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Australian lamb

Financial performance of slaughter lamb producing farms, 2011–12 to 2013–14

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Contents

Summary vi

1 Introduction 1

2 Industry background 2

3 Slaughter lamb production 7

Slaughter lamb production 2012–13 7

Slaughter lamb production 2013–14 7

Lamb and sheep selling methods 13

4 Financial performance 15

Financial performance 2012–13 15

Financial performance 2013–14 17

Financial performance by state 20

Financial performance by production scale 20

On-farm costs of slaughter lamb production 26

Grain finishing 26

5 Farm investment 30

6 Farm debt 33

7 Productivity 36

Survey methods and definitions 38

Glossary 44

References 48

Further information on lamb producers 49

Tables

Table 1 Sheep numbers and lamb production 3

Table 2 Distribution of broadacre farms selling lambs for slaughter, by number of slaughter lambs sold, 2011–12 to 2013–14 4

Table 3 Physical characteristics, by number of lambs sold for slaughter 6

Table 4 Selected physical characteristics, slaughter lamb industry, ranked by annual slaughter lamb sales 9

Table 5 Financial performance, slaughter lamb producers 17

Table 6 Financial performance, specialist slaughter lamb producers 19

Table 7 Financial performance, slaughter lamb producers, by state 22

Table 8 Financial performance, slaughter lamb producers, ranked by slaughter lamb production scale 23

Table 9 Physical and financial performance indicators, by use of grain finishing for lambs 27

Table 10 Physical and financial performance indicators, producers grain finishing lambs, by length of time on grain 29

Table 11 Average annual sheep total factor productivity growth, by region, 1977–78 to 2011–12 37

Figures

Figure 1 Index of real commodity prices, 1992–93 to 2013–14f 2

Figure 2 Composition of Australian sheep flock, 1993–94 to 2013–14f 3

Figure 3 Number of farms selling slaughter lambs, 1995–96 to 2012–13p 4

Figure 4 Number of ewes mated and lambing rate, by number of lambs sold for slaughter, 2003–04 to 2013–14 10

Figure 5 Lamb sales, by number of lambs sold for slaughter, 2006–07 to 2013–14 11

Figure 6 Sheep and lamb turn-off rate, by number of lambs sold for slaughter, 2003–04 to 2013–14 12

Figure 7 Lamb selling methods, slaughter lamb producing farms, 1988–89 to 2012–13 13

Figure 8 Adult sheep selling methods, slaughter lamb producing farms, 1988–89 to 2012–13 14

Figure 9 Financial performance, slaughter lamb producers, 1993–94 and 2013–14 15

Figure 10 Composition of receipts, slaughter lamb producers, 1993–94 to 2013–14 16

Figure 11 Farm cash income, slaughter lamb producers and specialist slaughter lamb producers, 1993–94 to 2013–14 16

Figure 12 Average farm cash income per hectare operated, slaughter lamb producers, 2010–11 to 2012–13p 21

Figure 13 Farm cash income, slaughter lamb producers, by state, 2001–02 to 2013–14 22

Figure 14 Financial performance, by number of lambs sold for slaughter, 2001–02 to 2013–14 25

Figure 15 Farm costs, slaughter lamb producers, Australia, 1993–94 to 2013–14 26

Figure 16 Proportion of slaughter lamb producers purchasing land, 1993–94 to 2012–13 30

Figure 17 Land value per hectare, slaughter lamb farms, by zone, 1994–95 to 2012–13 31

Figure 18 Composition of net capital additions excluding land, slaughter lamb producers, 1993–94 to 2012–13 32

Figure 19 Composition of farm business debt, slaughter lamb producers, 1993–94 to 2013–14 33
Figure 20 Ratio of interest to total cash receipts, slaughter lamb producers, 1993–94 to 2013–14 34
Figure 21 Equity ratio slaughter lamb producers, 1994–95 to 2012–13 35
Figure 22 Trend in sheep industry total factor productivity, total inputs and total outputs, 1977–78 to 2011–12 37

Maps

Map 1 Rainfall percentiles 1 July 2012 to 30 June 2013 8
Map 2 Rainfall percentiles 1 July 2013 to 30 June 2014 8
Map 3 ABARES Australian broadacre zones and regions 42
Map 4 Australian Dairy Industry Survey regions, New South Wales and Victoria 43

Boxes

Box 1 ABARES productivity estimates 36

Summary

Around 18 400 Australian broadacre farms each sell more than 200 lambs for slaughter. This report classifies these farms as slaughter lamb producers. Most of these farms are mixed enterprises, deriving receipts from cropping, beef cattle, sheep and wool and from the sale of slaughter lambs.

The average financial performance of Australian slaughter lamb producing farms is estimated to have improved in 2013–14. Sheep and lamb receipts are estimated to have increased by 6 per cent, mainly as a result of increased prices. Crop receipts are also estimated to have increased as a result of higher winter crop production. Average farm cash income for Australian slaughter lamb producing farms is estimated to have increased from an average of $155 300 a farm in 2012–13 to $193 000 a farm in 2013–14, around 52 per cent above the average for the 10 years ending 2012–13, in real terms.

Between 2010–11 and 2012–13 around 10 000 slaughter lamb producers earned more than 20 per cent of their total farm receipts from the sale of slaughter lambs. These businesses are classified as specialist slaughter lamb producers in this report. These farms generally have much smaller cropping and beef cattle enterprises than other slaughter lamb producing farms, resulting in a smaller overall scale of operations and lower average farm cash incomes.

Farm cash income for specialist slaughter lamb producers is estimated to have increased from an average of $70 200 a farm in 2012–13 to $91 000 a farm in 2013–14. If achieved, this would be around 32 per cent above the average in real terms for the 10 years ending 2012–13.

Average farm business debt for slaughter lamb producers decreased in 2012–13; another small decrease in farm debt is estimated for 2013–14. Large increases in farm debt in the decade ending 2009–10 resulted in a marked rise in the proportion of farm receipts required to fund interest payments. This proportion has declined since 2009–10 as result of lower interest rates, reductions in average farm debt and an increase in average farm receipts. In 2013–14 the ratio of interest payments to farm receipts is estimated to have been 6.6 per cent for Australian slaughter lamb producing farms, well below the 10.2 per cent recorded in 2006–07 and close to the relatively low average of 6.4 per cent recorded through the second half of the 1990s.

Most Australian slaughter lamb producing farms had relatively high farm equity and high farm cash income in 2013–14. Farm business equity ratios averaged 90 per cent for specialist slaughter lamb producers and 85 per cent for all slaughter lamb producers at 30 June 2013. The overall financial position of slaughter lamb producing farms is generally strong. Asset values and investment remain high and, although debt is also high, equity ratios and debt servicing are in line with long-term averages.

1 Introduction

This report provides an overview of production and farm financial performance in the Australian slaughter lamb industry. The report draws on data from the ABARES annual Australian Agricultural and Grazing Industries Survey (AAGIS) for the period 2011–12 to 2013–14.

AAGIS provides data on the financial performance of broadacre farm businesses and their associated production, farm management practices and farm household socio-economic characteristics. It also provides the main means of monitoring and analysing productivity growth in the various broadacre industries. AAGIS is funded by the Department of Agriculture, Meat & Livestock Australia (MLA) and the Grains Research and Development Corporation (GRDC). This report was commissioned and funded by MLA.

Information presented in this report expands on farm survey results published in *Australian farm survey results 2011–12 to 2013–14* (ABARES 2014b) and *Agricultural commodities: March quarter 2014* (ABARES 2014a). The report covers:

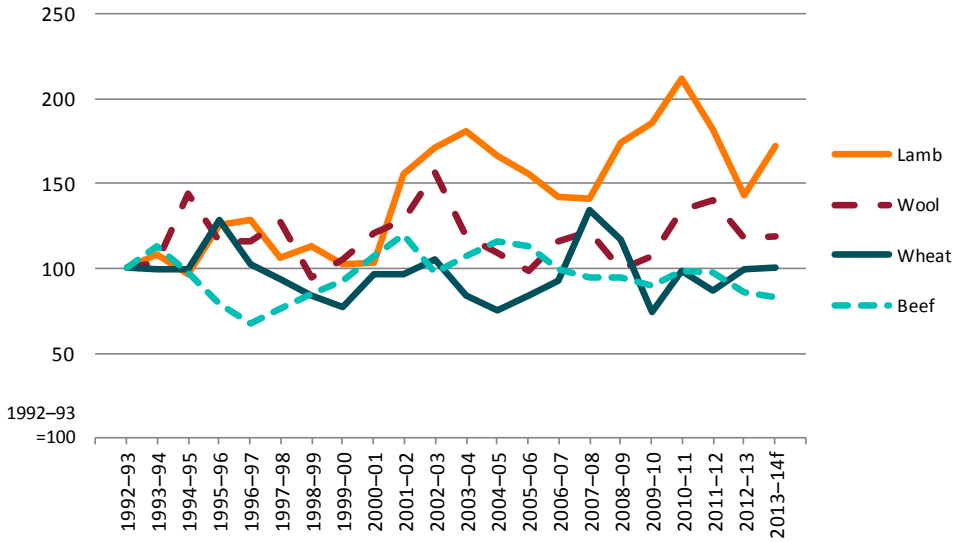
- **Overview of the slaughter lamb industry**—background of the industry, characteristics of slaughter lamb producers and production and selling methods (chapters 2 and 3).
- **Profile and farm financial performance of slaughter lamb producing farms**—overview of recent commodity prices and seasonal conditions and an examination of production and financial performance results from 2011–12 to 2013–14. Also reviewed are differences in results across producers of varying scale, specialisation and grain finishing methods, trends in slaughter lamb selling methods and costs of production (chapter 4).
- **Investment and financial position of slaughter lamb producing farms**—trends in farm investment and debt and the financial position and liquidity of slaughter lamb producers (chapters 5 and 6).
- **Productivity growth in the sheep industry**—trends and sources of productivity growth for the sheep industry, which comprises part of the broader slaughter lamb industry (chapter 7).

For the purpose of this report, ABARES classifies broadacre farm businesses as slaughter lamb producing farms if they sold, on average, more than 200 lambs a year over the three years ending 2012–13. Using this definition, approximately 18 400, or one-third, of all broadacre farms, are classified as slaughter lamb producers.

2 Industry background

The slaughter lamb industry has emerged from a long period of structural adjustment that followed a downshift in global demand for wool and wool prices in the early 1990s. Since then, the industry has transitioned from predominantly small, wool-focused enterprises to larger, lamb-slaughter focused enterprises or enterprises geared to combined slaughter lamb-wool production. This has been supported by strong growth in lamb prices since the early 2000s—but little or no long-term growth in wool, wheat and beef prices, in real terms (Figure 1).

Figure 1 Index of real commodity prices, 1992–93 to 2013–14f



f ABARES forecast.
Source: ABARES

In line with relatively favourable lamb prices, the total number of lambs slaughtered has increased. In the past decade, annual production has increased by 32 per cent to a peak of around 22 million head in 2013–14 (Table 1). At the same time, average slaughter lamb weight has increased by around 4 per cent, supporting growth of aggregate meat production to 471 kilotons in 2013–14—an increase of 38 per cent over the past decade or about 3 per cent a year (Table 1).

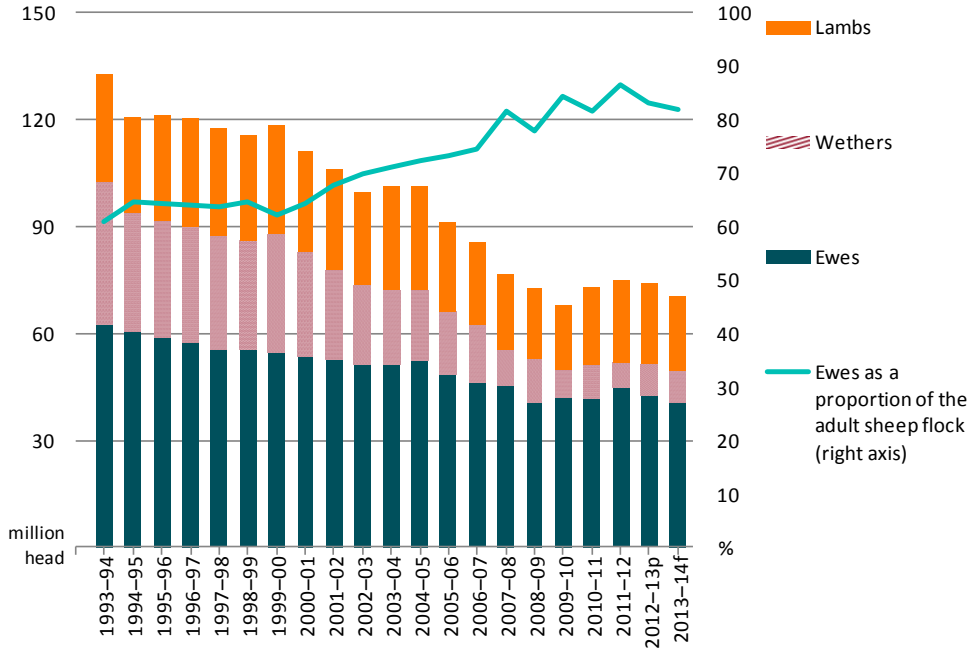
The shift in focus to slaughter lamb production has resulted in significant long-term adjustments in the national flock. National flock size declined by 44 per cent between 1993–94 and 2012–13, reaching a historic low of 68 million head in 2009–10 following prolonged drought conditions in the 2000s and a recovery in lamb prices (Table 1 and Figure 2). Composition of the national flock has also changed. The flock proportion represented by wethers (primarily carried for wool production) has declined sharply, while the proportion of ewes and lambs has increased (Figure 2). Adult sheep numbers have also declined as more sales have occurred at the lamb stage.

