



Australian Government
**Department of Agriculture
and Water Resources**
ABARES



Australian lamb

Financial performance of lamb producers, 2013–14 to 2015–16

Dale Ashton, Mark Oliver, Jeremy van Dijk, Aruni Weragoda and
Caroline Levantis

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

Research report 16.9
September 2016



© Commonwealth of Australia 2015

Ownership of intellectual property rights

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia (referred to as the Commonwealth).

Creative Commons licence

All material in this publication is licensed under a Creative Commons Attribution 3.0 Australia Licence, save for content supplied by third parties, logos and the Commonwealth Coat of Arms.



Creative Commons Attribution 3.0 Australia Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided you attribute the work. A summary of the licence terms is available from creativecommons.org/licenses/by/3.0/au/deed.en. The full licence terms are available from creativecommons.org/licenses/by/3.0/au/legalcode.

Cataloguing data

Ashton, D, Oliver, M, van Dijk, J, Weragoda, A & Levantis, C 2016, *Australian lamb: financial performance of lamb producers, 2013–14 to 2015–16*, ABARES research report 16.9, Canberra, September. CC BY 3.0.

ISSN 1447-8358

ISBN 978-1-74323-305-4

ABARES project 43010

Internet

Australian lamb: financial performance of lamb producers, 2013–14 to 2015–16 is available at agriculture.gov.au/abares/publications.

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

Postal address GPO Box 858 Canberra ACT 2601

Switchboard +61 2 6272 3933

Email info.abares@agriculture.gov.au

Web agriculture.gov.au/abares

Inquiries about the licence and any use of this document should be sent to copyright@agriculture.gov.au.

The Australian Government acting through the Department of Agriculture and Water Resources, represented by the Australian Bureau of Agricultural and Resource Economics and Sciences, has exercised due care and skill in preparing and compiling the information and data in this publication. Notwithstanding, the Department of Agriculture and Water Resources, ABARES, its employees and advisers disclaim all liability, including for negligence and for any loss, damage, injury, expense or cost incurred by any person as a result of accessing, using or relying on information or data in this publication to the maximum extent permitted by law.

Acknowledgements

ABARES relies on the voluntary cooperation of farmers participating in the annual Australian Agricultural and Grazing Industries Survey to provide data used in the preparation of this report. Without their help, the survey would not be possible. ABARES farm survey staff collected most of the information presented in this report through on-farm interviews with farmers. The Australian Agricultural and Grazing Industries Survey is funded by the Department of Agriculture and Water Resources, Meat & Livestock Australia and the Grains Research and Development Corporation.

Contents

1	Introduction	7
2	Seasonal conditions, lamb production and prices	9
3	Farm financial performance	14
4	Farm investment	18
	Appendix A	22
	References	31
	Further information	32

Tables

Table 1	Sheep numbers and lamb production, Australia, 2013–14 to 2015–16	10
Table 2	Lambs sold for slaughter, lamb producing farms, by state, 2013–14 to 2014–15	11
Table 3	Distribution of farms by lamb numbers sold, Australia, 2014–15	13
Table 4	Selected estimates by scale of lamb production, 2014–15	14
Table 5	Key financial performance, lamb producing farms, by state, 2013–14 to 2015–16	16

Figures

Figure 1	Price indexes for selected commodities, Australia, 2000–01 to 2015–16	12
Figure 2	Farm cash income, lamb producers, 1995–96 to 2015–16	15
Figure 3	Proportion of lamb producing farms with negative profit, 1999–2000 to 2015–16	17
Figure 4	Proportion of farms making capital additions, lamb producers, 1999–2000 to 2014–15	18
Figure 5	Net capital additions, lamb producers, 1999–2000 to 2014–15	19
Figure 6	Rate of return, lamb producers, 1999–2000 to 2015–16	20
Figure 7	Total farm debt, lamb producers, 1999–2000 to 2015–16	21
Figure 8	Ratio of interest paid to total cash receipts, lamb producers, 1999–2000 to 2015–16	21

Maps

Map 1 Australian lamb producing regions	8
Map 2 Rainfall deciles, lamb producing regions, 2014–15	9
Map 3 Rainfall deciles, lamb producing regions, 2015–16	10
Map 4 ABARES Australian broadacre zones and regions	26

Boxes

Box 1 Components of receipts, lamb producers by size	14
--	----

Key points

Farm financial performance in 2014–15 and 2015–16

- This report presents results from the ABARES annual Australian Agricultural and Grazing Industries Survey, focusing on estimates of farm financial performance of lamb producers from 2013–14 to 2015–16.
- In 2014–15 about 25 000 broadacre farms sold lambs for slaughter. Around 71 per cent of these farms sold between 200 and 2 000 lambs for slaughter (accounting for 67 per cent of the total number of lambs sold for slaughter). Around 5 per cent of farms sold between 2 000 and 4 000 lambs for slaughter and only 1 per cent of these farms sold more than 4 000 lambs for slaughter, accounting for 10 per cent of the total number of lambs sold for slaughter.
- Farm cash income of lamb producing farms rose on average over the period 2013–14 to 2014–15. The majority of the rise in farm incomes came from higher beef and lamb receipts due to increased prices and sales for both commodities. This was partially offset by reduced crop receipts on many farms that were affected by dry seasonal conditions.
- Average farm cash income of lamb producing farms is estimated to have increased further in 2015–16. Receipts from the sale of lambs increased slightly, although the rise in incomes was mainly a result of increased crop, wool and beef cattle sales reflecting higher prices, higher beef cattle turn-off and greater winter crop production. However, major differences exist in average incomes across states and by scale of production.
- Average incomes of lamb producing farms are estimated to have risen from 2014–15 to 2015–16 in New South Wales, Queensland and South Australia. Although receipts from the sale of lambs for slaughter increased, the majority of the increase in farm incomes in these states was from higher cropping receipts.
- Average incomes for lamb producers fell in Victoria, Western Australia and Tasmania from 2014–15 to 2015–16. In Victoria and Western Australia, lower crop receipts were partly offset by higher receipts from lambs and beef cattle. In Tasmania, all major receipt components declined as a result of dry seasonal conditions.
- In real terms, the estimated average farm incomes for 2014–15 and 2015–16 were among the highest recorded since 2001–02.
- Rate of return (excluding capital appreciation) for lamb producers fell marginally from 2.6 per cent in 2013–14 to 2.5 per cent in 2014–15. The average rate of return is estimated to have increased in 2015–16 to around 3.0 per cent, reflecting higher incomes.

Farm investment, capital and debt

- On average, 56 per cent of lamb producers each year made additions to total capital over the 10 years to 2014–15. Average farm capital investment increased over the period.
- Average debt for lamb producers increased in real terms by around 88 per cent from \$323 000 in 2000–01 (in 2015–16 dollars) to an estimated \$605 000 in 2015–16. Increases in average debt over the past 15 years have been largely the consequence of increases in average farm size and borrowing for land purchase, as well as for ongoing working capital.
- Overall, changes in average debt over time have been modest relative to lamb producers' capacity to service debt by generating income. The capacity to service debt—making interest and principal repayments—is an important part of farm viability. On average, around 8 per cent of lamb producers' farm cash receipts were used to make interest payments over the 10 years to 2015–16. This proportion has fallen in recent years because

of higher farm receipts and reduced interest rates. In 2015–16 an estimated 6 per cent of farm cash receipts were used to make interest payments.

