Australian farm survey results

2007-08 to 2009-10

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Contents

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Australian farm survey results
2007-08 to 2009-10

Farm performance

Broadacre and dairy farms - 2007-08 to 2009-10

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- Overall, broadacre farm financial performance is projected to decline in 2009-10 reversing some of the improvement recorded in 2008-09. Average farm cash income is projected to fall from $76 000 in 2008-09 to $62 000 in 2009-10.
- Reduced farm cash incomes are expected for broadacre farms in New South Wales and Queensland as a consequence of reduced crop production combined with lower grain prices and reductions in receipts from beef cattle.
- In Victoria, South Australia and Tasmania, farm cash incomes are projected to rise because of improved seasonal conditions, increases in winter crop production in 2009 and higher prices for wool, sheep and lambs. In Western Australia farm cash incomes are projected to be lower than in 2008-09, but remain relatively high.
- Average farm cash income for dairy farms is projected to decline further in 2009-10 in response to lower prices for manufacturing milk, continued dry conditions and low availability of irrigation water in some dairy regions.
- New investment in vehicles, farm equipment and improvements in 2008-09 was the highest recorded in the past 20 years. Overall, broadacre and dairy farms had strong farm equity at 30 June 2009 and debt servicing has been assisted by historically low interest rates in 2008-09 and 2009-10.

The financial performance of Australian broadacre farms improved in 2007-08 and again in 2008-09 after a record low in 2006-07 which was caused by widespread and severe drought. Farm cash income for broadacre farms increased from an average of $64 220 a farm in 2007-08 to average $76 000 in 2008-09. However, farm cash income for dairy farms declined from $129 310 in 2007-08, the second highest amount in more than 30 years, to $88 000 in 2008-09 as prices for manufacturing milk fell.

In 2009-10, the overall financial performance of Australian broadacre and dairy farms is projected to decline mainly because of significantly lower grain and manufacturing milk prices, a small reduction in beef cattle prices and reduced turn-off of beef cattle and sheep as herd rebuilding commences in response to improved seasonal conditions, particularly in northern regions. Lower overall farm cash incomes are expected despite reduced expenditure on the two most important cost items, fertiliser and interest payments, and improved seasonal conditions are expected to result in a reduction in fodder expenditure during 2009-10.

For broadacre farms, farm cash income is projected to decline to average $62 000 a farm in 2009-10 and farm cash income for dairy farms to decline to average $50 000 a farm.

Improvement in broadacre farm financial performance is projected for Victoria, South Australia and Tasmania in 2009-10. Farm cash incomes for sheep farms generally across the country are projected to improve in 2009-10 with higher wool, sheep and lamb prices, although production remains constrained by low sheep numbers. In southern irrigation regions, farm financial performance remains constrained by shortages of irrigation water.

Financial performance of Australian farms

Broadacre and dairy farms account for 68 per cent of commercial-scale Australian farm businesses (ABS, 2009). These farms 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. Located in all regions across Australia, these farms form a vital part of rural communities and local economies.

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: 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 the expected changes in the short term. Data from ABARE's Australian Agricultural and Grazing Industries Survey (AAGIS) and Australian Dairy Industry Survey (ADIS) have been analysed to gain insights into the performance of Australian broadacre and dairy farms over the period from 2007-08, including projected farm financial performance in 2009-10 (table 1).

ABARE uses the latest data available in producing estimates from its surveys. This means that estimates are revised as new information becomes available. When producing estimates from the 2008-09 farm survey, estimates for 2007-08 were recalculated to reflect updated benchmark information obtained from the ABS. This resulted in some estimates changing from the preliminary estimates previously published.

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

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

Mixed livestock–crops industry: representing those 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: representing the more specialised producers of sheep and wool. The number of properties classified to this 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: representing properties engaged mainly in running beef cattle and which 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: representing properties engaged in running sheep and beef cattle. As for the sheep and beef industries, this industry also contains a large number of small farms.

Farm production

2008-09

High grain, oilseed and grain legume prices in early 2008 led to a large increase in winter crop plantings in 2008-09. Below average spring rainfall in 2008 resulted in low yields in southern Australia. However, in Queensland and northern New South Wales, as well as in the northern grain belt of Western Australia, in-season rainfall and stored soil moisture resulted in a substantial increase in winter crop production. Overall, winter crop production increased by around 50 per cent on broadacre farms in 2008-09 compared with 2007-08. However, rain through the harvest period in many states resulted in a downgrading of grain quality, increased supply of feed grade grains and reduced prices for many growers.

Summer crop production was reduced by around 15 per cent on broadacre farms in 2008-09 relative to 2007-08. Although summer cropping regions of northern New South Wales and southern Queensland had favourable seasonal conditions, the area planted to grain sorghum declined as a result of lower feed grain prices and a reduction in the area of fallow land available. While there was a small increase in the total area planted to both cotton and rice, production of these crops remained low as farms continued to operate with limited availability of irrigation water.

Improved seasonal conditions in far northern Australia in 2008-09 led to a reduction in cattle turn-off as rebuilding of beef cattle herds commenced, although there were some losses of beef cattle as a result of flooding in the Gulf region of Queensland. In southern and eastern parts of Queensland and the Northern Territory dry seasonal conditions continued until late in 2009 and cattle turn-off increased. In southern states, cattle numbers were already reduced because of several dry years and cattle turn-off remained high as continued dry conditions prevented herd rebuilding in 2008-09. Sheep numbers and wool production declined further because of continued high turn-off rates of sheep and lambs for slaughter combined with reduced lambing rates.

Nationally, milk production increased by 1.8 per cent in 2008-09. Production increasing most in Tasmania, Queensland, Western Australia and South Australia, but in New South Wales and, particularly in Victoria, the increase was small. Continued dry conditions in south-eastern mainland regions combined with low irrigation water allocations and reduced farm gate-milk prices led dairy farmers in northern Victoria and southern New South Wales to further reduce dairy cow numbers and milk production.

2009-10

Overall, the total area sown to winter crops increased only marginally on broadacre farms in 2009-10 compared with the area planted in 2008-09. Wheat area expanded slightly as the area planted to barley, canola and lupins was reduced.

Queensland, northern New South Wales, western Victoria and South Australia received good planting rains for winter crops and plantings were augmented after further rain in June. In Queensland, the area planted to winter crops increased by more than 20 per cent and in South Australia the planted area increased by around 2 per cent. However, in southern New South Wales, eastern Victoria and Western Australia, the start to the season was poor before early June rainfall enabled the majority of planting to occur. The total area planted to winter crops fell in southern New South Wales and Victoria. In Western Australia the area planted to winter crops remained similar to 2008-09.

Yields in the major cropping regions of South Australia and Victoria were markedly higher than in 2008-09, reflecting above average rainfall through spring, although high temperatures and rains around harvest time reduced the quality of later sown grain crops. On broadacre farms, winter crop production is estimated to have increased by around 50 per cent in Victoria and is estimated to have increased by around 60 per cent in South Australia. In contrast, winter crop production in Queensland and New South Wales is estimated to have been reduced by around 20 and 30 per cent respectively, because of very dry seasonal conditions through spring. In southern and central New South Wales, late frosts also contributed to lower yields. In Western Australia a dry finish to the season, particularly in the southern wheat belt, reduced yields and with only a small increase in planted area in Western Australia, overall winter crop production is estimated to have been reduced by around 1 per cent relative to 2008-09.

Overall, total winter crop production on Australian broadacre farms increased by around 4 per cent in 2009-10 compared with 2008-09, with wheat production estimated to be around 3 per cent higher, barley production around 4 per cent higher and canola production 3 per cent higher.

Low rainfall in early summer in northern New South Wales and Queensland, combined with a reduction in the area available for summer crops because of large winter crop plantings, led to a reduction in the area planted to grain sorghum in 2009-10 compared with 2008-09. Widespread rains in late summer across Queensland and northern New South Wales improved prospects for summer crops, boosted expected sorghum yields, increased inflows to irrigation storages and perhaps, also, enabled some late planting of sorghum in Queensland.

A small increase in the availability of irrigation water in the Murray-Darling and Murrumbidgee catchment areas led to an increase in the area planted to rice in 2009, but the overall area planted was well below the long-term average. In addition, cotton plantings on broadacre farms increased in 2009-10, which mainly reflected expectations of improved returns from cotton production relative to alternative enterprises.

The late spring rains in Victoria and South Australia boosted pasture growth and encouraged many farmers in these states to hold onto sheep and beef cattle. In contrast, spring was extremely dry across northern and eastern Australia.

Conditions remained dry until late summer when above average rainfall occurred across most of northern Australia and into New South Wales, although parts of southern and eastern Queensland, the Northern Territory and New South Wales still remained dry late in summer. This rainfall is expected to significantly improve grazing conditions across

northern Australia, together with northern and eastern New South Wales, leading to a substantial reduction in cattle turn-off as farms retain stock and commence herd and flock rebuilding.

Despite some improvement in seasonal conditions and increased availability of irrigation water, low farm-gate prices for manufacturing milk in 2009-10 are estimated to have resulted in a reduction in milk production in all states except Queensland and New South Wales. In recent years, milk production in the irrigation areas of northern Victoria and southern New South Wales has declined markedly as a result of drought and low water allocations in the Murray-Darling irrigation system. With better rainfall in catchment areas in spring 2009, water allocations for 2009-10 have improved, but availability of irrigation water still remains relatively low for many broadacre and dairy farms in 2009-10.

Farm receipts

2008-09

In 2008-09, increased crop production raised average crop receipts by around 2 per cent a farm, despite falls in grain and oilseed prices (figure a).

A small reduction in sales of both sheep and lambs was more than offset by the higher prices received resulting in sheep and lamb receipts increasing by an average of 12 per cent for broadacre farms in 2008-09.

Average wool receipts per farm declined by 23 per cent for broadacre farms in 2008-09 as reductions in wool production resulting from drought and reduced sheep numbers combined with lower prices resulting from weak export demand.

The number of beef cattle sold fell by 2 per cent on broadacre farms, but prices received per head sold were higher than in 2007-08, partly reflecting improved quality of the cattle turned off, resulting in average beef cattle receipts per farm increasing by 3 per cent in 2008-09.

At the national level, average total cash receipts for broadacre farms fell by 2 per cent in 2008-09; increased receipts from livestock sales and crops were outweighed by reductions in receipts for wool, together with reductions in government drought assistance payments to farm businesses.

2009-10

In 2009-10, average crop receipts per farm are projected to fall by 7 per cent with increases in total crop production more than offset by lower grain, oilseed and pulse prices (figure a).

Significantly higher saleyard prices for sheep are projected to more than offset lower turn-off of sheep, resulting in an increase of around 3 per cent in average sheep receipts per farm.

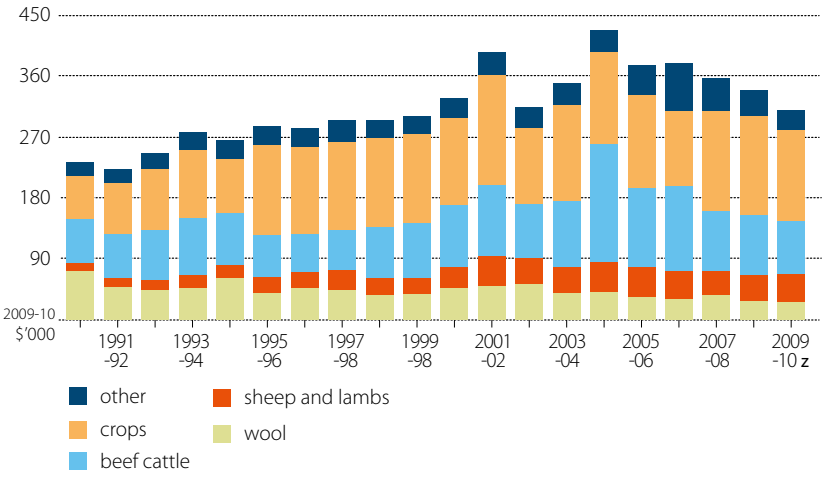
A small increase in turn-off of lambs, combined with an increase in forecast lamb prices, is expected to result in lamb receipts increasing by around 3 per cent in 2009-10.

Despite a forecast increase in wool prices, average wool receipts are projected to increase only slightly in 2009-10 from 2008-09. Wool sold per farm is expected to fall because of a further reduction in sheep numbers and lower wool cuts per head because of dry seasonal conditions in 2009.

Reductions in beef cattle turn-off from broadacre farms combined with lower saleyard prices is projected to result in a reduction in average beef cattle receipts per farm of around 6 per cent in 2009-10.

Average total cash receipts for broadacre farms are projected to fall by 8 per cent in 2009-10, with reduced crop and beef cattle receipts, outweighing small increases in receipts from sheep, lambs and wool.

a Farm cash receipts, broadacre industries



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 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 2009-10 projections are based on data collected via on-farm interviews and telephone interviews in the period October to December 2009. 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 2009-10 financial year. Modifications have been made to expected receipts and expenditure for the remainder of 2009-10 where significant price change has occurred post interview.

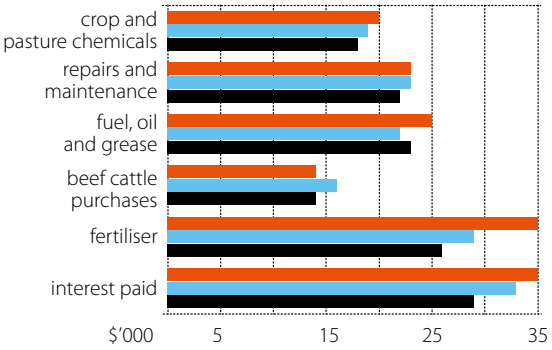
Farm costs

2008-09

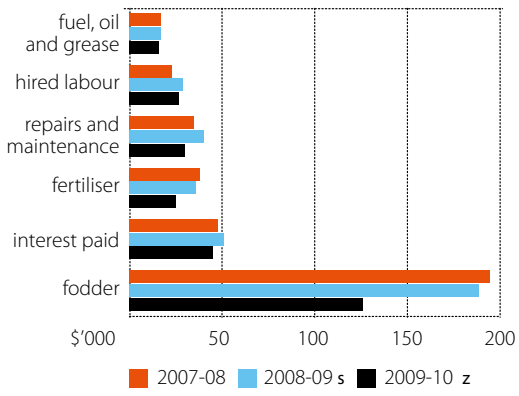
Increases in fertiliser prices during 2007-08 resulted in fertiliser becoming the equal largest item, together with interest on borrowings, of cash expenditure for broadacre farms in that year (figure b). Farm business debt has risen over time and, with increases in interest rates in 2007-08, both interest paid and fertiliser expenditure reached historical highs. Fertiliser prices fell in the second half of 2008-09 when the majority of broadacre farms normally purchase fertiliser and interest rates were reduced from October in response to the global financial crisis, which lowered average expenditure on both items. However, with farm business debt remaining high, interest paid became the single largest item of expenditure for broadacre farms in 2008-09. Overall total cash costs for broadacre farms declined 6 per cent in 2008-09 reflecting lower expenditure on fuel as a result of lower fuel prices combined with reduced fertiliser and interest expenditure.

For dairy farms, purchase of fodder including grains, hay, silage and concentrates has remained the largest item of farm expenditure for all of the past decade. In 2008-09, fodder prices fell significantly because of lower feed grain and hay prices. However, purchases of fodder remained high with many dairy farms in southern New South Wales and northern Victoria increasing purchases in response to low irrigation water allocations, and as farms generally sought to increase milk production with seasonal conditions remaining dry. In addition, expenditure on interest, the second largest expense item for dairy farms, increased despite reductions in interest rates because of an increase in average farm debt per farm, which was partially driven by increased farm investment. Overall, average total cash costs for dairy farms are estimated to have increased by 6 per cent in 2008-09, with an increase in most cash cost categories.

b Major cash costs
broadacre farms



Major cash costs
dairy farms



s Preliminary estimate. **z** Provisional projection.

2009-10

For broadacre farms, average total cash costs are projected to fall by 3 per cent in 2009-10 mainly as a result of reduced expenditure on fodder and fertiliser and lower interest payments. Improved seasonal conditions combined with lower feed grain and hay prices are expected to reduce fodder expenditure. Fertiliser prices are forecast to be lower in 2009-10. Interest payments are projected to be lower because of lower average interest rates in 2009-10, relative to the higher interest rates applying in the second half of 2008-09, and despite expected increases in farm debt. Reductions in these costs are projected to more than outweigh increases in expenditure caused by higher fuel prices and increased expenditure associated with harvesting and marketing a larger winter grain crop in 2009-10.

Dairy industry expenditure is projected to reduce by 26 per cent, which is a sharp response to lower milk receipts in 2009-10. As in the broadacre industries, reductions are expected to be largest for fodder, fertiliser and interest payments.