Table 1 Sheep numbers and lamb production

Year	Sheep numbers (million head) c	Lambs slaughtered b ('000)	Slaughter weight (kg/hd)	Lamb meat production ab (kt)	Lamb meat exports a (kt)
2002–03	99	16 870	19.5	329	113
2003–04	101	16 562	20.6	341	132
2004–05	101	17 331	20.4	354	146
2005–06	91	18 666	20.5	382	173
2006–07	86	20 158	20.5	413	179
2007–08	77	20 529	20.9	428	194
2008–09	73	20 395	20.4	416	184
2009–10	68	19 478	21.2	413	190
2010–11	73	17 880	21.9	391	188
2011–12	75	18 879	22.2	419	207
2012–13	74	21 122	21.6	457	235
2013–14f	70	21 925	21.5	471	258
Percentage change between 2003–04 and 2013–14	–30%	32%	4%	38%	95%

a Carcass weight. **b** Data from 2007 does not include farm kills. **c** As at 30 June.
Source: Australian Bureau of Statistics

Figure 2 Composition of Australian sheep flock, 1993–94 to 2013–14f



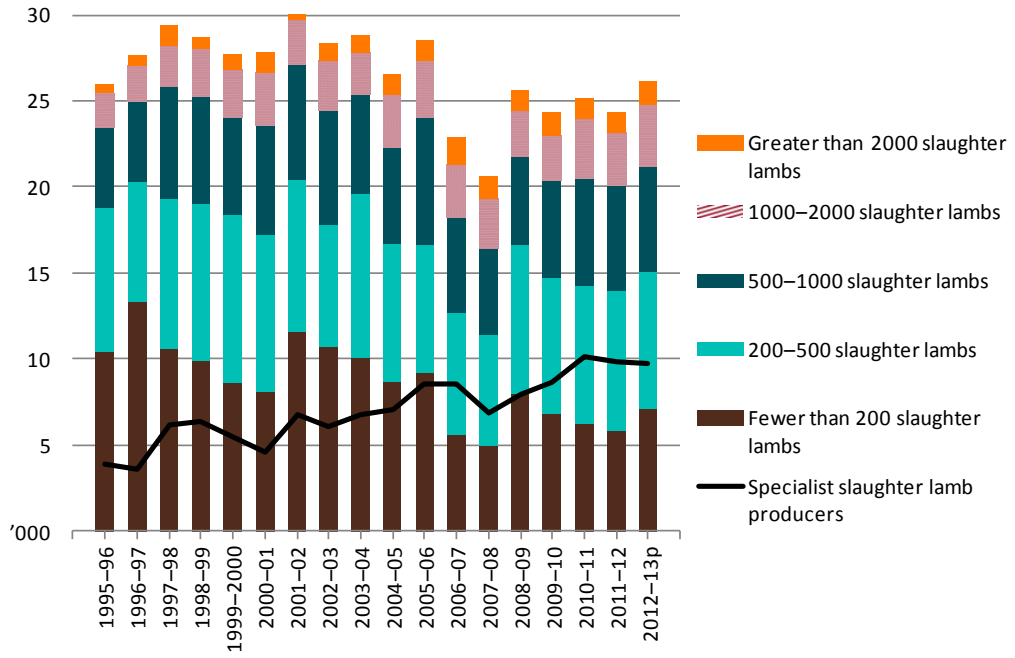
p Preliminary estimate. **f** ABARES forecast.
Source: Australian Bureau of Statistics Agricultural Census and Agricultural Commodities Survey

Although slaughter lamb production has continued to rise, the number of broadacre farms involved in slaughter lamb production has declined over the past decade. Increases in total production have been driven largely by an increase in the average number of head sold per farm. The number of farms selling fewer than 200 lambs a year has declined by one-third over the past

decade. In the three years ending 2012–13, these farms represented just 4 per cent of total production (Figure 3 and Table 2).

At the same time, the number of larger producers has increased significantly, with the number of farms selling more than 1000 head a year rising by 28 per cent in the past decade. These farms represent 19 per cent of all producers but account for more than half the total annual value of slaughter lamb production (Table 2). Overall, the number of farms selling 200 or more slaughter lambs a year has increased by 8 per cent, driven by this increase in larger farms.

Figure 3 Number of farms selling slaughter lambs, 1995–96 to 2012–13p



p Preliminary estimate.
Source: ABARES

Table 2 Distribution of broadacre farms selling lambs for slaughter, by number of slaughter lambs sold, 2011–12 to 2013–14

Number of slaughter lambs sold	Average number of producers (no.)	Share of producers (%)	Share of slaughter lambs sold (%)	Share of slaughter lamb value of production (%)
<200 slaughter lambs	5 800	24	4	4
200–500 slaughter lambs	7 800	32	16	15
500–1000 slaughter lambs	6 000	25	26	25
1000–2000 slaughter lambs	3 400	14	28	29
>2000 slaughter lambs	1 200	5	26	27
All broadacre farms selling slaughter lambs	24 200	100	100	100

Note: Includes only broadacre farms with an estimated value of agricultural operations greater than $40 000. Totals may vary because of rounding.
Source: ABARES

The number of producers specialising in slaughter lamb production has also increased, growing by 60 per cent in the past decade to almost 10 000 in 2012–13. In this report, farms are classified as specialist slaughter lamb producers if they earned, on average, more than 20 per cent of total income over the past three years from the sale of lambs for slaughter.

Specialists represent an increasingly important proportion of total slaughter lamb production, accounting for 63 per cent of the value of lamb production on average over 2010–11 to 2012–13. Most producers selling more than 500 slaughter lambs a year are also slaughter lamb specialists. In contrast, most producers selling 200 to 500 slaughter lambs a year are non-specialists with a greater emphasis on cropping, wool or beef production (Table 3).

Because specialists' flocks are optimised for slaughter lamb production, these producers on average sell more prime lambs and achieve a higher average price per head, relative to non-specialists. However, on average, specialists achieve lower wool production per head and a lower wool price per kilogram (Table 3) (Caboche & Thompson 2013).

For the purpose of farm performance analysis, ABARES classifies slaughter lamb producers according to average slaughter lamb production scale over the past three years (2010–11 to 2012–13).

- Small-scale farms—200 to 500 lambs sold for slaughter a year
- Medium-scale farms—500 to 1000 lambs sold for slaughter a year
- Large-scale farms—1000 to 2000 lambs sold for slaughter a year
- Very large-scale farms—more than 2000 lambs sold for slaughter a year.

Table 3 Physical characteristics, by number of lambs sold for slaughter

average per farm, 2011–12 to 2013–14

Physical characteristic	Units	Small-scale farms	Medium-scale farms	Large-scale farms	Very large-scale farms	All slaughter lamb producers	Specialist slaughter lamb producers
Area operated	ha	2 124	3 229	4 996	7 891	3 387	2 132
Area sown to crop	ha	431	679	858	1 133	636	210
Beef cattle at 30 June	no.	94	101	190	378	133	99
Sheep at 30 June	no.	1 747	2 411	3 861	7 601	2 736	2 392
–rams	%	1	1	1	1	1	1
–ewes	%	59	61	62	63	61	63
–wethers	%	12	8	7	5	8	6
–lambs	%	28	31	30	30	30	30
Ewes mated	no.	857	1 273	2 049	4 477	1 449	1 341
Lambs marked	no.	736	1 162	1 987	4 339	1 341	1 301
Lamb marking percentage	%	86	91	97	97	93	97
Adult sheep sold	no.	282	301	498	958	373	254
Total lambs sold	no.	371	749	1 448	3 587	903	1 027
–prime lambs	no.	183	416	845	2 210	514	661
–other lambs for slaughter	no.	157	286	526	1 267	340	345
–lambs not for slaughter	no.	31	48	78	109	50	22
Sheep and lambs shorn	no.	1 699	2 314	3 990	8 077	2 738	2 394
Wool production	kg	7 216	10 128	16 823	32 601	11 592	9 573
Wool cut per head shorn	kg/hd	4.3	4.4	4.2	4.0	4.2	4.0
Average price received							
Wool price	c/kg	762	700	669	671	703	631
Adult sheep price	$/hd	95	96	91	85	93	86
Slaughter lamb price	$/hd	103	107	114	114	110	114

Source: ABARES

3 Slaughter lamb production

Slaughter lamb production 2012–13

At the start of 2012–13, flock numbers had reached 75 million head as a result of favourable seasonal conditions and flock rebuilding in 2009–10 and 2010–11 (Table 1). However, dry conditions took hold in most key lamb production regions in 2012–13, with below average 2012 winter rainfall (Map 1) and average to drier than average summer conditions.

Less abundant grazing and relatively high opening flock levels in 2012–13 led to a rise in sheep and lamb turn-off and increased saleyard offerings in the eastern states. Aggregate slaughter lamb sales rose by 12 per cent year-on-year. However, reduced pasture availability was reflected in lower average slaughter weights, which declined by 3 per cent from 2011–12 levels (Table 1). AAGIS data suggest that average lamb marking rates also declined (Figure 4).

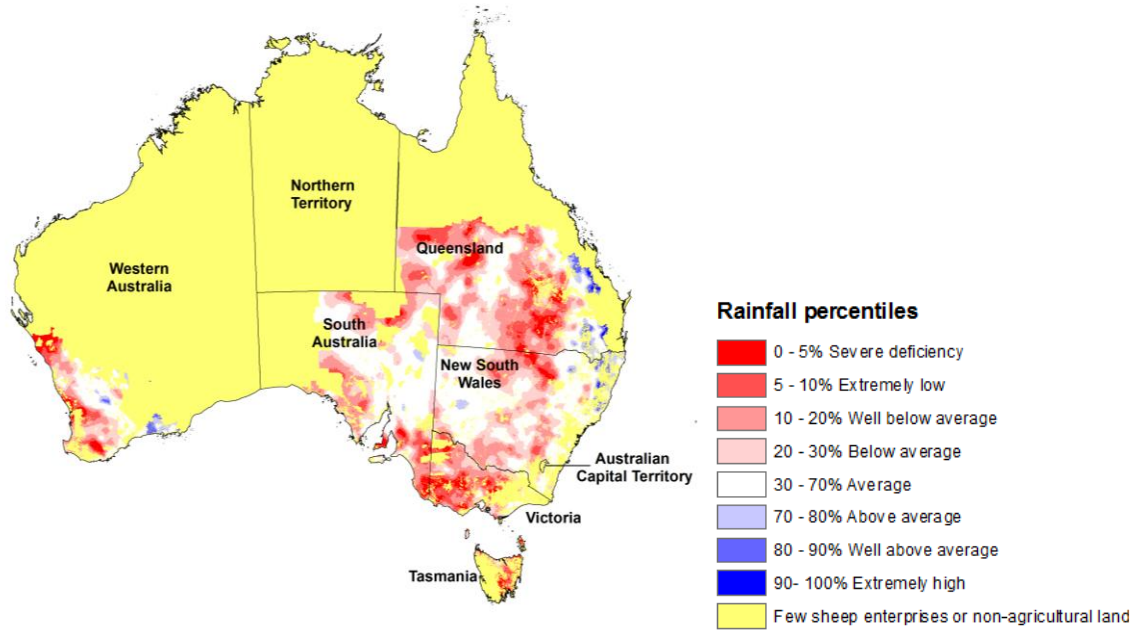
Average slaughter lamb sales rose by 4 per cent year-on-year, driven by sales by very large producers (Figure 5). In addition, destocking led to a significant rise in average adult sheep sales, which increased by 13 per cent from 2011–12 levels (Table 4). Overall, average sheep and lamb turn-off increased to 49 per cent from recent historic lows (Figure 6).

Slaughter lamb production 2013–14

In 2013–14 seasonal conditions were significantly more favourable across key lamb producing regions, although conditions in northern and western New South Wales and Queensland continued to be dry (Map 2). Improved conditions supported growth in ewe joinings and lamb marking rates, particularly for small-scale and medium-scale producers (Table 4 and Figure 4). Ewe joinings are estimated to have risen by 6 per cent on average, driving an overall increase of 8 per cent in the number of lambs marked.

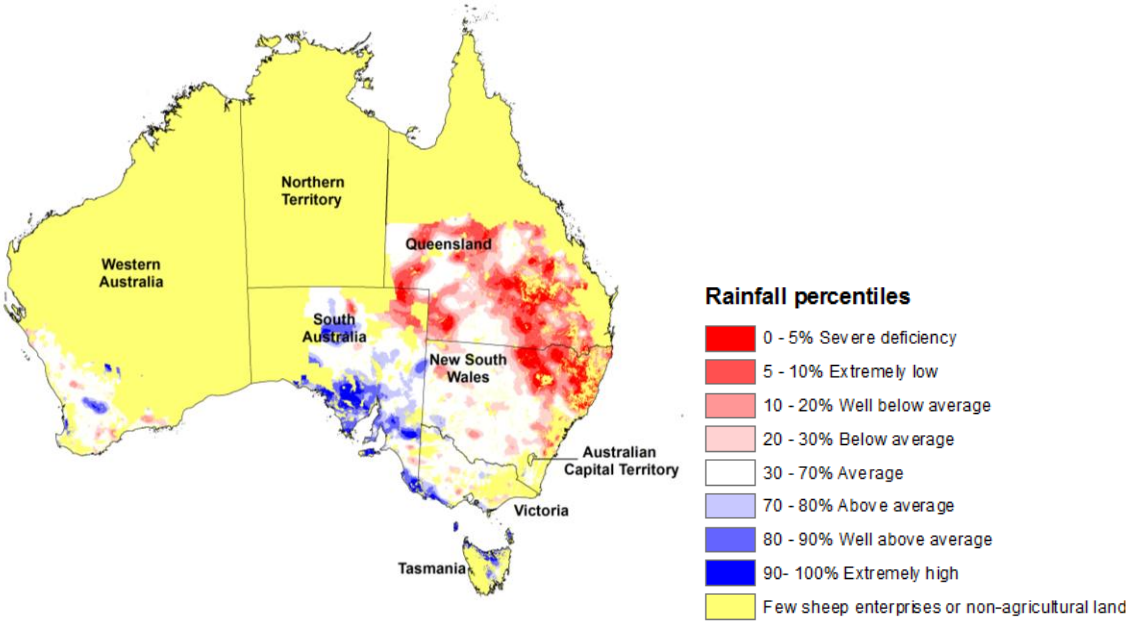
While lamb markings are estimated to have risen in 2013–14, average lamb sales are estimated to have remained around 2012–13 levels. Sales by specialist producers are estimated to have declined by 3 per cent as larger producers retained lambs for flock rebuilding (Figure 5). At the same time, continued destocking in the first half of 2013–14 contributed to a further estimated year-on-year increase in adult sheep sales of 5 per cent on average, while adult sheep sales by specialist slaughter lamb producers are estimated to have remained steady (Table 4). Overall sheep and lamb turn-off rates are estimated to have declined to 48 per cent in 2013–14 (Figure 6).