1 Introduction

The Australian lamb industry makes an important contribution to the Australian economy. It accounted for around 4 per cent (\$2.32 billion) of the gross value of agricultural production and around 4 per cent (\$1.7 billion) of agricultural export income in 2014–15 (ABARES 2016).

Since the early 1990s the number of farms producing lambs for slaughter has increased, as has the gross value of lamb production in aggregate and on a per farm basis. Many broadacre farms now rely on income from the sale of lambs for slaughter each year, with varying degrees of specialisation across the industry. Lamb producing regions are shown in Map 1.

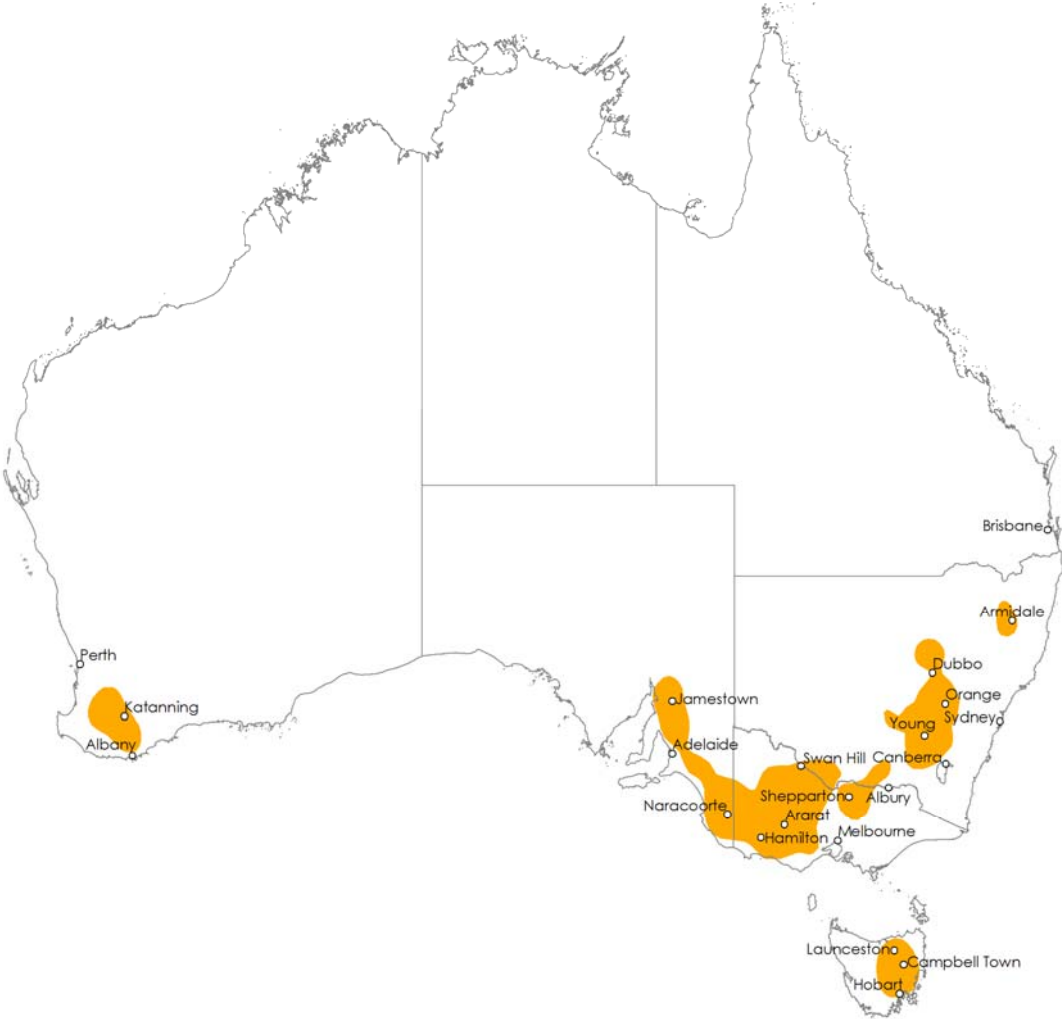
In 2014–15 about 25 000 broadacre farms sold lambs for slaughter. Around 71 per cent of these farms sold between 200 and 2 000 lambs for slaughter (accounting for 67 per cent of the total number of lambs sold for slaughter). Around 5 per cent of farms sold between 2 000 and 4 000 lambs for slaughter and only 1 per cent of these farms sold more than 4 000 lambs for slaughter, accounting for 10 per cent of the total number of lambs sold for slaughter.

This report presents detailed financial performance estimates of lamb producing farms from 2013–14 to 2015–16. The report includes analysis of changes in farm performance, debt and equity by farm size (measured as the number of lambs sold for slaughter) to highlight historical variations in performance across the lamb industry since 1999–2000. The information presented in this report expands on farm survey results published in ABARES (2016) and Martin (2016).

The report draws on data from the ABARES annual Australian Agricultural and Grazing Industries Survey (AAGIS) funded by the Department of Agriculture and Water Resources, Meat & Livestock Australia and the Grains Research and Development Corporation. This survey has been conducted by ABARES and its predecessors since 1978–79. It provides government and industry stakeholders with information and data that are used to monitor changes in the broadacre industries and to analyse a range of industry issues. The latest AAGIS data were collected between July and November 2015.

For the purpose of this report, broadacre farm businesses are classified as slaughter lamb producing farms if they sold, on average, 200 or more lambs for slaughter a year over the three years ending 2014–15.

Map 1 Australian lamb producing regions



Note: Shaded areas represent the concentration of sample farms.
Source: ABARES

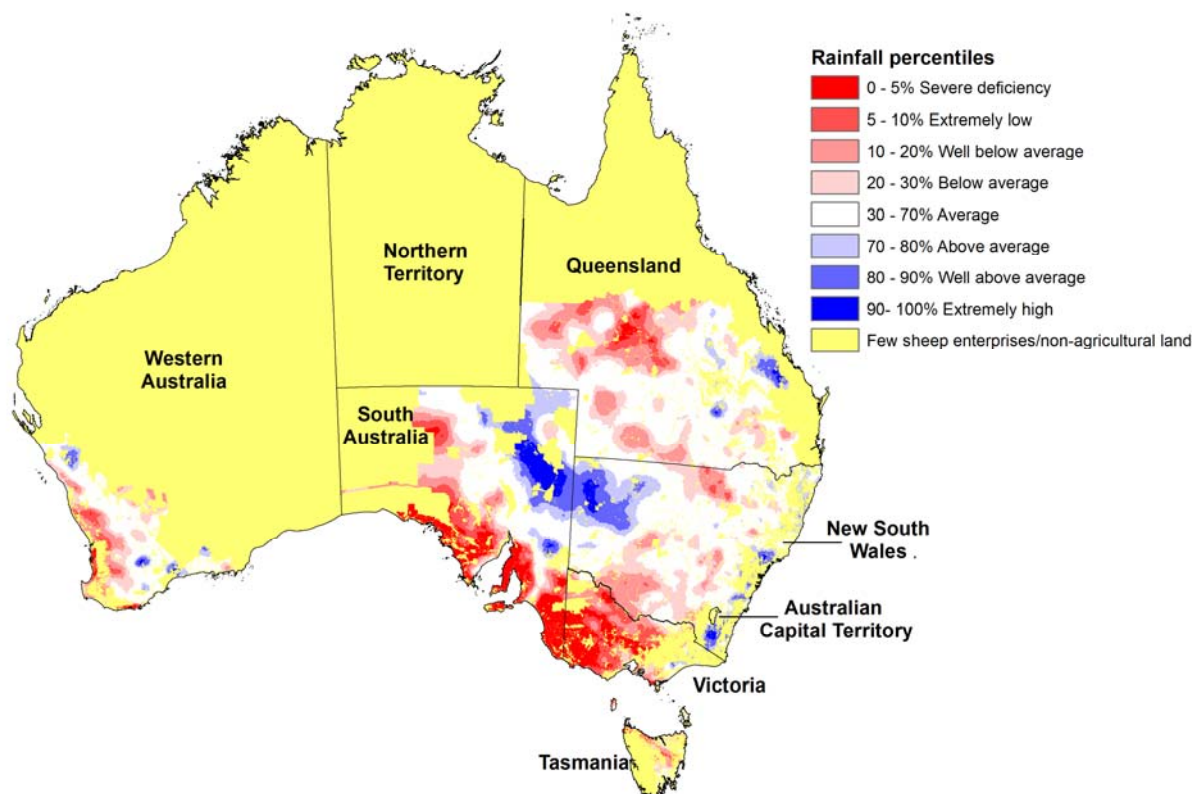
2 Seasonal conditions, lamb production and prices

