



Australian farm survey results

2006-07 to 2008-09



April 2009

abare.gov.au



Contents

Farm financial performance	3
Financial performance of Australian farms	3
Performance by state	10
Performance by industry	13
Productivity growth	27



© Commonwealth of Australia 2009

This work is copyright. The *Copyright Act 1968* permits fair dealing for study, research, news reporting, criticism or review. Selected passages, tables or diagrams may be reproduced for such purposes provided acknowledgment of the source is included. Major extracts or the entire document may not be reproduced by any process without the written permission of the executive director, abare.

ISBN 978-1-921448-37-9

ABARE 2009, *Australian Farm Survey Results 2006-07 to 2008-09*, Canberra.

2006-07 to 2008-09 Australian farm survey results

Farm performance

Broadacre and dairy farms – 2006-07 to 2008-09

Peter Martin, Daniel Mackinnon, Surya Dharma, Bella Liao, Paul Phillips, Sarah Crooks and Jammie Penm

- Broadacre farm financial performance is projected to improve in 2008-09, building on the improvement recorded in 2007-08. Average farm cash income is projected to increase from \$62 500 in 2007-08 to \$80 000 in 2008-09.
- However, improvement in income for broadacre farms will be mainly confined to Western Australia, northern New South Wales and Queensland.
- Average farm cash income for dairy farms is projected to decline sharply in 2008-09 on lower milk prices and continued dry conditions in many dairy regions.
- Overall farm debt levels are high, but broadacre and dairy farms had strong farm equity at 30 June 2008. Debt servicing will be assisted by lower interest rates in 2008-09 and by the improved incomes for broadacre farms.

The financial performance of Australian broadacre and dairy farms strengthened in 2007-08, from a record low in 2006-07, which was a year of widespread, severe drought. Farm cash income for broadacre farms increased from an average of \$29 800 per farm in 2006-07 to average \$62 400 in 2007-08. Farm cash incomes for dairy farms in 2007-08 was the highest recorded in more than 20 years.

In 2008-09, the overall financial performance of Australian broadacre farms is projected to further improve on the back of increases in grain production, strong livestock prices and reductions in fodder prices and interest rates. For broadacre farms, farm cash income is projected to rise to average \$80 000 per farm in 2008-09. But the financial performance of dairy farms is projected to decline sharply in 2008-09 in response to reductions in prices for manufactured dairy products in 2009.

However, improvement in farm financial performance in 2008-09 is expected to mainly be confined to Western Australia, northern New South Wales and Queensland. In southern regions farm financial performance remains constrained by continued dry seasonal conditions and shortages of irrigation water.

Financial performance of Australian farms

Broadacre and dairy farms account for almost 70 per cent of commercial-scale Australian farm businesses. They are also responsible for the management of more than 90 per cent of the total area of agricultural land in Australia and account for the majority of Australia's family owned and operated farms. They are located in all regions and form a vital part of rural communities and economies across the country.

Each year ABARE interviews producers from the broadacre and dairy sectors of Australian agriculture as part of its annual survey program. Broadacre industries covered in this survey include the wheat and other crops, mixed livestock-crops, sheep, beef and sheep-beef industries (box 1). The information collected provides a basis for analysing the current financial position of farmers in these industries and expected changes in the short term. Data from ABARE's Australian Agricultural and Grazing Industries Survey (AAGIS) and Australian Dairy Industry Survey (ADIS) are examined to gain insights into the performance of Australian broadacre and dairy farms over the period from 2006-07, including projected farm financial performance in 2008-09.

box 1 **The broadacre sector of Australian agriculture is defined to include five industry types:**

Wheat and other crops industry

The wheat and other crops industry represents the more specialised producers of cereal grains, coarse grains, pulses and oilseeds.

Mixed livestock–crops industry

The mixed livestock–crops industry covers farms engaged in the production of sheep and/or beef cattle in conjunction with substantial activity in broadacre crops such as wheat, coarse grains, oilseeds and pulses.

Sheep industry

The sheep industry represents the more specialised producers of sheep and wool. The number of properties classified to the industry, along with the sheep industry's contribution to wool production, has declined substantially since the early 1990s as producers diversified enterprises. Currently, sheep industry farms account for only 30 per cent of Australia's wool production. The majority of both wool and sheep meat production occurs on mixed enterprise farms, particularly on mixed livestock–crops industry farms.

Beef industry

The beef industry covers properties mainly engaged in running beef cattle and currently accounts for around 65 per cent of Australia's beef production. The beef industry contains a large number of small farms.

Sheep–beef industry

The sheep–beef industry covers properties engaged in running sheep and beef cattle. As with the sheep and beef industries, this industry also contains a large number of small farms.

Farm production

2007-08

Improved seasonal conditions during the first half of 2007 led to increases in the area of winter crops sown. However, with the exception of Queensland, parts of northern New South Wales and southern Western Australia, seasonal conditions deteriorated during the critical September–October period and many regions experienced a second year of crop failure. Higher rainfall in northern cropping areas resulted in record grain sorghum production in both Queensland and New South Wales (map 1).

Improved seasonal conditions in northern Australia led to a reduction in cattle turn-off in Queensland as beef cattle herds were rebuilt. However, in central Australia where seasonal conditions were dry, cattle turn-off increased. In southern states, where cattle numbers had been reduced through several dry years, cattle turn-off increased slightly and producers were unable to begin herd rebuilding. In addition, sheep numbers and wool production declined further because of low lambing rates and continued high turn-off rates of sheep and lambs for slaughter.

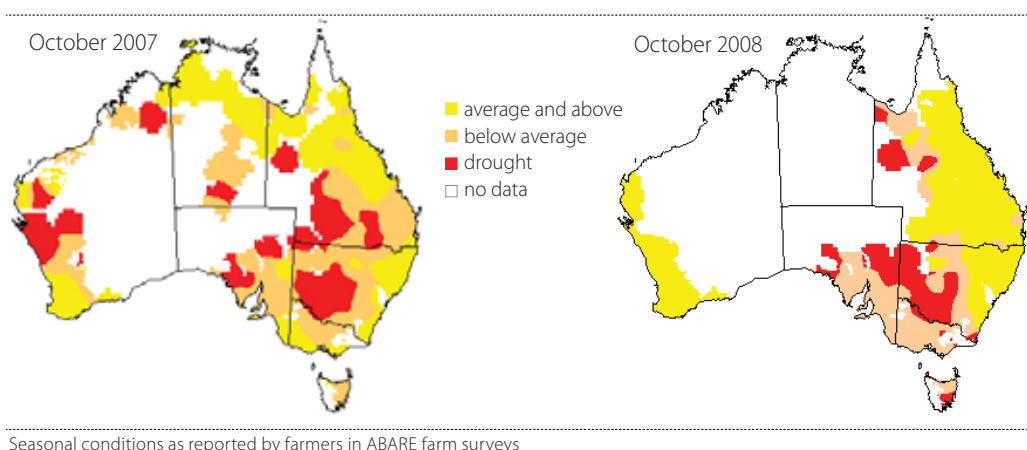
Production on irrigated broadacre and dairy farms in many regulated river valleys, particularly in the southern and eastern Murray–Darling Basin, was low with many licence holders receiving record low water allocations.

2008-09

Historically high grain, oilseed and grain legume prices in early 2008 led to an 8 per cent increase in winter crop plantings on broadacre farms for the season and raised hopes of a substantial increase in cropping farm incomes. Unfortunately, below average winter and spring rainfall in 2008 resulted in low yields in southern Australia. In Queensland, northern New South Wales and the northern grains belt of Western Australia, in-season rainfall and stored soil moisture resulted in a substantial increase in winter crop production. However, rain through the harvest period in most states resulted in a downgrading of grain quality, increasing the supply of feed grade grains and resulting in lower prices for many growers.

Overall, winter crop production increased by around 60 per cent on broadacre farms in 2008-09 compared with 2007-08. Of the major winter crops, wheat production increased by around 70 per cent on the 2007-08 harvest, barley production increased by around 7 per cent and canola production increased by slightly more than 50 per cent.

map 1 Seasonal conditions, broadacre and dairy farms



Prospects for 2008-09 summer crops are currently favourable, with good soil moisture conditions following spring and late summer rains in the major summer cropping regions of northern New South Wales and Queensland. However, the area planted to grain sorghum on broadacre farms is lower than in 2007-08 as growers respond to reduced feed grain prices and land available for cropping because of the large area planted to winter crops in 2008-09.

After a dry 2008 in which cattle turn-off increased sharply, seasonal conditions are expected to improve markedly in 2009 across most of pastoral northern and central Australia following widespread summer rains. Improved grazing conditions are expected to lead to an increase in herd building in formerly dry areas. However, overall turn-off of cattle in northern Australia and in northern New South Wales is projected to increase slightly in 2008-09, particularly from northern and eastern Queensland, following improved seasonal conditions and herd buildup in 2007-08.

In southern Australia, dry seasonal conditions throughout 2008-09 are projected to constrain beef cattle turn-off to be similar to 2007-08. Overall, average beef cattle numbers are projected to be slightly lower on broadacre farms in southern Australia, particularly in Victoria.

Lamb markings are expected to increase slightly on broadacre farms during 2008-09, but with continued high lamb and sheep turnoff rates for slaughter, sheep numbers and wool production on broadacre farms are projected to fall in 2008-09.

The availability of irrigation water remains a critical issue for irrigated broadacre and dairy farms in 2008-09. Many irrigated farms continue to operate with allocations of water significantly lower than licensed entitlements. Some improvement in water storage levels in 2008-09 has resulted in an increase in the area planted to cotton and rice, but the area planted is still historically low.

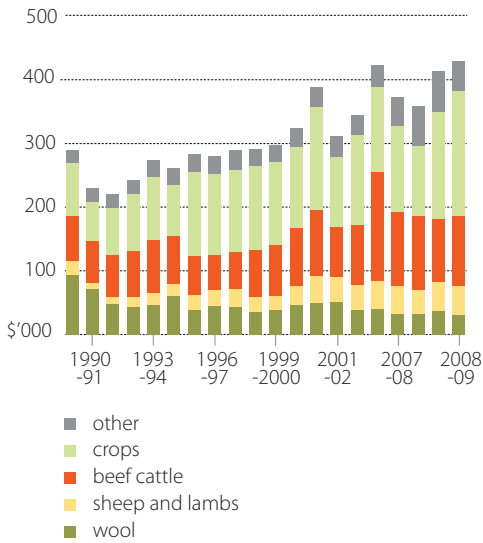
Improved seasonal conditions and high milk prices in 2008 encouraged a small increase in dairy cow numbers on dairy farms in 2008-09, leading to increased milk production in all states. However, continued dry conditions, low irrigation water allocations and increased competition for purchased fodder and feed grains has forced many dairy farms in northern Victoria and the southern New South Wales Riverina region to further reduce the size of their dairy herds.

Farm receipts

2007-08

In 2007-08, total cash receipts increased overall for broadacre farms as higher winter grain and sorghum production combined with high grain prices increased crop receipts. In addition, higher wool prices and strong prices for sheep and lambs resulted in increased receipts for sheep producers despite reductions in sheep turn-off and wool production. However, reductions in beef cattle turn-off and slightly lower beef cattle prices led to a reduction in beef cattle receipts.

a Farm cash receipts, broadacre industries



2008-09

The increase in crop production of broadacre farms is projected to have raised average crop receipts by around 16 per cent per farm, despite falls in grain and oilseed prices because of higher domestic and international production (figure a).

Lower net turn-off of both sheep and lambs on broadacre farms is projected to be more than offset by higher livestock prices resulting from the tight domestic supply of sheep and lambs. Average per farm sheep and lamb receipts are projected to increase by around 10 per cent.

Average wool receipts are projected to decline by around 16 per cent for broadacre farms because of reduced wool production and lower prices resulting from weak export demand.

Despite little change in net cattle turn-off from broadacre farms, higher prices and improved quality of cattle turned off is projected to result in an increase in average beef cattle receipts of 6 per cent.

Average total cash receipts for broadacre farms are projected to increase by 3 per cent, driven by increased crops, sheep, lamb, beef cattle, wool and other farm receipts.

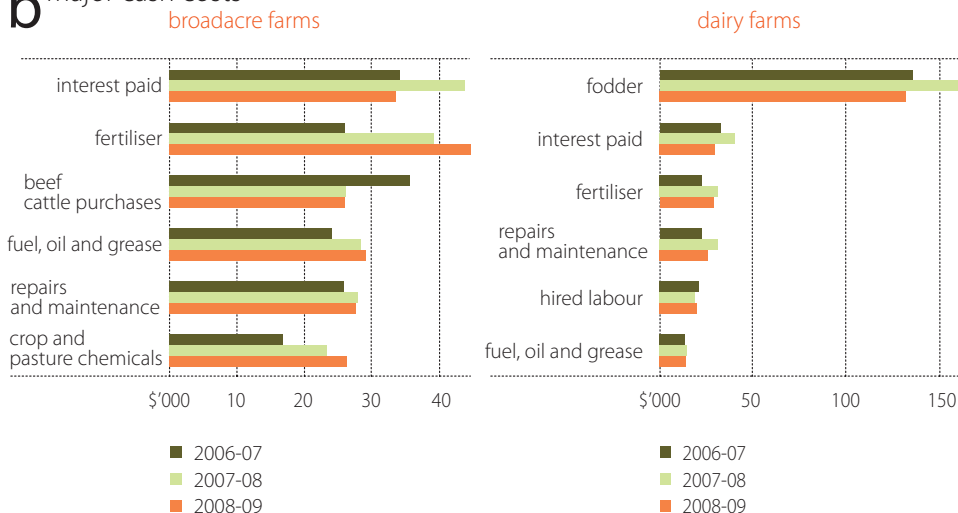
Farm costs

2007-08

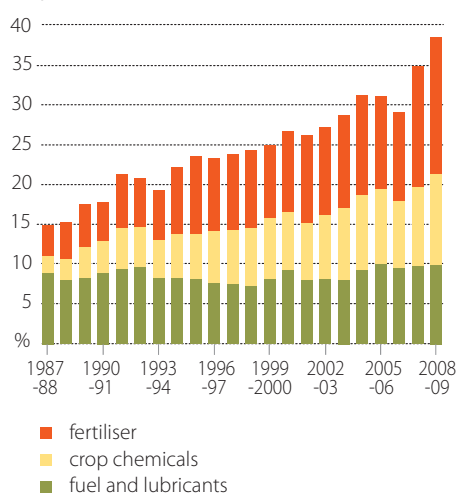
Average total cash costs are estimated to have increased by 7 per cent on broadacre farms, and by 20 per cent on dairy farms, with most of this resulting from higher fertiliser, fuel, chemical and interest costs. Expenditure on these items rose by a similar proportion as the increase in price, with the exception of fertiliser expenditure by broadacre farms. Expenditure on fertiliser by broadacre farms increased by 50 per cent on average in 2007-08 compared with the 182 per cent increase in the ABARE index of prices paid for fertiliser in 2007-08 (figure b). With the average area planted to crops increasing by around 7 per cent, this indicates substantial changes were made to fertiliser use in 2007-08.