Map 1 Rainfall percentiles 1 July 2012 to 30 June 2013



Source: Bureau of Meteorology

Map 2 Rainfall percentiles 1 July 2013 to 30 June 2014



Source: Bureau of Meteorology

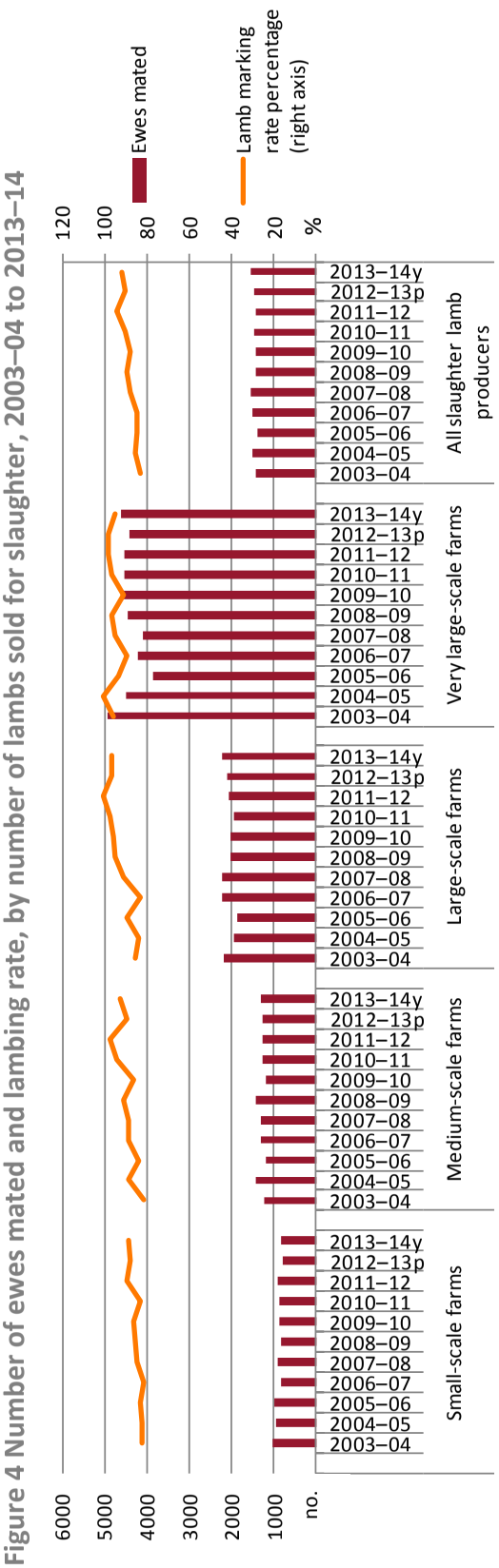
Table 4 Selected physical characteristics, slaughter lamb industry, ranked by annual slaughter lamb sales

average per farm

Farm scale	Area operated (ha)	Change in sheep numbers (%)	Ewes mated (no.)	Lambs marked (no.)	Lamb marking percentage (%)	Sheep sold (no.)	Lambs sold (no.)	Slaughter lambs sold (no.)	Area sown to crop (ha)	Change in beef cattle numbers (%)
Small										
2011–12	2 396	4.6	897	775	86	294	387	364	435	1.6
2012–13**p**	1 685	0.6	788	688	87	272	352	329	426	2.2
2013–14**y**	1 740	2.3	851	788	93	306	403	–	454	–5.0
Medium										
2011–12	3 595	10.1	1 270	1 201	95	255	744	700	724	5.7
2012–13**p**	3 012	1.4	1 274	1 122	88	344	741	697	631	2.5
2013–14**y**	3 036	4.1	1 311	1 214	93	344	750	–	636	–2.6
Large										
2011–12	4 715	4.7	2 084	2 068	99	537	1 561	1 423	769	4.5
2012–13**p**	4 801	2.1	2 101	1 986	95	588	1 422	1 401	979	2.6
2013–14**y**	4 928	–0.8	2 219	2 080	94	665	1 384	–	988	–7.1
Very large										
2011–12	6 933	3.3	4 520	4 373	97	1 023	3 578	3 492	1 165	5.3
2012–13**p**	9 700	–2.4	4 403	4 281	97	1 105	3 677	3 544	1 212	–1.8
2013–14**y**	9 648	3.4	4 603	4 370	95	992	3 416	–	1 016	4.3
All slaughter lamb producers										
2011–12	3 467	5.9	1 448	1 360	94	368	903	850	632	4.1
2012–13**p**	3 274	0.6	1 451	1 330	92	415	918	881	652	1.7
2013–14**y**	3 339	2.2	1 533	1 432	93	436	921	–	655	–3.4
Specialist slaughter lamb producers										
2011–12	2 022	5.8	1 326	1 306	99	258	1 012	987	191	5.4
2012–13**p**	2 075	–2.1	1 291	1 236	96	301	1 041	1 016	200	3.3
2013–14**y**	2 104	1.2	1 355	1 304	96	299	1 014	–	181	–1.9

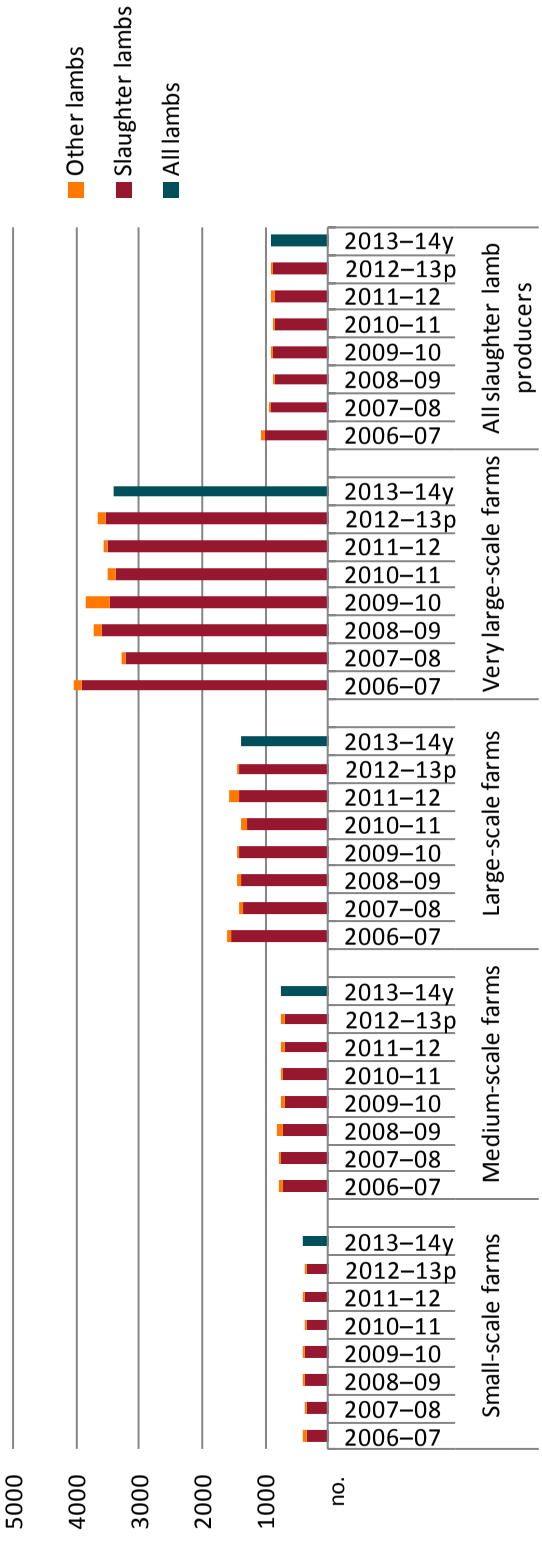
p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Figure 4 Number of ewes mated and lambing rate, by number of lambs sold for slaughter, 2003–04 to 2013–14



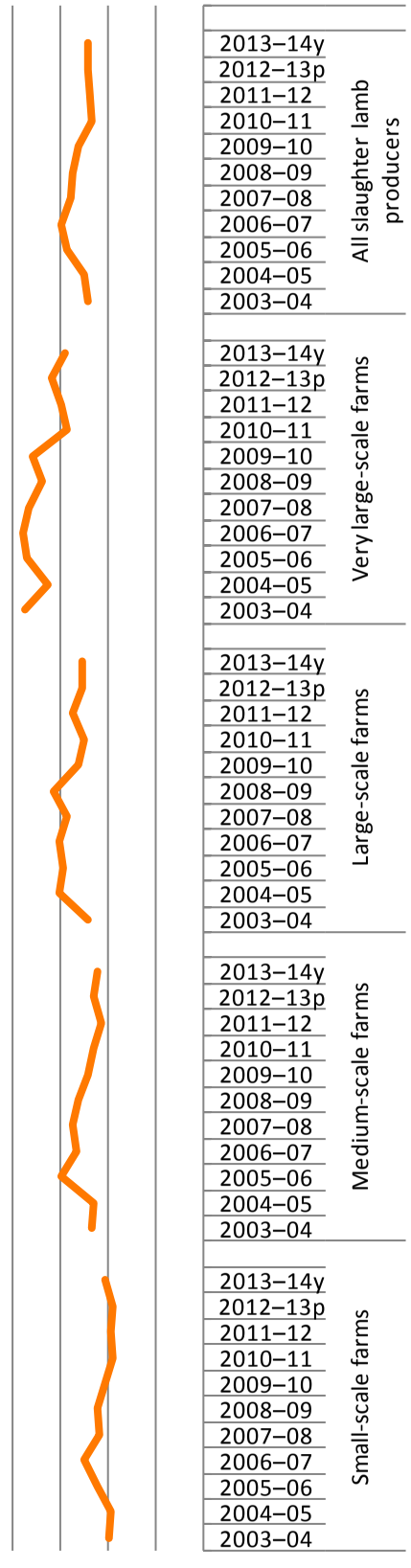
p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Figure 5 Lamb sales, by number of lambs sold for slaughter, 2006–07 to 2013–14



p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Figure 6 Sheep and lamb turn-off rate, by number of lambs sold for slaughter, 2003–04 to 2013–14



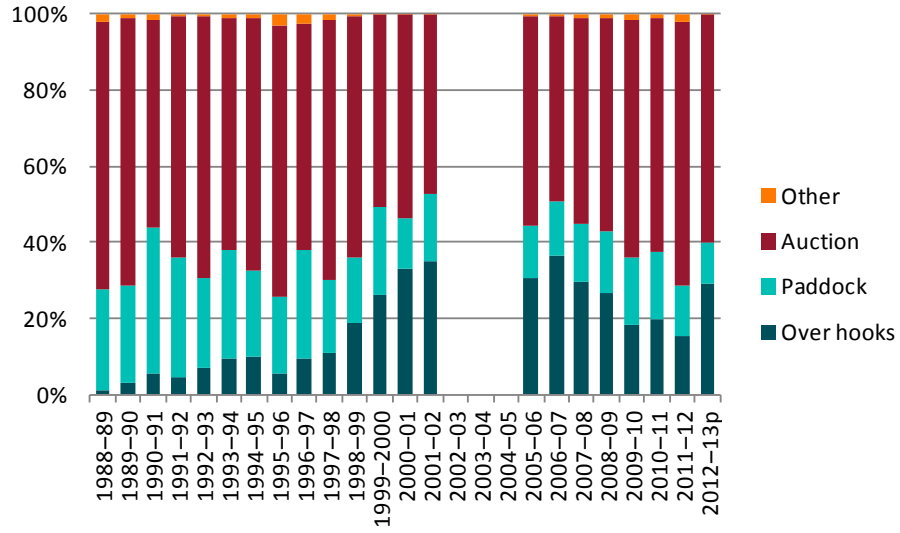
p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Lamb and sheep selling methods

Greater focus over the past decade on production of lambs specifically bred for slaughter, as well as better finishing of lambs before sale, has resulted in producers changing their method of sale. In the early 1990s, almost all lambs sold by slaughter lamb producing farms were sold at auction or in the paddock. Since that time, the proportion of lambs sold by these means, particularly in the paddock, has declined (Figure 7). At the same time, the proportion sold over the hooks increased from less than 5 per cent in the early 1990s to more than 30 per cent in 2006–07.

In the five years to 2012–13, the proportion of lambs sold over the hooks dropped and the proportion sold at auction increased. This may be because of stronger auction markets during favourable seasons between 2007–08 and 2011–12, supported by restocker and finisher demand and reduced lamb availability. In 2012–13 dry conditions and destocking activity resulted in a weaker auction market and led to a return to sale over the hooks resulted in the proportion of lambs sold by this method rising to 29 per cent.

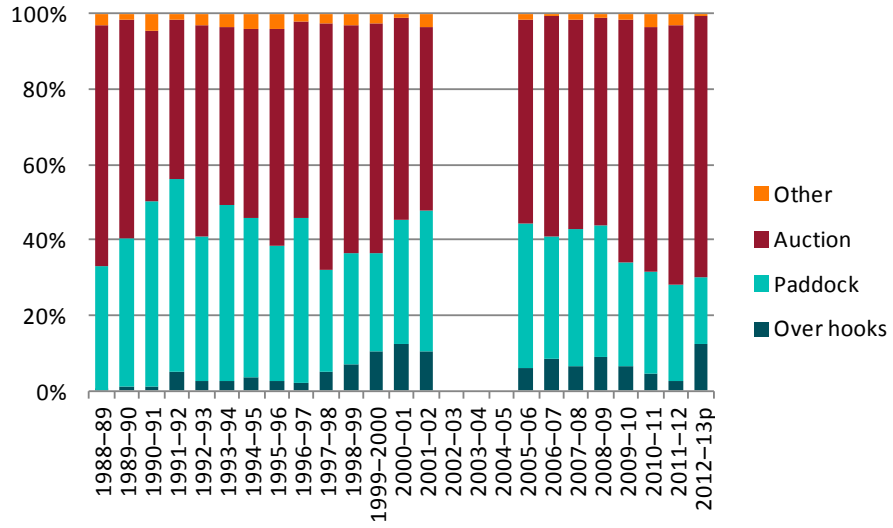
Figure 7 Lamb selling methods, slaughter lamb producing farms, 1988–89 to 2012–13



p Preliminary estimate.
Note: Because of changes in data collected, consistent results cannot be provided for 2002–03 to 2004–05.
Source: ABARES

Changes also occurred in sale methods for adult sheep (Figure 8).The proportion of sheep sold at auction trended upward, reaching 69 per cent in 2012–13. At the same time, the proportion of sheep sold in the paddock declined, falling to 18 per cent in 2012-13, its lowest level in 25 years. Greater use of specialised meat breeds of sheep resulted in the proportion of sheep sold over the hooks increasing in the late 1990s, mainly at the expense of paddock sales. As with lamb sales, the proportion of sheep sent over the hooks then trended downward for a decade before rising sharply to 12 per cent in 2012–13.