Seasonal conditions in 2014–15 and 2015–16

Seasonal conditions varied widely across the major lamb producing regions in 2014–15 and 2015–16.

In 2014–15 rainfall was average in much of northern New South Wales and southern Queensland following widespread below average rainfall in those regions in 2013–14. It was considerably drier in 2014–15 in the lamb producing regions of southern New South Wales, Victoria, South Australia and Western Australia (Map 2).

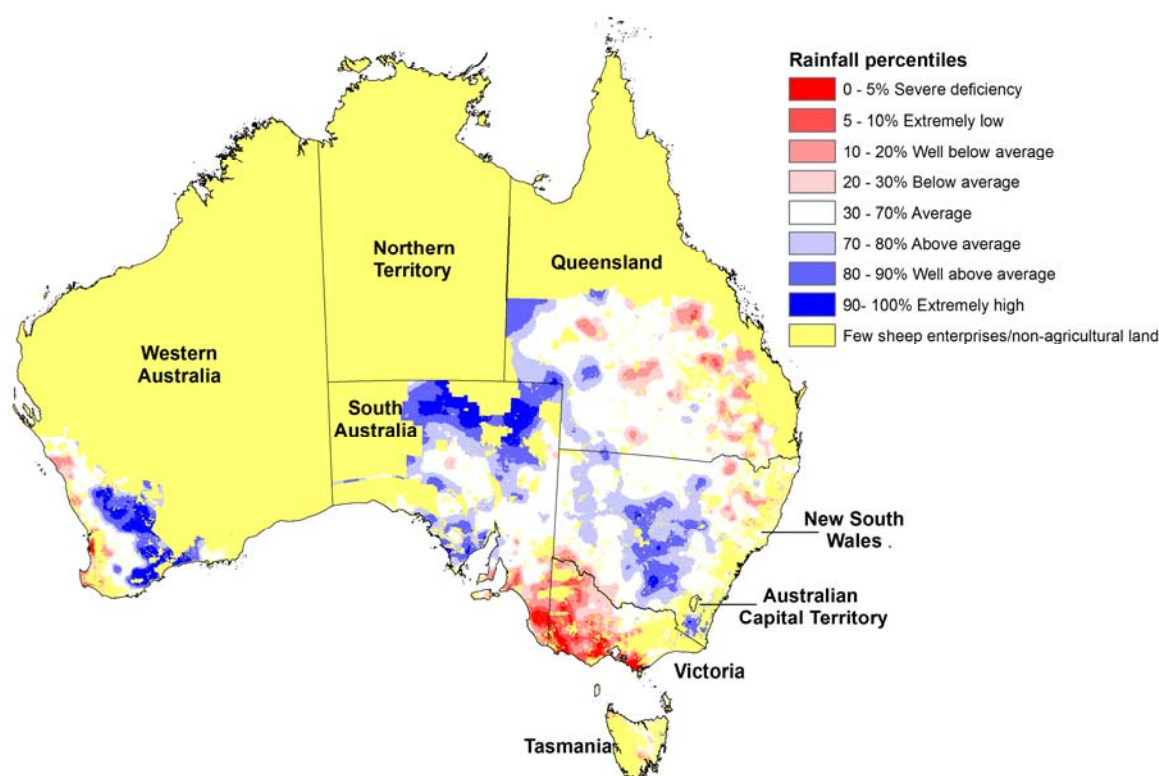
Map 2 Rainfall deciles, lamb producing regions, 2014–15



Source: Bureau of Meteorology

In 2015–16 most of the lamb producing regions of New South Wales and South Australia received average to below average rainfall, while rainfall in Victoria and Tasmania was generally below to well below average. Much of south-west Western Australia recorded above average rainfall in 2015–16 (Map 3).

Map 3 Rainfall deciles, lamb producing regions, 2015–16



Source: Bureau of Meteorology

Lamb production in 2014–15 and 2015–16

A combination of deteriorating seasonal conditions and high lamb prices contributed to a record number of lambs being slaughtered in 2014–15 and 2015–16. Nationally, total lamb slaughter increased by 5 per cent in 2014–15 to 22.9 million head. In 2015–16 Australian lamb production is estimated to have increased by a further 1 per cent to 23.1 million head (Table 1).

Table 1 Sheep numbers and lamb production, Australia, 2013–14 to 2015–16

Year	Sheep numbers b (million head)	Lambs slaughtered ('000)	Slaughter weight (kg/hd)	Lamb meat production a (kt)	Lamb meat exports a (kt)
2013–14	73	21 899	21.7	474	274
2014–15	71	22 867	22.2	507	285
2015–16 ^f	71	23 091	22.2	512	264

a Carcase weight. **b** As at 30 June. **f** ABARES forecast, subject to revision.

At the farm level, the average number of lambs sold for slaughter increased by 2 per cent in 2014–15 (Table 2). Data on lamb slaughter at the farm level are not available for 2015–16. The number of farms selling lambs for slaughter increased by 4 per cent in 2014–15, with increases in New South Wales, Victoria, Western Australia and Tasmania, and decreases in the remaining states.

In New South Wales—the largest lamb producing state, accounting for more than 40 per cent of lamb slaughter in 2014–15—the average number of lambs sold for slaughter decreased by 4 per cent in 2014–15. In Western Australia—accounting for 13 per cent of lamb slaughter—the average number of lambs sold for slaughter declined by 14 per cent.

In Victoria—accounting for 26 per cent of lamb slaughter—the average number of lambs sold for slaughter increased by 16 per cent. The average number of lambs sold for slaughter in South Australia—accounting for 16 per cent of lamb slaughter—rose by 9 per cent in 2014–15.

In Tasmania—accounting for 3 per cent of total lamb slaughter—the average number of lambs sold at the farm level increased by 27 per cent. In Queensland—representing 1 per cent of total lamb slaughter—the average number of lambs sold fell by 14 per cent.

Table 2 Lambs sold for slaughter, lamb producing farms, by state, 2013–14 to 2014–15

State	Year	Average number of lambs sold for slaughter ^a (no.)	Number of lamb producing farms (no.)
New South Wales	2013–14	974	7 427
	2014–15p	935	8 005
Victoria	2013–14	787	5 016
	2014–15p	911	5 225
Queensland	2013–14	1 010	330
	2014–15p	866	239
South Australia	2013–14	896	3 139
	2014–15p	972	3 010
Western Australia	2013–14	919	2 873
	2014–15p	792	2 995
Tasmania	2013–14	1 109	382
	2014–15p	1 403	409
Australia	2013–14	907	19 168
	2014–15p	922	19 884

^a Average per farm. ^p Preliminary estimate.

