reflects both the strategy of sampling a higher fraction of the large farms than smaller farms and the relatively lower numbers of large farms. Large farms have a wider range of variability of key characteristics and account for a much larger proportion of total output.

Reliability of estimates

The reliability of the estimates of population characteristics published by ABARES depends on the design of the sample and the accuracy of the measurement of characteristics for the individual sample farms.

Preliminary estimates and projections

Estimates for 2011–12 and all earlier years are final. All data from farmers, including accounting information, have been reconciled; final production and population information from the ABS has been included and no further change is expected in these estimates.

The 2012–13 estimates are preliminary, based on full production and accounting information from farmers. However, editing and addition of sample farms may be undertaken and ABS production and population benchmarks may also change.

The 2013–14 estimates are projections developed from the data collected through on-farm and telephone interviews from October to December, as well as from the preliminary estimates. Projection estimates include crop and livestock production, receipts and expenditure up to the date of interview together with expected production, and receipts and expenditure for the remainder of the projection year. Modifications are made to expected receipts and expenditure where significant production and price change has occurred post interview. Projection estimates are necessarily subject to greater uncertainty than preliminary and final estimates.

Preliminary and projection estimates of farm financial performance are produced within a few weeks of the completion of survey collections. However, these may be updated several times at later dates. These subsequent versions will be more accurate, as they will be based on upgraded information and slightly more accurate input datasets.

Sampling errors

Only a subset of farms out of the total number of farms in a particular industry is surveyed. The data collected from each sample farm are weighted to calculate population estimates. Estimates derived from these farms are likely to be different from those that would have been obtained if information had been collected from a census of all farms. Any such differences are called 'sampling errors'.

The size of the sampling error is influenced by the survey design and the estimation procedures, as well as the sample size and the variability of farms in the population. The larger the sample size, the lower the sampling error is likely to be. Hence, national estimates are likely to have lower sampling errors than industry and state estimates.

To give a guide to the reliability of the survey estimates, standard errors are calculated for all estimates published by ABARES. These estimated errors are expressed as percentages of the survey estimates and termed 'relative standard errors'.

Calculating confidence intervals using relative standard errors

Relative standard errors can be used to calculate 'confidence intervals' that give an indication of how close the actual population value is likely to be to the survey estimate.

To obtain the standard error, multiply the relative standard error by the survey estimate and divide by 100. For example, if average total cash receipts are estimated to be \$100 000 with a relative standard error of 6 per cent, the standard error for this estimate is \$6000. This is one standard error. Two standard errors equal \$12 000.

There is roughly a two-in-three chance that the 'census value' (the value that would have been obtained if all farms in the target population had been surveyed) is within one standard error of the survey estimate. This range of one standard error is described as the 66 per cent confidence interval. In this example, there is an approximately two-in-three chance that the census value is between \$94 000 and \$106 000 (\$100 000 plus or minus \$6000).

There is roughly a 19-in-20 chance that the census value is within two standard errors of the survey estimate (the 95 per cent confidence interval). In this example, there is an approximately 19-in-20 chance that the census value lies between \$88 000 and \$112 000 (\$100 000 plus or minus \$12 000).

Comparing estimates

When comparing estimates between two groups, it is important to recognise that the differences are also subject to sampling error. As a rule of thumb, a conservative estimate of the standard error of the difference can be constructed by adding the squares of the estimated standard errors of the component estimates and taking the square root of the result.

For example, suppose the estimates of total cash receipts were \$100 000 in the beef industry and \$125 000 in the sheep industry—a difference of \$25 000—and the relative standard error is given as 6 per cent for each estimate. The standard error of the difference can be estimated as:

$$\sqrt{((6 \times \$100\,000 / 100)^2 + (6 \times \$125\,000 / 100)^2)} = \$9605$$

A 95 per cent confidence interval for the difference is:

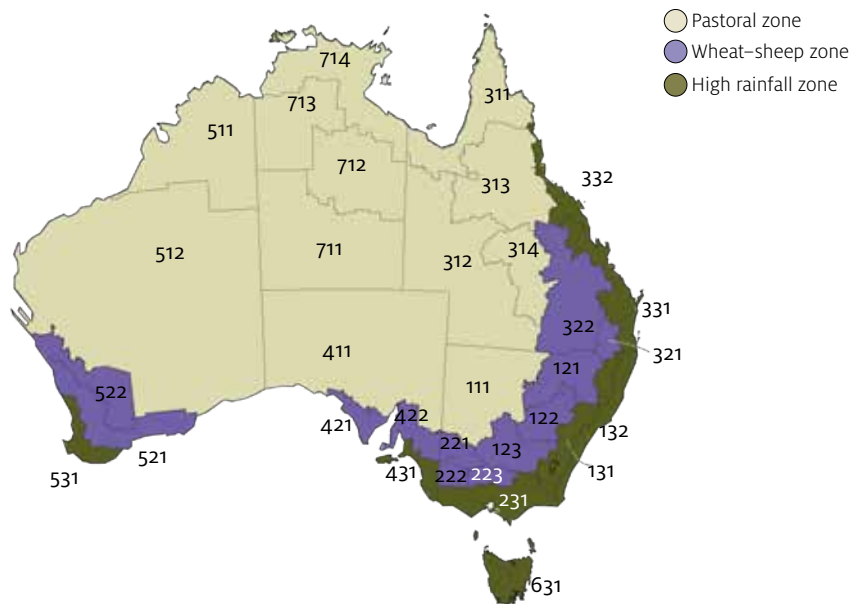
$$\$25\,000 \pm 1.96 \times \$9605 = (\$6174, \$43\,826)$$

Hence, if a large number (toward infinity) of different samples are taken, in approximately 95 per cent of them, the difference between these two estimates will lie between \$6174 and \$43 826. Also, since zero is not in this confidence interval, it is possible to say that the difference between the estimates is statistically significantly different from zero at the 95 per cent confidence level.

Regions

Broadacre and dairy statistics are also available by region. These regions represent the finest level of geographical aggregation for which the survey is designed to produce reliable estimates.

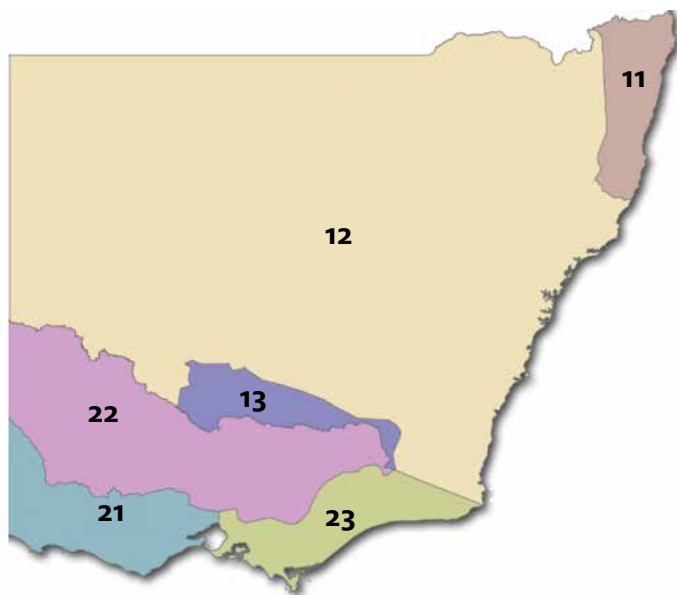
Australian broadacre zones and regions



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

For states other than New South Wales and Victoria, the Australian Dairy Industry Survey regions comprise the entire state.

Australian Dairy Industry Survey regions



Note: New South Wales and Victoria are divided into multiple regions. These regions are identified by a unique two digit code. The first digit indicates the state and the second digit indicates the region within the state.
Source: ABARES

Glossary

Owner–manager The primary decision maker for the farm business. This person is usually responsible for day-to-day operation of the farm and may own or have a share in the farm business.

Physical items

Beef cattle	Cattle kept primarily for the production of meat, irrespective of breed.
Dairy cattle	Cattle kept or intended mainly for the production of milk or cream.
Hired labour	Excludes the farm business manager, partners and family labour, and work by contractors. Expenditure on contract services appears as a cash cost.
Labour	Measured in work weeks, as estimated by the owner–manager or manager. It includes all work on the farm by the owner–manager, partners, family, hired permanent and casual workers and sharefarmers, but excludes work by contractors.
Total area operated	Includes all land operated by the farm business, whether owned or rented by the business, but excludes land share farmed on another farm.