Figure 8 Adult sheep selling methods, slaughter lamb producing farms, 1988–89 to 2012–13



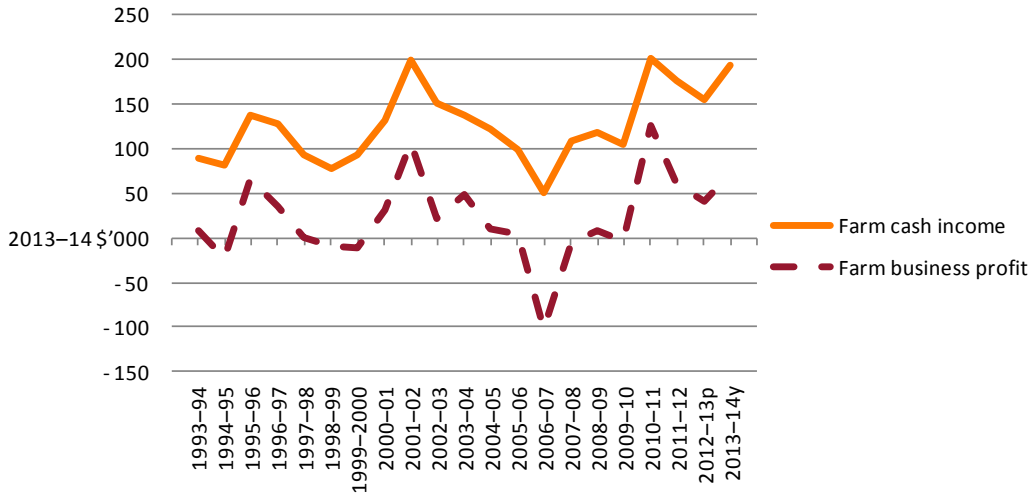
p Preliminary estimate.
Note: Because of changes in data collected, consistent results cannot be provided for 2002–03 to 2004–05.
Source: ABARES

4 Financial performance

Financial performance 2012–13

Following significant falls in the previous financial year, the financial performance of slaughter lamb producers continued to decline in 2012–13 but remained relatively high in historic terms. In 2012–13 average farm cash income fell by 12 per cent to $155 300 a farm, remaining above the 10-year average of $127 100 (in 2013–14 dollars). Average farm business profit fell by 32 per cent to $40 600 a farm, compared with a 10-year average of $18 800 (in 2013–14 dollars) (Figure 9 and Table 5).

Figure 9 Financial performance, slaughter lamb producers, 1993–94 and 2013–14



p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Weaker financial performance of slaughter lamb producers was largely because of a decline in average receipts, from $611 110 in 2011–12 to $562 700 in 2012–13. This was driven by a fall in prices and average receipts across all major livestock categories (Table 5 and Figure 10). Increased slaughter lamb sales in 2012–13 were more than offset by lower sale prices arising from higher turn-off in drought-affected areas and lower turn-off weights. Average lamb sale prices achieved by slaughter lamb producers fell by 24 per cent in nominal terms to $87 a head in 2012–13, leading to a fall in lamb receipts of 23 per cent, from $103 440 in 2011–12 to $80 100 in 2012–13.

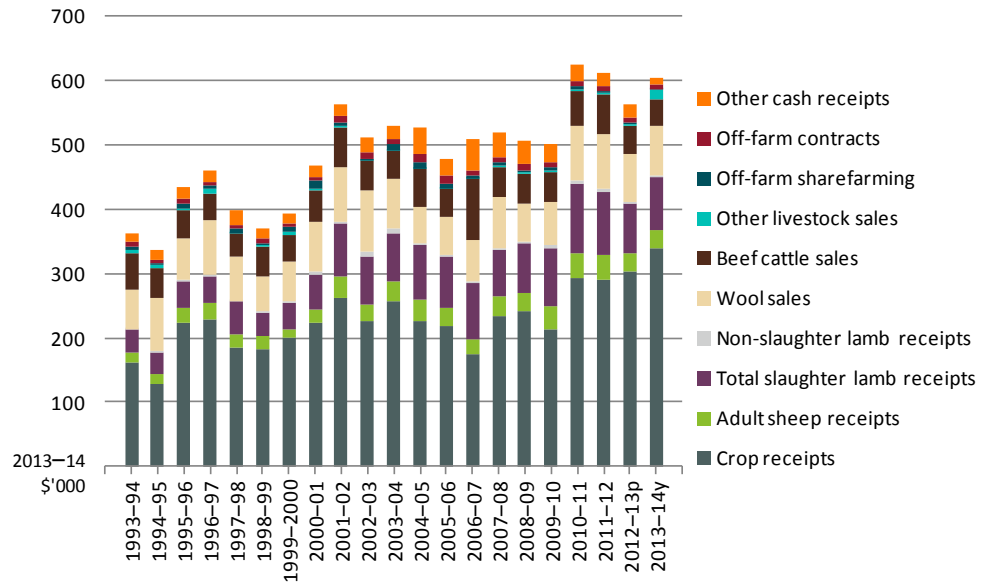
Similarly, average receipts from adult sheep declined in spite of higher sheep turn-off, falling by more than one-third to $26 400 in 2012–13. Beef receipts also fell by 30 per cent, on average, driven by both weaker beef prices and lower average sale weights. Average wool receipts by slaughter lamb producers declined by 12 per cent in 2012–13, largely in line with a decline in wool prices.

Reductions in livestock revenue were partly offset by an increase in crop receipts, which grew by 5 per cent on average to $304 100 in 2012–13. Dry conditions across most major lamb producing regions significantly reduced crop production in spite of an increase in area cropped. However, this was offset by higher grain, oilseed and pulse prices.

Average cash costs for slaughter lamb producers fell by 6 per cent to $407 400 a farm in 2012–13. Costs decreased across a range of areas, most importantly sheep and lamb purchases, which

declined from historically high levels in 2011–12. Poor growing conditions led to a fall in cropping-related expenditures, particularly fertiliser costs. Interest expenses also declined as a result of a reduction in average producer debt levels (see Chapter 5) and lower interest rates.

Figure 10 Composition of receipts, slaughter lamb producers, 1993–94 to 2013–14

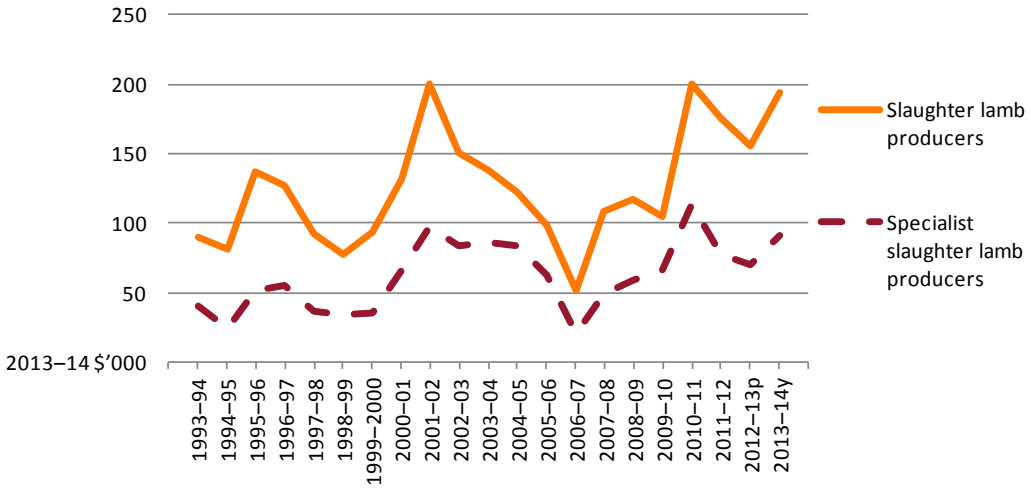


p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

In 2012–13 average farm cash income of specialist slaughter lamb producers declined by 9 per cent to $70 200 a farm (Table 6 and Figure 11). Average cash receipts fell by 12 per cent compared with 2011–12, driven by a 19 per cent decline in slaughter lamb receipts and a 22 per cent decline in wool receipts. However, this was partly offset by a 13 per cent decline in average cash costs.

A more dramatic decline in average farm business profit, from $730 in 2011–12 to $-16 700 a farm in 2012–13, was a result of reductions in inventories of sheep and cattle on farms in some regions.

Figure 11 Farm cash income, slaughter lamb producers and specialist slaughter lamb producers, 1993–94 to 2013–14



p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Financial performance 2013–14

Farm cash incomes and business profit for slaughter lamb producers recovered in 2013–14. Average farm cash income is estimated to have risen by 24 per cent to $193 000 a farm (close to the record averages of 2001–02 and 2010–11 in real terms) and by 30 per cent to $91 000 for specialist producers (Table 5 and Table 6).

Sheep and lamb receipts are estimated to have increased in 2013–14 by 6 per cent to $115 000 a farm, on average. The average number of lambs sold is estimated to have remained steady for slaughter lamb producers and to have declined slightly for specialist producers. However, average lamb prices are estimated to have risen significantly because of restricted lamb availability as a result of reduced flock size and demand for restocking in some areas. Similarly, higher estimated adult sheep prices and an increase in average adult sheep sales in 2013–14 supported an increase in estimated average sheep receipts of 14 per cent for producers and 12 per cent for specialist producers.

Crop receipts are estimated to have increased by 11 per cent on average, further boosting farm receipts, mainly as a result of much higher winter crop production in South Australia, Western Australia and southern New South Wales. Overall, little change is estimated in wool receipts as slightly higher wool prices were partly offset by a reduction in the average quantity of wool sold. Similarly, little change is estimated in average beef cattle receipts overall as an increase in the numbers of cattle sold is estimated to have been mostly offset by lower average prices received.

Farm cash costs in 2013–14 are estimated to have remained close to the 2012–13 average at $412 000 a farm. Minor increases are estimated for cropping related costs, partly because of the costs of harvesting and marketing much larger winter crops in Western Australia and South Australia. Fodder costs are also estimated to have risen in northern New South Wales, while sheep and lamb purchases are expected to slow further in northern regions. Interest expense is estimated to have declined again in 2013–14 as a result of further reductions in interest rates and average farm debt (see Chapter 5).

Table 5 Financial performance, slaughter lamb producers

average per farm

Physical characteristics	Units	2011–12	2012–13p		2013–14y
Area operated	ha	3 467	3 270	(6)	3 340
Area sown to crop	ha	632	650	(5)	660
Beef cattle at 30 June	no.	135	130	(8)	120
Sheep at 30 June	no.	2 745	2 760	(4)	2 840
Ewes mated	no.	1 448	1 450	(3)	1 530
Lambs marked	no.	1 360	1 330	(3)	1 430
Lamb marking percentage	%	94	92	(1)	93
Sheep and lamb turn-on rate	%	7	5	(11)	4
Sheep and lamb turn-off rate	%	48	49	(3)	48
Sheep sold	no.	368	420	(6)	440
Total lambs sold	no.	903	920	(4)	920
Slaughter lambs sold	no.	850	880	(5)	na

continued ...

Table 5 Financial performance, slaughter lamb producers

average per farm *continued*

Receipts	**Units**	**2011–12**	**2012–13p**		**2013–14y**
Sheep and lamb sales	$	143 180	106 500	(4)	115 000
Adult sheep receipts	$	39 740	26 400	(7)	30 000
Lamb receipts	$	103 440	80 100	(5)	85 000
Slaughter lamb receipts	$	97 360	77 600	(5)	na
Non–slaughter lamb receipts	$	6 080	2 600	(22)	na
Crop receipts	$	289 630	304 100	(6)	339 000
Wool sales	$	85 500	75 500	(5)	77 000
Beef cattle sales	$	59 850	42 700	(8)	42 000
Total cash receipts	$	611 110	562 700	(4)	606 000
Costs					
Sheep and lamb purchases	$	26 930	13 400	(10)	11 000
Fodder	$	5 890	8 300	(10)	10 000
Fertiliser	$	57 010	53 400	(5)	54 000
Sprays	$	37 910	36 600	(6)	37 000
Fuel, oil and lubricants	$	34 800	33 500	(4)	36 000
Repairs and maintenance	$	40 160	37 600	(4)	39 000
Interest payments	$	46 160	41 500	(7)	39 000
Hired labour	$	15 390	14 500	(8)	15 000
Total cash costs	$	435 590	407 400	(4)	412 000
Farm capital and debt					
Total capital value	$	4 688 200	4 471 300	(3)	4 415 000
Farm debt	$	677 970	641 400	(6)	627 000
Equity ratio	%	85	85	(1)	na
Farm financial performance					
Farm cash income	$	175 520	155 300	(7)	193 000
Farm business profit	$	59 540	40 600	(24)	73 000
Rate of return excl. capital appreciation	%	2.5	2.2	(10)	2.8
Prices					
Slaughter lamb price	$/hd	115	88	(2)	na
Lamb price	$/hd	115	87	(2)	93
Population	no.	18 484	19 080		19 300

p Preliminary estimate. **y** Provisional estimate. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES

Table 6 Financial performance, specialist slaughter lamb producers

average per farm

Physical characteristics	Units	2011–12	2012–13p		2013–14y
Area operated	ha	2 022	2 080	(15)	2 100
Area sown to crop	ha	191	200	(35)	180
Beef cattle at 30 June	no.	96	100	(13)	100
Sheep at 30 June	no.	2 427	2 290	(8)	2 340
Ewes mated	no.	1 326	1 290	(9)	1 360
Lambs marked	no.	1 306	1 240	(9)	1 300
Lamb marking percentage	%	99	96	(2)	96
Sheep and lamb turn-on rate	%	8	7	(22)	6
Sheep and lamb turn-off rate	%	54	58	(5)	56
Sheep sold	no.	258	300	(10)	300
Total lambs sold	no.	1 012	1 040	(9)	1 010
Slaughter lambs sold	no.	987	1 020	(9)	na
Receipts					
Sheep and lamb sales	$	143 980	113 100	(10)	119 000
Adult sheep receipts	$	25 320	17 800	(12)	20 000
Lamb receipts	$	118 660	95 300	(11)	99 000
Slaughter lamb receipts	$	115 030	93 500	(12)	na
Non–slaughter lamb receipts	$	3 630	1 800	(33)	na
Crop receipts	$	63 000	71 100	(23)	88 000
Wool sales	$	66 170	51 800	(15)	55 000
Beef cattle sales	$	32 710	28 200	(14)	30 000
Total cash receipts	$	322 850	283 800	(13)	312 000
Costs					
Sheep and lamb purchases	$	28 110	14 500	(18)	12 000
Fodder	$	5 660	8 000	(36)	10 000
Fertiliser	$	23 750	19 000	(35)	21 000
Sprays	$	11 600	10 600	(32)	12 000
Fuel, oil and lubricants	$	16 890	15 700	(16)	17 000
Repairs and maintenance	$	24 660	21 100	(10)	23 000
Interest payments	$	23 610	21 100	(21)	20 000
Hired labour	$	6 700	6 700	(24)	7 000
Total cash costs	$	246 060	213 600	(13)	221 000
Farm capital and debt					
Total capital value	$	3 215 540	3 178 400	(10)	3 167 000
Farm debt	$	330 270	314 400	(12)	319 000
Equity ratio	%	90	90	(2)	na
Farm financial performance					
Farm cash income	$	76 790	70 200	(17)	91 000
Farm business profit	$	730	–16 700	(77)	2 000
Rate of return excl. capital appreciation	%	1.0	0.3	(138)	na

continued ...