Spray chemicals and fertilisers accounted for about 25 per cent of average grains industry cash costs (grains industry includes wheat and other crops and mixed livestock-crops industries). In 1997-98, this was 17 per cent and just 6 per cent 20 years ago in 1987-88 (figure c). Significant changes in farm technology over the past three decades has contributed to the increased usage of chemicals and fertilisers, while reducing inputs of capital and labour on cropping farms (Nossal et al. 2009).

b Major cash costs



C Proportion of total cash costs for grains farms



2008-09

Fodder prices are estimated to have fallen significantly, with lower hay prices and lower feed grain prices. Interest rates have also been reduced and fuel and fertiliser prices are forecast to fall slightly in the second half of the year.

Total cash costs for broadacre farms are projected to rise by 4 per cent in 2008-09, with the final outcome to be determined mainly by the size of winter crop plantings in autumn and early winter and by expenditure of farms on beef cattle purchase, particularly in northern Australia.

For dairy farms total cash costs are projected to fall by around 10 per cent because of lower fodder prices, lower interest rates and an overall reduction in expenditure by dairy farms after higher expenditure in 2007-08 on the back of high milk prices and consequent high farm cash incomes.

box 2 Major financial performance indicators

Farm cash income = total cash receipts – total cash costs
total revenues received by the farm business during the financial year – *payments made by the farm business for materials and services and for permanent and casual hired labour (excluding owner manager, partner and family labour)*

Farm business profit = farm cash income + changes in trading stock – depreciation – imputed labour costs

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

Rate of return = profit at full equity ÷ total opening capital x 100
(return to all capital used)

Off-farm income = wages off-farm + other business income + investment + social welfare payments
(owner manager and spouse only)

box 3 Farm survey methodology

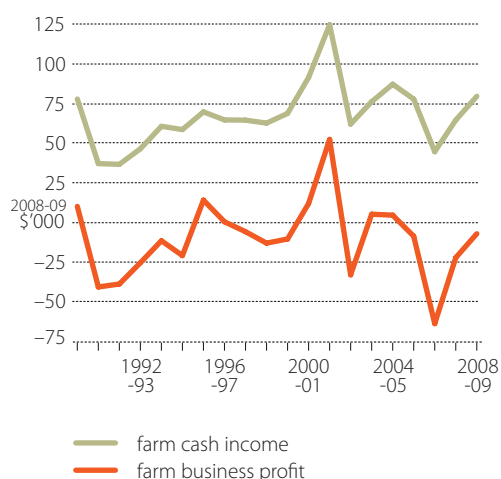
ABARE surveys are designed and samples selected on the basis of a framework drawn from the Business Register maintained by the Australian Bureau of Statistics (ABS). This framework includes agricultural establishments in each statistical local area classified by size and major industry.

Data provided in this paper have been collected via on-farm interviews and incorporate detailed farm financial accounting information.

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

The 2008-09 projections are based on data collected via on-farm interviews and telephone interviews in the period 1 October to 9 December 2008. The estimates include crop and livestock production, receipts and expenditure up to the date of interview together with expected production, receipts and expenditure for the remainder of the 2008-09 financial year. Modifications have been made to expected receipts and expenditure for the remainder of 2008-09 where significant price change has occurred post interview.

d Financial performance
all broadacre industries average per farm



Farm incomes and profits

Farm financial performance is projected to strengthen in 2008-09, adding to the improvement in farm financial performance recorded in 2007-08 (box 2).

Increased grain production, combined with favourable prices for livestock and reductions in fodder prices and interest rates, are projected to result in farm cash incomes on broadacre farms rising in 2008-09, to average around \$80 000 per farm (figure d, table 1).

For the dairy industry, farm financial performance is projected to fall sharply in 2008-09 because of lower milk prices, particularly for manufactured dairy products. This is despite lower fodder prices and interest rates and a small increase in milk production.

Farm cash income is a measure of the cash funds available for farm investment and consumption after paying all costs incurred in production, including interest payments, but excluding capital

payments and payments to family workers. It is a measure of short-term farm performance because it does not take into account depreciation or changes in farm inventories. A measure of longer term profitability which takes into account capital depreciation and changes in inventories of livestock, fodder, grain and wool is farm business profit.

Average farm business profit in the broadacre industries is projected to recover more strongly in 2008-09 than the increase in farm cash income. This largely reflects a small buildup in the value of trading stocks as a result of producers

1 Financial performance
all broadacre industries average per farm

		2006-07	2007-08 ^p	2008-09 ^s
Total cash receipts	\$	359 270	415 100 (4)	450 000
Total cash costs	\$	329 460	352 800 (4)	370 000
Farm cash income	\$	29 800	62 400 (13)	80 000
Farms with negative farm cash income	%	45	38 (5)	36
Farm business profit	\$	-70 240	-21 300 (38)	-7 000
Farms with negative farm business profit	%	81	70 (2)	69
Profit at full equity				
- excl. capital appreciation	\$	-28 510	32 300 (25)	36 000
- incl. capital appreciation	\$	244 970	110 300 (14)	na
Farm capital at 30 June ^a	\$	3 756 820	4 207 300 (3)	na
Net capital additions	\$	25 470	46 100 (27)	na
Farm debt at 30 June ^b	\$	463 870	547 200 (5)	na
Equity at 30 June ^{bc}	\$	3 181 660	3 531 600 (3)	na
Equity ratio ^{bd}	%	87	87 (1)	na
Harvest loans at 30 June ^e	\$	4 280	6 100 (23)	na
Farm liquid assets at 30 June ^b	\$	na	154 800 (12)	na
Farm management deposits (FMDs)				
at 30 June ^b	\$	23 890	25 700 (9)	na
Share of farms with FMDs at 30 June ^b	%	17	19 (8)	na
Rate of return ^g				
- excl. capital appreciation	%	-0.8	0.8 (25)	0.9
- incl. capital appreciation	%	7.0	2.7 (14)	na
Off-farm income of owner manager and spouse ^b	\$	37 440	37 500	na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Harvest loans are not included in farm debt. ^f Dairy Structural Adjustment Program and Supplementary Dairy Assistance Scheme. ^g Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^s Provisional estimates. ^{na} Not Available.

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

e Return on capital, broadacre industries



increasing cattle numbers in northern Australia and replenishing on-farm inventories of fodder and grain. However, little change is expected in the proportion of broadacre farms projected to realise a farm business loss in 2008-09. On average, farm businesses are projected to realise a loss of \$7000, compared with a loss of \$21 300 in 2007-08.

Rates of return

Rates of return to total farm capital including capital appreciation have been relatively high since 2000-01 but dipped sharply in 2007-08 (figure e). Strong demand for rural land during this period resulted in a sharp increase in land values in many agricultural regions, raising the total capital value of farms. These rising values have resulted in high rates of return, including capital appreciation. However, in 2007-08 increases in land values were much smaller, particularly in northern Australia where the growth in land prices has been strong in recent years. The lesser growth in land values in 2008-09 resulted in a much lower average rate of return to total farm capital including capital appreciation.

Rates of return excluding capital appreciation have been adversely affected in many regions by a number of poor profit years resulting from adverse seasonal conditions. Rises in total farm capital values as a consequence of increases in land values in recent years have also reduced rates of return excluding capital appreciation. Only a relatively small improvement in rates of return excluding capital appreciation is expected in 2008-09 (figure e).

In 2008-09, highest average rates of return excluding capital appreciation are expected to be recorded in Western Australia and the Northern Territory, and for cropping farms, large beef industry farms and dairy farms (tables 2 and 4).

2 Financial performance, by state

broadacre industries average per farm

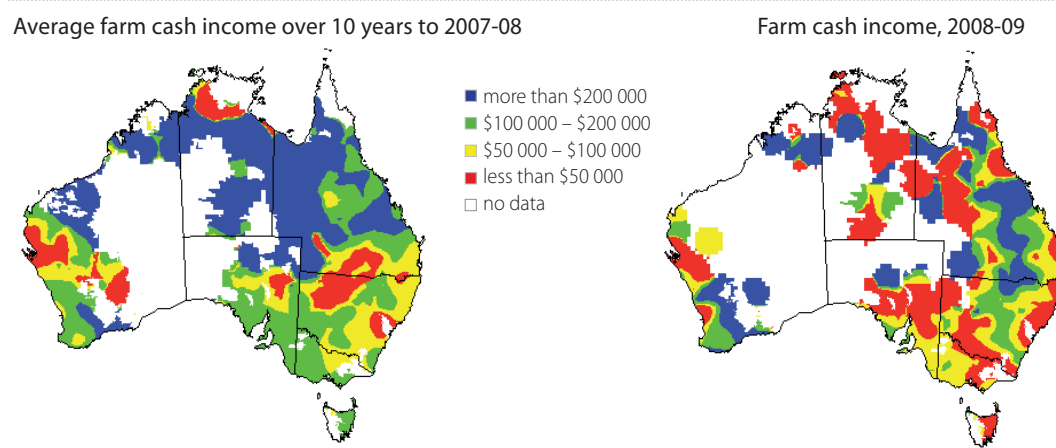
	farm cash income			farm business profit a		
	2006-07 \$	2007-08 p \$	2008-09 s \$	2006-07 \$	2007-08 p \$	2008-09 s \$
New South Wales	5 020	14 300 (84)	72 000	-103 830	-68 200 (18)	-4 000
Victoria	27 830	71 600 (16)	50 000	-70 190	-3 700 (343)	-29 000
Queensland	52 230	68 200 (21)	96 000	-16 830	6 800 (238)	13 000
Western Australia	66 360	127 500 (26)	149 000	-67 140	25 100 (133)	21 000
South Australia	35 730	88 100 (13)	60 000	-78 560	-17 200 (74)	-45 000
Tasmania	-7 200	36 100 (37)	16 000	-68 490	-47 100 (29)	-67 000
Northern Territory	10 090	695 600 (26)	33 000	567 500	161 500 (130)	407 000
Australia	29 800	62 400 (11)	80 000	-70 240	-21 300 (34)	-7 000

	rate of return – excluding capital appreciation b			rate of return – including capital appreciation b	
	2006-07 %	2007-08 p %	2008-09 s %	2006-07 %	2007-08 p %
New South Wales	-1.8	-0.3 (103)	1.1	4.1	0.7 (100)
Victoria	-1.7	1.0 (41)	0.0	5.4	4.9 (15)
Queensland	0.6	1.2 (24)	1.2	13.1	2.0 (37)
Western Australia	0.4	2.2 (31)	1.7	8.5	5.1 (22)
South Australia	-1.6	0.6 (60)	-0.3	2.1	1.8 (32)
Tasmania	-1.5	-0.7 (72)	-1.5	5.6	2.5 (68)
Northern Territory	5.4	1.6 (70)	2.7	20.9	11.7 (23)
Australia	-0.8	0.8 (22)	0.9	7.0	2.7 (13)

a Defined as farm cash income plus buildup in trading stocks, less depreciation and the imputed value of operator partner and family labour. b Defined as profit at full equity, excluding or including capital appreciation, as a percentage of total opening capital. Profit at full equity is defined as farm business profit plus rent, interest and lease payments less depreciation on leased items. p Preliminary. s Provisional estimate.

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

map 2 Farm cash income, broadacre and dairy farms



Performance, by state

Farm financial performance projected for 2008-09 and how this performance ranks in historical terms varies markedly across states and regions (map 2).

New South Wales

Broadacre farms in the grain growing areas of north-western and central New South Wales are projected to have higher farm cash incomes in 2008-09, despite crop losses and grain quality downgrading caused by rainfall and flooding during the harvest period. In contrast, farm cash incomes are projected to be relatively low across much of southern New South Wales, where dry seasonal conditions have continued, particularly in the irrigated areas of the southern Murray-Darling Basin.

Higher livestock prices and reductions in cash costs are projected to slightly increase average farm cash incomes for livestock farms despite lower wool prices. Improvement will mainly occur in the north and east, where turn-off of cattle and sheep is also expected to increase slightly.

On average, farm cash income of broadacre farms in New South Wales is projected to increase from \$14 300 in 2007-08 to \$72 000 per farm in 2008-09 (tables 2 and 3).

Victoria

Victorian cropping farm cash incomes are projected to decline in 2008-09 because of dry seasonal conditions. Receipts from wool are projected to fall, but higher sheep, lamb and beef cattle prices are expected to result in maintaining receipts from livestock sales, despite a small reduction in lamb turn-off. Farm cash incomes are projected to remain relatively low in the irrigated areas of the Murray-Darling Basin. Farm cash income for broadacre farms in Victoria is projected to average \$50 000 in 2008-09, falling from \$71 600 in 2007-08.

Queensland

Queensland cropping farm cash incomes increased in 2007-08 because of higher wheat production and, particularly, increased production of grain sorghum and summer crops. In 2008-09, cropping incomes are projected to be maintained, mainly through increased winter crop production. Receipts from summer crops are projected to be lower, because of expected lower prices for feed grains, including grain sorghum and reduced grain sorghum production because of lower plantings. Beef cattle receipts are projected to increase in 2008-09, with a small increase in projected beef cattle turn-off after two years of growth in beef cattle numbers combined with higher cattle prices. Farm cash incomes for broadacre farms in Queensland are projected to rise to average \$96 000 per farm in 2008-09.

Western Australia

Western Australian broadacre farm cash income is projected to remain relatively high in 2008-09. Increases to winter crop production, particularly in the northern and central wheat belt, are projected to offset falls in some grain prices and a substantial increases in farm cash costs. Despite a small increase in lambs expected to be marked in 2008-09, sheep numbers are projected to continue to reduce as farmers further expand grain growing.