Farm incomes and profits

The financial performance of Australian broadacre farms is projected to decline, on average, in 2009-10, reversing the improvement recorded in 2008-09.

Nationally, average farm cash income for broadacre farms increased from $64 220 in 2007-08 to $76 000 in 2008-09 and is projected to decline to $62 000 in 2009-10 (table 1) which is around 19 per cent below the average for the 10 years to 2008-09 of $77 000 (in real terms – figure c, table 1). Lower grain, oilseed and beef cattle prices, combined with a reduction in beef cattle turn-off and wool production, are projected to outweigh increases in crop production and reductions in expenditure on fodder, fertiliser and interest payments, to result in this fall in average farm cash income.

1 Financial performance, all broadacre industries

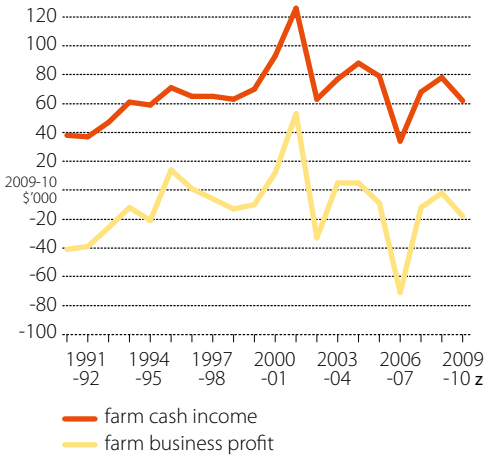
average per farm

		2007-08	2008-09 s		2009-10 z
Total cash receipts	$	338 650	336 600	(3)	311 000
Total cash costs	$	274 430	260 700	(4)	250 000
Farm cash income	$	64 220	76 000	(6)	62 000
Farms with negative farm cash income	%	34	29	(6)	29
Farm business profit	$	–11 310	–1 500	(288)	–18 000
Farms with negative farm business profit	%	68	68	(2)	70
Profit at full equity					
– excl. cap. appreciation	$	29 380	36 600	(12)	18 000
– incl. cap. appreciation	$	84 360	40 600	(29)	na
Farm capital at 30 June a	$	3 898 150	3 800 300	(2)	na
Net capital additions	$	40 110	43 500	(22)	na
Farm debt at 30 June b	$	413 060	409 000	(5)	418 000
Change in debt -1 July to 30 June b	%	8	4	(43)	4
Equity at 30 June bc	$	3 362 320	3 234 200	(3)	na
Equity ratio bd	%	89	89	(1)	na
Harvest loans at 30 June e	$	5 870	2 200	(30)	na
Farm liquid assets at 30 June b	$	142 710	153 300	(8)	na
Farm management deposits (FMDs) at 30 June b	$	28 160	28 800	(9)	na
Share of farms with FMDs at 30 June b	%	22	22	(7)	na
Rate of return g					
– excl. cap. appreciation	%	0.8	1.0	(12)	0.5
– incl. cap. appreciation	%	2.2	1.1	(29)	na
Off-farm income of owner manager and spouse b	$	34 030	35 800	(5)	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. **g** Rate of return to farm capital at 1 July. **s** Preliminary estimate. **z** Provisional projection. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

C Financial performance, all broadacre industries

average per farm



For the dairy industry, farm financial performance is projected to fall sharply in 2009-10 because of lower milk prices, particularly for manufactured dairy products, and despite the substantial reductions expected in farm expenditure. Nationally, average farm cash income for dairy farms fell from an historical high of $129 310 in 2007-08 to $88 000 in 2008-09 and is projected to fall to $50 000 in 2009-10 (table 5), which is well below the average for the 10 years to 2008-09 of $91 000 (in real terms – figure f).

Farm cash income is a measure of the cash funds generated by the farm business 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 is farm business profit as it takes into account capital depreciation and changes in inventories of livestock, fodder, grain and wool.

Average farm business profit in the broadacre industries is projected to be reduced by a slightly larger amount in 2009-10 than the reduction in farm cash income (table 1). This is partly because a high level of new investment in farm plant, machinery and improvements in 2008-09 resulted in increased depreciation in 2009-10 and partly because only a small change is expected in the value of trading stocks as an increase in stocks in some states is mostly balanced by reductions in others. The value of grain stocks on-farm is expected to increase in Victoria but to be reduced in Queensland. Similarly, little change is expected in the value of livestock inventories. Small increases are expected in cattle numbers in some northern regions, but small reductions or little change expected in southern regions. In addition, a small reduction is expected in sheep numbers during 2009-10.

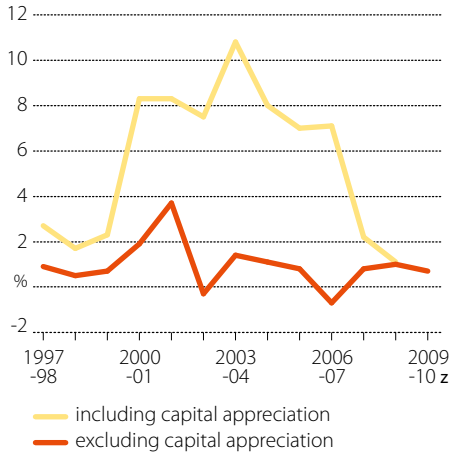
On average, broadacre farm businesses are projected to realise a farm business loss of $18 000, compared with a loss of $1500 in 2008-09.

For dairy industry farms, the reduction in farm cash income is projected to result in a decline in farm business profit from $6700 per farm in 2008-09 to a loss of $44 000 per farm in 2009-10.

Rates of return

The average rate of return to total farm capital including capital appreciation for broadacre farms was relatively high between 2000-01 and 2006-07 but declined in 2007-08 and 2008-09 (figure d). Strong demand for rural land during most of the 2000s has resulted in a sharp increase in land values in most agricultural regions, which has raised the total capital value of farms. Rapidly rising farm capital values resulted in high rates of return, including capital appreciation. However, from 2007-08 increases in land values have been much smaller, particularly in northern Australia and in higher rainfall areas where the growth in land prices had been strong through the early and mid-2000s. Slower growth in land values in 2008-09 is estimated to have resulted in a much lower average rate of return to total farm capital, including capital appreciation.

d Return on capital
broadacre industries



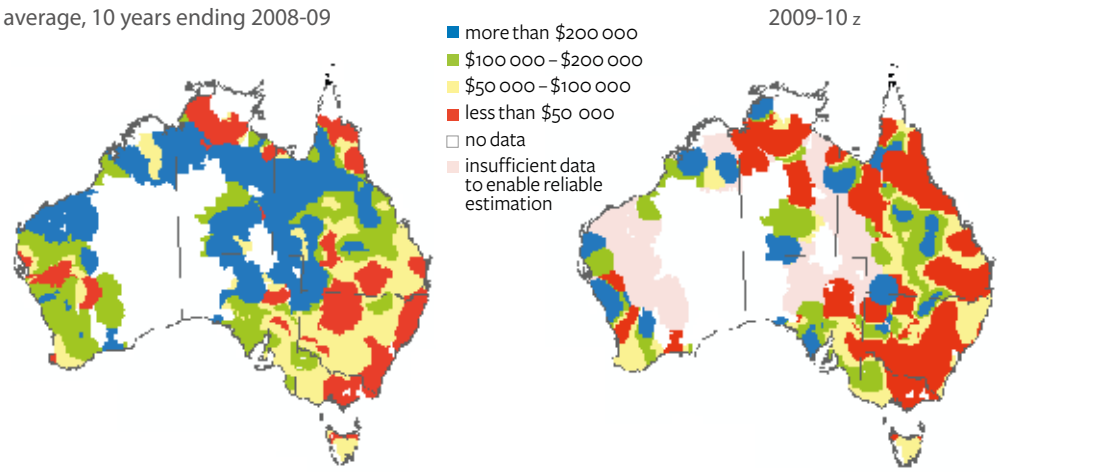
Rates of return excluding capital appreciation for broadacre farms have been adversely affected in many regions by a number of poor profit years resulting from adverse seasonal conditions and reduced grain prices in 2008-09 and 2009-10. Rises in total farm capital values as a consequence of increases in land values in recent years have also acted to reduce rates of return excluding capital appreciation. With lower farm business profits projected for broadacre farms in 2009-10, average rates of return excluding capital appreciation are expected to fall from 1 per cent in 2008-09 to 0.5 per cent in 2009-10 (figure e).

In 2009-10, the highest average rate of return excluding capital appreciation are projected for South Australia, Western Australia, the Northern Territory and Victoria (table 2); and for cropping farms and sheep farms (table 4).

Performance, by state

Projected farm financial performance for 2009-10 and how this performance ranks in historical terms varies markedly across states and regions (table 2 and 3, together with map 1).

map 1 **Farm cash income, broadacre and dairy farms**



New South Wales

Lower farm cash incomes are projected in 2009-10 for most grain growing areas with the exception of parts of north western New South Wales, where relatively large increases in grain production are estimated to have increased farm receipts. Elsewhere in New South Wales smaller cropping areas, poor spring rainfall and high temperatures resulted in reduced grain production and, in combination with lower grain prices, led to lower farm cash incomes.

Farm cash incomes for livestock farms in north eastern areas are projected to be maintained by increases in turn-off of beef cattle, sheep and lambs. However, in most other regions farm cash incomes for beef cattle and sheep farms are expected to remain relatively low being constrained by livestock numbers and low turn-off as some herd and flock rebuilding occurs following improvement in seasonal conditions in late 2009 and early 2010. The benefits of higher wool prices are expected to be limited by lower wool production in 2009-10, particularly in southern regions.

On average, farm cash income of broadacre farms in New South Wales is projected to fall from $50 800 in 2008-09 to $23 000 a farm in 2009-10 (table 2), which is less than half the average farm cash income for the 10 years to 2008-09.

Victoria

Farm cash income for Victorian cropping farms is estimated to have increased in 2009-10, relative to 2008-09, with improved seasonal conditions resulting in a large increase in grain production, more than offsetting the effect of lower grain and oilseed prices and raising crop receipts.

Receipts from sheep, lambs and wool are projected to increase because of higher prices and to underpin farm cash incomes for many livestock producers. However, receipts from beef cattle farms are projected to be reduced, with lower turn-off, as better seasonal conditions particularly in the south-west encourage farmers to hold on to stock.

On average, farm cash incomes for broadacre farms in Victoria are projected to rise to average $79 000 a farm in 2009-10 (tables 2 and 3) which is 25 per cent above the average farm cash income recorded for the 10 years to 2008-09.

2 Financial performance, by state, broadacre industries

average per farm

	farm cash income				farm business profit a			
	2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
	$	$		$	$	$		$
Broadacre industries								
New South Wales	18 680	50 800	(12)	23 000	–59 170	–21 800	(27)	–54 000
Victoria	77 910	40 800	(13)	79 000	12 490	–29 900	(19)	10 000
Queensland	69 530	82 600	(12)	47 000	18 090	19 800	(49)	–22 000
Western Australia	118 130	216 600	(10)	115 000	24 370	96 200	(23)	–5 000
South Australia	76 690	64 800	(13)	104 000	–14 310	–19 800	(42)	22 000
Tasmania	37 440	39 400	(26)	60 000	–49 030	–26 400	(38)	5 000
Northern Territory	888 090	–101 400	(237)	55 000	382 950	–112 600	(211)	43 000
Australia	64 220	76 000	(6)	62 000	–11 310	–1 500	(280)	–18 000

	rate of return excluding capital appreciation b				rate of return including capital appreciation			
	2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
	%	%		%	%	%		%
Broadacre industries								
New South Wales	–0.6	0.5	(37)	–0.7	–0.1	0.5	(79)	na
Victoria	1.4	–0.3	(67)	1.1	4.9	0.9	(131)	na
Queensland	1.2	1.1	(15)	0.3	1.4	0.6	(96)	na
Western Australia	2.0	3.2	(14)	1.2	4.3	3.8	(16)	na
South Australia	0.6	0.5	(57)	1.8	1.8	0.2	(395)	na
Tasmania	–0.9	–0.1	(300)	0.8	2.1	0.6	(150)	na
Northern Territory	2.6	0.4	(384)	1.7	10.3	–2.0	(73)	na
Australia	0.8	1.0	(11)	0.5	2.2	1.1	(28)	na

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

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

3 Financial performance, by state, all broadacre industries

average per farm

		New South Wales				Victoria			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	256 350	292 800	(7)	254 000	265 280	199 200	(4)	237 000
Total cash costs	$	237 670	242 000	(8)	231 000	187 370	158 400	(5)	157 000
Farm cash income	$	18 680	50 800	(12)	23 000	77 910	40 800	(13)	79 000
Farms with negative farm cash income	%	41	33	(11)	35	26	27	(15)	17
Farm business profit	$	–59 170	–21 800	(27)	– 54 000	12 490	–29 900	(19)	10 000
Farms with negative farm business profit	%	78	74	(4)	78	66	70	(6)	64
Profit at full equity									
– excl. cap. appreciation	$	–21 460	16 400	(38)	–22 000	38 180	–8 000	(65)	31 000
– incl. cap. appreciation	$	–2 540	17 500	(79)	na	138 430	25 100	(131)	na
Farm capital at 30 June a	$	3 339 190	3 234 700	(4)	na	2 904 190	2 859 200	(8)	na
Net capital additions	$	24 150	30 400	(35)	na	28 580	26 900	(56)	na
Farm debt at 30 June b	$	394 010	407 600	(9)	409 000	236 580	225 800	(9)	228 000
Change in debt – 1 July to 30 June b	%	8	3	(63)	6	11	5	(118)	1
Equity at 30 June bc	$	2 873 850	2 754 600	(4)	na	2 628 590	2 594 800	(8)	na
Equity ratio bd	%	88	87	(1)	na	92	92	(1)	na
Harvest loans at 30 June e	$	130	200	(89)	na	0	0	(99)	na
Farm liquid assets at 30 June b	$	113 930	134 800	(13)	na	143 260	141 800	(21)	na
Farm management deposits (FMDs) at 30 June b	$	19 660	21 700	(18)	na	28 410	19 200	(17)	na
Share of farms with FMDs at 30 June b	%	16	19	(14)	na	24	22	(16)	na
Rate of return g									
– excl. cap. appreciation	%	–0.6	0.5	(37)	–0.7	1.4	–0.3	(67)	1.1
– incl. cap. appreciation	%	–0.1	0.5	(79)	na	4.9	0.9	(131)	na
Off–farm income of owner manager and spouse b	$	33 160	43 100	(7)	na	42 530	38 300	(13)	na

		Queensland				Western Australia			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	343 300	338 000	(6)	270 000	608 820	708 100	(6)	631 000
Total cash costs	$	273 770	255 400	(7)	224 000	490 690	491 500	(6)	516 000
Farm cash income	$	69 530	82 600	(12)	47 000	118 130	216 600	(10)	115 000
Farms with negative farm cash income	%	34	28	(16)	40	39	28	(20)	32
Farm business profit	$	18 090	19 800	(49)	–22 000	24 370	96 200	(23)	–5 000
Farms with negative farm business profit	%	64	62	(4)	73	59	52	(9)	64
Profit at full equity									
– excl. cap. appreciation	$	65 760	62 000	(16)	15 000	95 580	160 200	(14)	64 000
– incl. cap. appreciation	$	75 910	32 600	(96)	na	200 610	186 400	(16)	na
Farm capital at 30 June a	$	5 601 170	5 452 800	(4)	na	4 851 520	5 001 200	(6)	na
Net capital additions	$	18 850	16 400	(111)	na	108 900	118 500	(40)	na
Farm debt at 30 June b	$	523 640	497 800	(11)	465 000	668 570	683 900	(9)	779 000
Change in debt - 1 July to 30 June b	%	7	3	(77)	7	6	3	(138)	1
Equity at 30 June bc	$	4 861 900	4 688 600	(4)	na	4 128 510	4 012 900	(6)	na
Equity ratio bd	%	90	90	(1)	na	86	85	(2)	na
Harvest loans at 30 June e	$	0	1 000	(81)	na	41 020	14 000	(33)	na
Farm liquid assets at 30 June b	$	166 510	153 000	(21)	na	161 780	207 800	(21)	na
Farm management deposits (FMDs) at 30 June b	$	36 250	35 200	(17)	na	33 710	57 100	(19)	na
Share of farms with FMDs at 30 June b	%	24	23	(14)	na	24	32	(18)	na
Rate of return g									
– excl. cap. appreciation	%	1.2	1.1	(15)	0.3	2.0	3.2	(14)	1.2
– incl. cap. appreciation	%	1.4	0.6	(96)	na	4.3	3.8	(16)	na
Off-farm income of owner manager and spouse b	$	29 670	25 400	(7)	na	29 140	28 000	(13)	na

continued...