Table 6 Financial performance, specialist slaughter lamb producers

average per farm *continued*

Prices	Units	2011–12	2012–13p		2013–14y
Slaughter lamb price	$/hd	117	92	(2)	na
Lamb price	$/hd	117	92	(2)	98
Population	no.	9 816	9 750		10 000

p Preliminary estimate. **y** Provisional estimate. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES

Financial performance by state

Average farm cash income for slaughter lamb producers declined across most states in 2012–13 with the exception of New South Wales (Figure 7 and Figure 13). Farm cash income declined by 38 per cent in South Australia and14 per cent in Western Australia compared with the very high incomes recorded in 2011–12 as drier seasonal conditions resulted in lower lamb and sheep prices and falls in crop production. However in the 10 years to 2013, slaughter lamb producers in these states typically achieved stronger average results than producers in other regions—a trend that continued in 2012–13. Average farm cash incomes increased in New South Wales in 2012–13 compared with 2011–12 largely as a result of increased crop production in southern New South Wales.

Average farm cash income is estimated to have recovered across most states in 2013–14, with favourable seasonal conditions resulting in increased grain production in South Australia and Western Australia and with higher lamb, sheep and wool prices. The largest gains are estimated in Western Australia (to a record level in real terms) and South Australia. Average farm cash income of producers in Tasmania, where income has been relatively stable, is estimated to have declined by 3 per cent as a result of decreased receipts from crops, wool and adult sheep. Overall, farm cash incomes for slaughter lamb producers in Victoria and New South Wales are also estimated to have increased slightly. However, in northern New South Wales, incomes for slaughter lamb producers with cropping enterprises are estimated to have fallen because of lower grain receipts resulting from much drier seasonal conditions.

Financial performance by production scale

Average farm cash income declined across all scales of slaughter lamb production in 2012–13 except in the case of large producers, who achieved an increase of 2 per cent (Figure 8 and Figure 14). Decreases ranged from 32 per cent for very large producers to 11 per cent for small-scale producers, driven by movements in a range of enterprise areas. In general, the greater focus of small and medium producers on crop production supported profit results for those groups, while results for very large producers reflected their greater exposure to the decline in lamb, sheep, beef cattle and wool prices.

Sheep and lamb receipts declined for producers across all scales of production, with falls in slaughter lamb receipts in 2012–13 ranging from 25 per cent to 30 per cent. Reductions in wool and beef cattle receipts for very large producers were only partially offset by moderate gains in crop receipts. In contrast, decreases in beef and wool receipts were more moderate for small to large-scale producers, and large-scale producers benefited from gains in crop receipts.

Average farm cash income is estimated to have improved in 2013–14 for small to large producers, primarily because of forecast increases in crop receipts. However, average cash

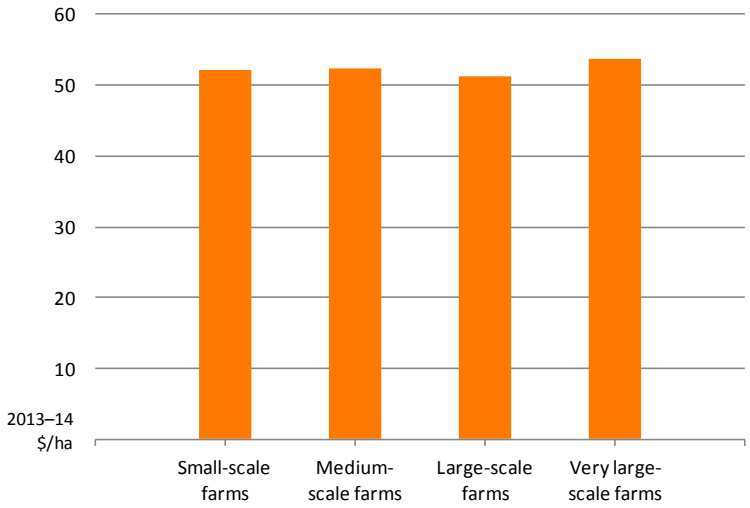
income for very large producers is estimated to have declined by a further 9 per cent because of a further small reduction in sheep and lamb receipts and a decrease in crop receipts. This reduction is mainly the result of the effects of dry seasonal conditions on very large-scale slaughter lamb producers in New South Wales.

This leaves large slaughter lamb producers with record average farm cash incomes and farm business profits for 2013–14, with medium-scale producers also performing well above historical averages.

While larger slaughter lamb producers typically achieve higher rates of return than smaller scale producers, returns for 2012–13 were more consistent across groups than in previous periods. Rates of return ranged from 1.3 per cent for small producers to 3.1 per cent for large producers (Table 8), while returns for very large producers declined from 4.6 per cent in 2011–12 to 3.0 per cent in 2012–13. Returns for small to large producers are estimated to have improved in 2013–14, ranging from 1.8 per cent (small producers) to 3.9 per cent (large producers). Returns for very large producers are expected to remain at 3.0 per cent, on average.

Reduced variation in returns across production scales flowed through to income per hectare measures. Average income per hectare for the three years ending 2012–13 was comparable across farm scales, ranging from $51 a hectare to $54 a hectare (Figure 12).

Figure 12 Average farm cash income per hectare operated, slaughter lamb producers, 2010–11 to 2012–13p



p Preliminary estimate.
Source: ABARES

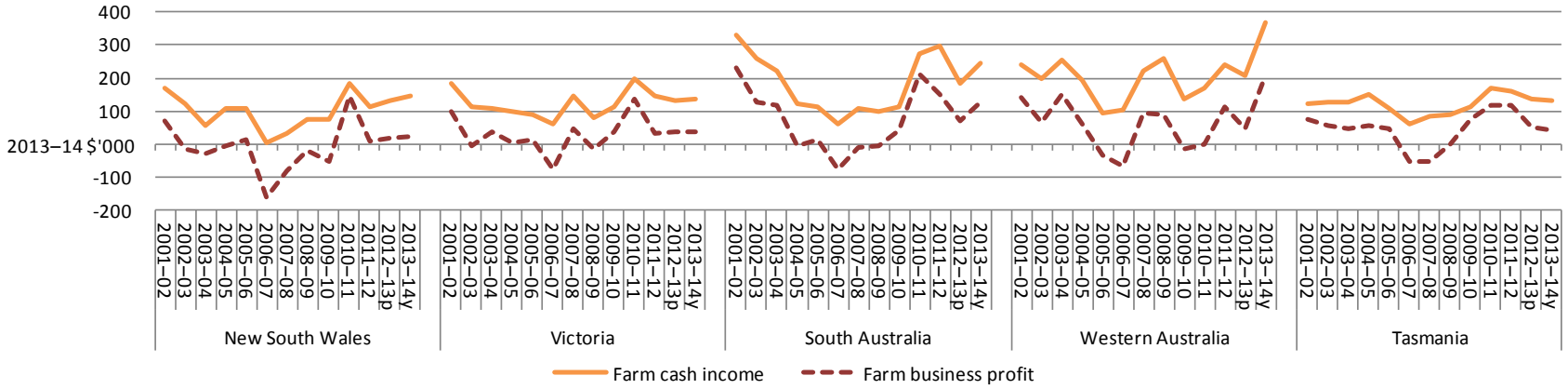
Table 7 Financial performance, slaughter lamb producers, by state

average per farm

State	Farm cash income			Farm business profit			Rate of return excluding capital appreciation			
	2011–12	2012–13p	2013–14y	2011–12	2012–13p	2013–14y	2011–12	2012–13p		2013–14y
New South Wales	112 530	133 800 (10)	144 000	7 360	19 100 (68)	24 000	1.5	1.8 (18)		1.9
Victoria	145 440	132 000 (10)	138 000	32 790	38 600 (33)	39 000	1.9	2.0 (16)		2.0
South Australia	296 890	183 800 (12)	244 000	148 810	71 600 (30)	126 000	4.0	2.8 (17)		4.0
Western Australia	238 770	205 500 (23)	366 000	113 320	46 400 (92)	205 000	3.2	2.2 (31)		4.5
Tasmania	160 600	135 000 (15)	131 000	119 060	53 000 (42)	44 000	3.2	1.7 (19)		1.5
Australia	175 520	155 300 (7)	193 000	59 540	40 600 (24)	73 000	2.5	2.2 (10)		2.8

p Preliminary estimate. **y** Provisional estimate.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES

Figure 13 Farm cash income, slaughter lamb producers, by state, 2001–02 to 2013–14



p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Table 8 Financial performance, slaughter lamb producers, ranked by slaughter lamb production scale

average per farm

Receipts					**Small-scale farms**				**Medium-scale farms**
		2011–12		**2012–13p**	**2013–14y**	**2011–12**		**2012–13p**	**2013–14y**
Adult sheep receipts	$	32 200	18 600	(14)	23 000	29 800	21 500	(15)	23 000
Slaughter lamb receipts	$	38 230	27 400	(5)	na	78 200	58 800	(5)	na
Total lamb receipts	$	41 390	28 900	(5)	35 000	82 510	61 900	(5)	67 000
Slaughter lamb price	$/hd	105	83	(3)	na	112	84	(2)	na
Average lamb price	$/hd	107	82	(3)	88	111	83	(2)	89
Crop receipts	$	183 490	189 800	(13)	215 000	336 860	296 500	(9)	344 000
Wool sales	$	57 350	47 200	(11)	48 000	72 260	64 100	(9)	66 000
Beef cattle sales	$	32 460	26 600	(20)	27 000	35 480	38 700	(15)	36 000
Total cash receipts	$	369 040	331 800	(9)	367 000	586 070	515 900	(6)	567 000
Costs									
Sheep and lamb purchases	$	13 880	5 100	(23)	5 000	18 340	10 400	(14)	10 000
Fodder	$	2 680	4 400	(14)	6 000	4 840	8 500	(13)	9 000
Fertiliser	$	36 380	34 100	(11)	37 000	59 110	49 600	(10)	48 000
Sprays	$	25 030	22 500	(12)	23 000	41 700	34 500	(8)	35 000
Fuel, oil and lubricants	$	23 630	21 600	(7)	25 000	36 560	31 100	(6)	32 000
Repairs and maintenance	$	24 340	24 700	(10)	26 000	42 830	34 100	(8)	34 000
Interest payments	$	28 760	26 100	(15)	27 000	46 690	41 900	(12)	40 000
Hired labour	$	6 190	5 000	(31)	5 000	14 010	13 000	(13)	13 000
Total cash costs	$	263 320	238 300	(8)	253 000	418 790	380 800	(6)	384 000
Farm financial performance									
Farm cash income	$	105 720	93 600	(18)	114 000	167 280	135 100	(12)	183 000
Farm business profit	$	7 290	6 000	(253)	20 000	44 720	22 500	(69)	67 000
Rate of return excl. capital appreciation	%	1.4	1.3	(40)	1.8	2.2	1.8	(21)	2.9

continued ...

Table 8 Financial performance of slaughter lamb producers, ranked by slaughter lamb production scale