3 Financial performance, by state

all broadacre industries average per farm

	New South Wales				Victoria			
	2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s		
Total cash receipts	\$ 352 020	353 700 (6)	415 000	222 280	312 100 (5)	279 000		
Total cash costs	\$ 347 000	339 400 (6)	343 000	194 450	240 500 (7)	228 000		
Farm cash income	\$ 5 020	14 300 (84)	72 000	27 830	71 600 (16)	50 000		
Farms with negative farm cash income	% 53	44 (9)	35	39	30 (15)	39		
Farm business profit	\$ -103 830	-68 200 (18)	-4 000	-70 190	-3 700 (343)	-29 000		
Farms with negative farm business profit	% 88	79 (3)	66	87	66 (5)	79		
Profit at full equity								
- excl. capital appreciation	\$ -62 420	-10 700 (102)	41 000	-45 460	30 400 (42)	-1 000		
- incl. capital appreciation	\$ 139 330	26 700 (99)	na	141 250	154 700 (14)	na		
Farm capital at 30 June ^a	\$ 3 559 290	3 926 300 (4)	na	2 710 480	3 256 700 (5)	na		
Net capital additions	\$ 30 060	45 600 (54)	na	-52 710	11 700 (142)	na		
Farm debt at 30 June ^b	\$ 496 090	597 000 (9)	na	242 910	311 800 (9)	na		
Equity at 30 June ^{bc}	\$ 3 153 570	3 183 500 (4)	na	2 352 210	2 932 100 (5)	na		
Equity ratio ^{bd}	% 86	84 (1)	na	91	90 (1)	na		
Harvest loans at 30 June ^e	\$ 480	300 (102)	na	360	0	na		
Farm liquid assets at 30 June ^b	\$ na	98 700 (12)	na	na	212 600 (33)	na		
Farm management deposits (FMDs) at 30 June ^b	\$ 17 890	14 900 (25)	na	22 200	27 100 (17)	na		
Share of farms with FMDs at 30 June ^b	% 14	13 (17)	na	20	21 (13)	na		
Rate of return^g								
- excl. capital appreciation	% -1.8	-0.3 (103)	1.1	-1.7	1.0 (41)	0.0		
- incl. capital appreciation	% 4.1	0.7 (100)	na	5.4	4.9 (15)	na		
Off-farm income of owner manager and spouse ^b	\$ 42 100	41 200	na	41 050	43 400	na		
Queensland								
	2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s		
Total cash receipts	\$ 446 400	448 200 (8)	522 000	556 870	714 600 (6)	806 000		
Total cash costs	\$ 394 170	379 900 (8)	426 000	490 510	587 000 (5)	657 000		
Farm cash income	\$ 52 230	68 200 (21)	96 000	66 360	127 500 (26)	149 000		
Farms with negative farm cash income	% 38	46 (12)	37	44	39 (12)	26		
Farm business profit	\$ -16 830	6 800 (238)	13 000	-67 140	25 100 (133)	21 000		
Farms with negative farm business profit	% 72	72 (4)	70	72	57 (7)	52		
Profit at full equity								
- excl. capital appreciation	\$ 26 170	69 200 (24)	82 000	16 820	110 000 (32)	88 000		
- incl. capital appreciation	\$ 552 400	109 900 (38)	na	398 420	256 400 (22)	na		
Farm capital at 30 June ^a	\$ 4 763 850	5 572 800 (5)	na	5 149 050	5 300 900 (5)	na		
Net capital additions	\$ 22 270	2 700 (1241)	na	102 850	153 500 (24)	na		
Farm debt at 30 June ^b	\$ 506 650	681 000 (9)	na	852 010	838 200 (8)	na		
Equity at 30 June ^{bc}	\$ 3 882 050	4 739 900 (6)	na	4 124 020	4 366 100 (6)	na		
Equity ratio ^{bd}	% 89	87 (1)	na	83	84 (1)	na		
Harvest loans at 30 June ^e	\$ 0	0	na	29 930	41 400 (25)	na		
Farm liquid assets at 30 June ^b	\$ na	141 600 (22)	na	na	162 600 (19)	na		
Farm management deposits (FMDs) at 30 June ^b	\$ 24 680	27 900 (16)	na	37 880	28 600 (21)	na		
Share of farms with FMDs at 30 June ^b	% 18	19 (17)	na	19	24 (17)	na		
Rate of return^g								
- excl. capital appreciation	% 0.6	1.2 (24)	1.2	0.4	2.2 (31)	1.7		
- incl. capital appreciation	% 13.1	2.0 (37)	na	8.5	5.1 (22)	na		
Off-farm income of owner manager and spouse ^b	\$ 35 320	34 900	na	27 320	30 000	na		

3 Financial performance, by state

all broadacre industries average per farm *continued*

	South Australia				Tasmania			
	2006-07	2007-08 ^p	2008-09 ^s		2006-07	2007-08 ^p	2008-09 ^s	
Total cash receipts	\$ 294 220	386 100	(7)	368 000	243 690	273 000	(12)	202 000
Total cash costs	\$ 258 490	297 900	(9)	308 000	250 890	236 900	(13)	186 000
Farm cash income	\$ 35 730	88 100	(13)	60 000	-7 200	36 100	(37)	16 000
Farms with negative farm cash income	% 45	26	(17)	37	51	39	(28)	65
Farm business profit	\$ -78 560	-17 200	(74)	-45 000	-68 490	-47 100	(29)	-67 000
Farms with negative farm business profit	% 79	64	(7)	76	81	83	(4)	86
Profit at full equity								
- excl. capital appreciation	\$ -47 880	19 700	(59)	-12 000	-43 120	-20 000	(70)	-48 000
- incl. capital appreciation	\$ 63 050	60 400	(34)	na	165 090	74 900	(69)	na
Farm capital at 1 July ^a	\$ 3 116 500	3 374 400	(8)	na	3 288 320	3 064 800	(8)	na
Net capital additions	\$ 62 630	68 100	(41)	na	145 270	21 900	(99)	na
Farm debt at 30 June ^b	\$ 334 640	361 300	(13)	na	385 180	284 400	(18)	na
Equity at 30 June ^{bc}	\$ 2 726 860	2 894 500	(8)	na	2 701 370	2 750 200	(10)	na
Equity ratio ^{bd}	% 89	89	(1)	na	88	91	(2)	na
Harvest loans at 30 June ^e	\$ 2 200	6 000	(41)	na	0	0		na
Farm liquid assets at 30 June ^b	\$ na	219 000	(18)	na	na	139 500	(56)	na
Farm management deposits (FMDs) at 30 June ^b	\$ 28 020	47 400	(23)	na	26 230	20 500	(36)	na
Share of farms with FMDs at 30 June ^b	% 19	26	(18)	na	22	14	(24)	na
Rate of return ^g								
- excl. capital appreciation	% -1.6	0.6	(60)	-0.3	-1.5	-0.7	(72)	-1.5
- incl. capital appreciation	% 2.1	1.8	(32)	na	5.6	2.5	(68)	na
Off-farm income of owner manager and spouse ^b	\$ 27 100	29 900		na	28 940	24 600		na
Northern Territory								
	2006-07	2007-08 ^p	2008-09 ^s		2006-07	2007-08 ^p	2008-09 ^s	
Total cash receipts	\$ 1 401 940	2 601 100	(17)	1 850 000	359 270	415 100	(3)	450 000
Total cash costs	\$ 1 391 860	1 905 500	(17)	1 817 000	329 460	352 800	(3)	370 000
Farm cash income	\$ 10 090	695 600	(26)	33 000	29 800	62 400	(11)	80 000
Farms with negative farm cash income	% 44	56	(10)	57	45	38	(5)	36
Farm business profit	\$ 567 500	161 500	(130)	407 000	-70 240	-21 300	(34)	-7 000
Farms with negative farm business profit	% 23	53	(17)	68	81	70	(2)	69
Profit at full equity								
- excl. capital appreciation	\$ 653 200	288 400	(72)	515 000	-28 510	32 300	(22)	36 000
- incl. capital appreciation	\$ 2 521 280	2 136 500	(28)	na	244 970	110 300	(13)	na
Farm capital at 30 June ^a	\$ 14 635 770	19 753 500	(11)	na	3 756 820	4 207 300	(2)	na
Net capital additions	\$ 159 650	135 400	(43)	na	25 470	46 100	(27)	na
Farm debt at 30 June ^b	\$ 1 039 220	1 454 300	(24)	na	463 870	547 200	(4)	na
Equity at 30 June ^{bc}	\$ 9 476 570	12 372 100	(10)	na	3 181 660	3 531 600	(2)	na
Equity ratio ^{bd}	% 90	90	(3)	na	87	87	(1)	na
Harvest loans at 30 June ^e	\$ 0	0		na	4 280	6 100	(23)	na
Farm liquid assets at 30 June ^b	\$ na	159 400	(26)	na	na	154 800	(12)	na
Farm management deposits (FMDs) at 30 June ^b	\$ 13 350	65 800	(59)	na	23 890	25 700	(9)	na
Share of farms with FMDs at 30 June ^b	% 3	14	(42)	na	17	19	(7)	na
Rate of return ^g								
- excl. capital appreciation	% 5.4	1.6	(70)	2.7	-0.8	0.8	(22)	0.9
- incl. capital appreciation	% 20.9	11.7	(23)	na	7.0	2.7	(13)	na
Off-farm income of owner manager and spouse ^b	\$ 46 360	17 619		na	46 360	37 500		na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital.

^e Harvest loans are not included in farm debt. ^f Dairy Structural Adjustment Program and Supplementary Dairy Assistance Scheme.

^g Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^s Provisional estimates. ^{na} Not Available.

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

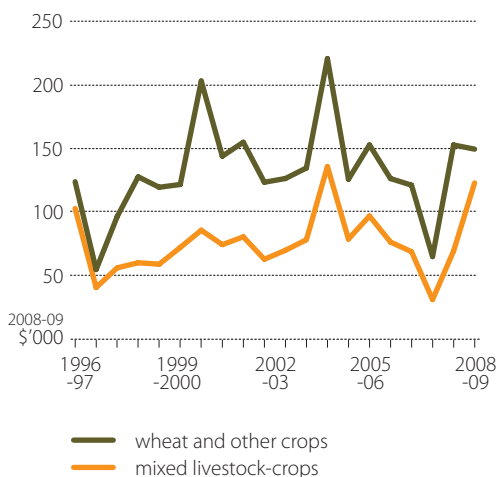
South Australia

South Australian broadacre farm cash income is projected to fall to average \$60 000 per farm as a result of both lower crop production and lower prices in 2008-09. Some of the fall in crop receipts is expected to be offset by increases in livestock receipts because of increased turn-off of sheep, lambs and beef cattle because of dry conditions in 2008-09.

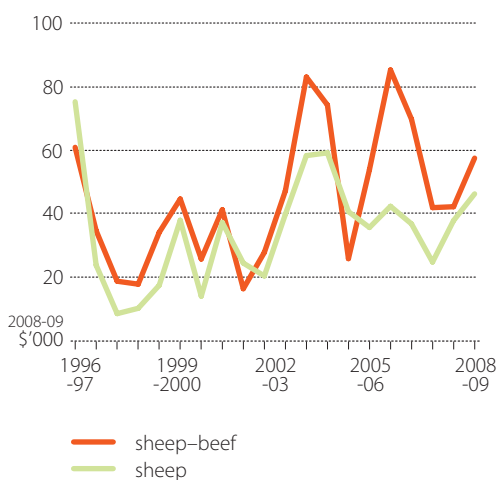
Tasmania

Tasmanian broadacre farm cash income is projected to decline in 2008-09. This is largely because of continued dry seasonal conditions in the midlands and central highlands. Sheep farm production is projected to be lower in 2008-

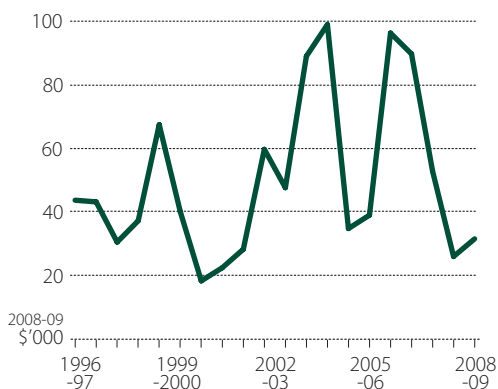
f Farm cash income average per farm
grains industries



sheep industries



beef industry



09 with many farms running smaller flocks. The decline in flock size is expected to result in lower receipts for sheep and for wool in 2008-09. Beef cattle receipts are also expected to be lower with farms turning off fewer cattle despite reducing cattle numbers because of dry conditions. The reduction in livestock numbers is projected to result in a substantial fall in the value of on-farm inventories and substantial farm business losses, for the third successive year.

Northern Territory

In 2007-08 and the first half of 2008-09, dry seasonal conditions throughout much of the southern and eastern Northern Territory led to increased cattle turn-off, high farm cash incomes and a reduction in herd sizes. With good rainfall through summer expected to improve grazing conditions across most of the Northern Territory, many cattle stations are projected to begin rebuilding herd numbers, reducing cattle turn-off and lowering farm cash income. In northern areas, turn-off of cattle for live export is projected to increase in 2008-09.

Performance, by industry

Wheat and other crops industry

Farm cash income for the wheat and other crops industry rebounded in 2007-08 from the drought reduced income of 2006-07 on the back of record grains prices and production increases in some regions. This was despite large increases in expenditure on the key crop inputs of fuel, chemicals and fertilisers (figure f).

In 2008-09, an increase in total farm cash costs is projected to result in average farm cash income for wheat and other crops industry farms remaining similar to that recorded in 2007-08, despite increased grain production in New South Wales, Queensland and Western Australia. Low grain yields in southern and eastern states combined with lower grain prices to subdue the overall increase in crop receipts (table 4). Total cash costs are projected to increase, mainly because of projected further increased fertiliser expenditure and despite reductions in interest rates. Domestic fertiliser prices are expected to remain high in 2008-09 and expenditure on fertiliser is projected to continue to account for the largest share of total cash costs. Higher expenditure is also projected for chemicals and crop marketing expenses because of the planting and harvesting of a larger crop 2008-09. Total cash costs are projected to increase by 7 per cent on average in 2008-09.

Wheat and other crops industry farms are projected to record the highest rates of return among the surveyed industries in 2008-09.

Mixed livestock-crops industry

Farm cash incomes for mixed livestock-crops industry farms rose in 2007-08 with increases in grain production and higher grain prices and despite some reduction in beef cattle receipts and increased total cash costs. In 2007-08, the largest costs for mixed livestock-crops industry farms were interest payments and fertiliser, both of which rose significantly because of higher interest rates and sharp increases in fertiliser prices during the year.

In 2008-09, expanded crop areas and improved yields, together with stronger sheep and lamb prices, are projected to increase average total cash receipts by around 13 per cent. Increases in expenditure on fertiliser are projected to be mostly offset by lower interest expenditure and livestock purchases. Total cash costs are projected to increase only marginally. Overall, farm cash income for mixed livestock-crops industry farms is projected to increase to average \$123 000 in 2008-09, compared with \$66 800 in 2007-08.