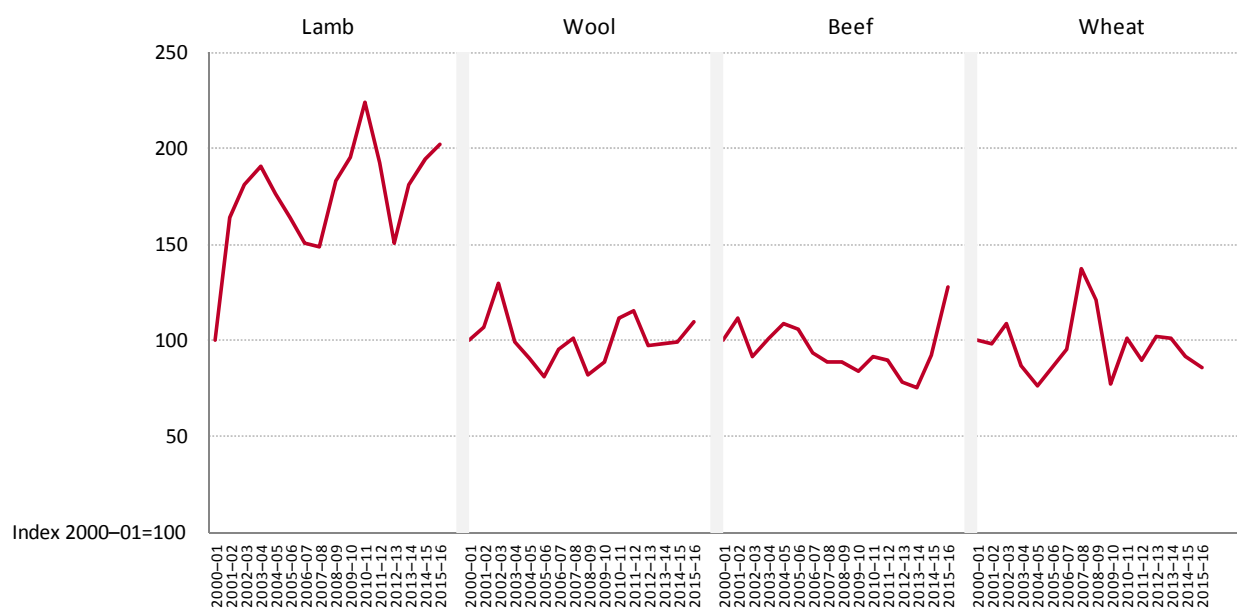
Note: Includes broadacre farms with an estimated value of agricultural operations of \$40 000 or more and those that sold 200 or more lambs. Totals may vary because of rounding.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Lamb prices

After a price drop from 2010–11 to 2012–13, saleyard lamb prices increased over the three years to 2015–16 (Figure 1). Despite increased supply, prices rose as a result of strong demand in both domestic and export markets, particularly from the United States, China and the Middle East.

Figure 1 Price indexes for selected commodities, Australia, 2000–01 to 2015–16



Note: Data for 2014–15 and 2015–16 are preliminary estimates and projections, respectively.

Source: ABARES estimates

Lamb producers by size

In this report, the population of lamb producing farms has been divided into four groups according to average number of lambs sold over the three years ending 2014–15:

- small-scale farms—200 to 500 lambs
- medium-scale farms—500 to 2 000 lambs
- large-scale farms—2 000 to 4 000 lambs
- very large-scale farms—more than 4 000 lambs.

In 2014–15 an estimated 7 600 farms sold 200 to 500 lambs for slaughter (Table 3), accounting for around 15 per cent of lambs sold and 14 per cent of the value of lamb production. Slightly more than half of lambs sold came from farms that sold 500 to 2 000 lambs for slaughter—about 40 per cent of producers. Around 1 600 farms sold more than 2 000 lambs for slaughter in 2014–15, and accounted for 29 per cent of total lambs sold and 31 per cent of the value of lamb production.

Table 3 Distribution of farms by lamb numbers sold, Australia, 2014–15

Number of lambs sold	Average number of producers (no.)	Share of producers (%)	Share of slaughter lambs sold (%)	Share of lamb value of production (%)
Less than 200 lambs ^a	5 700	23	4	3
200 to 500 lambs	7 600	31	15	14
500 to 2 000 lambs	9 800	40	52	52
2 000 to 4 000 lambs	1 300	5	19	20
More than 4 000 lambs	300	1	10	11
All broadacre farms selling lambs	24 700	100	100	100

^a Farms that sold on average less than 200 lambs for slaughter per financial year over the three years ending 2014–15 are not included in the analysis of this report.

Note: Includes broadacre farms with an estimated value of agricultural operations of \$40 000 or more. Totals may vary because of rounding.

Source: ABARES Australian Agricultural and Grazing Industries Survey

3 Farm financial performance

Farm receipts

Lamb producing farms usually have a mix of livestock and cropping enterprises. On average, the major part of receipts (nearly 50 per cent) were from selling crops in 2014–15. Receipts from sale of lambs contributed around one-fifth of total receipts; wool and beef cattle sales contributed around 14 per cent and 9 per cent, respectively. Small-scale farms received about 10 per cent of their total cash receipts from the sale of lambs for slaughter on average and very large-scale farms received 28 per cent of their receipts from the sale of lambs. Around 17 per cent of total cash receipts of medium-scale farms came from sale of lambs.

Average total cash receipts for lamb producing farms increased slightly by around 4 per cent in 2014–15. The majority of this rise came from sales of beef cattle, sheep and lambs. However, this was partly offset by reduced crop receipts as a result of dry seasonal conditions in some regions.

In 2015–16 total cash receipts are estimated to have risen marginally on average for lamb producing farms. Receipts from the sale of lambs increased slightly but the increase in receipts was mainly as a result of higher crop, wool and beef cattle sales because of higher commodity prices, higher beef cattle turn-off and greater winter crop production.

Box 1 Components of receipts, lamb producers by size

Lamb production occurs across a range of farm types, with varying relative importance of receipts from lamb, sheep, wool, beef cattle and crops. In 2014–15 very large-scale farms had the greatest reliance on receipts from lambs, sheep and wool (48 per cent) and small-scale farms had the least reliance (Table 4).

Table 4 Selected estimates by scale of lamb production, 2014–15

average per farm

Farm size	Area operated (ha)	Beef receipts (%)	Crop receipts (%)	Sheep and lambs receipts (%)	Wool receipts (%)
Small-scale farms	947	7	64	22	2
Medium-scale farms	1 821	27	30	31	5
Large-scale farms	2 601	7	57	20	11
Very large-scale farms	10 026	9	38	28	20

Source: ABARES Australian Agricultural and Grazing Industries Survey

Farm costs

Average total farm cash costs of lamb producing farms were relatively stable over the period 2013–14 to 2015–16. Fertiliser, repairs and maintenance, interest payments, sprays, and fuel, oil and lubricants were the major items accounting for the largest shares of total cash costs for lamb producers from 2013–14 to 2015–16. Sheep and lamb purchases also accounted for a significant share of total costs of large and very large-scale farms.