average per farm *continued*

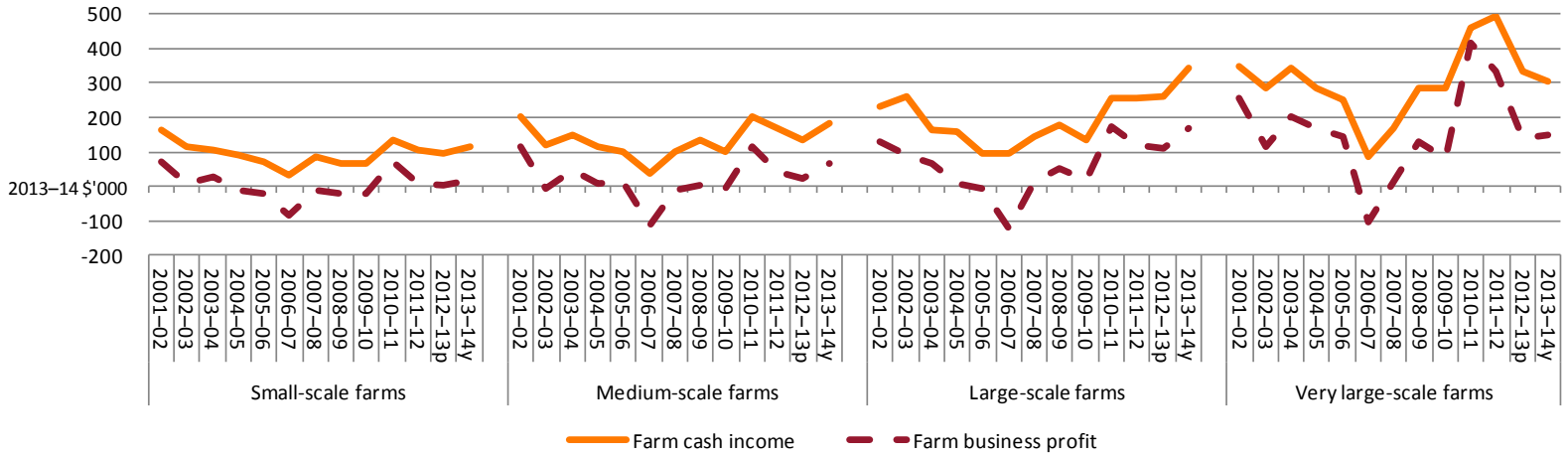
Receipts	**Unit**	**Large-scale farms**				**Very large-scale farms**			
		2011–12	**2012–13p**		**2013–14y**	**2011–12**	**2012–13p**		**2013–14y**
Adult sheep receipts	$	58 390	35 400	(17)	44 000	94 560	70 100	(17)	60 000
Slaughter lamb receipts	$	167 770	125 800	(4)	na	421 970	326 700	(6)	na
Total lamb receipts	$	183 050	127 300	(4)	133 000	433 220	336 300	(6)	327 000
Slaughter lamb price	$/hd	118	90	(2)	na	121	92	(3)	na
Average lamb price	$/hd	117	90	(2)	96	121	92	(3)	96
Crop receipts	$	386 110	470 400	(12)	523 000	526 130	570 300	(13)	541 000
Wool sales	$	119 190	116 300	(11)	121 000	260 940	184 100	(15)	179 000
Beef cattle sales	$	79 760	56 500	(22)	54 000	324 700	117 100	(46)	116 000
Total cash receipts	$	883 370	857 400	(8)	930 000	1 703 970	1 347 500	(9)	1 291 000
Costs									
Sheep and lamb purchases	$	46 530	20 400	(11)	15 000	110 530	56 200	(13)	48 000
Fodder	$	9 760	10 900	(70)	12 000	23 440	23 700	(16)	31 000
Fertiliser	$	85 830	77 400	(10)	77 000	113 200	120 800	(8)	123 000
Sprays	$	52 060	58 300	(13)	58 000	70 280	71 400	(8)	64 000
Fuel, oil and lubricants	$	47 000	51 700	(7)	53 000	70 950	66 200	(9)	66 000
Repairs and maintenance	$	57 520	51 900	(11)	55 000	90 290	90 300	(9)	87 000
Interest payments	$	66 550	49 300	(15)	43 000	110 380	109 400	(13)	98 000
Hired labour	$	21 990	21 100	(15)	21 000	69 130	59 400	(17)	59 000
Total cash costs	$	628 630	598 200	(9)	588 000	1 209 960	1 012 700	(8)	986 000
Farm financial performance									
Farm cash income	$	254 740	259 200	(11)	342 000	494 010	334 900	(15)	305 000
Farm business profit	$	121 910	111 700	(26)	169 000	334 900	137 500	(40)	149 000
Rate of return excl. capital appreciation	%	3.1	3.1	(16)	3.9	4.6	3.0	(18)	3.0

p Preliminary estimate **y** Provisional estimate.

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

Source: ABARES

Figure 14 Financial performance, by number of lambs sold for slaughter, 2001–02 to 2013–14



p Preliminary estimate **y** Provisional estimate.
Source: ABARES

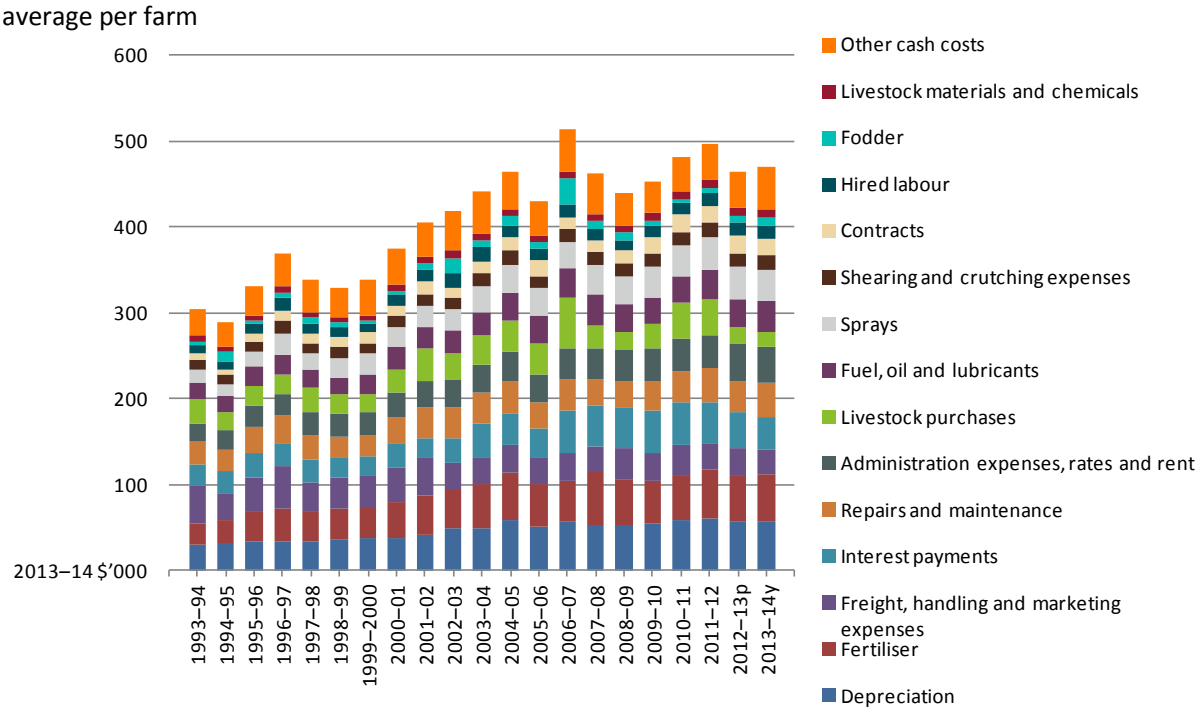
On-farm costs of slaughter lamb production

Average farm costs have increased over the past two decades by an average of 2 per cent a year in real terms (Figure 15). While costs have grown in the long term, largely in line with growth in average farm scale, the rate of increase has slowed in recent years, with no real growth on average over the five years ending 2012–13. In particular, growth has slowed significantly in cropping related expenses (for example fertiliser, sprays, fuel and depreciation of farm machinery) that grew rapidly during the 1990s and early 2000s.

The overall cost structure of slaughter lamb producers has remained relatively consistent over the past decade or more. Depreciation and fertiliser costs are typically the largest individual cost categories, together accounting for around 23 per cent of average costs over the five years ending 2012–13. Interest expenses, repairs and maintenance, administration, rent and rates items have also typically represented a large percentage of farm costs, together accounting for 26 per cent of average costs over the past five years.

The contribution of some expenses to average producer costs has changed more significantly over the long term. Livestock purchase costs for slaughter lamb producers have exhibited increased volatility (in step with lamb and adult sheep prices) in the past decade but on average have decreased as a proportion of total costs as crop-related expenses have increased.

Figure 15 Farm costs, slaughter lamb producers, Australia, 1993–94 to 2013–14



p Preliminary estimate. **y** Provisional estimate.
Source: ABARES

Grain finishing

In the three years ending 2012–13, 5 per cent of slaughter lamb producers (about 960 farms) finished some lambs with grain and 5 per cent of all slaughter lambs sold over the same period were grain finished (Table 9).

On average, producers using grain finishing were farms with large grain enterprises that operated a smaller farm area than non-grain finishing producers. Grain finishers also had significantly higher sheep and lamb turn-on and turn-off rates, indicating a much higher degree of lamb trading with lambs purchased for finishing compared with non-grain finishing producers, who mainly sold lambs bred on farm. On average, grain finishing producers sold 32 per cent more lambs than non-grain finishers, of which 71 per cent were grain finished to some extent. Grain finishers were also significantly more likely to be located in Western Australia than in other states.

Table 9 Physical and financial performance indicators, by use of grain finishing for lambs

average per farm, 2010–11 to 2012–13

Indicator	Unit	Grain finishing of lambs		No grain finishing of lambs	
Estimated population of farms	no.	960	na	17 870	na
Share of farms sold for slaughter	%	5	na	95	na
Location of farms					
Eastern states	%	69	na	84	na
Western Australia	%	31	na	16	na
Physical					
Area operated at 30 June	ha	2 158	(31)	3 453	(5)
Area sown to crop	no.	827	(16)	625	(2)
Sheep at 30 June	no.	2 558	(9)	2 745	(2)
Lambs marked	no.	1 258	(12)	1 346	(2)
Sheep and lamb turn-on rate	%	19	(33)	6	(6)
Sheep and lamb turn-off rate	%	60	(13)	47	(2)
Total lambs sold	no.	1 170	(17)	889	(2)
Grain finishing					
Lambs grain finished	no.	809	(21)	na	na
Average length of grain finishing	days	49	(7)	na	na
Proportion of lambs sold that were grain finished	%	71	(10)	na	na
Prices received					
Adult sheep price	$/hd	86	(14)	93	(2)
Slaughter lamb price	$/hd	113	(3)	110	(1)
Farm financial performance					
Adult sheep receipts	$	28 530	(19)	35 520	(4)
Lamb receipts	$	132 160	(17)	97 370	(2)
Total cash receipts	$	738 980	(19)	591 800	(2)
Sheep and lamb purchases	$	44 220	(29)	21 750	(5)
Fodder cost	$	12 840	(26)	6 120	(6)
Total cash costs	$	568 860	(20)	414 310	(2)
Farm cash income	$	170 130	(23)	177 490	(3)
Farm cash income per hectare operated	$	79	(32)	51	(6)
Farm business profit	$	63 980	(62)	76 240	(8)
Rate of return excl. capital appreciation	%	3.1	(27)	2.9	(4)

Note: Financial statistics are expressed in 2013–14 dollars. Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES

Results for grain finishing producers were also considered for farms that grain finished lambs for different lengths of time:

- less than 40 days
- 40 to 60 days
- more than 60 days.

No significant difference was noted in the average price received for lambs sold for slaughter across the three feeding groups. These prices were also similar to the average price received by all slaughter lamb producers in the three years ending 2012–13. These similarities in price suggest that all groups were selling lambs of similar weight and quality on average. This in turn suggests that slaughter lamb producers mainly used grain to get lambs to a minimum acceptable sale weight, rather than using grain to produce heavier lambs.

For those producers grain finishing lambs, farms finishing lambs for less than 40 days represented the largest group, accounting for 43 per cent of grain finishing farms (Table 10). On average, this group grain finished 68 per cent of the lambs they sold and the length of grain finishing averaged just 25 days. Producers in this group sold the fewest lambs a year and had lower turn-off rates than those finishing lambs for longer periods.

Comparison of expenditure on fodder per unit of livestock carried, together with information on grain use collected in the AAGIS, suggests that farms grain finishing lambs predominantly used grain grown on-farm rather than purchased grain. However, in 2012–13 there was an increase in the proportion of farms that bought additional fodder to finish lambs on grain. These farms were mainly in eastern states and mostly fed lambs for more than 40 days.

Table 10 Physical and financial performance indicators, producers grain finishing lambs, by length of time on grain

average per farm, 2010–11 to 2012–13

Indicator	Unit	Less than 40 days		40 to 60 days		More than 60 days	
Estimated population of farms	no.	410	na	350	na	190	na
Estimated number of lambs grain finished	'000	294	na	329	na	151	na
Share of grain finished lambs	%	38	na	43	na	19	na
Physical							
Area operated at 30 June	ha	2 449	(39)	1 529	(41)	2 698	(46)
Area sown to crop	no.	1 023	(54)	568	(49)	883	(19)
Sheep at 30 June	no.	2 626	(20)	2 497	(20)	2 524	(13)
Lambs marked	no.	1 261	(21)	1 263	(32)	1 244	(20)
Sheep and lamb turn-on rate	%	19	(60)	22	(40)	16	(38)
Sheep and lamb turn-off rate	%	54	(20)	67	(24)	62	(12)
Total lambs sold	no.	1 101	(32)	1 255	(36)	1 164	(17)
Grain finishing lambs							
Lambs grain finished	no.	711	(36)	929	(44)	796	(14)
Average length of grain finishing	days	25	(5)	53	(3)	93	(3)
Proportion of lambs sold that were grain finished	%	68	(16)	74	(17)	74	(10)
Slaughter lamb price	$/hd	116	(5)	110	(6)	117	(7)
Farm financial performance							
Adult sheep receipts	$	21 997	(20)	32 683	(79)	35 019	(27)
Lamb receipts	$	127 325	(34)	137 344	(38)	133 045	(18)
Total cash receipts	$	831 931	(35)	623 731	(45)	751 465	(10)
Sheep and lamb purchases	$	41 754	(51)	49 595	(39)	39 538	(32)
Fodder cost	$	5 037	(29)	21 105	(37)	14 446	(35)
Total cash costs	$	616 602	(33)	523 576	(49)	549 269	(9)
Farm cash income	$	215 328	(47)	100 155	(37)	202 195	(28)
Farm business profit	$	111 984	(61)	–5 174	(65)	88 408	(69)
Rate of return excl. capital appreciation	%	3.7	(29)	1.9	(46)	3.7	(35)

Note: Financial statistics are expressed in 2013–14 dollars. Figures in parentheses are standard errors expressed as a percentage of the estimate provided.
Source: ABARES

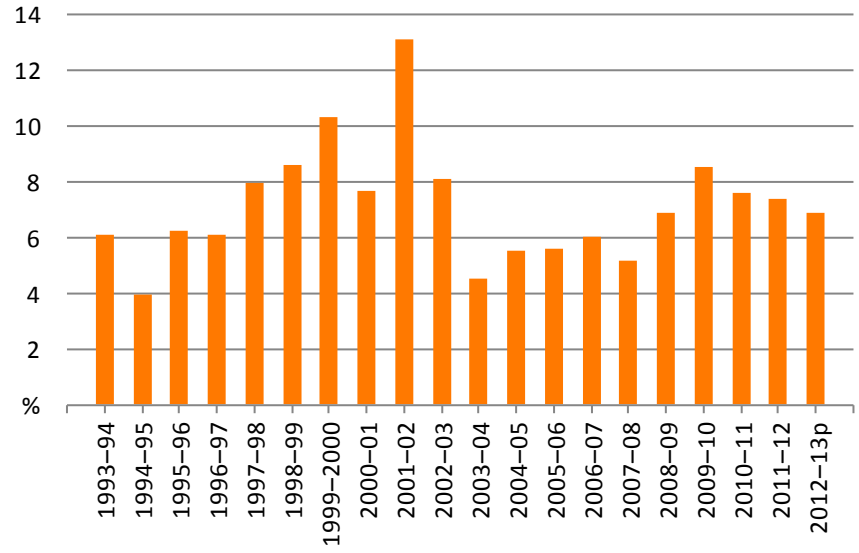
5 Farm investment

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

Over the past decade, slaughter lamb producers have responded to rising lamb prices and improved financial performance by undertaking considerable new investments in land, plant and machinery. While new investment decreased in 2012–13, it remained relatively high in historical terms.