Sheep industry

In 2007-08, higher wool prices together with increased turn-off of sheep and lambs led to a recovery in sheep industry farm cash income from the drought affected 2006-07. This was despite total cash costs increasing by around 8 per cent on average, mainly because of increases in interest rates.

In 2008-09, sheep industry farms are projected to have similar levels of total cash receipts as in 2007-08. Reductions in wool receipts resulting from lower wool prices, reduced wool production and some stockpiling of wool on farm, are projected to be offset by increases in receipts from sheep, lambs and crops, on average. However, total cash costs are projected to fall by around 3 per cent, mainly because of lower interest costs and a reduction in fodder expenditure resulting in a farm cash income rising slightly to average \$46 200 per farm.

In addition, a small increase in the number of lambs marked resulted in a small increase in overall sheep numbers, a rise in livestock inventories and a reduction in farm business loss.

Sheep-beef industry

In recent years, the number of farms classified as sheep-beef industry farms has declined. Many of these farms, particularly in Queensland, have been increasing beef cattle numbers steadily and have not rebuilt sheep numbers following recent droughts and have effectively moved to the beef industry.

In 2007-08, improved seasonal conditions allowed sheep-beef industry farms to turn-off an increased number of sheep and beef cattle at higher average prices. In combination with increased wool production and higher wool prices, farm cash income increased despite a large increase in total cash costs. Cost increases mainly resulted from increased purchases of beef cattle and higher interest rates in 2007-08.

In 2008-09, with many Queensland and northern New South Wales farms increasing beef cattle production, and beef and sheep-meat prices rising, the effect of reduced wool production and prices on total cash receipts is projected to be largely offset. Total cash costs are projected to fall by around 4 per cent, mainly because of lower interest costs, a reduction in expenditure on the purchase of beef cattle and reduced fodder expenditure as pasture availability continues to improve. This is projected to result in farm cash income rising slightly to average \$57 500 per farm in 2008-09, up from an average of \$40 800 a farm in 2007-08.

Increased beef and sheep numbers because of improved calving and lambing rates in 2008-09 are projected to increase the value of on-farm inventories and to contribute to a significant improvement in farm business profit from the previous two years' losses.

Beef industry

In 2007-08, a reduction in the number of beef cattle sold, combined with lower prices per head for cattle sold, resulted in average total cash receipts falling by around 23 per cent. Average total cash costs were also reduced, by around 21 per cent, with expenditure on beef cattle purchases falling by 40 per cent. Purchases of beef cattle fell sharply in northern regions, but increased in Victoria. In addition, fodder and agistment expenditure was reduced because of improved pasture availability compared with the severely drought affected 2006-07. With a larger fall in total farm receipts compared to the reduction in total farm costs, average farm cash income for beef industry farms declined in 2007-08 (figure f).

Overall, there was little change in beef industry cattle numbers on broadacre farms in 2007-08. The herd rebuilding in parts of northern and eastern Australia were offset by a small reduction in cattle numbers in Victoria and Tasmania and continued dry conditions elsewhere in southern Australia which prevented herd rebuilding. As a consequence, farm business profit declined by a similar amount as farm cash income.

In 2008-09, sales of beef cattle are projected to increase by around 1 per cent, with increased turn-off mostly occurring in northern Australia and with forecast higher average prices per head expected. Total cash receipts for beef industry farms are projected to rise by around 5 per cent.

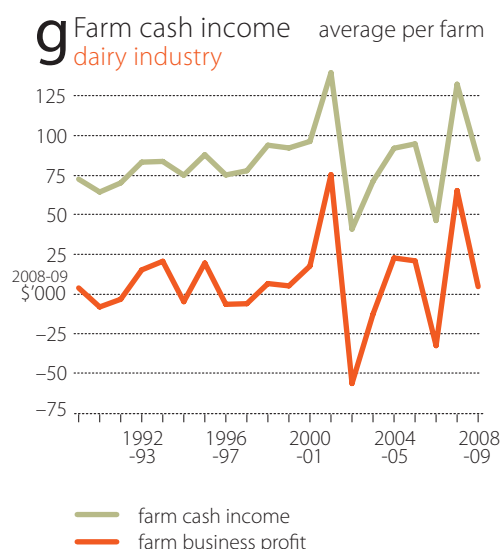
Total cash costs for beef industry farms are projected to increase in 2008-09. Beef cattle purchases are projected to increase by around 5 per cent and more than offset reductions in fodder expenditure and interest paid. Purchases of beef cattle are projected to increase mostly in northern Australia, including northern New South Wales, because of improved grazing conditions in 2009.

With a larger increase in beef industry farm receipts relative to the increase in farm cash costs, average farm cash income is projected to increase to around \$31 500 per farm in 2008-09, compared with \$25 080 per farm in 2007-08 (table 4).

Improvement in farm cash income is projected to mainly occur in northern Australia (Queensland, Northern Territory, and the Kimberley and Pilbara areas), with farm cash incomes in the south remaining similar to 2007-08. A projected increase in beef cattle numbers in the north in 2008-09 will increase the value of on-farm inventories and lead to an additional boost to farm business profit.

Dairy industry

Farm cash income for Australian dairy farms almost tripled in 2007-08 to average \$127 700 per farm, the highest average farm cash income recorded in the past 20 years (figure g). This was because of record farm-gate milk prices and occurred despite falls in average milk yield per cow as dry seasonal conditions restricted milk production. High total cash receipts were partly offset by increases in expenditure on major dairy farm inputs including hay, feed-grains, fertilisers, chemicals and fuel, resulting from higher input prices, together with higher interest rates and increased farm expenditure on repairs and maintenance. Average total cash costs rose by 20 per cent in 2007-08.



In 2008-09, average farm cash income for dairy industry farms is projected to fall to around \$85 000 a farm in response to lower manufacturing milk prices. Average farm-gate milk prices are forecast to fall sharply in regions where milk is used for manufactured dairy products because of the decline in prices for dairy products on international markets. Despite increased milk production in all states, average total cash receipts are projected to fall by around 16 per cent in 2008-09.

Partly offsetting this reduction in milk receipts, average total cash costs are projected to fall by around 11 per cent because of lower hay and feed grain prices, together with lower interest rates. Despite increased availability of feed grains, particularly in eastern Australia and improved on-farm pasture growth in some regions, overall expenditure by dairy farms on fodder is projected to remain relatively high.

Water inflows and storage levels are remaining historically low in northern Victoria and southern New South Wales irrigation regions and irrigated dairy farms in these regions continue to receive low irrigation water allocations in 2008-09. This has left many farms critically dependent on purchased feed grains and hay exacerbating the effect of reductions in farm receipts in these regions in 2008-09.

Farm equity

Farm business equity remained strong for broadacre and dairy farms in 2007-08 and debt servicing capacity improved. The proportion of broadacre and dairy farms estimated to have a farm business equity ratio of greater than 70 per cent increased only marginally from 87 per cent in 2006-07 to 88 per cent in 2007-08. The proportion of these farms

4 Financial performance of broadacre and dairy farms, by industry

average per farm

	farm cash income			farm business profit ^a		
	2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s
	\$	\$	\$	\$	\$	\$
Wheat and other crops	52 470	147 500	149 000	-100 820	33 400	15 000
Mixed livestock crops	15 590	66 800	123 000	-109 560	-25 000	12 000
Beef industry	41 350	25 100	32 000	-16 640	-43 800	-27 000
– farms with less than 300 beef cattle	7 250	-9 700	-18 000	-53 660	-67 100	-69 000
– farms with more than 300 beef cattle	123 630	86 500	110 000	64 360	-2 800	43 000
Sheep	6 910	36 600	46 000	-76 370	-42 900	-27 000
Sheep beef	19 990	40 800	58 000	-76 370	-19 800	2 000
All broadacre industries	29 800	62 400	80 000	-70 240	-21 300	-7 000
Dairy	43 110	127 700	85 000	-30 060	63 000	5 000

	rate of return –excluding capital appreciation ^b			rate of return –including capital appreciation ^b	
	2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p
	%	%	%	%	%
Wheat and other crops	-0.9	2.6	1.9	4.6	5.4
Mixed livestock crops	-1.8	1.0	1.5	3.6	3.0
Beef industry	0.5	-0.1	0.1	11.9	1.1
– farms with less than 300 beef cattle	-2.1	-2.8	-3.2	5.4	-3.1
– farms with more than 300 beef cattle	1.8	0.9	1.4	14.9	2.8
Sheep	-1.6	-0.2	0.0	3.5	3.5
Sheep beef	-1.4	0.6	0.8	7.4	0.9
All broadacre industries	-0.8	0.8	0.9	7.0	2.7
Dairy	0.3	3.7	1.3	10.3	10.5

^a Defined as farm cash income plus buildup in trading stocks, less depreciation and the imputed value of operator partner and family labour. ^b Defined as profit at full equity, excluding or including capital appreciation, as a percentage of total opening capital. Profit at full equity is defined as farm business profit plus rent, interest and lease payments less depreciation on leased items. ^p Preliminary. ^s Provisional estimate.



5 Financial performance, by industry

average per farm broadacre and dairy industries

	wheat and other crops industry				mixed livestock-crops industry			
	2006-07	2007-08 p		2008-09 s	2006-07	2007-08 p		2008-09 s
Total cash receipts	\$ 460 300	677 000	(7)	717 000	359 420	456 700	(5)	517 000
Total cash costs	\$ 407 830	529 500	(6)	567 000	343 830	389 900	(7)	395 000
Farm cash income	\$ 52 470	147 500	(20)	149 000	15 590	66 800	(23)	123 000
Farms with negative farm cash income	% 45	34	(13)	38	52	36	(9)	30
Farm business profit	\$ -100 820	33 400	(85)	15 000	-109 560	-25 000	(64)	12 000
Farms with negative farm business profit	% 77	62	(7)	65	87	61	(5)	62
Profit at full equity								
- excl. cap. appreciation	\$ -32 210	118 200	(25)	85 000	-64 540	39 500	(36)	64 000
- incl. cap. appreciation	\$ 169 120	240 600	(16)	na	128 650	125 100	(34)	na
Farm capital at 30 June a	\$ 3 848 370	4 695 900	(6)	na	3 704 490	4 236 100	(4)	na
Net capital additions	\$ 74 540	143 700	(20)	na	53 190	64 500	(43)	na
Farm debt at 30 June b	\$ 704 310	810 800	(9)	843 000	492 300	652 700	(8)	672 000
Equity at 30 June bc	\$ 3 069 410	3 696 900	(6)	na	3 245 390	3 588 200	(4)	na
Equity ratio bd	% 81	82	(2)	na	87	85	(1)	na
Harvest loans at 30 June e	\$ 12 890	19 400	(30)	na	7 800	8 700	(35)	na
Farm liquid assets at 30 June b	\$ na	270 400	(25)	na	na	114 800	(11)	na
Farm management deposits (FMDs) at 30 June b	\$ 44 660	48 600	(17)	na	21 500	25 700	(14)	na
Share of farms with FMDs at 30 June b	% 24	26	(16)	na	16	24	(12)	na
Annual payment from DSAP and SDAS f	\$ na	na	(16)	na	na	na	(12)	na
Rate of return g								
- excl. cap. appreciation	% -0.9	2.6	(24)	1.9	-1.8	1.0	(36)	1.5
- incl. cap. appreciation	% 4.6	5.4	(16)	na	3.6	3.0	(36)	na
Off-farm income of owner manager and spouse b	\$ 32 580	30 200		na	36 270	31 600		na
sheep industry								
	2006-07	2007-08 p		2008-09 s	2006-07	2007-08 p		2008-09 s
Total cash receipts	\$ 220 810	268 000	(9)	270 000	405 000	310 800	(10)	351 000
Total cash costs	\$ 213 900	231 400	(10)	224 000	363 650	285 700	(10)	320 000
Farm cash income	\$ 6 910	36 600	(22)	46 000	41 350	25 100	(42)	32 000
Farms with negative farm cash income	% 40	32	(15)	27	43	46	(10)	44
Farm business profit	\$ -76 370	-42 900	(21)	-27 000	-16 640	-43 800	(28)	-27 000
Farms with negative farm business profit	% 87	76	(4)	69	77	79	(3)	78
Profit at full equity								
- excl. cap. appreciation	\$ -45 440	-6 800	(124)	0	17 330	-6 300	(200)	4 000
- incl. cap. appreciation	\$ 97 170	96 700	(28)	na	446 240	48 300	(56)	na
Farm capital at 30 June a	\$ 2 938 130	2 892 000	(10)	na	4 141 920	4 337 800	(5)	na
Net capital additions	\$ 61 260	6 500	(569)	na	-44 900	-12 200	(155)	na
Farm debt at 30 June b	\$ 389 580	331 500	(12)	339 000	389 930	420 000	(10)	420 000
Equity at 30 June bc	\$ 2 526 950	2 526 400	(11)	na	3 419 830	3 721 200	(5)	na
Equity ratio bd	% 87	88	(2)	na	90	90	(1)	na
Harvest loans at 30 June e	\$ 340	800	(122)	na	0	0		na
Farm liquid assets at 30 June b	\$ na	123 900	(22)	na	na	131 000	(20)	na
Farm management deposits (FMDs) at 30 June b	\$ 14 650	26 500	(27)	na	13 490	13 800	(21)	na
Share of farms with FMDs at 30 June b	% 14	16	(23)	na	11	13	(18)	na
Annual payment from DSAP and SDAS f	\$ na	na	(23)	na	na	na	(18)	na
Rate of return g								
- excl. cap. appreciation	% -1.6	-0.2	(123)	0.0	0.5	-0.1	(202)	0.1
- incl. cap. appreciation	% 3.5	3.5	(24)	na	11.9	1.1	(56)	na
Off-farm income of owner manager and spouse b	\$ 30 980	40 000		na	44 500	47 700		na
beef industry								