3 Financial performance, by state, all broadacre industries

average per farm *continued*

		South Australia				Tasmania			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	336 310	305 900	(5)	334 000	233 160	226 200	(7)	240 000
Total cash costs	$	259 620	241 100	(4)	230 000	195 720	186 800	(7)	180 000
Farm cash income	$	76 690	64 800	(13)	104 000	37 440	39 400	(26)	60 000
Farms with negative farm cash income	%	21	26	(14)	11	36	27	(27)	37
Farm business profit	$	–14 310	–19 800	(42)	22 000	–49 030	–26 400	(38)	5 000
Farms with negative farm business profit	%	61	70	(6)	59	78	70	(11)	63
Profit at full equity									
– excl. cap. appreciation	$	17 780	14 200	(58)	53 000	–28 140	–3 000	(300)	27 000
– incl. cap. appreciation	$	55 220	5 700	(395)	na	66 600	19 100	(149)	na
Farm capital at 1 July a	$	3 112 300	3 104 100	(5)	na	3 258 180	3 352 700	(6)	na
Net capital additions	$	60 440	77 800	(45)	na	27 480	9 600	(310)	na
Farm debt at 30 June b	$	338 510	314 500	(8)	315 000	212 590	272 500	(14)	281 000
Change in debt –1 July to 30 June b	%	9	6	(56)	3	11	10	(47)	1
Equity at 30 June bc	$	2 670 500	2 602 700	(5)	na	3 016 550	3 046 100	(7)	na
Equity ratio bd	%	89	89	(1)	na	93	92	(1)	na
Harvest loans at 30 June e	$	3 320	1 700	(50)	na	0	0	()	na
Farm liquid assets at 30 June b	$	160 990	165 200	(14)	na	144 350	191 100	(27)	na
Farm management deposits (FMDs) at 30 June b	$	29 430	29 700	(23)	na	31 730	18 200	(57)	na
Share of farms with FMDs at 30 June b	%	25	22	(22)	na	21	16	(44)	na
Rate of return g									
– excl. cap. appreciation	%	0.6	0.5	(57)	1.8	–0.9	-0.1	(300)	0.8
– incl. cap. appreciation	%	1.8	0.2	(395)	na	2.1	0.6	(150)	na
Off-farm income of owner manager and spouse b	$	30 420	34 200	(7)	na	52 670	36 100	(20)	na

		Northern Territory				Australia			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	2 782 490	1 692 200	(17)	866 000	338 650	336 600	(3)	311 000
Total cash costs	$	1 894 400	1 793 600	(19)	810 000	274 430	260 700	(3)	250 000
Farm cash income	$	888 090	–101 400	(237)	55 000	64 220	76 000	(6)	62 000
Farms with negative farm cash income	%	43	59	(15)	34	34	29	(6)	29
Farm business profit	$	382 950	–112 600	(211)	43 000	–11 310	–1 500	(280)	–18 000
Farms with negative farm business profit	%	47	64	(8)	51	68	68	(2)	70
Profit at full equity									
– excl. cap. appreciation	$	502 270	62 300	(384)	226 000	29 380	36 600	(12)	18 000
– incl. cap. appreciation	$	2 002 680	–346 200	(73)	na	84 360	40 600	(28)	na
Farm capital at 30 June a	$	20 553 980	17 089 700	(14)	na	3 898 150	3 800 300	(2)	na
Net capital additions	$	173 940	115 300	(120)	na	40 110	43 500	(22)	na
Farm debt at 30 June b	$	1 308 610	2 178 700	(29)	2 379 000	413 060	409 000	(5)	418 000
Change in debt –1 July to 30 June b	%	1	5	(79)	2	8	4	(40)	4
Equity at 30 June bc	$	12 347 250	11 184 500	(14)	na	3 362 320	3 234 200	(2)	na
Equity ratio bd	%	90	84	(3)	na	89	89	(1)	na
Harvest loans at 30 June e	$	0	0	()	na	5 870	2 200	(28)	na
Farm liquid assets at 30 June b	$	227 310	78 800	(38)	na	142 710	153 300	(8)	na
Farm management deposits (FMDs) at 30 June b	$	136 460	25 700	(79)	na	28 160	28 800	(8)	na
Share of farms with FMDs at 30 June b	%	23	5	(55)	na	22	22	(7)	na
Rate of return g									
– excl. cap. appreciation	%	2.6	0.4	(384)	1.7	0.8	1.0	(11)	0.5
– incl. cap. appreciation	%	10.3	–2.0	(73)	na	2.2	1.1	(28)	na
Off-farm income of owner manager and spouse b	$	14 850	53 300	(38)	na	34 030	35 800	(5)	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. **g** Rate of return to farm capital at 1 July. **s** Preliminary estimates. **z** Provisional projection. **na** Not available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

Queensland

Queensland farm cash incomes are projected to fall significantly in 2009-10 because of substantial reductions in crop production combined with lower grain prices, reduced beef cattle turn-off and lower cattle prices. Receipts from summer crops are expected to be significantly reduced in 2009-10 relative to 2008-09. Yield prospects for summer crops appear good at this time, being boosted by late summer rainfall. However, the area planted to grain sorghum is estimated to be lower in 2009-10 than 2008-09 because of a dry spring and early summer, the large area planted to winter crops and continued rainfall through the latter part of the summer planting period.

Improved seasonal conditions in 2009-10 are expected to result in a reduction in turn-off of beef cattle as farmers commence rebuilding herds following dry conditions in 2008-09. Lower turn-off, combined with a small reduction in beef cattle prices is projected to reduce beef cattle receipts.

Overall, farm cash incomes for broadacre farms in Queensland are projected to fall to average $47 000 a farm in 2009-10 (tables 2 and 3) which is around 45 per cent below the average farm cash income recorded for the 10 years to 2008-09.

Reduction in grain stocks on-farm and little change overall in beef cattle numbers during 2009-10 are projected to result in a fall in the average value of stocks on-farm resulting in a slightly larger reduction in farm business profit in 2009-10.

Western Australia

Western Australian broadacre farm cash incomes are projected to fall in 2009-10, but nevertheless remain relatively high in historical terms. Winter crop production is estimated to have declined slightly compared with 2008-09 and, with lower grain prices, is projected to result in lower receipts from the 2009-10 crop. However, substantial pool payments for grain delivered in 2008-09 will cushion the reduction in crop receipts in 2009-10. Overall, crop receipts are projected to decline by around 12 per cent in 2009-10 compared with 2008-09.

Receipts from sheep, lambs and wool are expected to increase slightly, but receipts from beef cattle are projected be reduced by slightly lower turn-off.

Farm cash income for Western Australia broadacre farms is projected to average $115 000 (tables 2 and 3). While significantly lower than the record farm cash income is estimated for 2008-09 of $216 600, the average farm cash income projected for 2009-10 is only around 3 per cent below the average for the 10 years ending 2008-09.

South Australia

Despite lower grain prices, South Australian broadacre farm cash incomes are projected to increase substantially in 2009-10 as a result of much higher grain production compared with 2007-08 and 2008-09. Beef cattle receipts are expected to be reduced because of reduced turn-off. Receipts from sheep and lambs are expected to increase because of higher prices and despite a reduction in sheep turn-off. Wool receipts are projected to increase slightly as higher prices are mostly offset a small reduction in wool sold.

Farm cash incomes for broadacre farms in South Australia are projected to rise to average $104 000 a farm in 2009-10 (tables 2 and 3) which is around 4 per cent above the average farm cash income recorded for the 10 years to 2008-09.

Tasmania

Tasmanian broadacre farm cash incomes are projected to increase in 2009-10 with improved seasonal conditions and higher wool prices. This follows several years in which dry seasonal conditions reduced sheep and cattle numbers and severely constrained crop and livestock production. Turn-off of sheep and cattle is expected to be reduced as farms hold onto stock to rebuild flocks and herds. Reduced cattle turn-off together with weaker prices is expected to reduce receipts from beef cattle, but increases in sheep and lamb prices are expected to result in higher sheep and lamb receipts. A reduction in average total cash costs is also expected to contribute to increased farm cash income with lower expenditure on fodder and interest payments, although some increase is expected in livestock purchase expenditure.

4 Financial performance of broadacre farms, by industry

average per farm

	farm cash income			farm business profit a		
	2007-08 $	2008-09 s $	2009-10 z $	2007-08 $	2008-09 s $	2009-10 z $
Wheat and other crops	115 440	175 800	132 000	2 390	52 000	3 000
Mixed livestock crops	76 730	74 700	65 000	–10 880	–4 900	–25 000
Beef industry	40 090	48 400	26 000	–15 490	–13 700	–33 000
Sheep	56 860	42 800	57 000	–13 670	–22 900	–2 000
Sheep beef	35 050	60 900	64 000	–20 280	–5 100	–8 000
All broadacre industries	64 220	76 000	62 000	–11 310	–1 500	–18 000
Dairy	129 310	88 000	50 000	65 830	6 700	–44 000

	rate of return excluding capital appreciation			rate of return including capital appreciation	
	2007-08 %	2008-09 s %	2009-10 z %	2007-08 %	2008-09 s %
Wheat and other crops	1.9	2.9	1.7	4.3	3.3
Mixed livestock crops	0.9	1.0	0.4	2.9	1.5
Beef industry	0.3	0.4	–0.2	0.8	0.1
Sheep	0.5	0.0	0.8	3.8	0.5
Sheep beef	0.3	0.6	0.4	0.7	0.0
All broadacre industries	0.8	1.0	0.5	2.2	1.1
Dairy	3.7	1.9	0.4	10.4	1.2

a Defined as profit at full equity, excluding capital appreciation, as a percentage of total opening capital. Profit at full equity is defined as farm business profit plus rent, interest and lease payments less depreciation on leased items. **s** Preliminary estimate. **z** Provisional projection.

Farm cash incomes for broadacre farms in Tasmania are projected to rise to average $60 000 a farm in 2009-10 (tables 2 and 3), which is around 10 per cent above the average farm cash income recorded for the 10 years to 2008-09.

A small increase in livestock numbers, grain and fodder stocks on farm are projected to increase the value of on-farm inventories and build on higher farm cash income to result in average farm business profit being positive ($5000 per farm) for the first time in several years (tables 2 and 3).

Northern Territory

Seasonal conditions were very dry in 2007-08 in southern and eastern regions of the Northern Territory, which resulted in high turn-off of beef cattle.

In 2008-09 seasonal conditions improved in northern areas reducing cattle turn-off and lowering farm cash income. The effect on farm business profit was lesser because of some increase in cattle numbers.

With improved summer rainfall in 2009-10 grazing conditions are projected to improve across most of the Northern Territory and many cattle stations are expected to begin rebuilding cattle numbers. Cattle turn-off is projected to be reduced and cattle purchases and transfers, in the case of corporate properties, are projected to increase. Farm cash income is projected to increase in 2009-10, but is expected to be relatively low in historical terms.

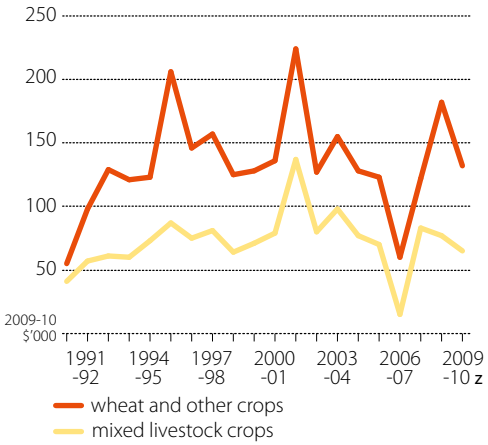
Performance, by industry

Summary information on financial performance in Australian broadacre and dairy industries is provided in table 4 and figures e and f.

Wheat and other crops industry

Average farm cash income for the wheat and other crops industry improved in 2008-09 on the back of increased grain production in New South Wales, Queensland and Western Australia. The increase occurred despite lower grains prices, and increases in total cash costs resulting mainly from higher expenditure on crop chemicals and costs of harvesting and marketing a larger crop than in 2007-08 (figure e1).

e1 Farm cash income, grains industries average per farm



In 2009-10, lower grain and oilseed prices, together with reduced crop production in New South Wales and Queensland are projected to result in average farm cash income declining despite increased grain production in Victoria and South Australia. Total cash costs are projected to fall slightly with lower fertiliser expenditure, the largest cost item for wheat and other crops industry farms as well reductions in interest payments. Farm cash income is projected to average $132 000 a farm in 2009-10 which is around 4 per cent below the industry average for the previous 10 years (tables 4 and 5, and figure e1).

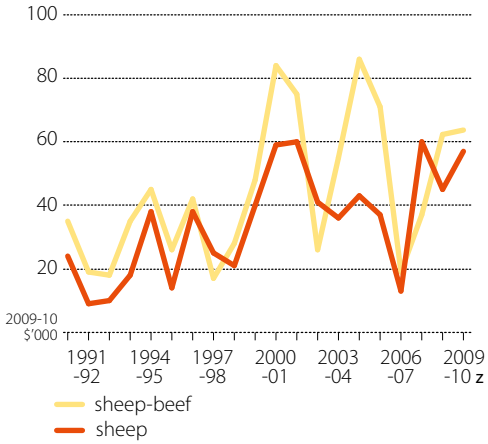
Despite lower farm cash incomes, wheat and other crops industry farms are projected to still record the highest rates of return among the surveyed industries in 2009-10 (table 4).

Mixed livestock–crops industry

Average farm cash income for mixed livestock-crops industry farms in 2008-09 was similar to that recorded in 2007-08, but there were marked differences in performance across states. Overall, reductions in grain and wool receipts, resulting from lower grain prices combined with reductions in both wool prices and production, were mostly offset by reductions in cash costs, particularly fertiliser expenditure and interest payments.

In 2009-10, despite lower grain prices, increased crop production in Victoria and South Australia combined with higher sheep and wool receipts are projected to result in a small increase in total cash receipts. However, increases in expenditure required to harvest and market the larger grain crop, together with increased expenditure on sheep purchases, are projected to increase average total cash costs by around 5 per cent. Average farm cash income for mixed livestock-crops industry farms is projected to decline to average $65 000 in 2009-10 which is around 4 per cent below the industry average for the previous 10 years (figure e1).

e2 Farm cash income, sheep industries average per farm



Sheep industry

In 2008-09, a fall in wool prices together with a small reduction in the number of sheep and lambs sold resulted in a fall in sheep industry farm cash income despite support from strong sheep and lamb prices and reduced expenditure on fertiliser, fuel and interest payments (tables 4 and 5, and figure e2).

In 2009-10, farm cash income for sheep industry farms is projected to increase to average $57 000 a farm (table 4 and figure e2) which is around 30 per cent above the average for the past 10 years. This increase is mainly because of increases in sheep receipts resulting from higher saleyard prices together with a small increase in wool receipts. The increase in wool receipts is projected to be small as higher wool prices will be mostly offset by reductions in wool for sale as a result of dry seasonal conditions in many regions and reductions in sheep numbers during 2008-09. Total cash costs are projected to be reduced by around 4 per cent, mainly because of lower interest payments and reduced fodder expenditure resulting from an improvement in seasonal conditions and lower fodder prices in 2009-10.

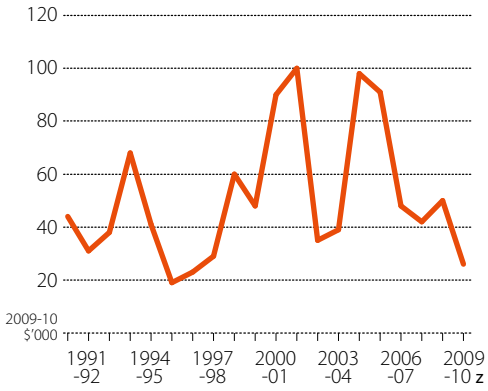
Sheep–beef industry

In 2008-09, farms in southern states and northern New South Wales increased turn-off of beef cattle and sheep. This increased turn-off combined with higher sheep and lamb prices resulted in higher total cash receipts that more than offset the effect of lower wool receipts as a consequence of lower wool prices and production. Total cash costs were lower because of interest payments and a reduction in expenditure on purchase of beef cattle and sheep. Increased receipts and lower cash costs resulted in farm cash income rising to average $60 900 a farm in 2008-09 (table 4).