Total cash costs of farms selling less than 4 000 lambs a year (small, medium and large-scale farms) went up, while that of very large-scale farms fell by around 20 per cent on average in 2014–15. In 2015–16 average total cash costs of small and medium-scale farms are estimated to

have slightly decreased; large and very large-scale farms are estimated to have increased their total costs.

Farm cash income

Farm financial performance is a key driver of changes on lamb producing farms. The three main measures of farm profitability used in this report are farm cash income, farm business profit and rate of return. Terms used in ABARES surveys are defined in the glossary.

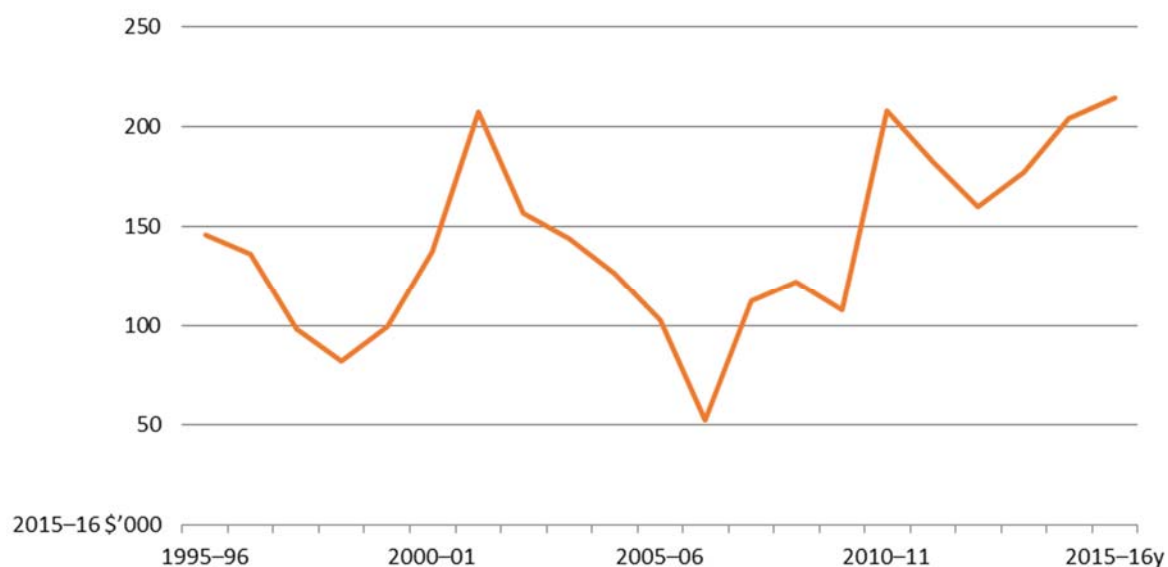
Farm cash income of lamb producing farms rose on average over the period 2013–14 to 2015–16 (Figure 2). The majority of the rise in farm incomes from 2013–14 to 2014–15 came from higher beef and lamb receipts resulting from increased prices and sales of both. However, this was partially offset by reduced crop receipts on many farms affected by dry seasonal conditions. Costs slightly decreased on average over the period, particularly as a result of reduced interest repayments and fuel expenditure, but was offset by higher repairs and maintenance costs.

Average incomes of lamb producing farms are estimated to have risen from 2014–15 to 2015–16 in New South Wales, Queensland and South Australia (Table 5). Although receipts from the sale of lambs for slaughter increased, most of the increase in farm incomes in these states was from higher cropping receipts.

Average incomes for lamb producers are estimated to have fallen in Victoria, Western Australia and Tasmania. In Victoria and Western Australia this is predominantly because of lower crop receipts; however, higher receipts from wool and beef cattle are estimated to reduce the extent of the decrease. In Tasmania, declines are predicted in all major receipt components as a result of dry seasonal conditions.

Figure 2 Farm cash income, lamb producers, 1995–96 to 2015–16

average per farm



y Provisional estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Small-scale and large-scale lamb producing farms greatly increased their cash income from 2013–14 to 2014–15, on average, because of increased sheep, lamb, beef cattle, and wool

receipts due to higher prices and increased turn-off, as well as larger crop receipts. Medium and very large-scale producers experienced relatively steady farm cash incomes, on average.

In 2015–16 farm cash income of small-scale producers is estimated to have remained relatively steady, on average. Farm cash income of medium and very large-scale farms is estimated to have risen in 2015–16, predominantly because of an increase in crop receipts and higher wool and beef receipts resulting from higher prices and increased beef cattle turn-off. For large-scale farms, farm cash income is estimated to have decreased, on average, stemming from a rise in expenditure on fertiliser and sprays resulting from an increase in the area sown to crops offsetting the increase in crop and wool receipts.

Table 5 Key financial performance, lamb producing farms, by state, 2013–14 to 2015–16
average per farm

Farm cash income	Unit	2013-14	2014-15^p	2015-16^y
New South Wales	\$	159 177	184 209	(7) 210 647
Victoria	\$	132 495	133 212	(7) 123 008
Queensland	\$	32 748	140 916	(53) 341 247
Western Australia	\$	318 070	333 632	(11) 314 008
South Australia	\$	181 753	255 210	(14) 274 387
Tasmania	\$	122 132	193 479	(11) 115 080
Australia	\$	176 809	203 830	(5) 214 500
Farm business profit				
New South Wales	\$	46 095	54 631	(21) 92 694
Victoria	\$	33 750	4	ns 1 306
Queensland	\$	-108 877	-52 177	(115) 189 219
Western Australia	\$	173 460	162 016	(18) 163 311
South Australia	\$	40 836	89 130	(31) 145 545
Tasmania	\$	54 884	53 692	(30) -2 394
Australia	\$	58 701	60 497	(13) 88 531
Rate of return (excluding capital appreciation)				
New South Wales	%	2.3	2.4	(11) 3.2
Victoria	%	2.1	1.0	(28) 1.0
Queensland	%	-1.0	0.1	(584) 5.0
Western Australia	%	4.6	4.0	(13) 4.0
South Australia	%	2.0	2.8	(18) 3.8
Tasmania	%	2.1	1.9	(16) 1.0
Australia	%	2.6	2.4	(7) 2.9

ns Not supplied. **p** Preliminary estimate. **y** Provisional estimate.