The proportion of slaughter lamb producers buying land decreased slightly in 2012–13, although it remained relatively high in historical terms at almost 7 per cent (Figure 16). In contrast, only 4 per cent of general broadacre and dairy industry producers bought land in 2012–13 (ABARES 2014b).

Figure 16 Proportion of slaughter lamb producers purchasing land, 1993–94 to 2012–13

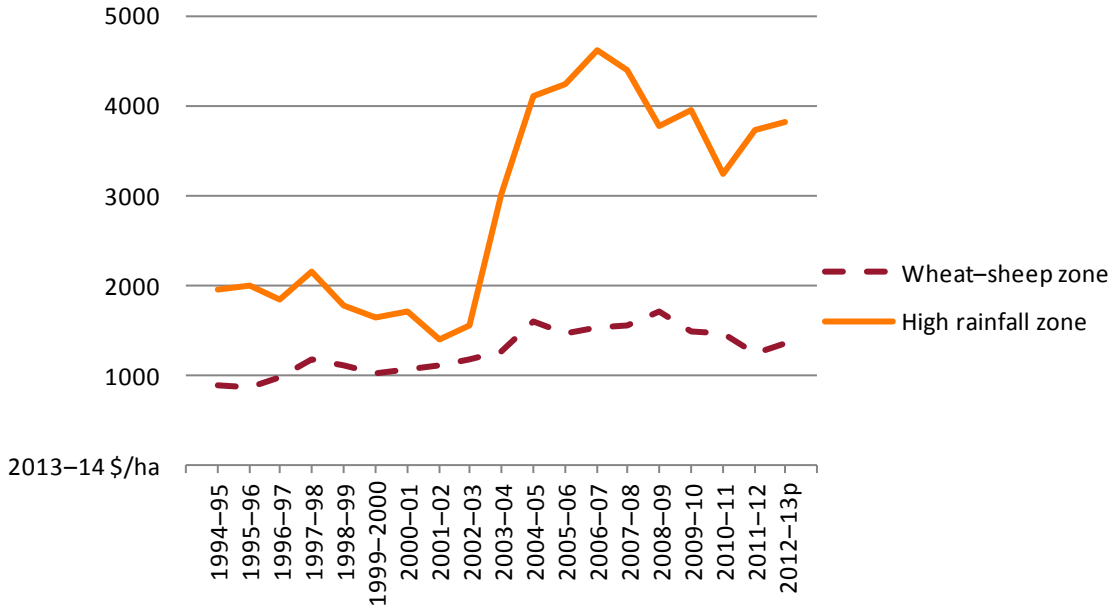


p Preliminary estimate.
Source: ABARES

After steep rises through the early and mid 2000s in the value of land operated by slaughter lamb producers, reported land values levelled off and declined slightly in the high rainfall and wheat–sheep zones over the five years ending 2012–13 (Figure 17).

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

Figure 17 Land value per hectare, slaughter lamb farms, by zone, 1994–95 to 2012–13



p Preliminary estimate.
Source: ABARES

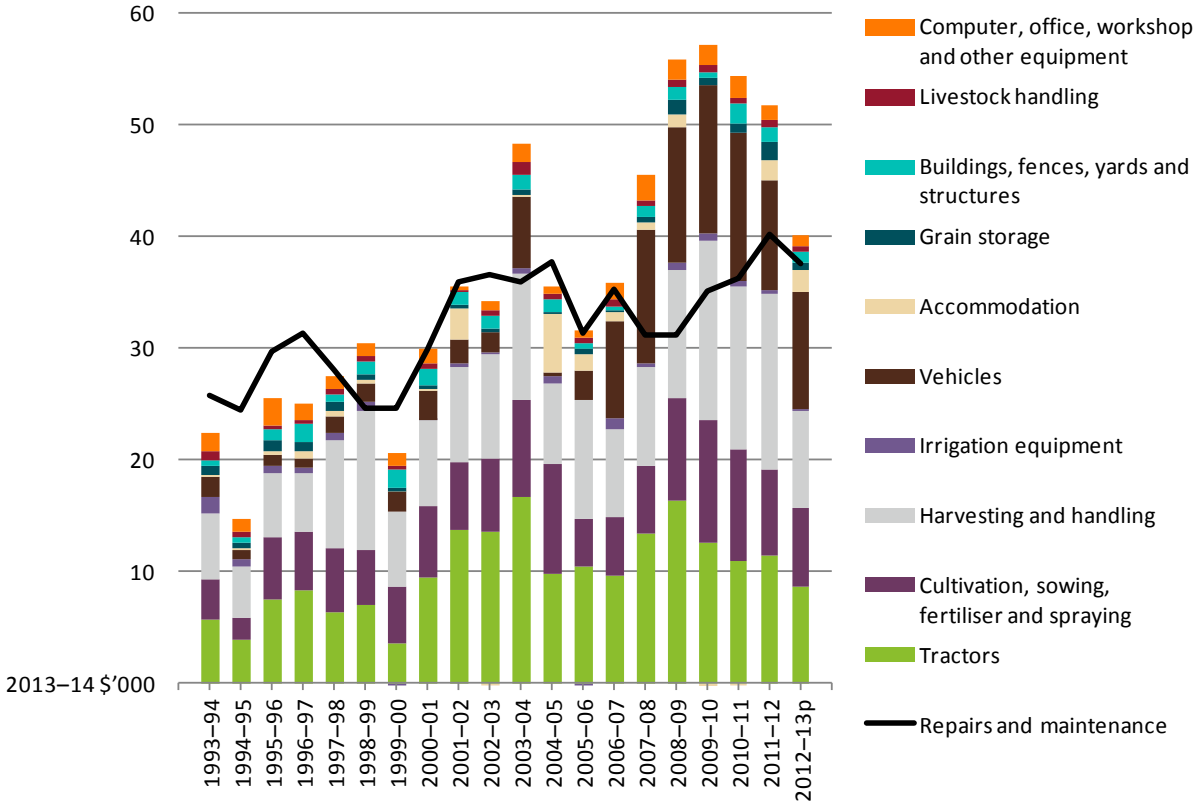
Net investment in plant, vehicles, machinery and farm infrastructure for all scales of slaughter lamb producers was historically high between 2007-08 and 2011-12 (Figure 18). During this period, the largest increase in net investment was by large and very large producers.

In 2008–09 and 2009–10 investment in plant, machinery and farm infrastructure (such as buildings, irrigation systems, water supply structures and fencing) is likely to have been stimulated by the investment allowance offered by the Australian Government to businesses that committed to investing in depreciating assets between 31 December 2008 and 31 December 2009. The allowance was part of the Nation Building and Jobs Plan to support economic activity during the global financial crisis. In 2010–11 and 2011–12 historically high farm cash incomes resulted in net investment in non-land capital remaining high. Following several years of high investment levels, net investment in non-land capital decreased in 2012–13 following a decrease in farm cash income.

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 income.

Much of the rising trend in real expenditure on net capital additions and repairs and maintenance over the two decades to 2012–13 is the result of an increase in the average scale of operations of slaughter lamb producing farms, increased production of crops and increased intensification of enterprises.

Figure 18 Composition of net capital additions excluding land, slaughter lamb producers, 1993–94 to 2012–13



p Preliminary estimate.
Source: ABARES

In the three years ending 2012–13, most of total net capital additions made by slaughter lamb producers were for crop growing activities. Crop harvesting and handling equipment accounted for around 27 per cent of average total net capital additions for slaughter lamb producing farms; vehicles accounted for 23 per cent; tractors for 21 per cent; and cultivation, sowing and planting equipment 17 per cent.

Poor seasonal conditions through the early and mid 2000s reduced farm cash incomes. As a result, expenditure on repairs and maintenance slowed in real terms as farmers sought to reduce discretionary expenditure. Since 2007–08 generally high real net capital additions have been augmented by an increase in expenditure on repairs and maintenance (Figure 18). With the decrease in farm cash income in 2012–13, expenditure on repairs and maintenance was also reduced.

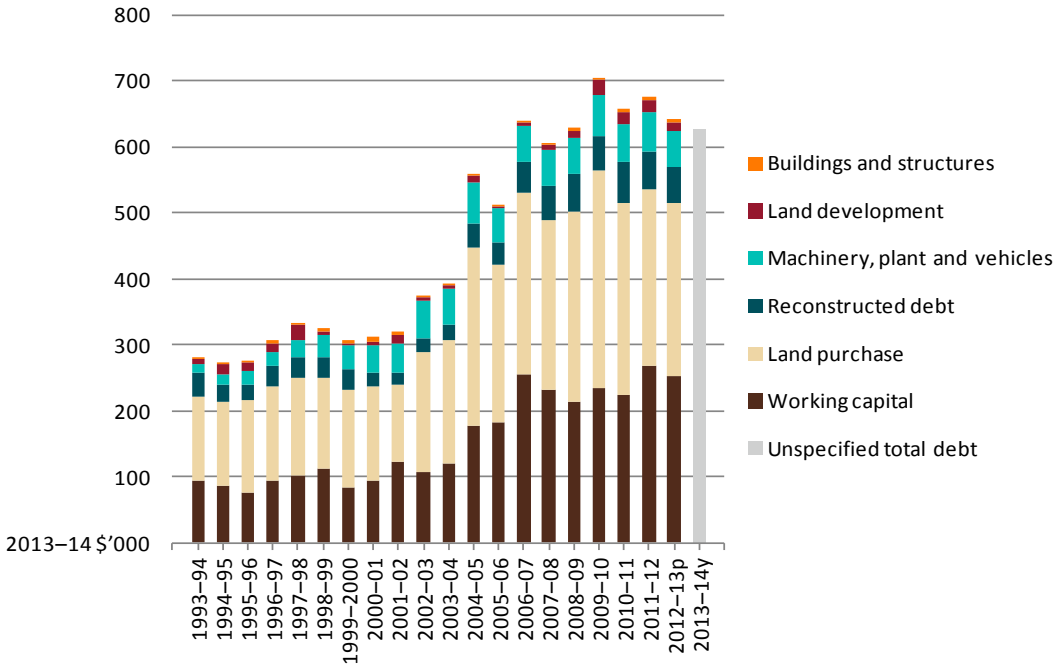
6 Farm debt

More than 95 per cent of farms in this sector are family-owned and operated. For family farms, funding for farm expansion and improvement is limited to the funds available to the family, the profits the farm business can generate and the funds it can borrow. Debt is therefore an important source of funds for farm investment and ongoing working capital.

Average debt per farm business more than doubled between 2000–01 and 2009–10 in real terms, from an average of $311 500 a farm in 2000–01 to $704 500 in 2009–10. Several factors contributed to growth in debt over this period, including the effects of lower interest rates, increases in the size and scale of farm enterprises, changes in the financing packages offered to farmers, increased cropping and reduced farm cash incomes in the 2000s as a consequence of widespread and extended drought conditions. Since 2009–10 growth in debt has slowed. According to the Reserve Bank of Australia, total bank lending to the entire rural sector declined slightly in real terms from $63.4 billion at 30 June 2009 to $60.7 billion at 30 June 2013 (ABARES 2014a). For slaughter lamb producers, average debt per farm decreased in 2012–13, falling to $641 400 a farm.

Increasing farm size and changes in enterprise mix have been particularly important factors in debt increases for slaughter lamb producers. Borrowing to fund the purchase of land has been the largest contributor to increased farm debt over the past 20 years. Debt to fund the purchase of land accounted for around 41 per cent of average farm debt in 2012–13 (Figure 19). Between 1993–94 and 2012–13 debt to fund the purchase of land increased by 107 per cent in real terms. However, borrowing to finance the purchase of machinery, plant and vehicles increased most (in percentage terms) over the past 20 years, rising 371 per cent since 1993–94 in real terms. Borrowing to fund farm buildings and structures increased by 141 per cent and borrowing to reconstruct debt increased by 43 per cent.

Figure 19 Composition of farm business debt, slaughter lamb producers, 1993–94 to 2013–14



p Preliminary estimate.
Source: ABARES

During the 2000s poor seasonal conditions depressed farm cash incomes in many regions and led to increased borrowing to meet working capital requirements. Working capital debt increased in real terms by 171 per cent between 1993–94 and 2012–13, accelerating between 2002–03 and 2006–07 as a result of widespread drought.

Movement of resources away from less input-intensive wool production to more intensive cropping and slaughter lamb activities required substantial new investment in machinery and borrowing to purchase inputs. In addition, expansion of cropping activities and increased use of inputs, such as herbicides and fertiliser, contributed to the increase in farm debt as producers borrowed to purchase annual inputs. Deregulation of grain markets also led to increased borrowing to provide working capital between grain harvests and to construct grain storage. This, coupled with the move to more intensive cropping activities, resulted in working capital debt as a proportion of total debt increasing from 27 per cent in 2002–03 to 39 per cent in 2012–13.

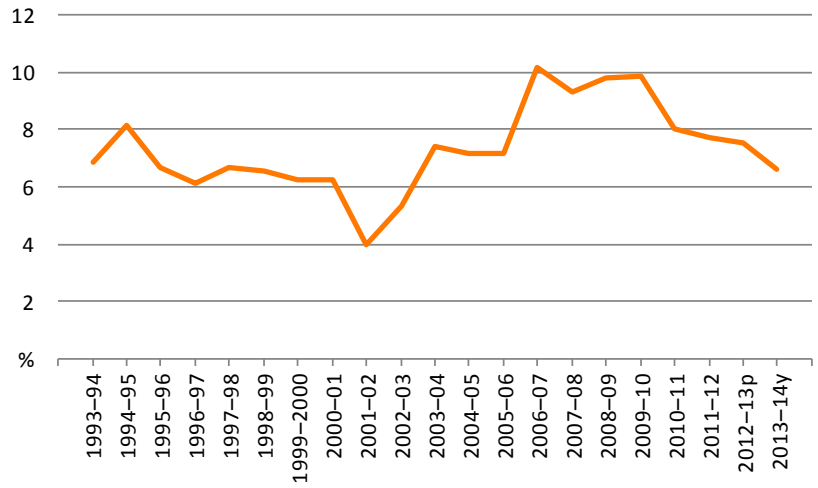
The proportion of reconstructed debt increased from around 5 per cent in 2002–03 to around 8 per cent in 2012–13. Reconstructed debt is mostly pre-existing debt incurred for a range of purposes that has been consolidated into longer-term and, usually, lower interest rate loans.