In 2009-10, turn-off of beef cattle and sheep is expected to be reduced and wool production is also expected to be lower. Despite increases in sheep and wool prices, reduced sales volumes are projected to result in lower total cash receipts. However, total cash costs are also projected to fall with reductions in fodder expenditure and interest

payments. Farm cash income is projected to average $64 000 a farm in 2009-10 (table 4) which is around 8 per cent above the average for the previous 10 years.

e3 Farm cash income, beef industry average per farm



Beef industry

In 2008-09, turn-off of beef cattle increased markedly on beef industry farms and average sale prices per head also increased resulting in total cash receipts increasing by around 5 per cent. Fodder expenditure increased as seasonal conditions remained dry, partly offsetting the increase in receipts. Farm cash income increased to average $48 400, but overall cattle numbers were reduced (table 4 and figure e3).

With improved seasonal conditions in 2009-10, beef cattle turn-off is expected to be reduced and, in combination with lower beef cattle prices, to result in average total cash receipts for beef industry farms falling by around 5 per cent. Total cash costs are also expected to be reduced with significant reductions expected in fodder expenditure and interest payments. Farm cash income is forecast to be reduced to average $26 000 a farm for the beef industry in 2009-10 which is around 25 per cent below the average farm cash income for the previous 10 years.

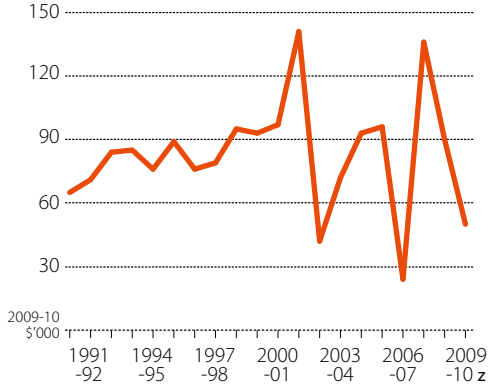
Dairy industry

Average farm cash income for dairy industry farms fell from $129 310 per farm in 2007-08 to $88 000 a farm in 2008-09 (table 5 and figure f) as a result of lower manufacturing milk prices. Average milk prices received by dairy farms fell sharply in Victoria and Tasmania and in regions such as southern New South Wales which produce mainly manufacturing milk. In contrast, average milk prices received were maintained or increased in New South Wales, Queensland, South Australia and Western Australia. Milk production increased in all states, but increases were small in Victoria and Tasmania and, in combination with lower milk prices, resulted in substantial reductions in average milk receipts per farm in these states. In the other states milk receipts increased on average (table 6).

In 2008-09, total cash costs increased in all states except Victoria as producers increased inputs to boost milk production. In northern Victoria and southern New South Wales irrigated dairy farms continued to receive low allocations of irrigation water leaving many farms critically dependent on purchased feedgrains and hay exacerbating the effect of reductions in farm receipts in these regions.

In 2009-10, the financial performance of Australian dairy farms is projected to decline further because of more reductions in farm-gate prices received for milk used in manufactured dairy products. In response to lower prices, milk production is expected to be reduced in all states except Queensland and New South Wales. The effect of lower milk prices and reduced production on farm receipts is expected to be partly offset by lower interest payments and by reductions in other expenditure, particularly fodder and fertiliser as farmers reduce production. Lower fodder prices in 2009-10 are expected to assist cost reductions, but overall fodder expenditure is expected to remain high, particularly in regions including northern Victoria and southern New South Wales where allocations of irrigation water remain relatively low.

f Farm cash income, dairy industry average per farm



Nationally, average farm cash income for dairy farms fell from an historical high of $129 310 in 2007-08 to $88 000 in 2008-09 and is projected to fall to $50 000 in 2009-10 (table 5 and figure f) which is well below the average for the 10 years to 2008-09 of $91 000 and similar to the average farm cash income recorded in the drought of 2006-07 (in real terms – figure f).

Farm equity

On average, farm business equity remained strong for broadacre and dairy farms and debt servicing capacity improved in 2008-09. The proportion of broadacre and dairy farms estimated to have a farm business equity ratio of greater than 70 per cent was 91 per cent in 2008-09, and the proportion of these farms recording negative farm cash incomes

5 Financial performance, by industry, broadacre and dairy industries

average per farm

		wheat and other crops industry				mixed livestock-crops industry			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	593 110	683 800	(5)	622 000	368 470	309 300	(5)	315 000
Total cash costs	$	477 670	507 900	(5)	490 000	291 740	234 600	(5)	251 000
Farm cash income	$	115 440	175 800	(10)	132 000	76 730	74 700	(10)	65 000
Farms with negative farm cash income	%	30	25	(14)	27	34	29	(13)	31
Farm business profit	$	2 390	52 000	(34)	3 000	–10 880	–4 900	(152)	–25 000
Farms with negative farm business profit	%	61	56	(6)	56	62	71	(4)	72
Profit at full equity									
– excl. cap. appreciation	$	79 420	131 200	(14)	78 000	31 180	31 400	(25)	12 000
– incl. cap. appreciation	$	178 860	151 400	(19)	na	102 430	48 000	(59)	na
Farm capital at 30 June a	$	4 274 960	4 714 200	(5)	na	3 622 980	3 315 800	(6)	na
Net capital additions	$	108 830	200 800	(19)	na	38 800	51 900	(26)	na
Farm debt at 30 June b	$	736 910	817 800	(8)	825 000	424 410	379 300	(9)	442 000
Change in debt –1 July to 30 June b	%	8	8	(44)	5	9	3	(120)	4
Equity at 30 June bc	$	3 422 010	3 656 900	(4)	na	3 191 030	2 905 200	(7)	na
Equity ratio bd	%	82	82	(2)	na	88	89	(1)	na
Harvest loans at 30 June e	$	17 290	7 400	(47)	na	10 280	3 800	(36)	na
Farm liquid assets at 30 June b	$	195 180	239 000	(14)	na	119 670	116 100	(13)	na
Farm management deposits (FMDs) at 30 June b	$	48 950	62 800	(15)	na	26 830	26 100	(15)	na
Share of farms with FMDs at 30 June b	%	25	33	(12)	na	24	24	(13)	na
Annual payment from DSAP and SDAS f	$	na	na	(12)	na	na	na	(13)	na
Rate of return g									
– excl. cap. appreciation	%	1.9	2.9	(13)	1.7	0.9	1.0	(24)	0.4
– incl. cap. appreciation	%	4.3	3.3	(18)	na	2.9	1.5	(59)	na
Off-farm income of owner manager and spouse b	$	32 450	29 400	(9)	na	29 080	36 600	(7)	na

		sheep industry				beef industry			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	242 760	207 900	(7)	215 000	241 620	272 200	(9)	224 000
Total cash costs	$	185 910	165 100	(7)	158 000	201 530	223 700	(10)	199 000
Farm cash income	$	56 860	42 800	(18)	57 000	40 090	48 400	(15)	26 000
Farms with negative farm cash income	%	26	26	(19)	14	38	35	(11)	39
Farm business profit	$	–13 670	–22 900	(33)	–2 000	–15 490	–13 700	(50)	–33 000
Farms with negative farm business profit	%	71	74	(5)	65	74	71	(5)	80
Profit at full equity									
– excl. cap. appreciation	$	12 300	200	(3501)	18 000	13 350	16 300	(43)	–7 000
– incl. cap. appreciation	$	101 680	11 200	(142)	na	31 740	6 200	(351)	na
Farm capital at 30 June a	$	2 795 500	2 427 400	(6)	na	4 232 000	4 451 700	(4)	na
Net capital additions	$	20 840	28 200	(58)	na	11 690	–22 900	(76)	na
Farm debt at 30 June b	$	247 260	245 800	(12)	239 000	315 290	344 700	(10)	344 000
Change in debt –1 July to 30 June b	%	2	8	(48)	4	8	–1	(149)	5
Equity at 30 June bc	$	2 526 910	2 162 700	(6)	na	3 675 720	3 816 000	(4)	na
Equity ratio bd	%	91	90	(1)	na	92	92	(1)	na
Harvest loans at 30 June e	$	2 100	0	()	na	0	0	()	na
Farm liquid assets at 30 June b	$	121 120	98 000	(17)	na	144 730	175 700	(16)	na
Farm management deposits (FMDs) at 30 June b	$	22 730	19 000	(27)	na	21 900	21 600	(18)	na
Share of farms with FMDs at 30 June b	%	19	15	(23)	na	19	19	(16)	na
Annual payment from DSAP and SDAS f	$	na	na	(23)	na	na	na	(16)	na
Rate of return g									
– excl. cap. appreciation	%	0.5	0.0	(3499)	0.8	0.3	0.4	(42)	-0.2
– incl. cap. appreciation	%	3.8	0.5	(143)	na	0.8	0.1	(351)	na
Off-farm income of owner manager and spouse b	$	38 210	34 200	(11)	na	36 460	40 400	(11)	na

continued...

5 Financial performance, by industry, broadacre and dairy industries

average per farm *continued*

		sheep-beef industry				dairy industry			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	262 260	267 700	(8)	251 000	625 530	611 800	(3)	471 000
Total cash costs	$	227 210	206 800	(8)	187 000	496 220	523 800	(4)	420 000
Farm cash income	$	35 050	60 900	(16)	64 000	129 310	88 000	(11)	50 000
Farms with negative farm cash income	%	33	24	(19)	22	11	26	(20)	44
Farm business profit	$	–20 280	–5 100	(187)	–8 000	65 830	6 700	(138)	–44 000
Farms with negative farm business profit	%	69	59	(10)	60	38	52	(10)	68
Profit at full equity									
– excl. cap. appreciation	$	10 150	22 800	(47)	15 000	120 990	69 600	(14)	13 000
– incl. cap. appreciation	$	29 610	1 800	(1394)	na	338 620	45 200	(74)	na
Farm capital at 30 June a	$	4 061 310	3 769 100	(8)	na	3 550 230	3 714 700	(4)	na
Net capital additions	$	39 240	5 800	(278)	na	74 150	168 800	(26)	na
Farm debt at 30 June b	$	334 230	302 200	(24)	266 000	567 970	663 200	(7)	683 000
Change in debt –1 July to 30 June b	%	10	0	(1206)	– 5	7	11	(30)	5
Equity at 30 June bc	$	3 614 240	3 332 500	(10)	na	3 002 320	3 071 700	(4)	na
Equity ratio bd	%	92	92	(2)	na	84	82	(1)	na
Harvest loans at 30 June e	$	90	0	()	na	0	0	()	na
Farm liquid assets at 30 June b	$	114 410	135 200	(16)	na	107 130	104 400	(10)	na
Farm management deposits (FMDs) at 30 June b	$	20 330	19 900	(37)	na	30 050	23 500	(18)	na
Share of farms with FMDs at 30 June b	%	21	23	(23)	na	20	20	(19)	na
Annual payment from DSAP and SDAS f	$	na	na	(23)	na	15 630	15 300	(25)	na
Rate of return g									
– excl. cap. appreciation	%	0.3	0.6	(43)	0.4	3.7	1.9	(13)	0.4
– incl. cap. appreciation	%	0.7	0.0	(1392)	na	10.4	1.2	(74)	na
Off-farm income of owner manager and spouse b	$	34 270	32 300	(16)	na	20 070	24 000	(15)	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.
s Preliminary estimates. **z** Provisional estimates. **na** Not Available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

6 Financial performance, by state, dairy industry

average per farm

		New South Wales				Victoria			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	641 470	737 300	(4)	638 000	603 580	534 800	(5)	379 000
Total cash costs	$	533 340	603 600	(5)	548 000	480 620	476 600	(5)	361 000
Farm cash income	$	108 130	133 700	(15)	90 000	122 970	58 100	(22)	18 000
Farms with negative farm cash income	%	11	22	(32)	18	12	30	(25)	57
Farm business profit	$	43 200	61 800	(31)	–9 000	61 740	–29 200	(42)	–72 000
Farms with negative farm business profit	%	36	31	(24)	56	42	62	(12)	77
Profit at full equity									
– excl. cap. appreciation	$	95 080	115 900	(16)	41 000	115 150	32 400	(40)	–18 000
– incl. cap. appreciation	$	130 960	199 400	(77)	na	346 460	- 10 900	(372)	na
Farm capital at 30 June **a**	$	4 210 190	4 257 700	(6)	na	3 085 420	3 181 100	(6)	na
Net capital additions	$	48 030	191 600	(26)	na	52 120	158 400	(39)	na
Farm debt at 30 June **b**	$	515 040	526 300	(11)	540 000	553 320	653 700	(10)	682 000
Change in debt - 1 July to 30 June **b**	%	8.0	–7.0	(95)	4.0	5.0	13.0	(36)	8.0
Equity at 30 June **bc**	$	3 665 620	3 663 300	(7)	na	2 557 530	2 561 200	(7)	na
Equity ratio **bd**	%	88	87	(2)	na	82	80	(2)	na
Farm liquid assets at 30 June **b**	$	na	172 400	(18)	na	na	89 400	(14)	na
Farm management deposits (FMDs) at 30 June **b**	$	14 610	44 200	(29)	na	37 910	18 400	(30)	na
Share of farms with FMDs at 30 June **b**	%	11	27	(25)	na	25	19	(28)	na
Annual payment from DSAP and SDAS **f**	$	22 986	0	(25)	na	11 266	0	(28)	na
Rate of return **g**									
– excl. cap. appreciation	%	2.3	2.9	(16)	0.9	4.1	1.0	(39)	–0.6
– incl. cap. appreciation	%	3.2	4.9	(78)	na	12.3	-0.3	(374)	na
Off-farm income of owner manager and spouse **b**	$	19 920	52 900	(44)	na	21 220	20 400	(13)	na

		Queensland				Western Australia			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	444 470	523 400	(6)	530 000	698 750	1 006 600	(8)	880 000
Total cash costs	$	324 700	401 800	(5)	404 000	552 120	724 900	(9)	639 000
Farm cash income	$	119 770	121 600	(17)	127 000	146 630	281 600	(14)	240 000
Farms with negative farm cash income	%	7	18	(59)	11	11	14	(79)	4
Farm business profit	$	61 080	54 200	(43)	27 000	78 420	203 700	(20)	130 000
Farms with negative farm business profit	%	46	35	(31)	44	25	20	(60)	31
Profit at full equity									
– excl. cap. appreciation	$	89 700	85 300	(29)	53 000	149 200	290 500	(13)	222 000
– incl. cap. appreciation	$	292 480	162 500	(42)	na	762 470	277 500	(31)	na
Farm capital at 30 June **a**	$	3 206 350	3 853 400	(10)	na	8 971 400	9 236 900	(9)	na
Net capital additions	$	70 230	147 900	(35)	na	19 700	366 400	(32)	na
Farm debt at 30 June **b**	$	310 390	358 100	(25)	271 000	670 840	881 300	(16)	953 000
Change in debt - 1 July to 30 June **b**	%	5.0	24.0	(73)	3.0	-1.0	2.0	(259)	2.0
Equity at 30 June **bc**	$	2 895 210	3 483 300	(11)	na	8 293 590	8 355 600	(10)	na
Equity ratio **bd**	%	90	91	(3)	na	93	91	(2)	na
Farm liquid assets at 30 June **b**	$	na	111 400	(24)	na	na	85 700	(26)	na
Farm management deposits (FMDs) at 30 June **b**	$	6 710	17 500	(37)	na	0	6 800	(89)	na
Share of farms with FMDs at 30 June **b**	%	8	17	(31)	na	0	1	(89)	na
Annual payment from DSAP and SDAS **f**	$	22 880	0	(31)	na	32 721	0	(89)	na
Rate of return **g**									
– excl. cap. appreciation	%	3.1	2.3	(26)	1.4	1.8	3.3	(13)	2.4
– incl. cap. appreciation	%	10.0	4.4	(43)	na	9.2	3.1	(31)	na
Off-farm income of owner manager and spouse **b**	$	15 270	21 000	(30)	na	10 880	16 200	(13)	na

continued...