5 Financial performance, by industry

 average per farm broadacre and dairy industries *continued*

	sheep-beef industry				dairy industry			
	2006-07	2007-08 ^p	2008-09 ^s		2006-07	2007-08 ^p	2008-09 ^s	
Total cash receipts	\$ 261 970	355 000 (7)	355 000		394 580	551 200 (4)	461 000	
Total cash costs	\$ 241 980	314 300 (7)	298 000		351 470	423 500 (5)	376 000	
Farm cash income	\$ 19 990	40 800 (24)	58 000		43 110	127 700 (8)	85 000	
Farms with negative farm cash income	% 42	34 (13)	28		32	7 (41)	18	
Farm business profit	\$ -76 370	-19 800 (53)	2 000		-30 060	63 000 (18)	5 000	
Farms with negative farm business profit	% 82	69 (6)	66		73	38 (14)	62	
Profit at full equity								
- excl. cap. appreciation	\$ -49 690	26 500 (34)	36 000		9 600	111 900 (11)	42 000	
- incl. cap. appreciation	\$ 258 660	42 100 (72)	na		295 200	319 200 (10)	na	
Farm capital at 30 June ^a	\$ 3 771 980	4 598 400 (7)	na		3 206 040	3 281 800 (4)	na	
Net capital additions	\$ 28 190	57 700 (75)	na		39 920	53 500 (37)	na	
Farm debt at 30 June ^b	\$ 312 190	505 300 (14)	453 000		479 760	511 900 (7)	486 000	
Equity at 30 June ^{bc}	\$ 3 478 550	3 917 000 (7)	na		2 668 010	2 783 700 (5)	na	
Equity ratio ^{bd}	% 92	89 (2)	na		85	85 (1)	na	
Harvest loans at 30 June ^e	\$ 0	300 (654)	na		0	0	na	
Farm liquid assets at 30 June ^b	\$ na	121 300 (32)	na		na	103 500 (15)	na	
Farm management deposits (FMDs) at 30 June ^b	\$ 32 570	15 500 (30)	na		12 410	28 400 (33)	na	
Share of farms with FMDs at 30 June ^b	% 26	16 (23)	na		16	19 (27)	na	
Annual payment from DSAP and SDAS ^f	\$ na	na (23)	na		15 630	15 300 (45)	na	
Rate of return ^g								
- excl. cap. appreciation	% -1.4	0.6 (33)	0.8		0.3	3.7 (10)	1.3	
- incl. cap. appreciation	% 7.4	0.9 (72)	na		10.3	10.5 (10)	na	
Off-farm income of owner manager and spouse ^b	\$ 37 960	31 800	na		21 140	19 900 (14)	na	

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Harvest loans are not included in farm debt. ^f Dairy Structural Adjustment Program and Supplementary Dairy Assistance Scheme. ^g Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^s Provisional estimates. **na** Not Available.



6 Financial performance, by state

average per farm dairy industry

		New South Wales			Victoria		
		2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s
Total cash receipts	\$	434 970	551 300	(5) 494 000	372 930	541 400	(6) 431 000
Total cash costs	\$	394 410	457 500	(5) 422 000	334 150	412 400	(7) 353 000
Farm cash income	\$	40 550	93 800	(13) 72 000	38 780	129 100	(12) 78 000
Farms with negative farm cash income	%	25	12	(26) 22	34	6	(72) 17
Farm business profit	\$	-38 300	31 700	(43) -13 000	-32 920	68 200	(24) 3 000
Farms with negative farm business profit	%	76	29	(20) 61	77	41	(19) 64
Profit at full equity							
-excl. cap. appreciation	\$	2 450	76 800	(18) 23 000	4 250	116 300	(15) 38 000
-incl. cap. appreciation	\$	357 220	110 500	(19) na	270 640	337 500	(12) na
Farm capital at 30 June ^a	\$	4 056 250	3 936 900	(15) na	2 753 670	2 873 200	(6) na
Net capital additions	\$	78 440	25 700	(128) na	32 160	39 000	(62) na
Farm debt at 30 June ^b	\$	466 040	438 700	(11) na	451 750	513 100	(10) na
Equity at 30 June ^{bc}	\$	3 599 490	3 471 500	(17) na	2 278 650	2 371 000	(7) na
Equity ratio ^{bd}	%	89	89	(2) na	84	82	(2) na
Farm liquid assets at 30 June ^b	\$	na	123 900	(17) na	na	110 300	(22) na
Farm management deposits (FMDs) at 30 June ^b	\$	15 730	12 800	(50) na	11 700	37 500	(38) na
Share of farms with FMDs at 30 June ^b	\$	8	10	(45) na	19	24	(32) na
Annual payment from DSAP and SDAS ^f	\$	22 986	13 325	(45) na	11 266	6 025	(32) na
Rate of return ^g							
- excl. cap. appreciation	%	0.1	2.0	(25) 0.6	0.2	4.4	(14) 1.3
- incl. cap. appreciation	%	9.9	2.8	(25) na	11.0	12.9	(14) na
Off-farm income of owner manager and spouse ^b	\$	27 600	18 700	na	22 370	21 100	na
		Queensland			Western Australia		
		2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s
Total cash receipts	\$	325 670	385 500	(7) 390 000	468 820	550 900	(9) 536 000
Total cash costs	\$	271 030	287 100	(8) 289 000	370 910	423 500	(12) 414 000
Farm cash income	\$	54 640	98 400	(14) 101 000	97 910	127 400	(12) 122 000
Farms with negative farm cash income	%	45	7	(77) 26	9	5	(47) 19
Farm business profit	\$	-23 510	40 900	(36) 12 000	37 820	39 500	(35) 30 000
Farms with negative farm business profit	%	65	50	(20) 51	34	14	(53) 58
Profit at full equity							
- excl. cap. appreciation	\$	1 340	66 900	(24) 31 000	76 650	90 900	(15) 76 000
- incl. cap. appreciation	\$	175 500	268 700	(23) na	1 984 070	620 700	(57) na
Farm capital at 30 June ^a	\$	3 159 370	3 048 400	(9) na	9 585 910	8 495 600	(9) na
Net capital additions	\$	-22 380	57 200	(37) na	93 650	-44 100	(461) na
Farm debt at 30 June ^b	\$	331 720	285 700	(24) na	491 290	471 900	(19) na
Equity at 30 June ^{bc}	\$	2 778 820	2 762 400	(11) na	7 365 170	8 021 900	(9) na
Equity ratio ^{bd}	%	89	91	(3) na	94	94	(1) na
Farm liquid assets at 30 June ^b	\$	na	80 200	(20) na	na	32 800	(54) na
Farm management deposits (FMDs) at 30 June ^b	\$	7 640	4 800	(50) na	26 920	0	na
Share of farms with FMDs at 30 June ^b	\$	12	6	(38) na	16	0	na
Annual payment from DSAP and SDAS ^f	\$	22 880	9 199	(38) na	32 721	19 852	na
Rate of return ^g							
- excl. cap. appreciation	%	0.0	2.4	(23) 1.0	1.0	1.1	(17) 1.0
- incl. cap. appreciation	%	5.8	9.7	(25) na	26.3	7.7	(57) na
Off-farm income of owner manager and spouse ^b	\$	15 760	15 200	na	17 900	12 200	na

6 Financial performance, by state

 average per farm dairy industry *continued*

		South Australia			Tasmania		
		2006-07	2007-08 ^p	2008-09 ^s	2006-07	2007-08 ^p	2008-09 ^s
Total cash receipts	\$	584 820	807 200 (6)	664 000	486 470	705 100 (15)	651 000
Total cash costs	\$	561 740	622 500 (6)	544 000	416 320	528 600 (17)	533 000
Farm cash income	\$	23 080	184 700 (19)	120 000	70 160	176 500 (17)	118 000
Farms with negative farm cash income	%	43	13 (87)	26	9	11 (100)	12
Farm business profit	\$	-81 530	76 500 (53)	16 000	17 150	99 200 (28)	33 000
Farms with negative farm business profit	%	60	13 (84)	50	61	45 (49)	66
Profit at full equity							
- excl. cap. appreciation	\$	-13 550	148 100 (26)	73 000	84 560	179 400 (19)	112 000
- incl. cap. appreciation	\$	234 410	188 300 (44)	na	-162 370	545 200 (17)	na
Farm capital at 1 July ^a	\$	3 643 920	3 583 700 (9)	na	3 388 080	4 125 500 (15)	na
Net capital additions	\$	35 250	106 600 (40)	na	129 450	279 700 (56)	na
Farm debt at 30 June ^b	\$	779 780	712 500 (14)	na	775 740	842 200 (28)	na
Equity at 30 June ^{bc}	\$	2 879 950	2 865 500 (11)	na	2 580 970	3 281 400 (14)	na
Equity ratio ^{bd}	%	79	80 (4)	na	77	80 (5)	na
Farm liquid assets at 30 June ^b	\$	na	89 500 (28)	na	na	71 700 (18)	na
Farm management deposits (FMDs) at 30 June ^b	\$	21 570	24 100 (56)	na	8 260	16 400 (41)	na
Share of farms with FMDs at 30 June ^b	\$	12	21 (45)	na	6	11 (51)	na
Annual payment from DSAP and SDAS ^f	\$	21 116	19 915 (45)	na	13 664	8 223 (51)	na
Rate of return ^g							
- excl. cap. appreciation	%	-0.4	4.3 (22)	2.0	2.4	5.1 (14)	2.5
- incl. cap. appreciation	%	7.0	5.4 (43)	na	-4.7	15.6 (17)	na
Off-farm income of owner manager and spouse ^b	\$	8 970	21 100	na	13 760	18 700	na

^a Excludes leased plant and equipment. ^b Average per responding farm. ^c Farm capital minus farm debt. ^d Equity expressed as a percentage of farm capital. ^e Harvest loans are not included in farm debt. ^f Dairy Structural Adjustment Program and Supplementary Dairy Assistance Scheme. ^g Rate of return to farm capital at 1 July. ^p Preliminary estimates. ^s Provisional estimates. ^{na} Not Available.



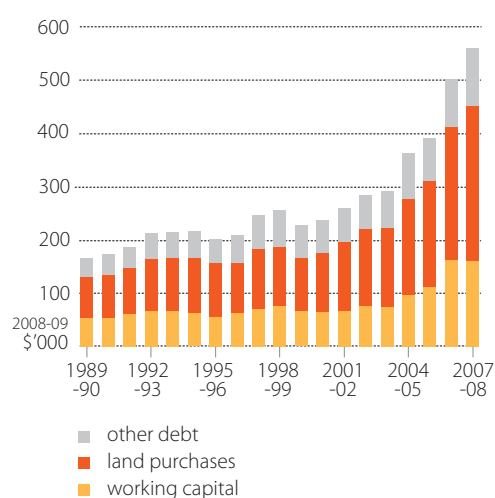
h Distribution of farms, by equity and farm cash income
broadacre and dairy industries



recording negative farm cash incomes declined from 32 per cent in 2006-07 to 29 per cent in 2007-08 (figure h). The proportion of farms estimated to have a farm business equity ratio of less than 70 per cent declined from 13 per cent in 2006-07 to 12 per cent in 2007-08 and the proportion of these farms recording negative farm cash incomes declined from 8 per cent to 5 per cent.

Despite the projected improvement in broadacre farm income in 2008-09, in part a consequence of lower interest costs, the proportion of broadacre farms recording negative farm cash income and therefore potentially needing to borrow working capital is projected to fall only slightly from 38 per cent of farms in 2007-08 to 36 per cent in 2008-09. For the dairy industry, the proportion of farms recording negative farm cash income is projected to rise from 7 per cent in 2007-08 to 18 per cent in 2008-09.

i Composition of farm debt
broadacre and dairy industries
average per farm

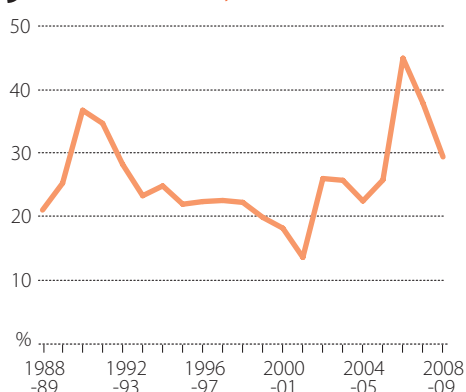


Use of debt

Average farm business debt is estimated to have increased by 18 per cent for broadacre farms in 2007-08 and by 7 per cent for dairy farms, compared with the rise of 10 per cent for broadacre farms and 16 per cent for dairy farms in 2006-07. Farm businesses interviewed by ABARE in November 2008 indicated they expected to make smaller increases in farm debt in 2008-09, on average. Broadacre and dairy farms reported they expected to increase debt by around 2 per cent in 2008-09.

Increases in debt to fund land purchase, account for the largest share of the large increase in average farm business debt which occurred in recent years (figure i). Increases in land purchase debt have been confined to a relatively small proportion of farms with around 7 per cent increasing borrowing to purchase land in each the three years ending 2007-08.

j Debt servicing ratio
broadacre and dairy farms

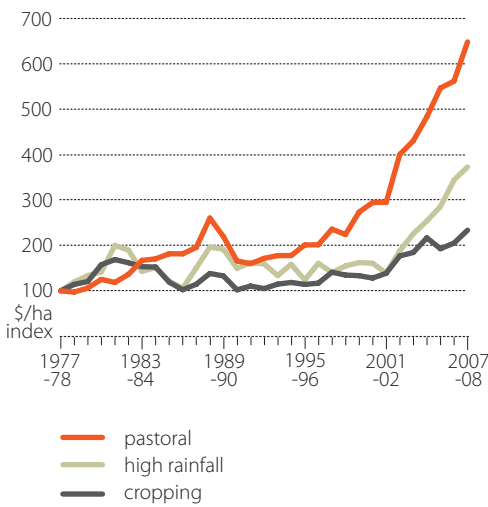


There have also been substantial increase in debt to fund working capital in recent years and this increase has occurred across a high proportion of farms. Around 27 per cent of farms increased borrowings to fund working capital in each of the three years ending 2007-08. In the period of adverse seasonal conditions from 2002-03, farms have relied on a range of sources of finance to deal with reduced farm incomes and marked fluctuation in income including: the use of Farm Management Deposits; drawing down other farm liquid assets; increasing off-farm work for wages; and increased reliance of government drought assistance payments to both the farm business and farm households. Borrowing to cover working capital requirements has been one of the most common responses (if not the most common response) to low cash flow caused by adverse seasonal conditions in recent years (Levantis and Martin, 2007 and ABS, 2009). Increases in farm debt also corresponds with increased use of interest only loans and increases in the total amount of interest subsidies paid to farm businesses in many parts of eastern and northern Australia as part of government exceptional circumstances assistance.

Debt servicing

The proportion of farm cash income needed to meet interest payments on farm debt increased sharply from 2001-02 to 2007-08 (debt servicing ratio) (figure j). The debt servicing ratio is defined as

k Land prices for broadacre farms



interest paid as a percentage of farm cash income plus interest paid. Interest rates rose through this period and farm cash incomes were highly variable. Partially offsetting the increase in interest rates was the increase in interest subsidies paid to farm businesses via exceptional circumstances assistance. However, notwithstanding this, most of the increase in the debt servicing ratio has been because of the large increases in farm debt.