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

Source: ABARES Australian Agricultural and Grazing Industries Survey

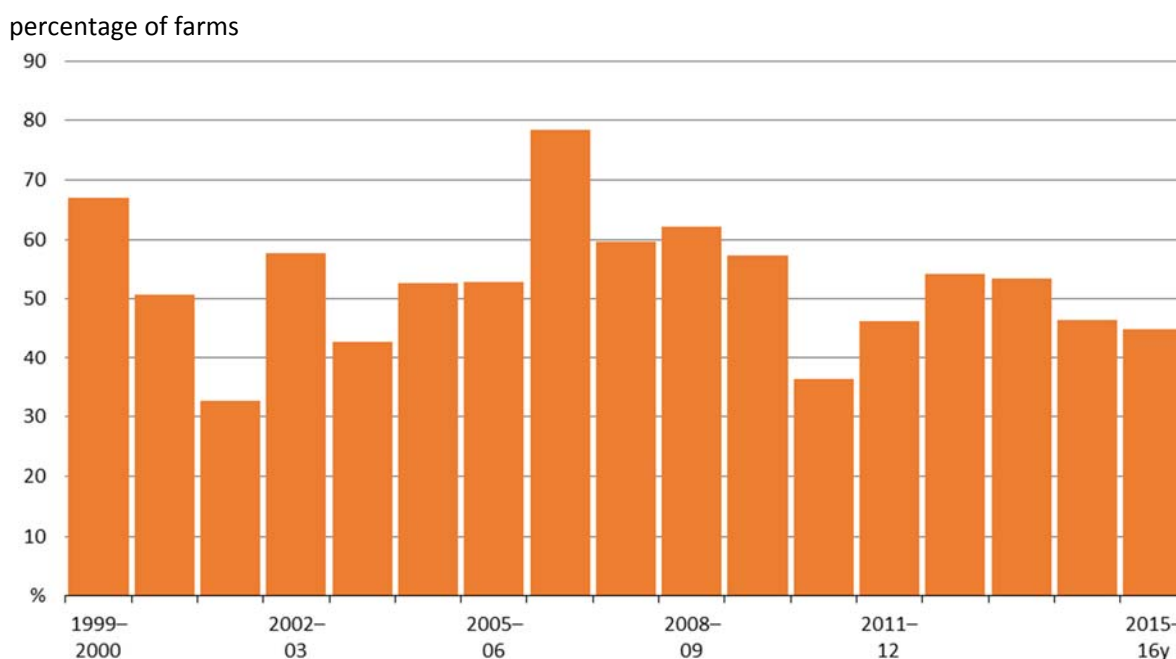
Farm business profit

Farm business profit is a measure of long-term profitability that accounts for capital depreciation, payments to family labour and changes in inventories of livestock, fodder and grain held on-farm.

At the national level, non-cash allowances for depreciation and family labour were relatively steady between 1999–2000 and 2014–15, at an average of around \$117 000 for each farm (in 2015–16 dollars). As a consequence, changes in farm business profit closely reflect changes in farm cash income.

Negative farm business profit means a farm has not covered the costs of unpaid family labour or set aside funds to replace depreciating farm assets. While many farms record negative farm business profits occasionally as their incomes fluctuate, ongoing low or negative profits affect long-term viability because farms have reduced capacity to invest in newer and more efficient technologies. Over the 10 years to 2014–15 around 55 per cent of lamb producing farms recorded negative farm business profits. In 2015–16, with improved financial performance at the national level, the proportion of farms recording negative farm business profit was estimated to have fallen to 45 per cent (Figure 3).

Figure 3 Proportion of lamb producing farms with negative profit, 1999–2000 to 2015–16



y Provisional estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

4 Farm investment

New farm investment

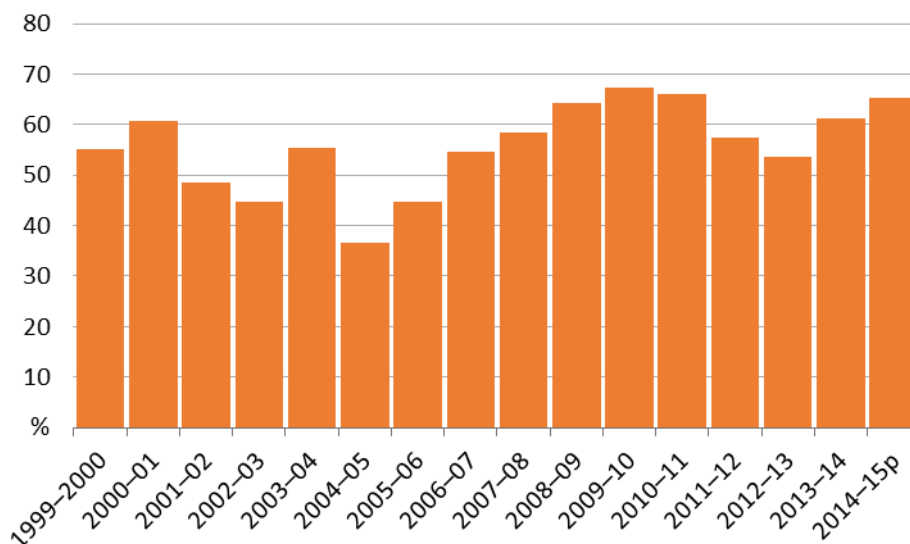
Investment in farm capital (land, fixed structures, livestock, plant and equipment) is important to all aspects of farm business management, including financial performance, production efficiency and farm productivity. Lamb producers combine capital items with other farm inputs, such as labour, fertiliser and livestock, to produce lambs, crops and a range of other agricultural outputs.

New investments allow farmers to replace capital items that have deteriorated or outlived their useful life with newer items. Most investments—particularly those in land and fixed on-farm infrastructure—are usually made with long-term outcomes in mind and based on expected returns over the life of the investment.

Lamb producers’ capacity to generate farm income is influenced by their past investments in land, farm infrastructure, and plant and machinery. Only a relatively small proportion of farmers buy land in any given year, but most farmers make some annual investment in plant, vehicles, machinery or infrastructure. Around 9 per cent of lamb producers bought land in 2014–15. This was above the average of 7 per cent for the 10-year period to 2014–15. On average, 56 per cent of lamb producers each year made additions to total capital over the 10 years to 2014–15 (Figure 4). Average farm capital investment fluctuated over the period from 1999–2000 to 2014–15 (Figure 5).

Figure 4 Proportion of farms making capital additions, lamb producers, 1999–2000 to 2014–15

percentage of farms

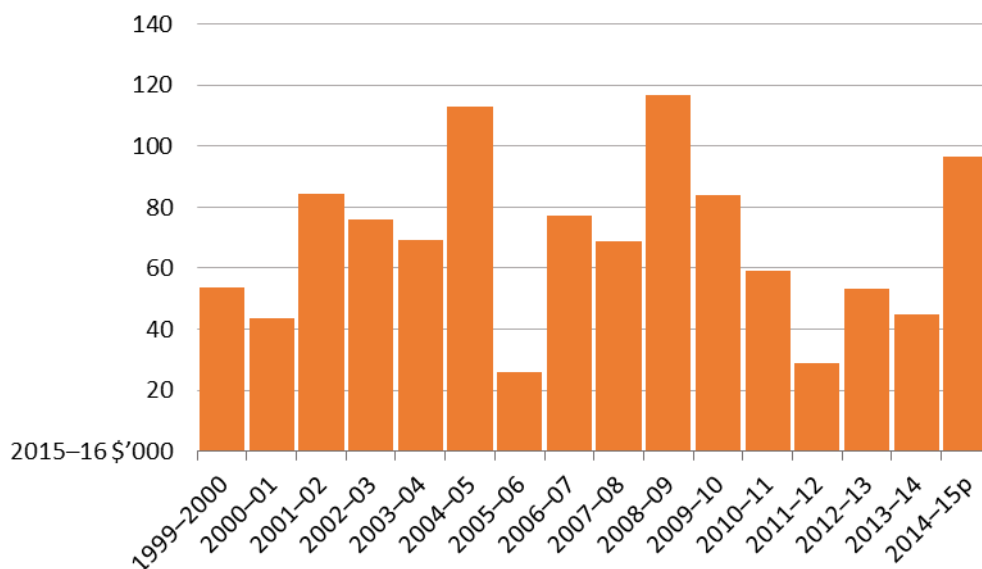


p Preliminary estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Figure 5 Net capital additions, lamb producers, 1999–2000 to 2014–15

average per farm



p Preliminary estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Return to capital