Financial items

Capital	<p>The value of farm capital is the value of all the assets used on a farm, including the value of leased items but excluding machinery and equipment either hired or used by contractors. The value of 'owned' capital is the value of farm capital excluding the value of leased machinery and equipment.</p> <p>ABARES uses the owner–manager’s valuation of the farm property. The valuation includes the value of land and fixed improvements used by each farm business in the survey, excluding land sharefarmed off the sample farm. Residences on the farm are included in the valuations.</p> <p>Livestock are valued at estimated market prices for the land use zones within each state. These values are based on recorded sales and purchases by sample farms.</p> <p>Before 2001–02 ABARES maintained an inventory of plant and machinery for each sample farm. Individual items were valued at replacement cost, depreciated for age. Each year, the replacement cost was indexed to allow for changes in that cost.</p> <p>Since 2001–02 total value of plant and machinery has been based on market valuations provided by the owner–manager for broad categories of capital, such as tractors, vehicles and irrigation plant.</p> <p>The total value of items purchased or sold during the survey year was added to or subtracted from farm capital at 31 December of the relevant financial year, irrespective of the actual date of purchase or sale.</p>
Change in debt	<p>Estimated as the difference between debt at 1 July and the following 30 June within the survey year, rather than between debt at 30 June in consecutive years. It is an estimate of the change in indebtedness of a given population of farms during the financial year and is thus unaffected by changes in sample or population between years.</p>
Farm business debt	<p>Estimated as all debts attributable to the farm business, but excluding personal debt, lease financed debt and underwritten loans, including harvest loans. Information is collected at the interview, supplemented by information contained in the farm accounts.</p>
Farm liquid assets	<p>Assets owned by the farm business that can be readily converted to cash. They include savings bank deposits, interest bearing deposits, debentures and shares. Excluded are items such as real estate, life assurance policies and other farms or businesses.</p>

Receipts and costs	<p>Receipts for livestock and livestock products sold are determined at the point of sale. Selling charges and charges for transport to the point of sale are included in the costs of sample farms.</p> <p>Receipts for crops sold during the survey year are gross of deductions made by marketing authorities for freight and selling charges. These deductions are included in farm costs. Receipts for other farm products are determined on a farmgate basis. All cash receipt items are the revenue received in the financial year.</p> <p>Farm receipts and costs relate to the whole area operated, including areas operated by on-farm sharefarmers. Thus, cash receipts include receipts from the sale of products produced by sharefarmers. If possible, on-farm sharefarmers' costs are amalgamated with those of the sample farm. Otherwise, the total sum paid to sharefarmers is treated as a cash cost.</p> <p>Some sample farm businesses engage in off-farm contracting or sharefarming, employing labour and capital equipment also used in normal on-farm activities. Since it is not possible to accurately allocate costs between off-farm and on-farm operations, the income and expenditure attributable to such off-farm operations are included in the receipts and costs of the sample farm business.</p>
Total cash costs	<p>Payments made by the farm business for materials and services and for permanent and casual hired labour (excluding owner–manager, partner and other family labour). It includes the value of livestock transfers onto the property as well as any lease payments on capital, produce purchased for resale, rent, interest, livestock purchases and payments to sharefarmers. Capital and household expenditures are excluded from total cash costs.</p> <p>Handling and marketing expenses include commission, yard dues and levies for farm produce sold.</p> <p>Administration costs include accountancy fees, banking and legal expenses, postage, stationery, subscriptions and telephone.</p> <p>Contracts paid refers to expenditure on contracts such as harvesting. Capital and land development contracts are not included.</p> <p>Other cash costs include stores and rations, seed purchased, electricity, artificial insemination and herd testing fees, advisory services, motor vehicle expenses, travelling expenses and insurance. While 'other cash costs' may comprise a relatively large proportion of total cash costs, individually the components are relatively small overall, and as such, have not been listed.</p>
Total cash receipts	<p>Total of revenues received by the farm business during the financial year, including revenues from the sale of livestock, livestock products and crops, plus the value of livestock transfers off a property. It includes revenue received from agistment, royalties, rebates, refunds, plant hire, contracts, sharefarming, insurance claims and compensation, and government assistance payments to the farm business.</p>