Average debt for slaughter lamb producers increased to average $641 400 a farm in 2012–13, and is estimated to have decreased by 2 per cent in 2013–14 (Figure 19).

Debt servicing

Large increases in farm debt in the decade ending 2009–10 resulted in a marked rise in the proportion of farm receipts required to fund interest payments. This proportion has declined since 2009–10 as a result of lower interest rates, reductions in average farm debt and increases in average farm receipts to 2011–12. In 2012–13, the reduction in interest payments exceeded the reduction in farm receipts, resulting in a slight fall in the proportion of farm receipts required to fund interest payments (Figure 20). In 2013–14 the ratio of interest payments to farm receipts is estimated to have reduced further as a result of slightly lower interest rates and an estimated increase in farm receipts. The proportion of farm receipts needed to meet interest payments is estimated to be around 6.6 per cent, close to the relatively low average of 6.4 per cent recorded through the second half of the 1990s (Figure 20).

Figure 20 Ratio of interest to total cash receipts, slaughter lamb producers, 1993–94 to 2013–14

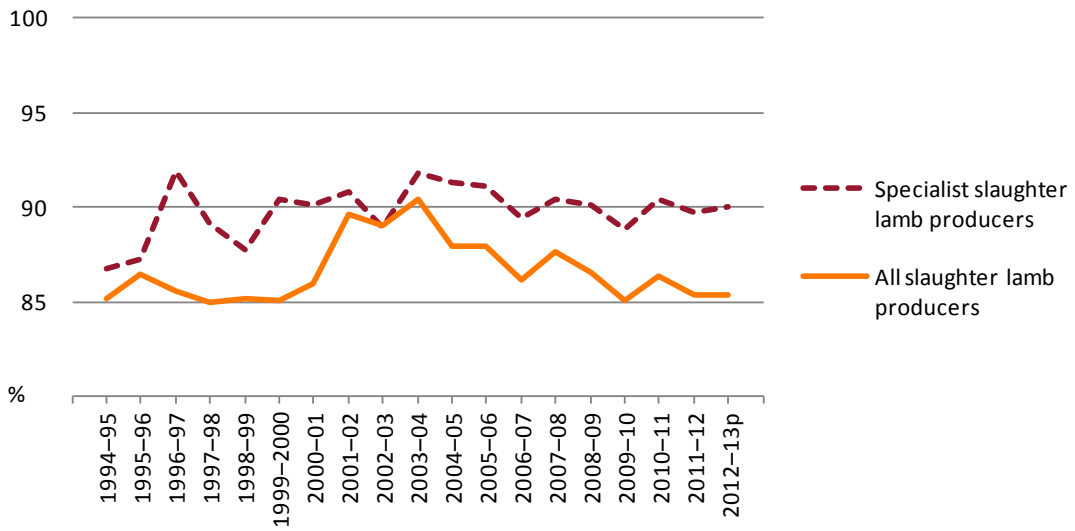


p Preliminary estimate.
Source: ABARES

Farm equity

The decline in 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.

Figure 21 Equity ratio slaughter lamb producers, 1994–95 to 2012–13



p Preliminary estimate.
Source: ABARES

Historically, the average equity ratio for specialist slaughter lamb producers has been significantly higher than that for all slaughter lamb producers. Equity ratios for specialist slaughter lamb producers averaged 90 per cent at 30 June 2013 (Figure 21).

Average equity ratios for all slaughter lamb producers averaged 85 per cent at 30 June 2013. While equity ratios have declined from the historical highs of the early 2000s, in 2012–13 they were similar to those recorded in the late 1990s, before the largest increases in land values occurred. Overall, equity ratios remain strong relative to long-term historical averages.

The overall financial position of slaughter lamb producing farms is generally strong. Asset values and investment remain high and while debt is also high, equity ratios and debt servicing are in line with long-term averages.

7 Productivity

Total factor productivity (TFP) is the key indicator ABARES uses to measure the productivity of the sheep industry. 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). It is a useful indicator of changes in overall efficiency of production. In this section of the report the definition of the sheep industry is as outlined in Box 1.

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 programme. 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 details of 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 (ANZSIC) (ABS 2006):

Crops industry (ANZSIC06 Class 0146 and 0149)—farms engaged mainly in growing cereal grains, coarse grains, oilseeds, rice and/or pulses.

Mixed crop–livestock 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.

Beef industry (ANZSIC06 Class 0142)—farms engaged mainly in running beef cattle.

Sheep industry (ANZSIC06 Class 0141)—farms engaged mainly in running sheep.

Sheep–beef industry (ANZSIC06 Class 0144)—farms engaged mainly in running both sheep and beef cattle. TFP estimates are not reported separately for these farms, although they are included within the aggregate broadacre estimates.

Dairy industry (ANZSIC06 Class 0160)—farms engaged mainly in farming dairy cattle.

Together, the broadacre and dairy industries account for 68 per cent of commercial-scale Australian farm businesses and for an estimated 55 per cent of the total gross value of Australian agricultural production in the five years ending 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 most of Australia's family-owned and operated farms (ABARES 2013).

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.

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 11). However, the long-run growth rate obscures strong growth that followed several years of acute adjustment in the early 1990s (Figure 22). Following the collapse of the scheme, industry structure changed significantly, as many producers left the wool industry or turned to cropping and slaughter lamb production.

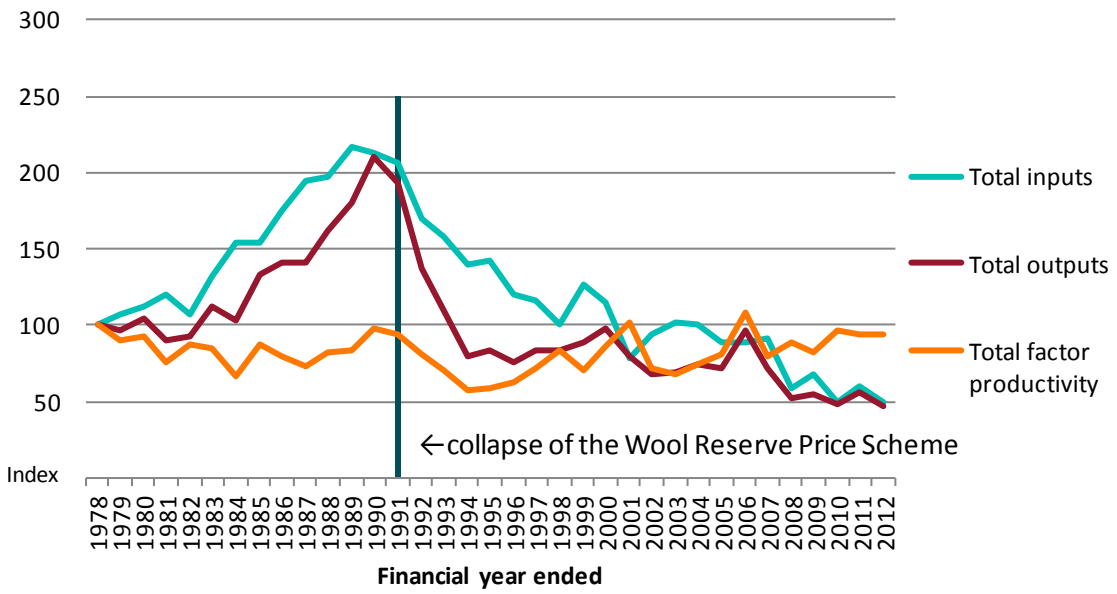
Table 11 Average annual sheep total factor productivity growth, by region, 1977–78 to 2011–12

Category	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

Note: Sheep industry defined as farms engaged mainly in running sheep.
Source: ABARES

Following the collapse of the scheme, changes in 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 22). 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 22 Trend in sheep industry total factor productivity, total inputs and total outputs, 1977–78 to 2011–12



Source: ABARES

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 flock, 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 higher average slaughter weights (ABARE 2007).

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.

The annual agricultural surveys 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 and/or beef cattle 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

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 ADIS is derived from farms that have paid levies based on their milk deliveries. This list is provided to ABARES 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). 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 1991–92 the survey included establishments with an EVAO of $20 000 or more. Before 1986–87 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 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 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 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.

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:

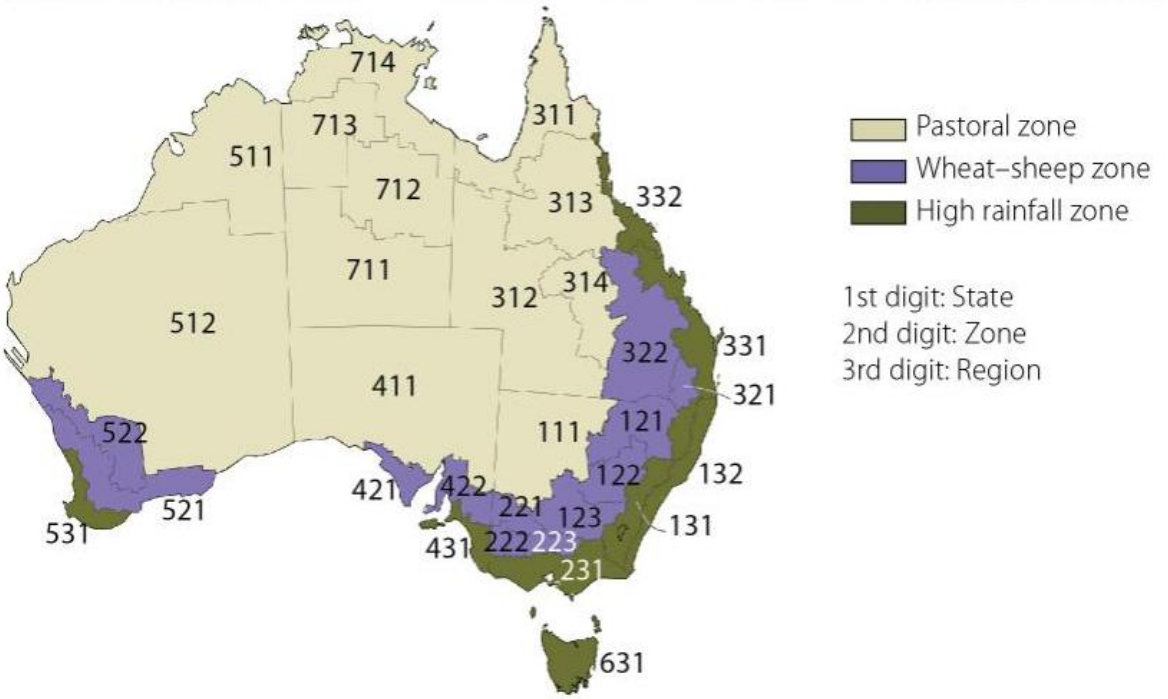
$25 000 ± 1.96*$9605 = ($6174, $43 826)

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 (Map 3). These regions represent the finest level of geographical aggregation for which the survey is designed to produce reliable estimates.

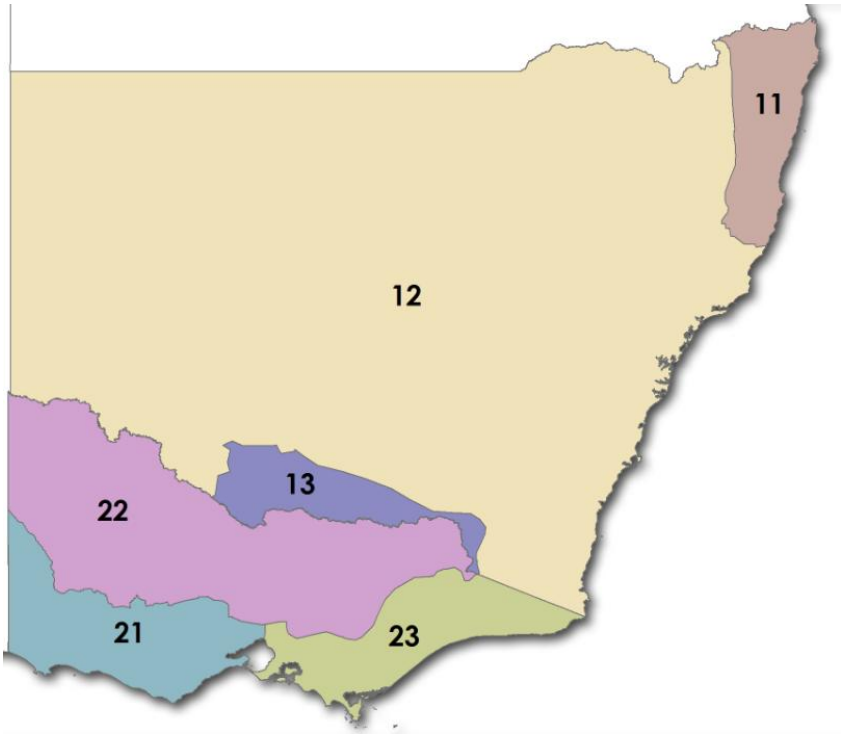
Map 3 ABARES Australian broadacre zones and regions



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

For states other than New South Wales and Victoria, the Australian Dairy Industry Survey regions comprise the entire state (Map 4).

Map 4 Australian Dairy Industry Survey regions, New South Wales and Victoria



Note: New South Wales and Victoria are divided into multiple regions. These regions are identified by a unique two-digit code. The first digit identifies the state and the second digit identifies 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 sharefarmed on another farm.

Financial items

capital	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. 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. 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. 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. 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. 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.
change in debt	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.
farm business debt	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.
farm liquid assets	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.
receipts and costs	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. 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. 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. 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.
total cash costs	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. 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. 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.
total cash receipts	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.

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	Payments for owner–manager and family labour may bear little relationship to the actual work input. An estimate of the labour input of

cost	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.

ABARES 2014a, *Agricultural commodities: March quarter 2014,* Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

ABARES 2014b, *Australian farm survey results, 2011–12 to 2013–14*, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.

ABS 2006, *Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 (Revision 1.0)*, cat. no. 1292.0, Australian Bureau of Statistics, Canberra.

ABS 2001, *Agricultural industries, financial statistics, Australia, preliminary, 1999–2000,* cat. no. 7506.0, Australian Bureau of Statistics, Canberra.

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

Caboche, T & Thompson, T 2013, *Australian lamb: financial performance of slaughter lamb producing farms, 2010–11 to 2012–13*, ABARES research report, Canberra, June.

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.

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.

Further information on lamb producers

ABARES farm survey data for the beef, lamb and sheep industries

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