6 Financial performance, by state, dairy industry

average per farm *continued*

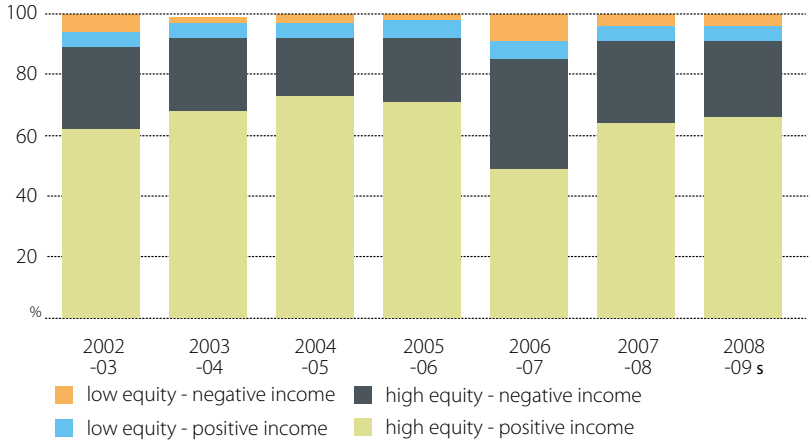
		South Australia				Tasmania			
		2007-08	2008-09 s		2009-10 z	2007-08	2008-09 s		2009-10 z
Total cash receipts	$	965 760	1 082 400	(5)	844 000	822 080	869 300	(8)	683 000
Total cash costs	$	754 060	865 400	(6)	670 000	635 350	751 100	(9)	614 000
Farm cash income	$	211 710	217 100	(19)	174 000	186 730	118 200	(25)	69 000
Farms with negative farm cash income	%	12	18	(35)	20	11	17	(39)	34
Farm business profit	$	96 750	125 500	(29)	65 000	135 640	79 200	(41)	–38 000
Farms with negative farm business profit	%	20	28	(25)	53	11	34	(39)	56
Profit at full equity									
– excl. cap. appreciation	$	183 630	209 700	(17)	141 000	225 430	194 700	(19)	79 000
– incl. cap. appreciation	$	230 210	74 800	(99)	na	602 960	119 000	(69)	na
Farm capital at 1 July **a**	$	4 402 570	5 080 200	(8)	na	4 966 820	5 279 800	(10)	na
Net capital additions	$	140 690	197 800	(22)	na	369 510	165 600	(76)	na
Farm debt at 30 June **b**	$	849 990	920 100	(13)	969 000	958 200	1 188 800	(17)	1 220 000
Change in debt - 1 July to 30 June **b**	%	3.0	3.0	(254)	3.0	33.0	26.0	(46)	–5.0
Equity at 30 June **bc**	$	3 546 690	4 122 900	(9)	na	4 006 360	4 089 500	(11)	na
Equity ratio **bd**	%	81	82	(2)	na	81	78	(4)	na
Farm liquid assets at 30 June **b**	$	na	185 300	(36)	na	na	76 500	(28)	na
Farm management deposits (FMDs) at 30 June **b**	$	24 350	63 700	(30)	na	24 040	24 700	(51)	na
Share of farms with FMDs at 30 June **b**	%	21	34	(25)	na	12	12	(54)	na
Annual payment from DSAP and SDAS **f**	$	21 116	0	(25)	na	13 664	0	(54)	na
Rate of return **g**									
– excl. cap. appreciation	%	4.3	4.1	(16)	2.8	5.3	3.7	(14)	1.4
– incl. cap. appreciation	%	5.4	1.5	(97)	na	14.3	2.3	(73)	na
Off-farm income of owner manager and spouse **b**	$	20 990	28 700	(44)	na	18 160	14 300	(21)	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.
s Preliminary estimates. **z** Provisional estimates. **na** Not Available.
Note: Figures in parentheses are standard errors expressed as a percentage of the estimate provided.

declined from 31 per cent in 2007-08 to 28 per cent in 2008-09 (figure g). The proportion of farms estimated to have a farm business equity ratio of less than 70 per cent was 9 per cent in both 2007-08 and 2008-09. The proportion of farms recording both an equity ratio of less than 70 per cent and negative farm cash income was 4 per cent in both years.

Despite the projected reduction in average broadacre farm cash income in 2009-10, the proportion of broadacre farms recording negative farm cash income and therefore potentially needing to borrow working capital is projected to remain at around 29 per cent in 2009-10, similar to the percentage in 2008-09 (table 2). This result occurs mainly because of increases in the number of grain farms in South Australia and Victoria, and sheep farms across all states, recording higher farm cash incomes in 2009-10. However, for the dairy industry, the proportion of farms recording negative farm cash income is projected to increase from 26 per cent in 2008-09 to 44 per cent in 2009-10 (table 5).

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



Use of debt

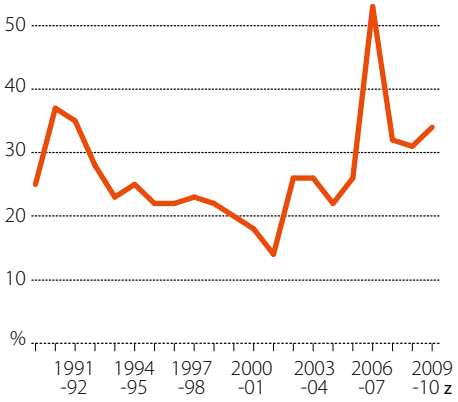
Average farm business debt has increased for broadacre and dairy farms over recent years. Farm businesses interviewed by ABARE in November 2009 expected to increase farm debt in 2009-10 by an average of 5 per cent among dairy farms and 4 per cent among broadacre farms.

Overall, debt to fund land purchase still accounts for the largest share of total farm debt for both broadacre and dairy farms. Increase in land purchase debt is estimated to have accounted for 55 per cent of the increase in total farm debt for both dairy and broadacre farms in the five years ending 2005-06.

Increases in land purchase debt are confined to a relatively small proportion of farms. However, in recent years there has been a substantial increase in debt to fund working capital as many farms have had low cash incomes because of adverse seasonal conditions. In contrast to increases in land purchase debt, increased borrowing for working capital has occurred across a high proportion of farms. In 2006-07, 60 per cent of the total increase in broadacre farm debt was to fund working capital.

In 2008-09, land purchase accounted for the largest share of the increase in dairy farm debt. With increased new investment, debt to finance purchase of farm vehicles, farm machinery and improvements also increased markedly and there was a substantial increase in debt classified as restructured debt. The increase was particularly large for dairy farms but also occurred for broadacre farms. Debt may have been restructured in response to lower interest rates for some categories of farm debt. A substantial proportion of this restructured debt may have been additional borrowing to provide working capital.

h Debt servicing ratio, broadacre and dairy farms



Debt servicing

The proportion of farm cash income needed to meet interest payments on farm debt (debt servicing ratio) has trended upward since 2001-02 (figure h). Interest rates rose throughout the period 2001-02 to 2007-08 and farm cash incomes have been highly variable since 2001-02, being particularly low in 2002-03 and 2006-07 when the debt servicing ratio rose sharply. Partially offsetting the increase in interest paid in the period 2001-02 to 2007-08 were increases in interest subsidies paid to farm businesses via exceptional circumstances assistance. However, notwithstanding these factors, most of the increase in debt servicing ratio between 2001-02 and 2007-08 was because of increases in farm debt.

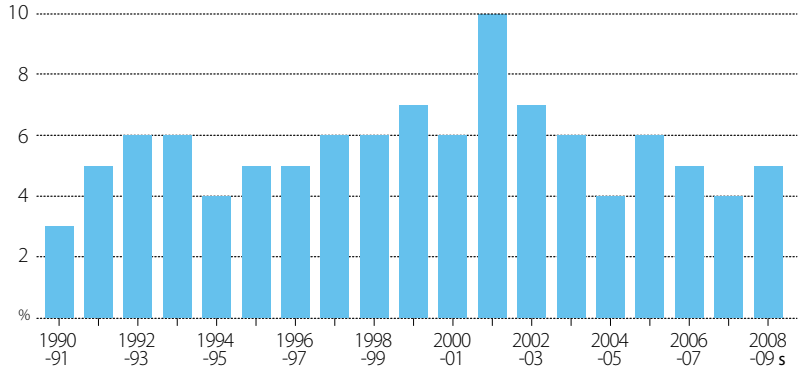
With improved cash flow for broadacre and dairy farms in 2007-08, the debt servicing ratio fell, but remained relatively high in historical terms. In 2008-09, the debt servicing ratio fell only slightly despite increases in farm cash income and reductions in interest rates as farm debt increased. In 2009-10, reductions in farm cash income and an increase in farm debt are projected to result in the debt servicing ratio rising further despite interest rates being relatively low.

The increase in the overall level of farm debt for broadacre and dairy farms has been the main driver of the increase in the proportion of farm cash income needed to service interest payments on debt over the past decade rather than increases in interest rates.

Farm investment

The proportion of broadacre and dairy farms acquiring land increased slightly to 5 per cent in 2008-09, but remained below the average for the previous 20 years of 6 per cent (figure i). In contrast, there was a large increase in the acquisition of non-land farm capital in 2008-09. The value of additions of non-land capital, including vehicles, plant, machinery and farm improvements, were the highest since 1990-91 in real terms. These increased by 10 per cent for broadacre farms and by 80 per cent for dairy farms in 2008-09 compared with the previous year (figure j).

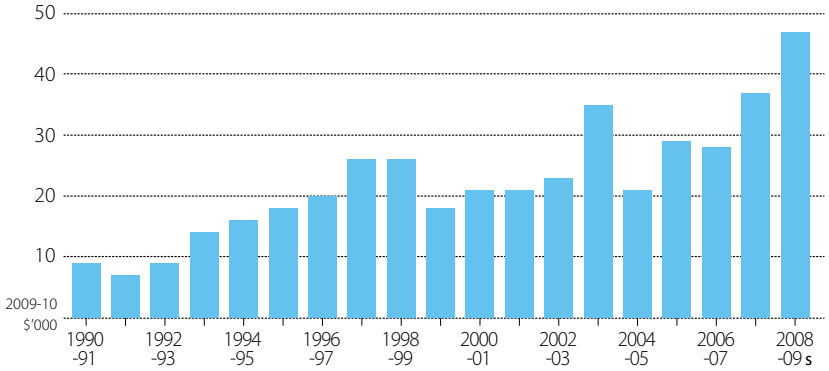
i Proportion of farms acquiring land, broadacre and dairy farms



In part, the increased investment in plant, machinery and farm improvements in 2008-09 is likely to have been partly stimulated by the investment allowance offered to businesses committing to investing in depreciating assets between 31 December 2008 and 31 December 2009 as part of the Federal Government's Nation Building and Jobs Plan to support economic activity in the face of the global financial crisis. Government assistance was also provided to irrigators in the Murray-Darling Basin in 2007-08 and 2008-09 in the form of grants to help irrigators respond to reduced water allocations by improving on-farm practices. Grants may have been used to fund replacement irrigation plant and structures or reconfigure irrigation systems.

High levels of new investment in 2007-08 and 2008-09 have also been a response to improved cash flow for some farms, particularly dairy industry farms in 2007-08. In addition, high prices for fertiliser, low availability of irrigation water and a

j Additions of non-land capital, broadacre and dairy industries
average per farm

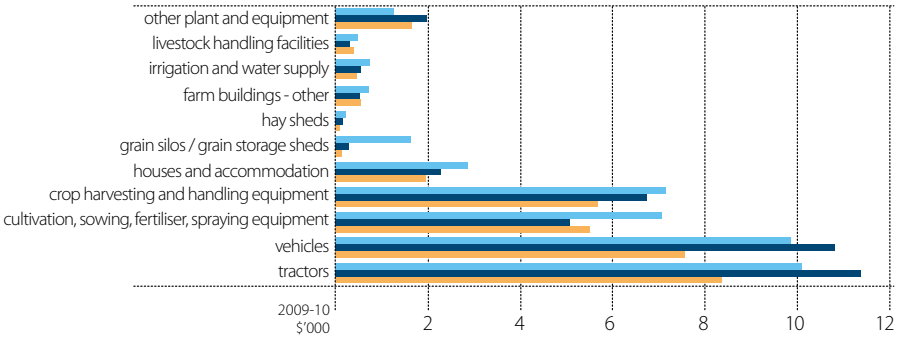


decade of reduced rainfall in cropping areas has provided strong incentives to change farm technologies toward more efficient use of these inputs. Most common innovative changes made by broadacre farms in 2006-07 and 2007-08 were the introduction of new cropping equipment, new fertiliser practices and new soil management practices. For dairy farms, the introduction of new irrigation and new fodder conservation practices were highly ranked (Liao and Martin 2009).

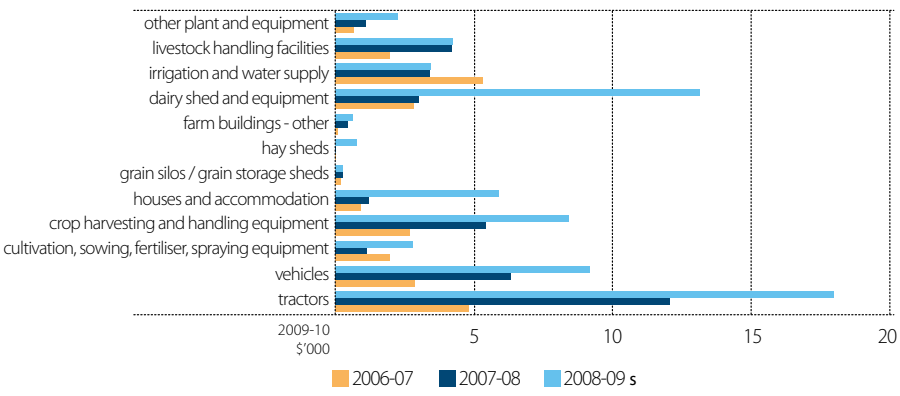
The reduction in farms acquiring additional land and increased non-land investment may also indicate that farmers may be aiming to improve the productivity of their existing land base rather than purchasing additional relatively high priced land.

ABARE surveys indicate the largest category of new capital expenditure on both broadacre and dairy farms in 2007-08 and 2008-09 was tractors followed closely by motor vehicles (figure k). Crop harvesting and handling machinery was another major item of expenditure for both farm types and expenditure on farm houses and accommodation was also high, particularly in 2008-09. For broadacre farms, additions of cultivation, sowing, fertiliser, spraying equipment were also high and expenditure on livestock handling facilities and irrigation and water supply structures were high for dairy farms in both 2007-08 and 2008-09.

k Capital additions, broadacre farms



Capital additions, dairy farms



For dairy farms there was a large increase recorded in expenditure on dairy sheds in 2008-09 and for broadacre farms a large increase in expenditure on silos and grain storage sheds in 2008-09.

Better performing farms

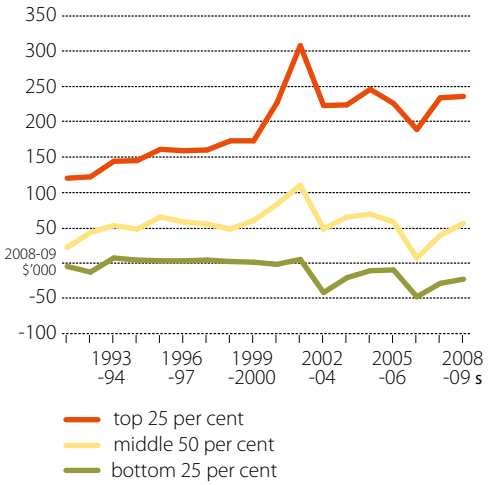
Average farm incomes and rates of return on investment in agricultural industries are usually low when reported across a whole industry or state. However, low average returns are partly a consequence of the generally high proportion of small farms in many industries, particularly the beef and sheep industries. The presence of these small farms masks the much higher incomes and returns from better performing and larger farms that 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 l). 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 that 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 4 per cent over the five years ending 2008-09 and rates of return including capital appreciation of 9 per cent. These accounted for 55 per cent of the gross value of broadacre farm production over the period and 85 per cent of farm business profits.

Estimates of productivity growth in the broadacre industries indicate higher total factor productivity for larger farms (Zhao et al. 2009) indicating larger farms capturing most of the productivity growth in broadacre industries and the smallest one third of farms capturing very little productivity increase. Many of the ways to achieve productivity growth, such as purchasing more efficient equipment or accessing information about new processes or practices and responding to changing external conditions, are costly. In the three years ending 2008-09 the top 25 per cent of farms also accounted for 55 per cent of new investment for broadacre farms and the bottom 25 per cent of farms accounted for 13 per cent (and only 7 per cent prior to the introduction of the investment allowance in 2007-08). Rates of new investment on poorly performing and small farms are likely to be too small to generate significant productivity gains to maintain real farm cash incomes over time.

Farm cash income, broadacre farms average per farm



ABARE's farm survey results indicate that farms which are more profitable are generally more innovative in adopting new technologies or processes (Liao and Martin 2009), potentially indicating a greater ability to invest in production capabilities. Financial capability is also influenced by access to credit and other sources of income. Farms with access to many dimensions of finance are likely to be more resilient to external changes and better placed to improve productivity over time (Kokic, Davidson and Rodriguez 2006).

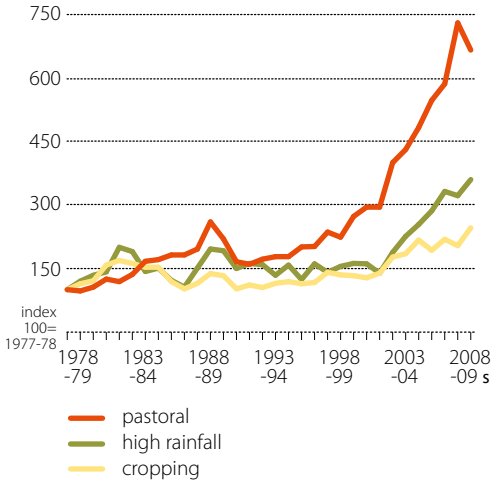
Land values

The high proportion of farms estimated to have strong business equity ratios in 2008-09 has mainly resulted from increases in land values across most regions. This increase was sufficient to more than offset the effect of rising farm debt on farm equity in recent years.