Financial performance measures

Build-up in trading stocks	The closing value of all changes in the inventories of trading stocks during the financial year. It includes the value of any change in herd or flock size or in stocks of wool, fruit and grains held on the farm. It is negative if inventories are run down.
Depreciation of farm improvements plant and equipment	Estimated by the diminishing value method, based on the replacement cost and age of each item. The rates applied are the standard rates allowed by the Commissioner of Taxation. For items purchased or sold during the financial year, depreciation is assessed as if the transaction had taken place at the midpoint of the year. Calculation of farm business profit does not account for depreciation on items subject to a finance lease because cash costs already include finance lease payments.
Farm business equity	The value of owned capital, less farm business debt at 30 June. The estimate is based on those sample farms for which complete data on farm debt are available.
Farm business profit	Farm cash income plus build-up in trading stocks, less depreciation and the imputed value of the owner–manager, partner(s) and family labour.
Farm cash income	The difference between total cash receipts and total cash costs.
Farm equity ratio	Calculated as farm business equity as a percentage of owned capital at 30 June.
Imputed labour cost	Payments for owner–manager and family labour may bear little relationship to the actual work input. An estimate of the labour input of the owner–manager, partners and their families is calculated in work weeks and a value is imputed at the relevant Federal Pastoral Industry Award rates.
Off-farm income	Collected for the owner–manager and spouse only, including income from wages, other businesses, investment, government assistance to the farm household and social welfare payments.
Profit at full equity	Farm business profit, plus rent, interest and finance lease payments, less depreciation on leased items. It is the return produced by all the resources used in the farm business.
Rates of return	Calculated by expressing profit at full equity as a percentage of total opening capital. Rate of return represents the ability of the business to generate a return to all capital used by the business, including that which is borrowed or leased. The following rates of return are estimated: rate of return, excluding capital appreciation; and rate of return, including capital appreciation.

References

- ABARE 2007, *Benefits of adjustment in Australia's sheep industry*, Australian lamb report 07.1, Australian Bureau of Agricultural and Resource Economics, Canberra.
- 2006, *Australian beef industry: financial performance to 2005–06*, Australian beef report 06.1, Australian Bureau of Agricultural and Resource Economics, Canberra.
- ABARES 2014, *Australian agricultural productivity growth: past reforms and future opportunities*, ABARES research report, Canberra, February.
- 2013, *Australian farm survey results 2010–11 to 2012–13*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- 2013a, *Australian beef: financial performance of beef cattle producing farms, 2010–11 to 2012–13*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- 2013b, 'Farm debt: farm level analysis', in *Agricultural commodities: September quarter 2013*, vol.3 no. 3, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- 2014, *Agricultural commodities: March quarter 2014*, vol.4 no. 1, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- Ashton, D, Cuevas-Cubria, C, Leith, R & Jackson, T forthcoming, *Productivity in the Australian dairy industry: pursuing new sources of growth*, ABARES report to client for Dairy Australia, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- ABS 2012, *Agricultural commodities, Australia, 2009–10*, cat. no. 7121.0, Australian Bureau of Statistics, Canberra, June 2012.
- 2006, *Australian and New Zealand standard industrial classification (ANZSIC) 2006 (Revision 1.0)*, Australian Bureau of Statistics, cat. no. 1292.0, Australian Bureau of Statistics, Canberra.
- Banks, G 2012, 'Productivity policies: the "to do" list', paper presented at Economic and Social Outlook Conference, Melbourne, 1 November.
- 2010, 'Successful reform: past lessons, future challenges', paper presented at Annual Forecasting Conference of Australian Business Economists, Sydney, 8 December, Productivity Commission, Canberra.
- Bardsley, P. and Chambers, R.L. 1984, *Multipurpose estimation from unbalanced samples*, Journal of the Royal Statistical Society, Series C (Applied Statistics), vol.33, pp.290-9.
- Beale, R, Fairbrother, J, Inglis, A & Trebeck, D 2008, *One biosecurity: a working partnership, the independent review of Australia's quarantine and biosecurity arrangements*, report to the Australian Government, Canberra.
- Dahl, A, Leith, R & Gray, EM 2013, 'Productivity in the broadacre and dairy industries', in *Agricultural Commodities: March quarter 2013*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.
- Dharma, S & Dahl, A 2013, *Australian dairy: financial performance of dairy producing farms, 2010–11 to 2012–13*, ABARES research report 13.9, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Gibbs, C, Harris-Adams, K & Davidson, A 2013, *Review of selected regulatory burdens on agriculture and forestry businesses*, ABARES report for Agricultural Productivity Division, Department of Agriculture, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Gleeson, T, McDonald, D, Hooper, S & Martin, P 2003, *Australian beef industry 2003: report on the Australian agricultural and grazing industries surveys of beef producers*, ABARE research report 03.3, Australian Bureau of Agricultural and Resource Economics, Canberra.