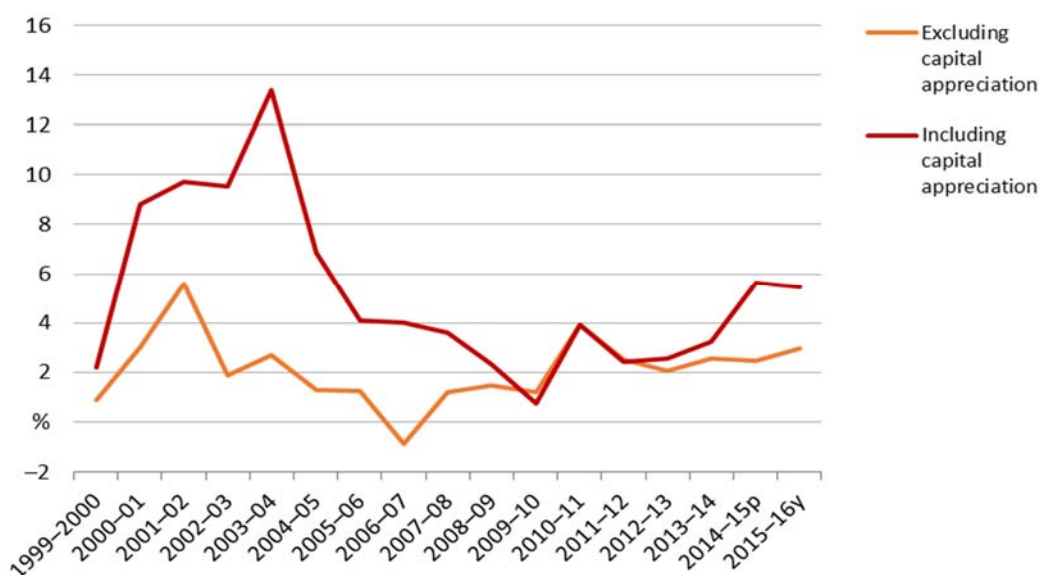
Measures of return to capital are important indicators of the economic performance of farm businesses and the incentives for farmers to continue investing in the industry. Over the period from 2000–01 to 2007–08 the average rate of return of lamb producing farms was relatively high when capital appreciation is included (Figure 6). During most of the 2000s strong demand for rural land resulted in land values rising in most regions, which increased the total capital value of lamb producing farms and, consequently, rates of return including capital appreciation. However, reported land values started to decline in a number of regions in 2008–09, resulting in substantially lower average rates of return to total farm capital including capital appreciation.

When capital appreciation is excluded, changes in rates of return to capital have been more modest. Over the 10 years to 2014–15, the average rate of return to capital (excluding capital appreciation) for Australian lamb producing farms was 1.7 per cent. Rate of return (excluding capital appreciation) declined slightly to 2.4 per cent in 2014–15 despite an increase in farm cash income. Average rate of return (excluding capital appreciation) is estimated to have increased to 3.0 per cent in 2015–16.

In 2015–16 rates of return excluding capital appreciation are expected to be positive across all states, except Tasmania. The highest rate of return excluding capital appreciation is projected in Queensland at 5 per cent.

In 2015–16 the highest average rate of return excluding capital appreciation was for very large-scale lamb producing farms (5 per cent), followed by large-scale farms (3.8 per cent). The average rate of return for medium and small lamb producing farms was 1.5 per cent and 3.2 per cent, respectively.

Figure 6 Rate of return, lamb producers, 1999–2000 to 2015–16



^p Preliminary estimate. ^y Provisional estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Farm debt and equity

Debt is an important source of funds for farm investment and ongoing working capital for many lamb producing farms.

Average debt for lamb producers increased in real terms by around 88 per cent, from \$323 000 in 2000–01 (in 2015–16 dollars) to an estimated \$605 000 in 2015–16 (Figure 7). Increases in average debt over the past 15 years have been largely the consequence of increases in average farm size and borrowing for land purchase, as well as for ongoing working capital.

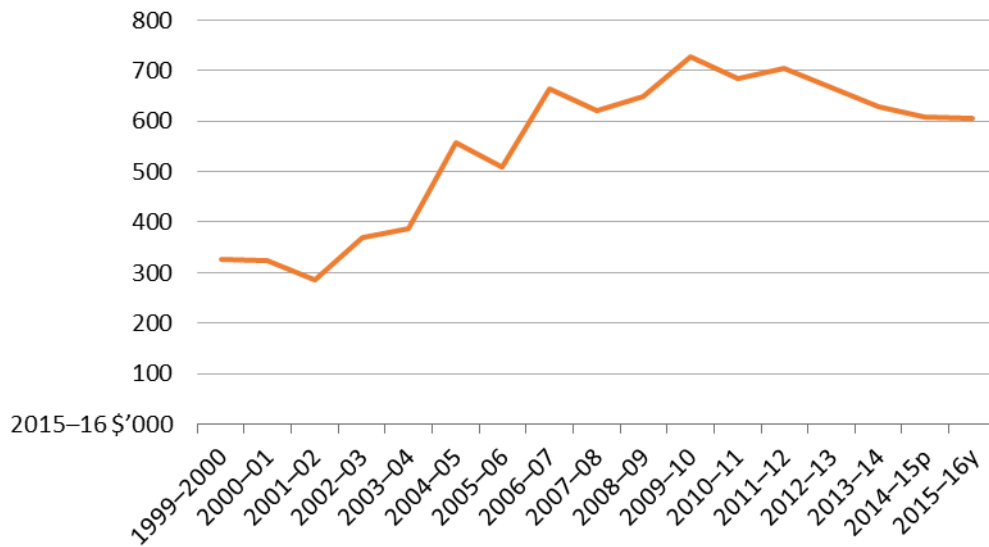
The increases in debt over time have largely been supported by increases in the total capital value of lamb producing farms. As a consequence, average farm business equity ratios remained relatively steady over the period 2000–01 to 2015–16. Change in farm equity ratios over time should be considered 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.

At the national level, the average equity ratio for lamb producers remained relatively steady over the 10 years to 2014–15. The average farm equity ratio of lamb producers at 30 June 2015 was 86 per cent.

Overall, changes in average debt over time have been modest relative to lamb producers' capacity to service debt by generating income. The capacity to service debt—making interest and principal repayments—is an important part of farm viability. On average, around 8 per cent of lamb producers' farm cash receipts were used to make interest payments over the 10 years to 2015–16. This proportion has fallen in recent years because of higher farm receipts and reduced interest rates (Figure 8). In 2015–16 an estimated 6 per cent of farm cash receipts were used to make interest payments.

Figure 7 Total farm debt, lamb producers, 1999–2000 to 2015–16

average per farm

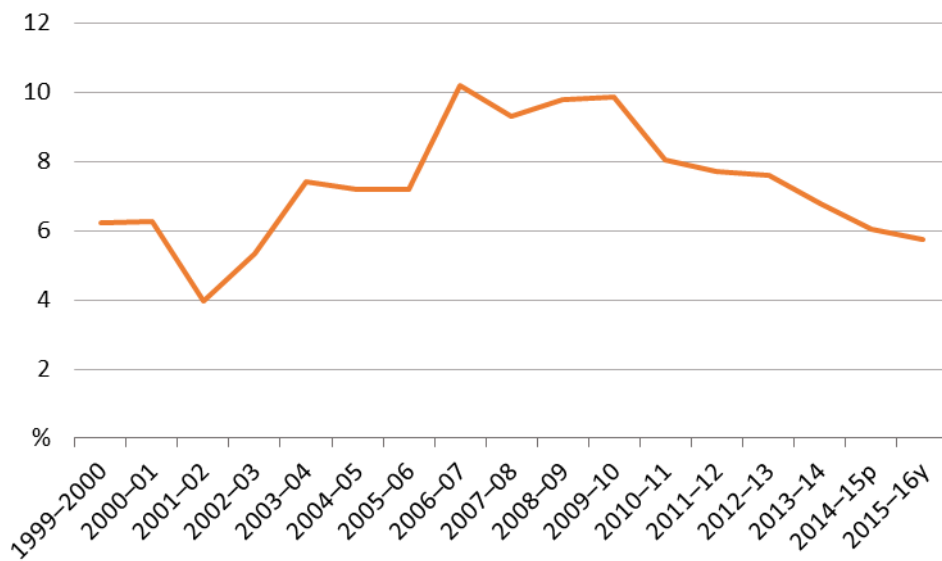


p Preliminary estimate. **y** Provisional estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Figure 8 Ratio of interest paid to total cash receipts, lamb producers, 1999–2000 to 2015–16

average per farm



p Preliminary estimate. **y** Provisional estimate.