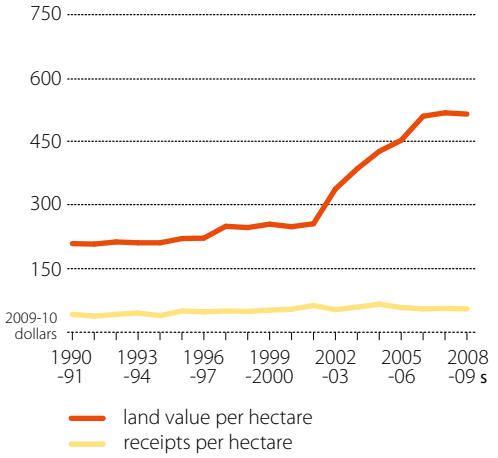
Increases in land values were reported for broadacre farms in the high rainfall and wheat-sheep zone, but a small decrease was reported for farms in the pastoral zone in 2008-09 (figure m). In the period since 2004-05, increases in reported land values have been relatively smaller in the cropping zone where the majority of broadacre production occurs. This possibly reflects the greater effect of adverse seasonal conditions and the lesser influence in this zone of non-agricultural factors, including competition for land from population growth, urban and peri-urban developments and economic growth driven by mining developments that may support increases in land values in other zones.

In recent years, average land prices for broadacre farms have increased relative to the cash receipts per hectare generated by farming activity. The ratio of average land price per hectare to total cash receipts per hectare has increased from around 5:1 prior to 2001-02 to around 7:1 in 2008-09 on broadacre farms (figure n). The increase in this ratio is relatively similar across all agricultural zones and industries.

m Land prices for broadacre farms



n Land prices and receipts per hectare, broadacre farms



Determinants of land values

In general, an asset's price should reflect expectations about the future return the asset can generate. Farmers' expectations about future returns from land investments are likley to be strongly influenced by two main components: net value of farm production per hectare and unrealised growth in capital values.

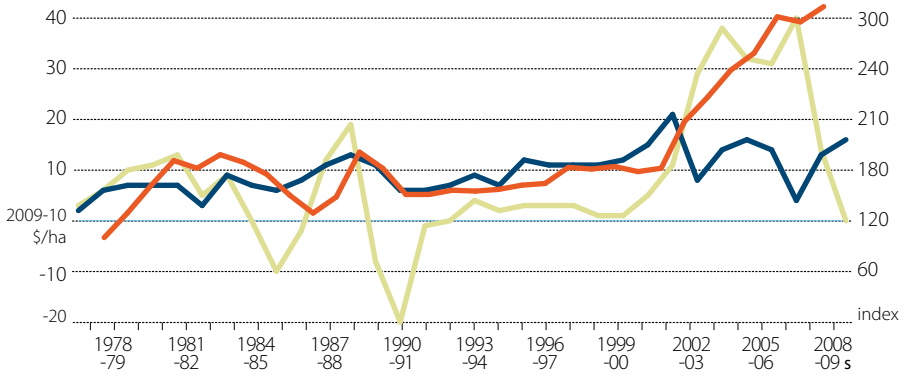
During the late 1980s and 1990s, the dominant component of returns realised by broadacre and dairy farm businesses was the return from using the land for production purposes (figure o). During this period, growth in land values closely followed growth in the net value of farm production per hectare.

However, during much of the 2000s, producers in many parts of Australia experienced higher returns from capital appreciation than from agricultural production, which experienced considerable volatility because of adverse climatic conditions.

It is also possible that the growth in land values may have been generated largely by strong demand from producers' operating the better performing farm businesses that generate significantly higher returns than average. During the 2000s, the top 25 per cent of farms in the broadacre and dairy industries generated average annual total returns per hectare operated that were almost 11 times greater than the average for all other farms in these industries. During this period, the proportion of top performing farms that acquired additional land averaged almost 8 per cent a year, which is more than 50 per cent higher than the proportion for other broadacre and dairy producers.

Farmers' expectations are also influenced by a range of other, non-agricultural factors which may result in a sustained growth in land prices. These include real interest rates (or cost of capital), access to and availability of irrigation water, economic growth, distance to markets and urban centres, aesthetic and lifestyle factors, particularly in areas close to towns and cities, and non-agricultural land use options, including the potential for mining, tourism and commercial/residential development.

o Land values and returns per hectare, broadacre and dairy industries



a Net value of production is defined to be farm cash income at full equity plus the buildup in the value of trading stocks less government payments.

Government policies can also affect agricultural land prices. International studies have shown that capitalisation of the benefits of public policies can have a strong influence on land prices (Vantreese et al.; Seed et al.; Weersink et al.; Moss). Examples sited in these studies include favourable tax treatment of realised capital gains and government payments to primary producers that are perceived to be long-term in nature. Public policies that reduce income risk and boost the expected return from farming and land ownership can unintentionally alter farmers' supply of land to the market and demand for land resulting in higher prices.

As the gap between land values and production returns widens, farmers' reliance on land ownership as part of their farming business may become an impediment to structural adjustment. This is because strong growth in land values could reduce the willingness of producers who are operating underperforming farms to sell their land. Likewise, the best performing producers' capacity to purchase land will be restricted by the high cost of buying land.

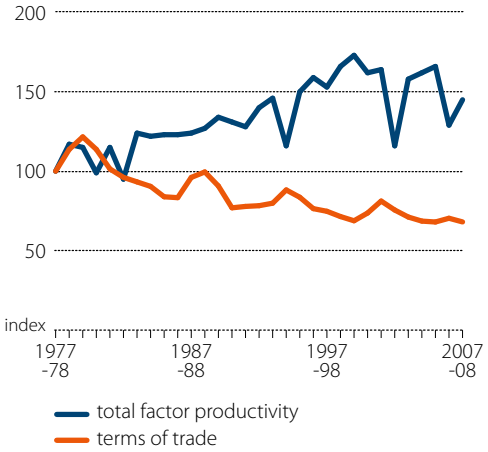
In countries such as the United States and Great Britain, this barrier to structural adjustment has been to some extent addressed by land leasing rather than land purchase as the dominant method of farm expansion. In so doing, land resource use can be reallocated to the more profitable farm businesses without land ownership having to change.

Productivity growth in the broadacre and dairy industries

Katarina Nossal and Yu Sheng

Increasing agricultural productivity continues to be a core objective of rural industries and Australian governments. Given limitations to the land, labour, water and other resources available to agriculture, long-term growth in food production depends largely on increases in productivity. Productivity growth, measured using total factor productivity (TFP) indices, measures the increases in output in excess of additional input use. The additional production comes about through efficiency gains, mostly associated with new technologies and better production and management methods.

p Broadacre TFP and agricultural terms of trade



Productivity growth in Australian agriculture has been strong relative to other sectors of the economy and comparable with other OECD countries (Nossal and Gooday 2009). Broadacre and dairy industries, accounting for 65 per cent of agricultural gross value of production, have achieved long-term productivity growth of 1.4 per cent and 0.8 per cent a year for the period 1977-78 to 2007-08, respectively. This growth has helped maintain competitiveness in export markets and offset changes in farmer's terms of trade. The terms of trade, being a ratio of the prices farmers receive to the prices paid for inputs, have declined over this period at an average annual rate of 1.6 per cent a year. Over the past decade the rate of decline has been 0.6 per cent a year (figure p).

Productivity growth in Australian agriculture has also slowed over the past decade, most notably in the broadacre cropping and dairy industries. There are many factors that could explain this decline, with major influences likely to include extended poor seasonal conditions and a long-term slowing of growth in public investment in research and development. The sources of slowing productivity growth and options for improving the future outlook for productivity grains remain a priority for research and discussion.

TFP is estimated by taking a ratio of an aggregate output index to an aggregate input index. Compared with partial measures such as yield or labour productivity, TFP provides an indication of overall productivity progress. However, it should be noted that non-market inputs such as soil quality are not included, and that TFP estimates also reflect peripheral factors such as measurement constraints, seasonal variability and changes in industry scale. A description of ABARE's methods for productivity estimation can be found in Nossal et al. (2009).

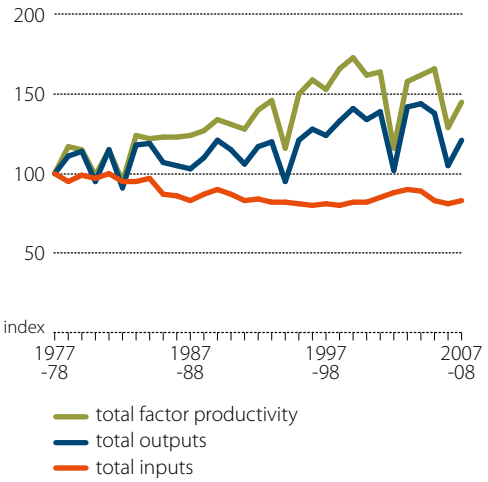
Aggregate TFP growth estimates provide an indication of historical changes in technological progress. However, given the vast differences in industry and regional characteristics, they are not sufficient to prescribe solutions to lifting agricultural productivity growth.

Broadacre productivity growth

Productivity growth in the broadacre sector averaged 1.4 per cent a year between 1977-78 and 2007-08. The gain reflects a long-term decline in input use, averaging 0.6 per cent a year, coupled with an increase in output averaging 0.8 per cent a year, albeit with notable year to year fluctuations (figure q).

Between 1977-78 and 2000-01, broadacre productivity grew at 2 per cent a year, but since 2000-01 growth has fallen by an average of 1 per cent a year. More detailed statistical analysis suggests that this slowdown in agricultural productivity growth has began earlier than 2000-01. However, this has undoubtedly been exacerbated by the effect of drought conditions in recent years (Sheng, Mullen and Zhao 2010).

q Broadacre inputs, outputs and TFP



The broadacre sector includes those farms generating most of their income from dryland cropping, beef and sheep farming activities (box 4). Comparing industry productivity growth across the sector shows that the cropping industry has consistently achieved the highest long-term growth, followed by beef, mixed crop-livestock and sheep (figure r and table 7).

However, estimating productivity trends across different periods provides an alternative perspective on industry performance. Long-term productivity growth in the cropping and mixed crop-livestock industries was significantly higher in the earlier period between 1977-78 and 2001-02 than over the whole period from 1977-78 to 2007-08 (figure s).

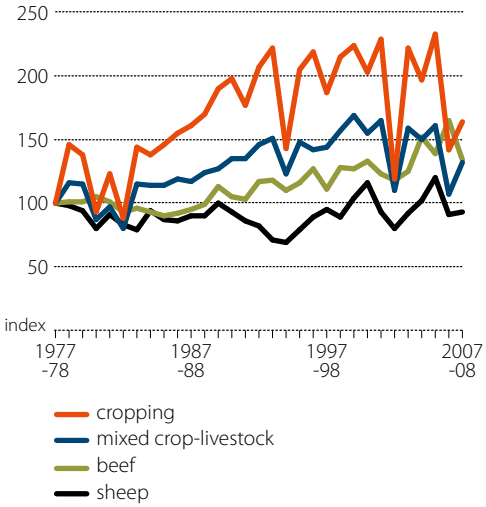
box 4 Industry definitions

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 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 sheep and beef (mixed sheep-beef)
- Dairy – farms engaged mainly in dairying

Under these definitions, farms with crop production accounting for the majority of their agricultural output will be included in the cropping industry productivity analysis. However, it 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.

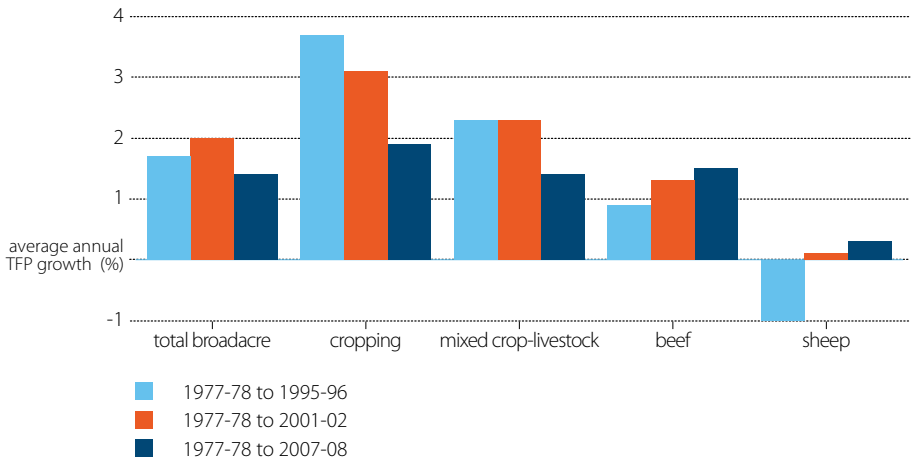
r Broadacre total factor productivity



7 Broadacre industry productivity growth, 1977-78 to 2007-08 average annual growth

	TFP growth %	output growth %	input growth %
Total broadacre	1.4	0.8	–0.6
Cropping	1.9	2.1	0.2
Mixed crop–livestock	1.4	–0.1	–1.6
Beef	1.5	1.6	0.2
Sheep	0.3	–1.5	–1.7

S Changes in broadacre productivity growth trends
average annual growth



In comparison, the beef and sheep industries have increased their long-term productivity growth rates compared with earlier periods. Between 1977-78 and 1995-96, beef and sheep industry productivity growth averaged 0.9 and -1 per cent a year, respectively, compared with 1.5 and 0.3 per cent a year over the period 1977-78 to 2007-08.

Productivity growth estimates do not indicate causes behind their trends or differences and several explanations can often appear plausible. During the 1980s and 1990s, the cropping industry achieved considerable technological advances in seed varieties, fertilisers, crop rotations and tillage techniques. Comparatively, improvements in livestock technologies appear to have had smaller productivity effects. The longer production cycle in livestock farming could also make the transition to better technologies and production methods slower (Mullen 2007).

Technological advances have enabled the cropping industry to benefit from input substitution. In particular, there have been productivity benefits from substituting labour for capital and more recently from increased purchases of materials and services (Nossal et al. 2009). Labour and capital productivity growth has been higher in cropping than in other broadacre industries.

Contrasting the recent decline in cropping productivity, the improvements in beef and sheep productivity growth over the past decade are likely to reflect industry changes and could partly be the result of starting from a lower base. For example, the wool stockpile had an adverse effect on industry confidence and profitability during the 1990s, and clearing of the stockpile was a positive for sheep industry productivity growth (Rowe and Atkins 2004). The sheep industry has also improved productivity through advanced breeds, higher stocking rates, product diversification, and the use of supplementary feeding and use of within flock variation as a risk management tool (Rowe and Atkins 2004).

Improved productivity growth rates are also likely to be associated with declining sheep numbers from the early 1990s onward. In general, those farms remaining in an industry are likely to be more productive than those choosing to exit farming or change their production mix. Nevertheless, some farms are unable to change their enterprise mix because of agronomic circumstances, which could explain why the sheep industry continues to underperform other broadacre sectors.

It is well known that productivity estimates are susceptible to seasonal variations. Drought conditions over the past decade have affected productivity through two pathways. Most obviously, drought has caused sharp downturns in output which have led to sharp downturns in measured productivity. Perhaps less apparently, the ongoing series of poor seasonal conditions has caused adjustments in input use. While the use of fixed inputs such as land and machinery tends to be adjusted over the long term, use of variable inputs changes from year to year. Livestock farmers have increased their purchases of feed to supplement pasture growth. This has increased input use among these farms and reduced overall productivity gains.

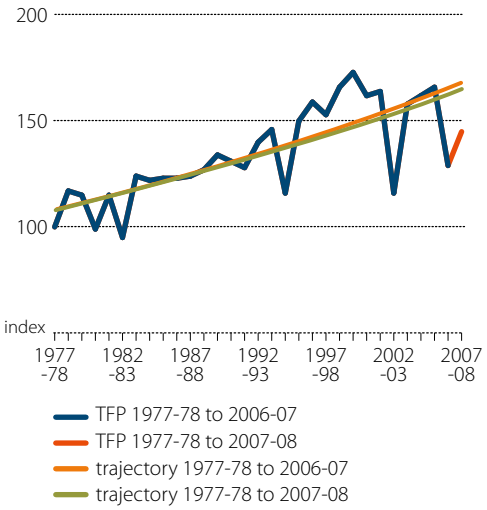
Cropping farms have also changed their input use and management practices to address the riskiness caused by drought. For example, some have ceased to use summer crop rotations or removed some crops because of their inherent riskiness. In many cases, growing of summer and alternative crops enabled more efficient use of farm

box 5 **Why do ABARE's long-term productivity estimates change each year?**

Understanding movements in productivity growth can be a challenge, particularly in agricultural industries where year to year fluctuations are high. Productivity is simply a ratio of output to input, so it is natural that estimates change as outputs and inputs change. Nevertheless, productivity estimates in agriculture can be particularly erratic because of the influence of weather conditions.