GRDC 2011, *GRDC annual report 2010–11*, Grains Research and Development Corporation, Canberra.

Hughes, N, Lawson, K, Davidson, A, Jackson, T & Sheng, Y 2011, *Productivity pathways: climate adjusted production frontiers for the Australian broadacre cropping industry*, ABARES research report 11.5, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Jackson, T 2010, *Harvesting productivity: ABARE–GRDC workshops on grains productivity growth*, ABARE research report 10.6 for Grains Research and Development Corporation, Australian Bureau of Agricultural and Resource Economics, Canberra.

Knopke, P, O'Donnell, V & Shepherd, A 2000, *Productivity growth in the Australian grains industry*, ABARE research report 2000.1 for Grains Research and Development Corporation, Australian Bureau of Agricultural and Resource Economics, Canberra.

Mackinnon, D, Oliver, M & Ashton, D 2010, *Australian dairy industry: technology and management practices, 2008–09*, ABARE–BRS report 10.11, Australian Bureau of Agricultural and Resource Economics–Bureau of Rural Sciences, Canberra.

Martin, P, Phillips, P, Leith, R & Caboche, T 2013, *Australian beef: financial performance of beef cattle producing farms, 2010–11 to 2012–13*, ABARES research report 13.8 for Meat & Livestock Australia, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, pp. 5–8.

Nossal, K & Sheng, Y 2013, *Cross-country comparisons of agricultural productivity: an Australian perspective*, Rural Industries Research and Development Corporation, RIRDC publication 13/011, Canberra.

OECD 2012, *OECD Economic survey of Australia 2012*, Organisation for Economic Co-operation and Development, Paris.

Office of Deregulation 2013, *Office of Deregulation*, Department of the Prime Minister and Cabinet, Canberra, available at dpmc.gov.au/deregulation/index.cfm.

Productivity Commission 2011, *Rural research and development corporations*, Productivity Commission inquiry report no.52, Canberra.

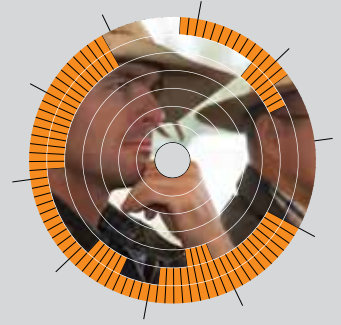
— 2008, *Chemicals and plastics regulation*, Productivity Commission research report, Canberra.

Sheng, Y, Mullen, JD & Zhao, S 2011, *A turning point in agricultural productivity: consideration of the causes*, ABARES research report 11.4 for the Grains Research and Research and Development Corporation, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Zhao, S, Sheng, Y & Gray, EM 2012, 'Measuring productivity of the Australian broadacre and dairy industries: concepts, methodology and data', in KO Fuglie, SL Wang & VE Ball (eds), *Productivity growth in agriculture: an international perspective*, CABI, Wallingford, pp. 73–107.

The 'Biosphere' graphic element

The biosphere is a key part of the department's visual identity. Individual biospheres are used to visually describe the diverse nature of the work we do as a department, in Australia and internationally.



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