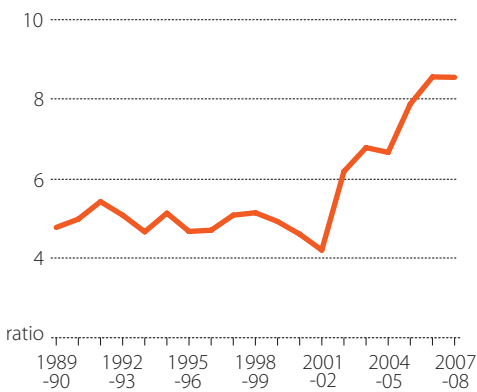
With improved farm cash incomes for broadacre and dairy farms in 2007-08 the debt servicing ratio fell. In 2008-09, further improvement in the debt servicing ratio is expected with higher broadacre farm cash incomes and reduced interest rates.

Land values

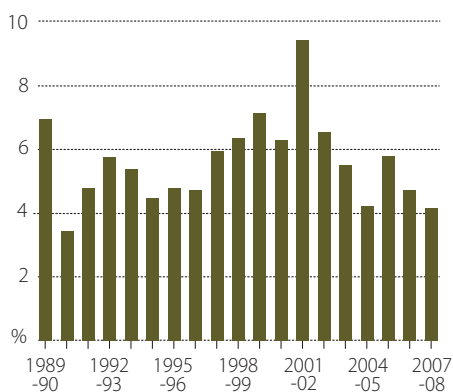
Improvement in the proportion of farms estimated to have strong business equity ratios in 2007-08 was driven by increases in land values in many regions which were sufficient to more than offset the effect of increases in farm debt on farm equity. Increases in land values reported for broadacre farms occurred in all agricultural zones in 2007-08 (figure k). In the period since 2004-05, increases in reported land values have been relatively smaller in the cropping zone, where the majority of broadacre production occurs, reflecting the greater effect of adverse seasonal conditions and the lesser influence in this zone of non-agricultural factors. These include competition for land from population growth, urban and peri-urban developments and economic growth driven by mining developments which support increases in land values in other zones.

In recent years, average land prices for broadacre farms have become historically high relative to the cash receipts per hectare generated by farming activity during this period. The ratio of land price per hectare to total cash receipts per hectare has increased from around 5 prior to 2001-02 to more than 8 on average in 2007-08 on broadacre farms (figure l). This has been a period of adverse seasonal conditions, but this is a large increase and the increase in this ratio is relatively similar across all agricultural zones and industries.

l Ratio of land prices to receipts per hectare *broadacre and dairy farms*



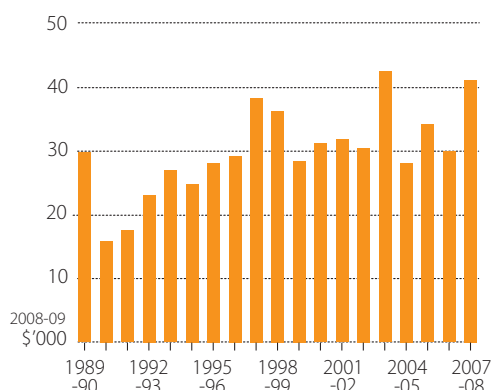
m Proportion of farms acquiring land *broadacre and dairy farms*



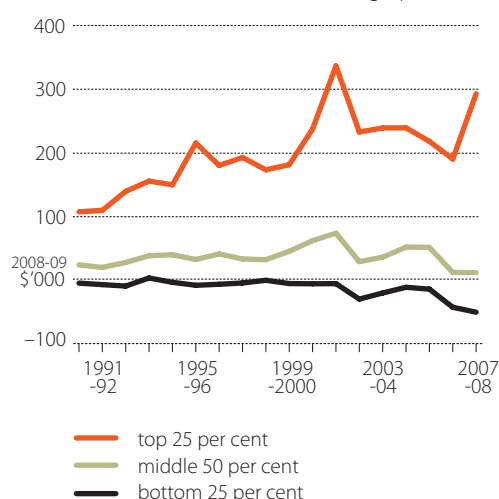
Farm investment

Despite improvement in farm cash income in 2007-08, the proportion of broadacre and dairy farms acquiring land continued the general downward trend of recent years (figure m). However, a substantial increase occurred in non-land farm capital in 2007-08. Non-land capital additions, including vehicles, plant, machinery and farm improvements, increased by more than two-thirds for both broadacre and dairy farms in 2007-08 (figure n). The increased investment in plant, machinery and farm improvements may have been substantially opportunistic with lower prices for imported farm machinery because of the strong Australian dollar, in combination with the improved cash flow, particularly in the dairy industry. High prices for fertiliser and low availability of irrigation water also provided incentives to change farm technologies related to the use of these inputs. The reduction in farms acquiring additional land and increased non-land investment may also indicate that farmers may be aiming to improve the productivity of their existing land base rather than purchasing additional relatively high priced land. Lower interest rates in 2008-09 will provide opportunities

n Additions of non-land capital
broadacre and dairy farms
average per farm



o Financial performance
broadacre farms
average per farm



for those farms in a sound financial position to invest to improve farm productivity.

Better performing farms

Farm incomes and rates of return on investment in agricultural industries are usually low when reported across a whole industry or state. However, low average returns are partly a consequence of the generally high proportion of small farms in many industries, particularly the beef and sheep industries. The presence of these small farms masks the much higher incomes and returns from better performing and larger farms which generate the majority of each industry's output.

The top 25 per cent of farms, ranked by a moving average of rate of return to capital excluding capital appreciation, have consistently generated cash incomes of more than \$100 000 a year (in real terms) over the past two decades (figure o). Moreover, the trend in farm cash incomes for these farms is up. In contrast, the bottom 25 per cent of broadacre farms have struggled to generate positive farm incomes and it appears the trend line for this group is at best flat.

The top 25 per cent of farms generated average rates of return excluding capital appreciation of 5 per cent over the five years ending 2007-08 and rates of return including capital appreciation of 12 per cent. These farms accounted for 54 per cent of the gross value of broadacre farm production over this period and 85 per cent of farm business profits. They have also accounted for 80 per cent of the increase in real value of production for the broadacre sector since 1990.

The top 25 per cent of farms also accounted for almost two-thirds of the net additions to farm capital in five years ending 2007-08. Estimates of productivity growth in the broadacre industries, have found that higher total factor productivity for larger farms capture most of the productivity growth in broadacre industries and the smallest one-third of farms capturing little productivity increase (Knopke et al. 1995 and ABARE, 2004). Rates of new investment on

poorly performing and small farms are likely to be too small to generate significant productivity gains. An important means of capturing productivity increases is the adoption of more efficient methods of farming. These practices often require increasing the scale of farming enterprises to capture their advantages. This is difficult for small farms which have lesser capacity to generate a financial surplus and are often located in areas where high land values render land purchase a poor business option.

A range of other characteristics have been found to be associated with better performing farms. These characteristics are broadly indicative of a more intense focus on farm business improvement and include farms which are generally operated by owner-managers who are: more likely to be members of production and Landcare groups; seek information for decision-making more widely and from professional advisors; have less aversion to risk; use more risk management tools, including forward sales and futures; use methods of sale of farm products which ensure they receive clear market and price signals, enabling them to modify their production system; and, in some analyses but certainly not all, adopt better natural resource management practices (Martin et al. 2005).

Farm innovation

Productivity growth in agricultural industries relies on continued innovation and adoption of more efficient technologies. Data measuring the extent of farm innovation over the two years ending 2007-08 was collected as a supplementary survey to the 2007-08 Australian Agricultural and Grazing Industry Survey.

The survey collected data on new farm innovations. Innovation was defined in the survey to include only the implementation of new practices or technologies which were not previously used by the farm. To be considered an innovation, an implemented technology or practice had to be likely to be used on a continuing basis.

More than one-third of broadacre and dairy farms made significant innovative change introducing new crop types or cultivars to their business (table 7). Similarly, more than one-third of farms purchased new crop production equipment and more than one-third changed fertilisers or nutrient management practices. These results are broadly consistent with the relatively high level of capital additions made by broadacre and dairy farms in 2007-08 and changes which may occur in response to the strong incentives to change fertiliser practices in the face of high fertiliser prices over this period. Introduction of new irrigation practices was also highly ranked, consistent with the severe shortage of irrigation water in many irrigation areas during this period.

The survey results indicate that farms in the top 25 per cent of farms, ranked by rate of return, were more likely to adopt innovative changes than the bottom 25 per cent of farms during 2007-08. Nearly half of the top performing farms introduced new crop types or cultivars in the past two years, and a similar proportion invested in new farm plant and equipment. A much higher proportion of top performing farms implemented new approaches to marketing their farm's production, changed labour use and introduced new members to the farms management team than the bottom 25 per cent of farms. There were also significant difference between the proportion of farms in the top and bottom 25 per cent of farms which introduced new equipments for cultivation, planting, fertilising, spraying and harvesting, and the proportion which introduced irrigation and water management practices in 2007-08.

Information from the survey of farm innovation is intended to be included in future ABARE analysis of total factor productivity for broadacre and dairy farms.

7 Farms making innovative changes, broadacre and dairy farms 2006-07 and 2007-08

percent of farms

innovative activity	bottom 25 percent a		top 25 percent a		all farms	
Marketing						
New approach to marketing farm's production	%	17 (17)	39 (5)	26 (5)		
Management/Labour use						
New approach to labour use	%	17 (24)	26 (7)	21 (6)		
New members to farm's management	%	5 (30)	14 (13)	9 (8)		
Natural resource management practice						
Weed-related natural resource management	%	26 (16)	30 (8)	24 (6)		
Pest-related natural resource management	%	16 (19)	18 (11)	17 (7)		
Soil-related natural resource management	%	25 (16)	30 (7)	24 (6)		
Cropping farms						
Product changes - new crop types/cultivars	%	42 (12)	48 (5)	41 (4)		
Fertiliser practice	%	37 (15)	36 (7)	34 (6)		
Soil management practice	%	34 (16)	33 (8)	31 (6)		
Weed, pest and disease management practices	%	28 (15)	34 (8)	27 (6)		
Equipments for cultivation, planting, fertilizing, spraying & harvesting	%	32 (16)	48 (6)	38 (4)		
Livestock farms						
product changes - new livestock types/breeds	%	17 (16)	23 (9)	21 (7)		
Livestock feeding practice	%	21 (20)	23 (8)	21 (6)		
Fodder conservation and use practice	%	12 (27)	18 (11)	14 (7)		
Livestock handling practice	%	14 (24)	16 (11)	14 (8)		
Livestock health practices	%	15 (21)	20 (10)	16 (8)		
Grazing management practices	%	19 (20)	22 (9)	20 (7)		
Pasture types	%	21 (12)	23 (9)	22 (7)		
Irrigation farms						
Irrigation and water management practices	%	20 (14)	35 (20)	29 (12)		

a Farms ranked by rate of return excluding capital appreciation.

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

References

ABARE 2004, *Australian beef: productivity, Australian Beef 04.2*, Canberra, November.

ABARE, 2009, *Australian commodities, March quarter*, vol. 16, no. 1.

ABS 2008, *Principal agricultural commodities – preliminary 2007-08*, Cat 7111.0, Canberra, November 2008.

Knopke, P, Strappazon, L and Mullen, J 1995, 'Productivity growth: total factor productivity on Australian broadacre farms', *Australian commodities June quarter*, vol. 2, no. 4, pp. 486–97.

Levantis, C and Martin, P 2007, 'Farm management deposits, use and interaction with exceptional circumstances assistance', *Australian commodities December quarter*, vol. 14, no. 4, pp. 691–97.

Martin, P, King, J, Puangsumalee, P, Tulloh, C and Treadwell, R 2005, 'Farm financial performance 2002-03 to 2004-05', *Australian commodities March quarter*, vol. 12, no. 1, pp. 180–99.

Nossal, K, Zhao, S, Sheng Y and Gunaserera, D 2009, 'Productivity movements in Australian agriculture', *Australian commodities March quarter*, vol. 16, no. 1.



abare.gov.au

PDF

Access ABARE's releases ready to download and print; a main source of economic information and research.

All information on our website is available free of charge.

Data

Visit ABARE's website for interactive and excel data, view ABARE's Marketmonitor for a comprehensive statistical report comprising

- exchange rates
- interest rates
- market indices
- commodity prices

Web

Our commodity analysis cover agriculture, minerals, energy, fisheries and forestry.

For all reports released publicly since 2008.

Now available as stand alone websites.

visit ABARE's website for independent economic research analysis and forecasting

Productivity movements in Australian agriculture

Katarina Nossal, Shiji Zhao, Yu Sheng and Don Gunasekera

- Productivity growth in broadacre agriculture has been highly volatile, but positive over the long term, averaging 1.5 per cent a year between 1977-78 and 2006-07. Dairy productivity growth has averaged 1.2 per cent a year between 1988-89 and 2006-07.
- Cropping specialists continue to outperform livestock industries over the long term with 2.1 per cent annual average productivity growth. However, productivity growth in crop and mixed crop-livestock industries is showing signs of slowing.
- Regional disparities influence productivity growth rates, while seasonal conditions and access to markets are among other factors affecting overall performance in the farm sector. Recent drought conditions across Australia have diminished some regional advantages, with high performing regions more difficult to distinguish.
- Productivity gains in broadacre agriculture are partly influenced by farms changing their input mix. In particular, inputs of materials and services have increased by 2.4 per cent a year, while there has been a long-term decline in the use of other inputs.

In Australia, productivity growth has been the main source of long-term income growth in the economy. Improvements in terms of trade also played a role in the most recent decade. However, over the long term the economy has experienced a steady terms of trade decline. Productivity growth has also been the major driver of growth in Australia's agriculture sector. In fact, agricultural productivity growth has typically exceeded productivity growth in the rest of the economy.

Agriculture, similar to much of the economy, experienced a surge in productivity growth during the 1990s. While productivity growth may have begun to slowdown, long-term agricultural productivity growth rates continue to exceed that of the rest of the economy. This is largely because of technological progress, but also partly because farmers have adjusted in a number of ways, including by releasing resources such as labour to other sectors of the economy (PC 2008).

It has been highlighted stronger productivity growth would reduce or negate the adverse impact on living standards of three looming long-term challenges: population ageing; sustainable water use; and climate change (PC 2008). Further, dealing with challenges such as the global financial crisis, global food security, water and resource availability and drought will require productivity growth. These challenges are particularly relevant for the agriculture sector and, as a result, there will continue to be an emphasis on agricultural productivity growth.