Long-term estimates of productivity growth are considered the most reliable indicators of performance as the effect of year to year fluctuations are reduced. These are estimated by regressing the logarithm of the productivity index over time to give an annual average growth rate. However, movements in any given year can still affect long-term estimates. Each year, ABARE collects and incorporates another year of farm survey data into the productivity estimates. The additional year of data can sometimes produce vastly different results to productivity estimates if the new observation diverges from the long-term trend.

t Estimating TFP growth over time



In 2007-08, the level of inputs, outputs and productivity increased from the previous year (figure e). However, long-term growth rates actually fell when this year was included, with TFP growth falling from an average of 1.47 per cent a year for the period 1977-78 to 2006-07 to 1.39 per cent when data for 2007-08 are added (table 8).

Based on the regression methods used for estimating annual TFP growth, the growth pattern fits an exponential trajectory over time (figure t). As a new year of TFP data is added, the trajectory is re-estimated. In 2007-08, the new TFP was below the previously estimated trajectory, so the annual average growth rate was indeed lower, despite the increase from the previous year.

Any changes in the sample size, data variables or time periods are likely to lead to different productivity growth estimates. This is important to keep in mind when interpreting changes in productivity growth and their potential causes.

8 Comparing estimates from year to year

	TFP growth %	output growth %	input growth %
1977-78 to 2007-08	1.39	0.81	–0.58
1977-78 to 2006-07	1.47	0.83	–0.62

machinery and labour, and so removing them has reduced productivity and overall production. Other cropping farmers have adjusted input applications in response to uncertainty.

Both the cropping and livestock industries have been affected by poor seasonal conditions over the past decade. While livestock productivity growth has accelerated, it may have been even higher had conditions been more favourable.

Factors that have been identified as being of particular importance to productivity growth in the cropping sector are outlined in box 6.

Changes in input use between industries

As mentioned above, changes in input use can explain some of the long-term productivity trends experienced in agricultural industries. Productivity gains can arise from increasing output, reducing input use or by changing input

box 6 **Findings from the 2009 workshops on cropping productivity**

In July 2009, as part of a project funded by GRDC, ABARE conducted a series of workshops with cropping farmers and agronomists to gather regional information about the drivers of productivity growth. Workshops were held in Toowoomba, Dubbo, Perth, Adelaide, Horsham and Melbourne with grain growers and consultants from the surrounding region. The participants discussed the strong productivity growth during the 1980s and 1990s, the recent slowdown experienced by the cropping industry, and prospects for future productivity gains.

The participants agreed that the uptake of new technologies, expansion of cropping areas, increased farm size and improved varieties were major contributors to productivity gains in the past. Conservation farming was believed to have productivity benefits for some farmers through improved soil quality, water use efficiency and timing flexibility.

Many farms had faced a decline in productivity owing to drought conditions over the past decade. The drought reduced crop yields, increased input costs and reduced the viability of some break crops to the point where rotations were ceased. Drought conditions also reduced overall confidence and investment in new technologies, although many growers were using the opportunity to improve risk management and water use efficiency.

Farmers and consultants also highlighted other factors believed to have led to the productivity slowdown. These included a decline in the gains from new technologies, slower adoption rates for new technologies and knowledge constraints in effectively using technologies. The shift in research priorities away from productivity growth was also a concern.

The main limitations to the adoption of new technologies were human capital and knowledge constraints, with farmers not having the necessary skills, incentives or information necessary for successfully integrating innovations into existing farming systems. Farmers expressed a desire for improved extension services, especially given the greater level of knowledge and diversity of skills required for effective farm management. Regional specific knowledge and farming system options were also desired.

Future productivity gains were predicted to come from improved cropping systems, human capital and risk management skills, as well as new crop varieties. Improved varieties to address climatic variability, reduce frost-susceptibility and increase nutrient efficiency and yields were considered to be a priority as well as break crops that could be viable in dry seasons. Research and development was indicated as the key solution to the slowdown, although a strong focus on extension was considered critical for R&D efforts to be successful.

mix to achieve efficiency gains. As operating environments change and as new technologies become available, farm managers may change their production systems, and hence input mix, to become more efficient.

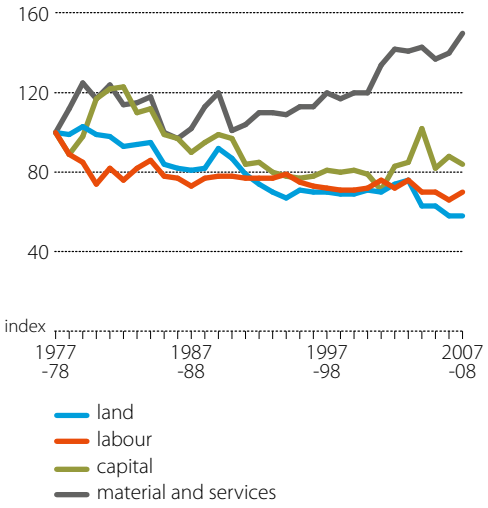
Overall, broadacre industries have reduced their input use by 0.6 per cent a year on average between 1977-78 and 2007-08. There has been a reduction in the use of land, labour and capital over this period although the use of materials and services has increased (figure u, table 9). This suggests that the ability of farm managers to reduce input requirements, and improve productivity, has come partly from additional use of seed, fodder, fuel, fertilisers and services (Nossal et al. 2009).

However, input use changes have differed between industries. Land used for broadacre farming has decreased overall, despite an increase among cropping farms (figure v, table 9). Cropping specialists increased land use by 1.4 per cent

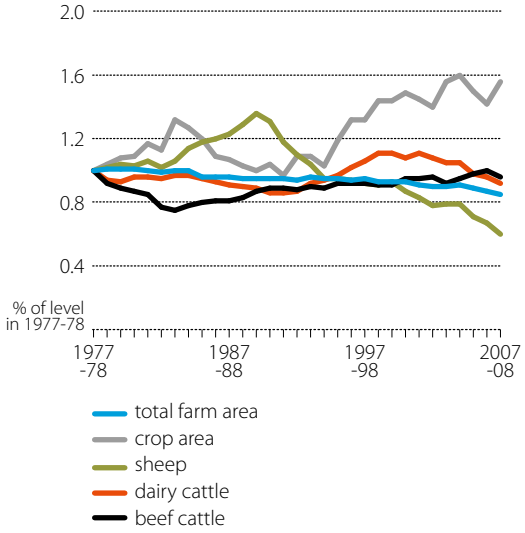
9 **Broadacre industry input use and partial factor productivity, 1977-78 to 2007-08** average annual growth

	land		labour		capital		materials and services	
	input use	PFP	input use	PFP	input use	PFP	input use	PFP
	%	%	%	%	%	%	%	%
Total broadacre	–0.7	1.5	–1.7	2.6	–1.1	1.9	0.9	0.0
Cropping	1.4	1.7	–0.2	3.3	–0.3	3.4	2.6	0.4
Mixed crop-livestock	–1.3	1.2	–2.6	2.4	–2.6	2.5	–0.2	0.1
Beef	–0.3	2.1	–0.6	2.4	1.1	0.7	2.2	–0.4
Sheep	–1.2	–0.2	–2.6	1.2	–2.8	1.4	–1.1	–0.4

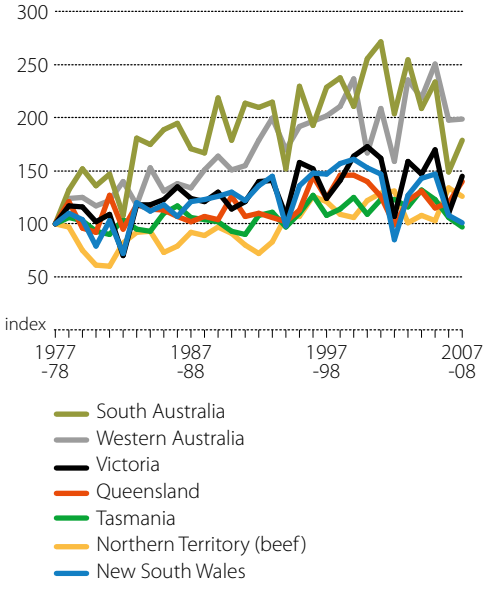
U Changes in input use among broadacre industries



V Changes in farm land use and livestock numbers
relative to 1977-78 levels



W Broadacre productivity growth
by state



a year on average between 1977-78 and 2007-08. Expanding cropping area to enable better use of technologies and improve economies of size is a recognised source of productivity gains (Kokic, Davidson and Boero Rodriguez 2006; Zhao, Sheng and Kee 2009).

All broadacre industries have improved their labour productivity over the long term (table 9). The cropping sector achieved the greatest improvements in labour productivity, although because of strong output growth total labour use fell only marginally.

Beef producers increased capital intensity over the past three decades by an average of 1.1 per cent a year, with below average gains in capital productivity. The use of materials and services inputs also increased, by 2.2 per cent a year, which indicates a shift toward more intensive beef production. The increased use of purchased feed, partly in response to poor pasture growth in drought affected areas, is likely to be a main cause of growth in input use.

Regional disparities

Disparity in local environmental and market circumstances between states and regions has implications for productivity performance. Comparing the level of total factor productivity across Australia shows variability in performance between 1977-78 and 2007-08 (figure w). In particular, increasing productivity has been identified in recent years for the Northern Territory, where cattle enterprises have intensified along with export trade. In contrast, the south-eastern states of South Australia, New South Wales and Victoria are characterised by significantly slower productivity growth compared with a decade ago.

During the 1980s and 1990s, the composition of the South Australian broadacre industry shifted from mostly livestock to mostly cropping, where productivity gains and returns were higher. More recently, drought conditions have seen some shift back to livestock as farms aim to diversify and minimise risk exposure. This trend has been observed across most states.

Interstate comparisons show that long-term broadacre productivity growth has been highest in Western Australia and lowest in Tasmania and Queensland between 1977-78 and 2007-08 (table 10). These trends are a consequence of the different structure of the broadacre industry in each state as well as differences in average farm size, environmental and seasonal conditions and other historical factors.

Productivity estimates at the state and regional level relate to a smaller sample size and therefore are not as precise as national estimates. Nevertheless, the trends observed do offer some additional insights about the performance of broadacre agriculture. All states reduced their overall input use over the long term as a result of improved efficiency and technological progress. With the exception of Tasmania, all states also expanded their output of broadacre products.

Tasmania's broadacre industry is dominated by livestock production, predominately beef and wool. As with other beef and sheep industries, productivity growth did not pick up until the late 1990s. The state has seen variability in performance since then as a consequence of ongoing drought. Comparatively, the Northern Territory, where the broadacre industry comprises mostly beef production, has achieved

relatively strong productivity growth over the past decade with an expansion of the industry in terms of herd size, output and trade.

Long-term productivity growth in Western Australia has exceeded other states, despite a deviation from the upward trend over the past decade (figure w). The broadacre industry in Western Australia is dominated by large cropping enterprises which have achieved relatively strong productivity growth by increasing farm size and benefiting from the technological improvements possible with a larger scale. However, Western Australia has not been exempt from the slowdown in cropping productivity experienced more generally, despite drought conditions being more moderate than in eastern states.

Productivity growth has slowed in all states over the past decade (table 10). Western Australia and the Northern Territory were the only states to experience positive growth between 1998-99 and 2007-08. Nevertheless, productivity growth rates in these states were also well below their long-term average.

10 Broadacre productivity growth by state, 1977-78 to 2007-08
average annual growth

	input growth %	output growth %	productivity growth 1977-78 to 2007-08 %	short-term productivity growth 1998-99 to 2007-08 %
WA	–0.5	1.8	2.4	0.5
SA	–0.4	1.4	1.8	–3.6
NT (beef) a	–0.2	1.5	1.7	0.8
VIC	–0.6	0.7	1.3	–1.5
NSW	–0.7	0.3	1.0	–4.0
QLD	–0.1	0.6	0.8	–1.5
TAS	–2.8	–2.1	0.7	–1.1

a NT includes only beef specialists.

Dairy productivity growth

The dairy industry expanded output by an average of 4.7 per cent a year between 1988-89 and 2007-08. Unlike the broadacre industry, the majority of the additional output was gained from increasing inputs rather than improvements in productivity. Total input use by dairy farms increased by an average of 3.9 per cent a year, compared with an average 0.8 per cent a year productivity growth (table 11).

11 Dairy industry productivity growth by state

	TFP growth	output growth	input growth
Australia	0.8	4.7	3.9
NSW	1.8	5.2	3.4
VIC	0.1	4.2	4.1
QLD	1.4	4.2	2.8
SA	1.3	7.7	6.4
WA	1.7	4.1	2.5
TAS	0.8	5.4	4.6

Note: Dairy industry estimates are from 1988-89 to 2007-08.

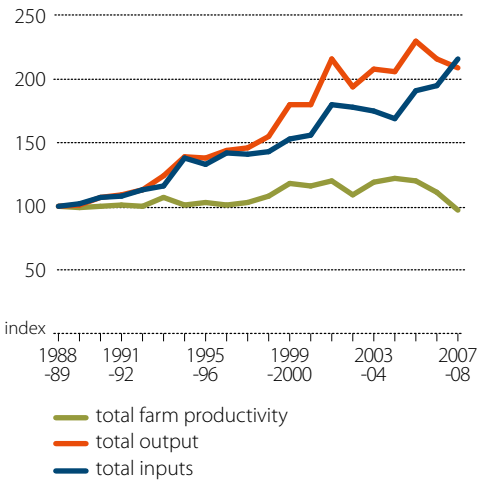
In the decade before deregulation (in 2000), the dairy industry did not achieve any substantial productivity gains (figure x). Since then, some farms have left the industry while others have increased the size and intensity of operations. While higher milk yields and labour productivity improvements did enable some overall total factor productivity gains during the early 2000s, the effect of these improvements has been less pronounced in recent years and dairy productivity growth has fallen. Comparing the long-term productivity gains between 1988-89 and 2004-05 with those from 1988-89 to 2007-08 shows a fall from 1.3 per cent a year on average to 0.8 per cent a year (figure y). The slowdown has been most pronounced in those states affected by low irrigation water allocations. Western Australia has seen an insignificant change in long-term productivity growth in recent years, potentially because of lower variability in seasonal conditions and the greater prevalence of mixed dairy and beef cattle operations.

As with the broadacre industry, the slowdown in dairy productivity is likely to be an outcome of a combination of factors. One factor has been poor seasonal conditions and limited water allocations, which have inhibited productivity gains by reducing pasture growth and output, and increasing input use through additional purchases of fodder and feed grains.

12 Dairy industry input use and partial factor productivity growth

	Input use	PFP
Land	2.3	3.9
Labour	0.8	2.4
Capital	2.3	2.4
Materials and services	6.4	–1.7

X Dairy inputs, outputs and TFP
1988-89 to 2007-08



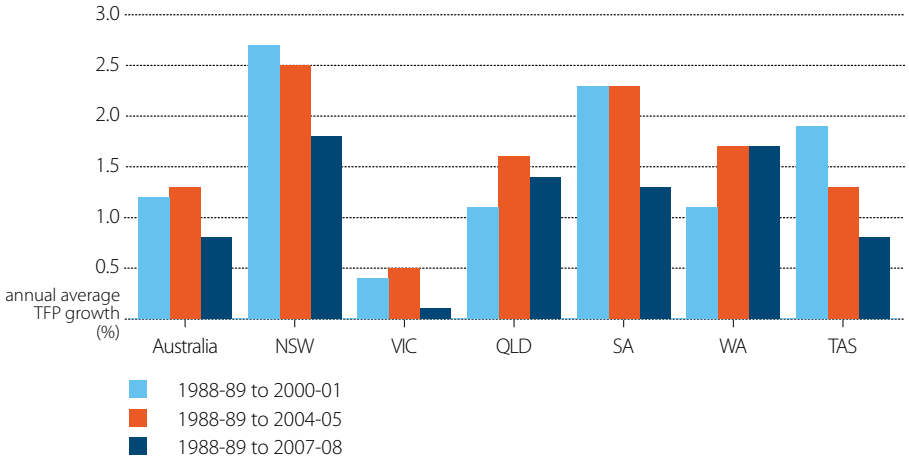
In 2007-08, dairy productivity fell to below the level in 1988-89 (figure x). Short-term output and input-side factors contributed to the fall with the output index falling to below the input index. Total output declined because milking cow numbers were lower after some vulnerable farms reduced herd size to offset rises in fodder and feed grain prices. Input use increased through relatively higher use of supplementary feeding and a substantial rise in capital investment. Investment in vehicles, plant, machinery and other farm improvements increased by more than two-thirds in 2007-08 as a result of improved cash flow and the strong Australian dollar. Dairy farm cash income in 2007-08 was the highest in the past 20 years (ABARE 2009).