Source: ABARES Australian Agricultural and Grazing Industries Survey

Appendix A

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 dataset is used for research and analysis that forms the basis of many publications, briefing material and industry reports. Since 1977–78 ABARES has conducted the annual Australian Agricultural and Grazing Industries Survey (AAGIS) to provide a set of data that are collected nationally using a consistent methodology.

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 (class 0146 and 0149)
 - farms engaged mainly in growing rice, other cereal grains, coarse grains, oilseeds, pulses
- mixed livestock–crops industry (class 0145)
 - farms engaged mainly in running sheep, beef cattle and growing cereal grains, coarse grains, oilseeds, pulses
- sheep industry (class 0141)
 - farms engaged mainly in running sheep
- beef industry (class 0142)
 - farms engaged mainly in running beef cattle
- sheep–beef industry (class 0144)
 - farms engaged mainly in running both sheep and beef cattle.

Target populations

AAGIS is designed from a population list drawn from the Australian Business Register (ABR) and maintained by the Australian Bureau of Statistics. 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.

ABARES surveys target farming establishments that make a significant contribution to the total value of agricultural output (commercial farms). Farms excluded from ABARES surveys are the smallest units and in aggregate 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). EVAO is a standardised dollar measure of the level of agricultural output. However, in some surveys in recent years other measures of agricultural production have also been used.

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 1 600 farms.

The main method of collecting data is face-to-face interviews with the owner-manager of the farm business. Detailed physical and financial information is collected on the operations of the farm business during the preceding financial year. Respondents to AAGIS are also contacted by telephone in the latter part of 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 Australian Bureau of Statistics estimates from its Agricultural Census and surveys.

The weighting methodology for AAGIS 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.

Generally, larger farms have smaller weights and smaller farms have larger weights. This reflects both the strategy of sampling a higher fraction of the larger 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 2013–14 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 2014–15 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 2015–16 estimates are projections developed from the data collected through on-farm and telephone interviews between September 2015 and December 2015. 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 2015–16 where prices have changed significantly since the 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 \$6 000. 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 \$6 000).

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 is \$9 605, estimated as the square root of:

$$((6 \times \$100\,000/100)^2 + (6 \times \$125\,000/100)^2)$$

A 95 per cent confidence interval for the difference is therefore:

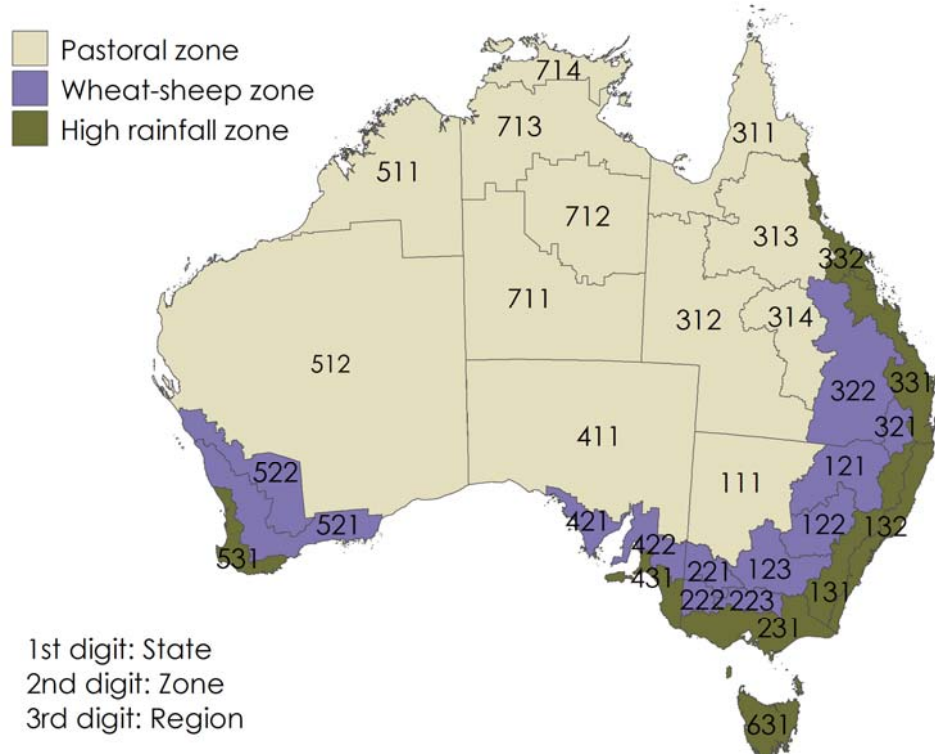
$$\$25\,000 \pm 1.96 \times \$9\,605 = (\$6\,174; \$43\,826)$$

Hence, if a large number (towards infinity) of different samples are taken, in approximately 95 per cent of them, the difference between these two estimates will lie between \$6 174 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 statistics are also available by region (Map 4). These regions represent the finest level of geographical aggregation for which the survey is designed to produce reliable estimates.

Map 4 ABARES Australian broadacre zones and regions



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

Source: ABARES

Glossary

Term	Definition
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.
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 sharefarmed on another farm.
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>

Term	Definition
	<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>

Term	Definition
total cash costs	<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> <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. Administration costs include accountancy fees, banking and legal expenses, postage, stationery, subscriptions and telephone. 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>
build-up in trading stocks	<p>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.</p>

Term	Definition
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. Rate of return excluding capital appreciation and rate of return including capital appreciation are estimated.

References

Unless otherwise indicated, ABARES publications listed here are available at agriculture.gov.au/abares/publications.

ABARES 2016, *Agricultural commodities: March quarter 2016*, vol. 6, no. 1, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

ABS 2006, *Australian and New Zealand Standard Industrial Classification (ANZSIC)*, Australian Bureau of Statistics, Catalogue no. 1292.0, Canberra.

Bardsley, P & Chambers, R 1984, 'Multipurpose estimation from unbalanced samples', *Journal of the Royal Statistical Society, Series C (Applied Statistics)*, vol. 33, pp. 290–9.

Martin, P 2016, 'Farm performance: broadacre and dairy farms, 2013–14 to 2015–16', *Australian farm survey results 2013–14 to 2015–2016*, pp. 7–53, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

Further information

ABARES farm survey data for the livestock and other broadacre industries

Webb: agriculture.gov.au/agsurf

Meat & Livestock Australia

Level 1, 40 Mount Street, North Sydney NSW 2060

Postal address: PO Box 1961, North Sydney NSW 2059

Phone: 02 9463 9333

Fax: 02 9463 9393

Email: info@mla.com.au

Webb: mla.com.au