Over the long term, Australian farmers have adjusted input use and adopted new technologies to expand their agricultural output. The effect of these changes on agricultural production are reflected to some extent in growth in total factor productivity (TFP). Measuring TFP enables productivity movements and their determinants to be compared across industries, regions and countries.

While TFP growth in the agriculture sector is higher than most other sectors of the economy, it has become evident agricultural productivity growth rates have also eased over the past decade. This article provides an updated analysis of productivity growth in the broadacre and dairy sectors. Regional differences in agricultural productivity and changes in input use over the past 30 years are also discussed.

Trends in productivity growth

TFP measures total outputs relative to the inputs used in producing that output. Growth in TFP is often used as a measure of technological progress and is frequently used as an indicator of farm performance. Long-term TFP trends are considered to be the most reliable indicators, as the impact of year-to-year fluctuations are smoothed. These fluctuations are often sizeable because of factors such as variable seasonal and economic conditions.

box 1 Estimation technique and industry definitions

Long-term TFP trends are estimated using regression techniques, rather than taking an average of TFP growth in each year-to-year period. Average TFP growth over multiple years is estimated by regressing the natural logarithm of the TFP index against time.

In this paper, total factor productivity is estimated for five broadacre industries and the dairy industry using data collected through ABARE's Australian Agricultural and Grazing Industries Survey (AAGIS) and Australian Dairy Industry Survey (ADIS). Industry definitions are based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) (ABS, 2006, cat no. 1292.0). The industries are:

- **Cropping** – farms engaged mainly in growing cereal grains, coarse grains, oilseeds and/or pulses
- **Mixed crop-livestock** – farms engaged mainly in both growing crops and running sheep or beef cattle
- **Beef** – farms engaged mainly in running beef cattle (beef specialists) and those running both beef and sheep (mixed beef-sheep)
- **Sheep** – farms engaged mainly in running sheep (sheep specialist) and those running both beef and sheep (mixed beef-sheep)
- **Dairy** – farms engaged mainly in dairying

Under these definitions, farms with crop production accounting for the majority of its agricultural output will be included in cropping industry for productivity analysis. However, it therefore should be noted that in measuring relative inputs and outputs (to estimate TFP), cropping industry output includes not only crop outputs, but all other agricultural outputs produced by farms classified within the industry. This clarification is particularly relevant as many Australian agricultural farms produce multiple products.

Regional TFP estimates are provided for crop specialists, beef specialists and sheep specialists. In these estimates, farms classified as mixed beef-sheep are excluded.

Broadacre agriculture

Broadacre productivity growth has been highly volatile, however long-term trends are positive. Between 1977-78 and 2006-07, TFP growth averaged 1.5 per cent a year for the broadacre sector. This trend was accompanied by farms expanding output, while simultaneously reducing their input requirements (figure a). Output growth in the broadacre sector averaged 0.8 per cent a year over the period, with inputs declining at 0.6 per cent a year.

Fluctuations in broadacre TFP have been common, largely reflecting varying seasonal conditions. As many inputs used in agricultural production are often fixed in the short term, TFP fluctuations tend to coincide with movements in output. In figure a, it is shown that while input use declined quite consistently in broadacre agriculture, output growth was more variable. These sharp downturns in output growth are consistent with drought years in Australia, including 1980-81, 1982-83, 1994-95, 2002-03 and 2006-07. Despite these downturns, long-term productivity growth remained positive.

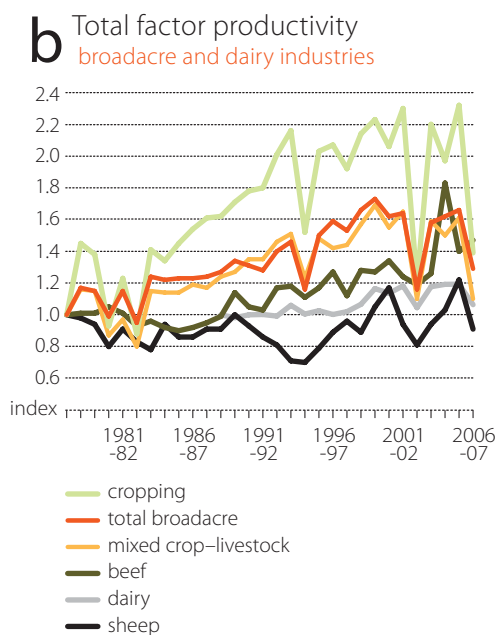
a Total factor productivity broadacre and dairy industries



1 Average annual input, output and TFP growth in broadacre industries, 1977-78 to 2006-07

	TFP growth %	output growth %	input growth %
Total broadacre	1.5	0.8	-0.6
Cropping	2.1	3.1	1.0
Mixed crop-livestock	1.5	0.1	-1.5
Beef	1.5	1.7	0.1
Sheep	0.3	-1.4	-1.8
Dairy ^a	1.2	5.1	3.9

^a Dairy industry estimates from 1988-89 to 2006-07.



Within the broadacre sector, the cropping industry continued to outperform beef, sheep and mixed crop-livestock industries in terms of TFP growth (figure b). Cropping specialists achieved annual productivity growth of 2.1 per cent a year over the past three decades. The improved performance coincided with farms expanding output significantly, with only moderate increases in input use (table 1).

The mixed crop-livestock industry improved productivity by an average of 1.5 per cent a year. These farms expanded output only marginally and productivity gains were mostly achieved through more efficient use of inputs (they required fewer inputs to achieve a similar level of output) (table 1).

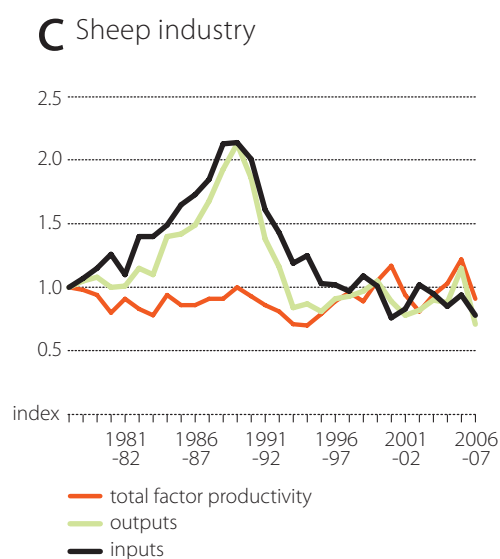
Beef specialists achieved the same average performance level as the mixed crop-livestock industry over the past three decades (table 1). Their productivity growth coincided with high output growth and relatively marginal growth in input use.

The sheep industry continues to lag behind the broadacre sector in terms of long term productivity growth. Between 1977-78 and 2006-07, the industry has experienced a decline in both output and input use (table 1). Possible reasons for underperformance in the sheep industry have been ambiguous and are discussed further in box 2.

box 2 Is the sheep industry underperforming?

Long-term productivity growth in the sheep industry has been consistently below other broadacre sectors. While the industry has undergone significant adjustments over the past three decades, the cause of underperformance in terms of TFP has been only briefly discussed.

The sheep industry is mainly comprised of small farms, typically engaged in mixed operations with a combination of wool, lamb, sheep and other outputs. Output and input use in the sheep industry has changed over time in a different way to the overall broadacre industry (figure c). Growth in input use through the 1980s was not able to stimulate any significant productivity gains. During the 1990s, following the collapse of the wool reserve price scheme, there was a significant shift from wool into cropping as farmers took advantage of higher relative returns. As the industry was contracting, there was little investment, which may have limited the ability to introduce improved technology.



More recently, sheep productivity growth seems to be trending upwards (figure c). Between 1997-98 and 2006-07, productivity growth averaged 0.5 per cent a year, compared with -1.39 per cent for the broadacre sector overall during that period. If there were not two major droughts during this period, productivity growth would potentially have been even higher. This indicates a possible shift in sheep industry productivity growth may be underway, and the industry may not be performing as poorly as the long-term trend would suggest.

High prices and increasing export demand for Australian slaughter lamb in recent years is likely to have stimulated productivity growth with farms adopting new technologies and more efficient farm management practices. Domestic lamb prices have risen to historically high levels averaging 350 cents per kilogram between 2003-04 and 2007-08, compared with 194 cents per kilogram between 1993-94 and 1997-98. Some farmers have returned to the sheep industry and expanding production levels. Over the past decade there has also been a greater focus on finishing lambs to increase slaughter weight, use of improved pastures and supplementary feeding, as well as superior genetics (Nossal et al. 2008). The impact of these industry developments is likely to take some time to flow through in the form of long-term productivity growth.

Dairy

Productivity growth amongst dairy specialists averaged 1.2 per cent a year between 1988-89 and 2006-07, reflecting high input and output growth (table 1). Dairy specialists began to expand their operations following deregulation in 2000. Some unproductive farms exited the industry while remaining farms began to increase the size and intensity of their operations in order to maintain profitability (Harris 2005). These dairy specialists have achieved strong output growth. Input growth was also higher during this expansion, particularly land and dairy herd purchases.

However, during the current decade, overall dairy production (in terms of milk products) has been falling. For example, milk production fell from a peak of 11.3 billion litres in 2001-02 to 9.1 billion litres in 2007-08. This suggests that while the average size of dairy farms has increased, the expansion in average farm size has not offset the fall in the total number of farms.

The observed strong output growth is hence a reflection of improvements achieved by specialist dairy farms, despite total industry production falling. These improvements have been achieved by farms increasing intensity (through higher stocking rates and more intensive feeding practices), improving pastures and increasing purchases of off-farm feed. New technologies and farm management practices have also lifted labour productivity and milk yields (Zhao et al. 2008).

Regional productivity trends in broadacre agriculture

Comparing productivity across regions provides an indication of possible factors driving productivity growth. For cropping specialists, regional estimates are based on the three Grains Research and Development Corporation (GRDC) agro-ecological regions. Beef specialist productivity estimates are compared between northern and southern beef regions as defined by Meat and Livestock Australia (MLA). The sheep specialists are divided into three geographical zones – pastoral, wheat-sheep and high rainfall.

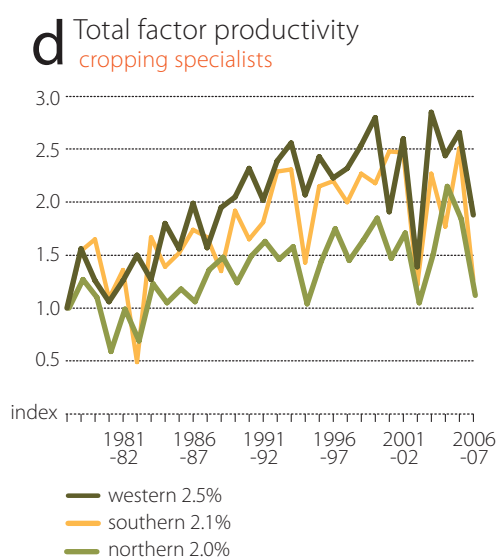
2 Annual growth of cropping specialists, 1977-78 to 2006-07

	TFP growth %	output growth %	input growth %
Northern region	2.0	1.3	-0.8
Southern region	2.1	3.8	1.7
Western region	2.5	4.4	2.0

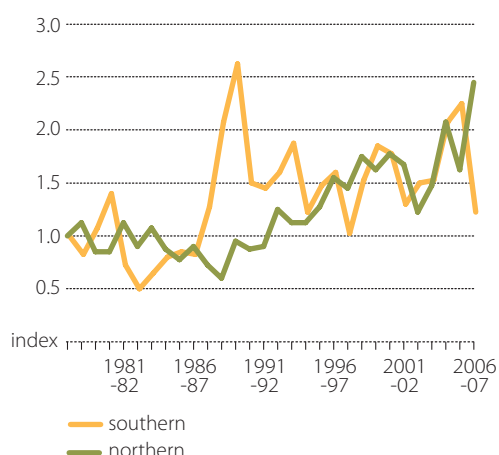
Farm performance in the cropping industry followed a similar trend between GRDC agro-ecological regions with productivity growth in northern, southern and western regions ranging from 2.0 to 2.5 per cent on average. However, the contribution of input and output growth to productivity growth differed between regions (table 2). The southern and western regions both experienced strong growth in outputs, with inputs expanding modestly also. These regions (particularly the western region) benefited from a significant shift into cropping from wool production and increases in the scale of cropping operations. Other factors improving productivity included increased use of crop rotations, higher yielding varieties, and use of minimum tillage techniques.

The northern region achieved lesser output growth, but simultaneously reduced input use. While productivity growth of cropping specialists has been consistently lower in the northern region (figure d), long-term growth has been only slightly lower than the southern region as fluctuations have been less significant.

Productivity differences are more obvious between northern and southern beef producing regions (figure e). Beef specialists in the northern region achieved annual average TFP growth of 1.2 per cent a year, compared with 0.8 per cent a year for the southern region (table 3). In the northern region, higher overall performance was mainly a reflection of dramatic productivity growth during the 1990s. In the current decade, productivity growth appears to be continuing to rise, with only the drought years of 2002-03 and 2004-05 causing drops in performance (figure e).



e Total factor productivity
beef specialists



Productivity growth in the northern beef region has been partly because of the expansion in output in recent years. Farms in the northern region have expanded over the past two decades and the region is now dominated by large specialist farms with high stock numbers. The emergence of live export trade with Asia has also stimulated an expansion in output, with minimal additional input requirements. Other factors lifting productivity growth have included improved pest and disease control, higher fertility rates and increased turn-off weights.

In the southern beef region, productivity has been more variable, leading to lower overall productivity growth. In general, the region has been more heavily affected by seasonal conditions in recent years, causing notable fluctuations in productivity. This variability could therefore reflect destocking and subsequent rebuilding in response to drought (Nossal, Sheng and Zhao 2008). The southern region typically shows more vulnerability than their northern counterparts as southern farms are often smaller and more diversified.

3 Average annual growth of beef specialists, 1977-78 to 2006-07

	TFP growth %	output growth %	input growth %
Northern region	1.2	1.3	0.1
Southern region	0.8	0	-0.9

Sheep specialists can be split into three geographical regions for productivity analysis – high rainfall, wheat-sheep and pastoral regions. These different farming environments have led to distinctive patterns in productivity growth, however long-term trends were similar (figure f), with productivity growth averaging between 0.5 per cent and 0.9 per cent a year over the past three decades (table 4).

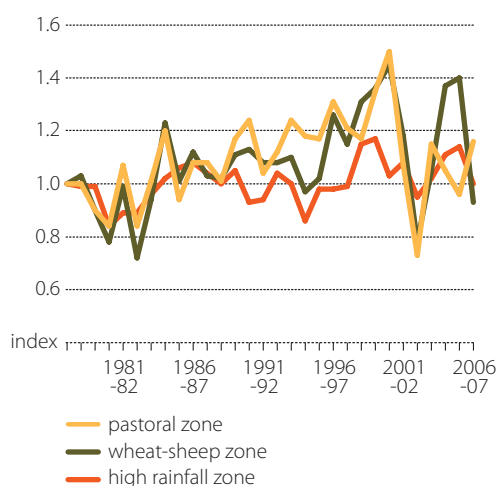
4 Average annual growth of sheep specialists, 1977-78 to 2006-07

	TFP growth %	output growth %	input growth %
Pastoral	0.5	-1.5	-2.0
Wheat-sheep	0.9	0.0	-0.9
High rainfall	0.5	-2.2	-2.7

Productivity has been most variable in the pastoral region. Large specialist farms are more predominant in this region. These large farms demonstrated the strongest productivity gains during the 1980s and 1990s, however drought in recent years appears to have significantly affected the ability of these farms to continue improving performance. Productivity gains in this region have coincided with farms cutting back inputs more than outputs.

Over the long term, all sheep producing regions have achieved productivity gains while scaling back production, although input use has been reduced faster than output has fallen. In the wheat-sheep region, the reduction in inputs and outputs has been only slight relative to the other regions. This is most likely to reflect that farms in this region commonly undertake crop-grazing rotation and cropping productivity growth has been strong. The high rainfall region has had the largest decline in output and input use, however long-term productivity growth has remained at a similar level because of the ability of farms to cut input requirements at a faster rate. This has led to some efficiency improvements and translated to a positive measure of TFP growth.

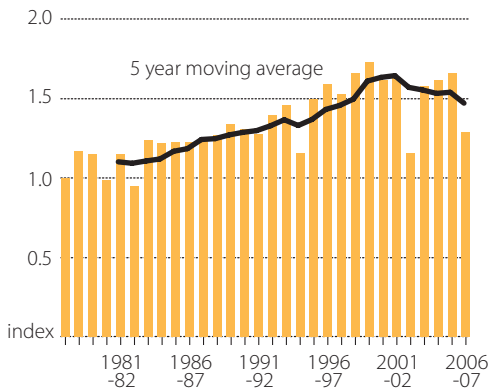
f Total factor productivity
sheep specialists



Is productivity growth slowing over time?

There are several indicators which suggest productivity growth may be slowing in the agriculture sector. Similar to most Australian industries, productivity growth experienced a surge during the 1990s (figure g). Broadacre productivity growth was 3.6 per cent on average between 1989-90 and 1998-99, compared with an average 1.5 per cent between 1977-78 and 2006-07. The agriculture industry,

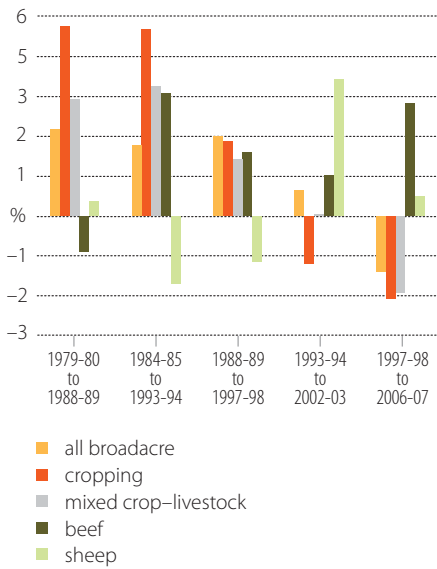
g Total factor productivity
broadacre



along with many others, benefited from microeconomic reforms, improvement in market access and technological development.

Since around the turn of the century, broadacre productivity growth appears to be slowing. Between 1997-98 and 2006-07, productivity growth began to show a negative trend, falling at an average rate of 1.4 per cent a year. Looking at productivity growth over relatively short time periods does not provide a reliable indication of long-term trends, however there appears to be some possibility productivity growth is showing signs of slowing. This trend also appears to be analogous with the more general slowdown in productivity growth occurring for the economy overall (PC, 2008).

h Broadacre TFP growth by industry short-term trends

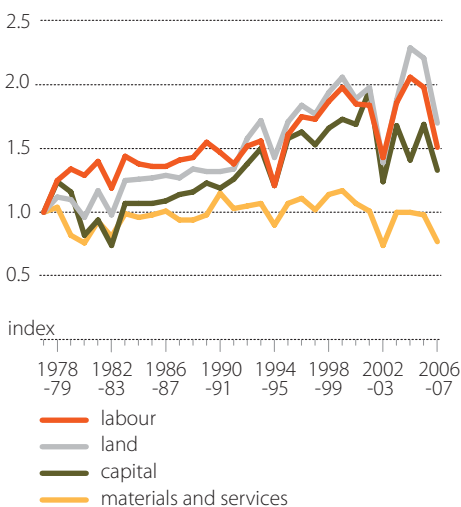


In broadacre agriculture, it is obvious recurring droughts have influenced productivity growth, with severe downturns in output (and productivity) occurring during drought years 1994-95, 2002-03 and 2006-07 (figure g). However, drought may not be the only reason for the perceived slowdown in productivity growth.

Comparing productivity growth across broadacre industries shows the slowdown has been largely restricted to cropping industries (figure h). The beef industry has lifted productivity growth in the past decade and the sheep industry has also improved productivity performance compared with previous decades, although drought appears to have had a negative influence in the past few years.

Much of the productivity growth in cropping during the 1980s and 1990s was because of technological advances, including much larger and more efficient planting and harvesting equipment. This enabled high substitution of capital for labour in crop production. The cropping sector increased productivity by an average of 4.7 per cent a year between 1984-85 and 1993-94. It appears the cropping sector may be approaching its limit in terms of the capital-labour substitution possible with currently available technologies and hence productivity growth rates have flattened accordingly. Combined with drought impacts, productivity growth in cropping has been negative over the past 10 to 15 years.

i Partial factor productivity in broadacre industries



What else is behind productivity growth?

Input components

Productivity growth estimates often reflect more than simply a shift in the efficiency frontier. Gains can also be made via improvements in allocative efficiency – changing input mix to enable farms to lie on the efficiency frontier (PC 2008). As such, productivity gains in agriculture have come in part from substitution between inputs.

Examining the growth in inputs can be one way to observe how input use has changed over time (table 5). Changes in the amount of output produced relative to a single input factor, such as land, labour or capital, reflected in estimates of partial factor productivity (PFP) growth, also shows the changing efficiency with which farms use certain inputs (figure i).

During the 1980s and 1990s, productivity gains in agriculture came largely from substituting capital for labour. As a result, labour use in

5 Partial productivity growth in the broadacre industries, average annual growth, 1977-78 to 2006-07

	input growth %	partial factor productivity growth %
All broadacre		
Land	-0.7	1.6
Labour	-1.7	2.5
Capital	-1.2	2.1
Purchased inputs	2.4	0.2
Cropping		
Land	1.3	1.9
Labour	-0.2	3.3
Capital	-0.4	3.5
Purchased inputs	4.0	0.6
Mixed crop-livestock		
Land	-1.3	1.3
Labour	-2.4	2.4
Capital	-2.5	2.5
Purchased inputs	1.8	0.3
Beef		
Land	-0.3	2.0
Labour	-0.7	2.3
Capital	0.7	1.0
Purchased inputs	3.5	-0.2
Sheep		
Land	-1.1	-0.3
Labour	-2.5	1.1
Capital	-2.9	1.5
Purchased inputs	-0.1	0.3

agriculture fell by an average of 1.7 per cent a year over the past three decades and farmers have increased their output per unit of labour by an average of 2.5 per cent a year (table 5).

More recently, productivity gains have corresponded with a general reduction in land, labour and capital use in agriculture (table 5). Lower input requirements are mostly attributable to technological progress, however additional use of materials and services has also enabled the reduction in other inputs. Use of materials and services, including fodder, seed, fuel, fertiliser, services etc, increased by 2.4 per cent a year between 1977-78 and 2006-07.

It is questionable whether improving productivity via a switch to materials and services, in place of other inputs, is likely to be sustainable on an ongoing basis. Another concern is that some materials and services are relatively emissions-intensive inputs (eg fuel, fertiliser, etc). An emissions trading scheme is likely to have a relatively greater impact on these inputs, compared with land, labour or capital. It may become costly to continue expanding in this direction. In this case, improving productivity growth through increased use of materials and services, may become less attractive.

Future productivity gains could potentially come via improvements in the quality of materials and services. For example, the CPRS is likely to provide incentives for technological advances which are less energy intensive. This could simultaneously lift productivity growth and reduce the emissions impact of agricultural production. Alternatively, a new wave of technological progress could lead to another shift in input composition.

External factors

External factors continually influence productivity performance, including seasonal patterns, economic conditions and government

policy. Recurring drought is an inherent part of Australian agriculture and part of the environment in which Australian producers must operate (ABARE, 2004). The impact of climate change is likely to have additional implications for productivity into the future. Management strategies which minimise the impacts of drought on output will have long-term productivity benefits as well as improve resilience of agricultural industries.

Similarly, there have been positive external influences affecting productivity growth. These include ongoing structural adjustments and changes in overseas demand for Australian agricultural exports. These changes have fuelled productivity growth by providing farmers with an incentive to innovate and expand output. These factors play an important role in facilitating developments within the industry.

References

- ABARE, 2004, *Australian beef industry productivity*, ABARE report for Meat and Livestock Australia, Research Report 04.2, November 2004
- Harris, D, 2005, *Industry adjustment to policy reform: A case study on the Australian dairy industry*, Report prepared for the Rural Industries Research and Development Corporation, RIRDC Publication no. 05/110, Canberra.
- Nossal, K, Sheng, E Y and Zhao, S 2008, *Productivity in the beef cattle and slaughter lamb industries*, ABARE report 08.13, Canberra, December.
- Productivity Commission 2008, *Annual Report 2007-08*, Annual Report Series, Productivity Commission, Canberra
- Zhao, S, Nossal, K, Kokic, P and Elliston, L 2008, Productivity growth: Australian broadacre and dairy industries, *Australian commodities*, vol. 15, no. 1, March 2008

across Australia in 2009

Regional Outlook CONFERENCES

Conference schedule

QLD	Kingaroy 29 April
WA	Kununurra 20 May
NSW	Armidale 1 July
VIC	Wangaratta 29 July
SA	Clare 26 August
TAS	Devonport 30 September
NT	Darwin 28 October

Discover a new perspective on your region at **ABARE's Regional Outlook conferences**

Held across Australia in 2009, each Regional Outlook conference delivers commodity forecasts and research results directly to rural and regional audiences.

Featuring a diverse range of local speakers, complemented by ABARE economists, the Regional Outlook program is tailored to specific regions, with economic data and commodity forecasts, a focus on regional industries and trends, innovative business stories, agriculture, productivity and climate

change, and the opportunity to make new contacts in the community.

To discover a new perspective on your region, join other delegates, drawn from businesses, government, industry and the community, at the next Regional Outlook conference.

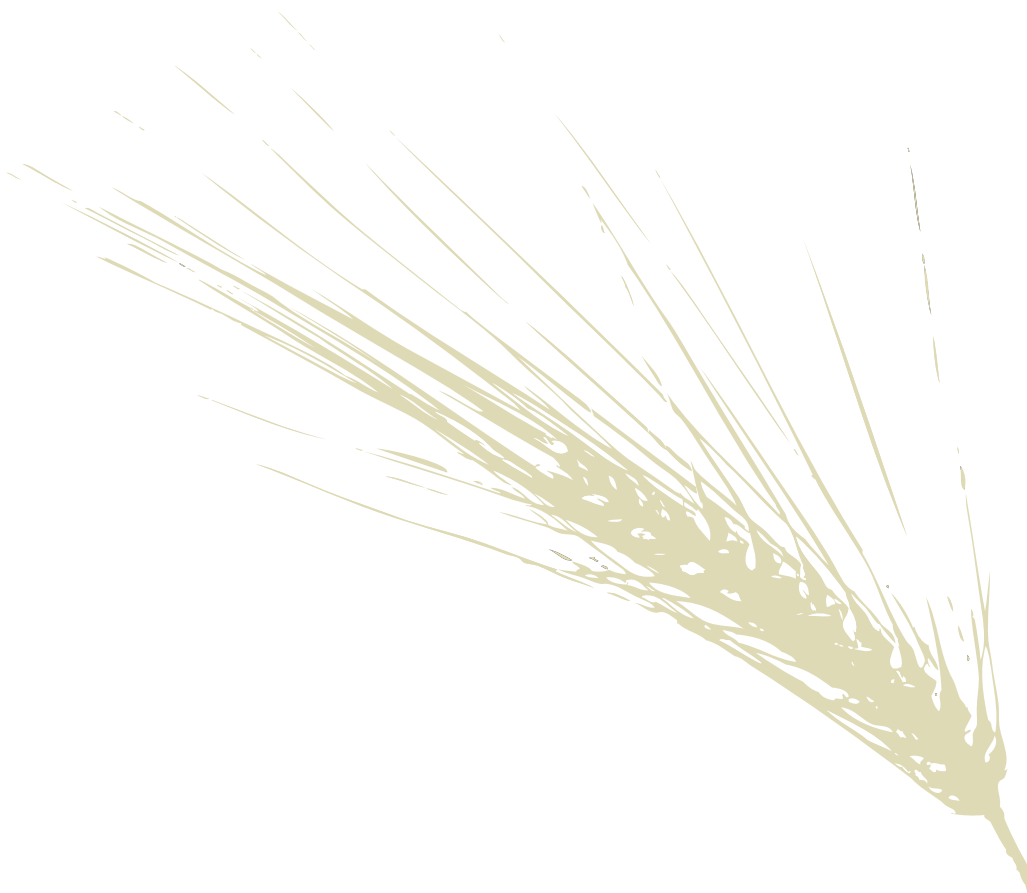
Enquiries

Maree Finnegan
Media, Marketing and
Events Manager
P: +61 2 6272 2260
E: mfinnegan@abare.gov.au
W: abare.gov.au/regional

Conference partner



□ for further information visit abare.gov.au



abare.gov.au

Australian Bureau of Agricultural and Resource Economics

Postal address	GPO Box 1563	Canberra	ACT	2601
Location	7b London Circuit	Canberra	ACT	2601
switchboard	+61 2 6272 2000			