Underlying short-term TFP shifts, the investments made by the dairy industry are likely to improve its ability to materialise productivity gains over the long term. Therefore, the severe fall in short-term productivity reflects longer-term decision-making and is not likely to be of any long-term detriment to the industry (see box 7 for further discussion). Technologies and management systems continue to improve with ongoing growth in milk yields.

At this stage, expenditure on supplementary feed is likely to remain high because of low allocations of irrigation water, particularly in the eastern states, making it difficult to grow fodder on farm. Reduced water has led many farms to switch to a feedlot based feeding system using more purchased feeds, leaving the pasture system under-utilised.

While the substantial growth in output achieved by the dairy industry over the past two decades has been achieved by increasing inputs, the composition of these inputs has changed. Large improvements have been made to labour productivity (2.4 per cent a year) which appears to have been enabled by high growth in the use of materials and services (averaging 6.4 per cent a year) (table 12). The partial factor productivity estimate for materials and services was negative, at -1.7 per cent a year. One aspect of this trend is the increased use of supplementary feeding, at a faster rate than growth in output. At this stage, growth in materials and services use has not generated substantial productivity improvements overall, with TFP growth averaging just 0.8 per cent a year.

y Changes in dairy industry productivity growth



box 7 **Productivity and farm incomes/profitability**

Productivity and profitability are related concepts. While profitability is typically the objective of farm managers, producers most commonly influence their profits through changes in productivity.

Profitability is determined by two factors: productivity and the terms of trade, which is the ratio of prices received to prices paid. As agricultural output and input prices are determined largely on global markets, farm managers have a negligible influence over their terms of trade. Therefore, it is only productivity that farm managers can improve through innovation in technologies and management systems.

In seeking to maximise profits, farm managers respond to changes in the production environment in a variety of ways including changing their input or output mix, using different technologies or practices or changing the size of their operations (Jackson et al. 2010). The success of the changes in increasing profitability will depend on their effect on productivity through increasing output (or output quality) or reducing input costs.

It should be noted that declining productivity in the short term is not always bad for profitability over the long term, particularly if there is a change in the terms of trade. For example, if input prices fall, farm managers may choose to invest in new technology. Large capital investments increase input use, but may take time to influence output. Consequently, while the investment is likely to add new capacity and increase potential for future productivity gains, it may adversely affect short-term productivity growth.

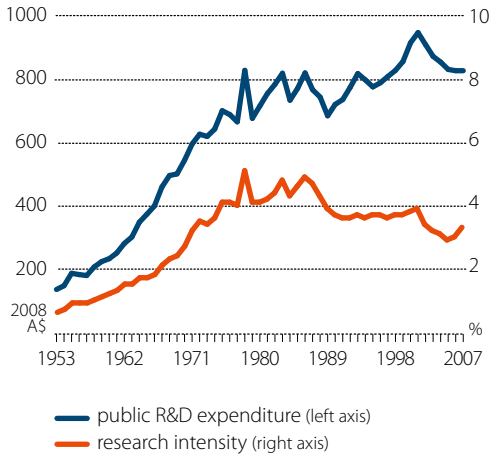
Explaining the slowdown in agricultural productivity growth

In the past, the key to productivity growth in Australian agriculture has been improvements across three areas: the creation of new knowledge and technologies; improved use of available innovations; and structural changes that have led to fewer farms with larger operating area and shifts in production and enterprise mix.

Although there has been a fall in long-term productivity growth, technological progress has not stalled or regressed. Australian agriculture continues to focus on research and innovation with more than 80 per cent of broadacre farms and more than 90 per cent of dairy farms undertaking some innovative activity between 2006-07 and 2007-08 (Liao and Martin 2009). There continues to be improvements made to the set of crop varieties, livestock breeds, soil and water management practices, pasture types and precision agriculture technologies employed. In addition, farm managers have a greater set of tools for record keeping and decision-making, particularly since the introduction of advanced computer based communication technologies. Environmental and market pressures have also provided a strong incentive to improve productivity as farm managers seek to overcome climate variability, land degradation, water restrictions and price fluctuations to maintain viability and competitiveness.

Statistical analysis has confirmed a break in the upward trend in broadacre productivity growth during the mid-1990s. It is well recognised that a decade of poor seasonal conditions has caused volatility in broadacre productivity estimates and affected the ability of farm managers to materialise productivity gains from the innovative activities they have undertaken. The effects of short term climate variability on measured productivity are minimised by considering productivity growth over a long time period. However, given the persistent drought conditions over much of the past decade, with eight consecutive years of below average rainfall in some regions, a lower long-term growth pattern has been observed. More detailed analysis has found that the slowdown in productivity growth cannot be explained by drought conditions alone.

Z Public agricultural research investment and intensity, 1953 to 2007



Source: Sheng, Mullen and Zhao 2010

Another factor used to explain much of the productivity slowdown has been a long-term slowing in the rate of growth in public investment in agricultural research. Public expenditure on research and development (R&D) in Australian agriculture increased from $140 million in 1953 to $829 million in 2007 (in 2008 dollars). Between 1953 and 1980, the growth in research investment averaged 6.5 per cent a year, compared with 0.6 per cent a year since 1980. As a share of agricultural gross value of production (GVP), investment peaked at 5 per cent in the late 1970s, but has progressively fallen to slightly more than 3 per cent in 2007 (figure z). In the statistical analysis by Sheng et al. (2010), it was shown that slowing agricultural productivity growth can only be explained when the effects of both water stress (drought) and the reduction in public R&D were considered jointly.

Investment in R&D has a lagged effect on productivity, with the effects often continuing for more than 35 years (Alston et al. 2009; Mullen 2007). Hence, the long-term slowing of investment growth could continue to affect productivity gains for many decades. As well as a slowdown in R&D investment growth, agricultural R&D investment in Australia and internationally has recently been spread across a wider variety of areas (for example food safety, environmental management, biosecurity and climate change) than has been the case historically. While research in these areas has complementary benefits for agricultural productivity growth, spreading resources more thinly could reduce the effect of research outputs on productivity growth.

While dry seasons and declining R&D are the two major drivers behind the changing trend in broadacre productivity growth, other factors could also play a contributing role. For example, it has been argued that the uptake of new technologies and farming systems has slowed compared with previous decades and that the largest gains from innovating have already been made. Innovation adoption is affected by a number of factors including awareness, accessibility, suitability and adaptability. Ageing farm populations could also affect innovation uptake, with older farmers often less willing to invest in new technologies or skills (Jackson 2010).

Perhaps associated with the ageing farm population, structural adjustment on farms has also begun to slow. Compared with previous decades, in the 2000s there were fewer farm sales and hence fewer farm aggregations. Increasing farm size through the amalgamation of farms is a commonly recognised productivity driver from the 1990s. This slowing structural change has also coincided with fewer farmers leaving the land, despite a run of poor seasons and many farm managers acknowledging that they do not have succession plans in place (Jackson 2010).

On-farm adjustments have also been lagging because of reduced confidence among farm managers, with many becoming more risk averse. Coupled with the financial effects of drought, this has been a contributor to the reduced investment in new technologies, fewer adjustments in farm practices and a hesitation to change production mix in response to the changing conditions. In addition, many farms have stopped their typical rotation systems because of the riskiness associated with some rotation crops.

Opportunities for lifting productivity growth

The solution to lifting productivity growth is likely to lie in targeting the well-known drivers that accelerated farm productivity in the past: the development of new innovations, the adoption of existing innovations and overall structural change. The productivity growth slowdown has made it apparent that adjustments in these areas are not happening fast enough. Further research into the effect of each of these productivity drivers will therefore play a constructive role in progressing productivity growth.

The potential for advancing the development and adoption of agricultural innovations is likely to be high. There have been continuous advances in technologies and in identifying superior strategies and farming systems. Over the long term, these advances have made the greatest contribution to productivity growth and therefore productivity growth is commonly interpreted as a measure of technological progress. Such innovation has enabled Australian agriculture to become more competitive and has been a key driver of economic growth.

Additional investment in R&D and improved targeting of R&D investments (toward productivity gains alongside other objectives) will therefore be a major contributor to long-term productivity growth. A clearer definition of objectives and better coordination and alignment of rural R&D toward these objectives is necessary. Achieving an appropriate balance between public and private research expenditure will also be important given the cross-cutting issues and high public good and industry benefits (Mallawaarachchi et al. 2009).

Nevertheless, innovations do not affect productivity until they are integrated into farm operations and used to generate net benefits. In the short to medium term, productivity gains are likely to come about by making better use of existing opportunities. Quality information and extension services that inform farm managers about technologies and production systems which can be easily integrated into existing productivity systems will be important in facilitating innovation. Additional research is also needed to identify innovations likely to have the greatest benefit for productivity and profitability. Identifying such innovations is not simple given the regional and farm level variability in production methods, farm environments and managerial capabilities. More regionally specific knowledge is critical.

Potentially, the most important aspect of increasing productivity will be in improving the ability of farm managers to adjust farming systems in response to changing conditions and to make the best use of more efficient technologies as they become available. There remain opportunities for Australian governments to facilitate improvements in this area. Some rural policy settings impede structural adjustment, with adverse effects on the capacity for innovation among top performing farms. For example, the drought policy settings currently under review are an area where reform could improve efficiency and reduce impediments to change.

Regional Outlook conference

Conference schedule for 2010

WA	Albany	28 April
TAS	Hobart	19 May
NSW	Wagga Wagga	30 June
QLD	Mareeba	28 July
VIC	Swan Hill	18 August
SA	Port Lincoln	15 September
NT	Katherine	13 October

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Survey methods and definitions

ABARE has conducted surveys of selected Australian agricultural industries since the 1940s. These surveys provide a broad range of information on the economic performance of farm business units in the rural sector. They provide a structural set of information for research and analysis which forms the basis of many publications, papers, briefing material and industry reports.

The annual agricultural surveys currently undertaken are:

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

Definitions of industries

Industry definitions are based on the 2006 Australian and New Zealand Standard Industrial Classification (ANZSIC06). This classification is consistent with an international standard applied comprehensively across Australian industry, permitting comparisons between industries, both within Australia and internationally. Farms assigned to a particular ANZSIC have a high proportion of their total output characterised by that class. Further information on ANZSIC and on the farming activities included in each of these industries is provided in Australian and New Zealand Standard Industrial Classification (ABS 2006, cat. no. 1292.0).

The five broadacre industries covered by AAGIS are:

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

Target populations

The AAGIS is designed from a frame (population list) drawn from the Australian Business Register (ABR) and maintained by the Australian Bureau of Statistics (ABS). The ABR comprises businesses registered with the Australian Taxation Office (ATO). The ABR-based frame provided to ABARE consists of agricultural establishments with their corresponding statistical local area, ANZSIC, and a size of operation variable.

The sample frame for the ADIS is a list of dairy farms who have paid levies based on their milk deliveries, sourced from the Levies Revenue Service. This list is provided by Dairy Australia. The design measure for ADIS is total milk production for each dairy business on the frame.

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

The size of operation variable used in ABARE survey designs is usually 'estimated value of agricultural operations' (EVAO). However, in some surveys in recent years other measures of agricultural production have also been used. EVAO is a standardised dollar measure of the level of agricultural output. A definition of EVAO is given in Agricultural

Industries: Financial Statistics (ABS 2001, cat. no. 7506.0). Between 2004-05 and 2007-08 the ABARE survey included establishments classified as having an EVAO of $40 000 or more. Between 1991-92 and 2003-04 the survey included establishments with an EVAO of $22 500 or more. Between 1987-88 and 1991-92 the survey included establishments with an EVAO of $20 000 or more. Prior to 1986-87 the survey included establishments with an EVAO of $10 000 or more.

Survey design

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

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

The sample size for AAGIS is usually around 1500 and for ADIS around 300.

The main method of collection for both surveys is face to face interviews with farmers. Respondents to the AAGIS and ADIS are also contacted by telephone in October each year to obtain estimates of projected production and expected receipts and costs for the current financial year. ABARE surveys also allow supplementary questionnaires to be attached to the main or to the telephone surveys. These additional questions help to address specific current issues.

Sample weighting

Farm level estimates published by ABARE are calculated by appropriately weighting the data collected from each sample farm and then using the weighted data to calculate population estimates. Sample weights are calculated so that population estimates from the sample for numbers of farms, areas of crops and numbers of livestock correspond as closely as possible to the most recently available ABS estimates from data collected from Agricultural Census and Surveys. The weighting methodology for AAGIS and ADIS uses a model-based approach, with a linear regression model linking the survey variables and the estimation benchmark variables. The details of this method are described in Bardsley and Chambers (1984).

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

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

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

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

Generally, larger farms have smaller weights and smaller farms have larger weights, reflecting both the strategy of sampling a higher fraction of the large farms than small farms (the former having a wider range of variability of key characteristics and accounting for a much larger proportion of total output) and the relatively lower numbers of large farms.

Reliability of estimates

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

Preliminary estimates and projections

Estimates for 2007-08 and all earlier years are final. All data from farmers, including accounting information have been reconciled, final production and population information from the ABS has been included and no further change is expected in the estimates.

The 2008-09 estimates are preliminary based on full production and accounting information from farmers. However, editing and addition of sample farms may be undertaken and ABS production and population benchmarks may also change.

The 2009-10 estimates are projections developed from the data collected via on-farm interviews and telephone interviews in the period October to December as well as from the preliminary estimates. Projection estimates include crop and livestock production, receipts and expenditure up to the date of interview together with expected production, receipts and expenditure for the remainder of the projection year. Modifications are made to expected receipts and expenditure where significant production and price change has occurred post interview. Projection estimates are subject to greater uncertainty than the preliminary and final estimates.

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

Sampling errors

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

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

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

Calculating confidence intervals using relative standard errors

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

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

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

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

Comparing estimates

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

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

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

A 95 per cent confidence interval for the difference is:

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

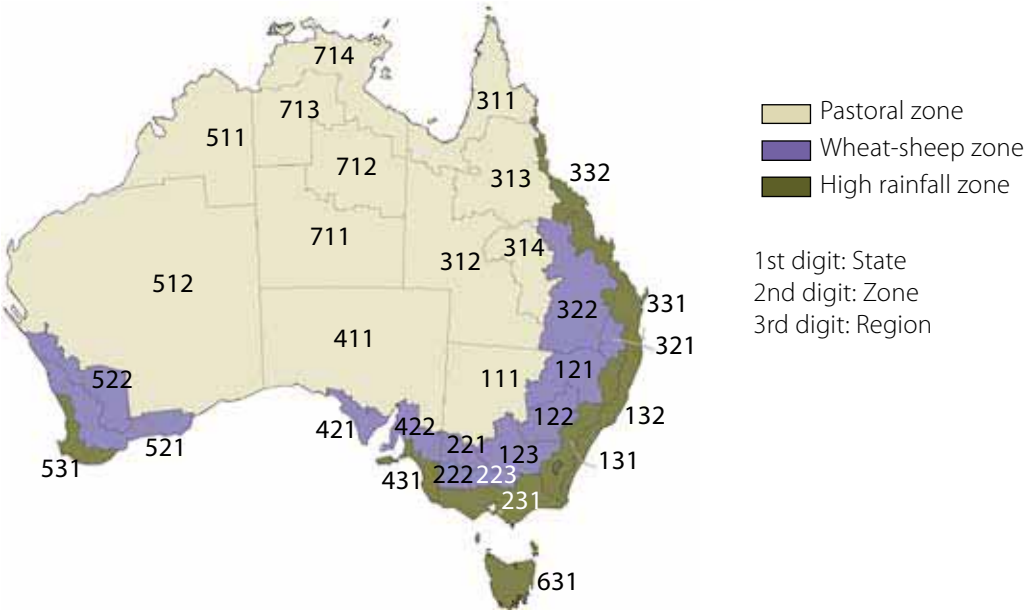
Hence, if a large number (towards infinity) of different samples are taken, in approximately 95 per cent of them, the difference between these two estimates will lie between $6174 and $43 826. Also, since zero is not in this confidence interval, it is possible to say that the difference between the estimates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

Regions

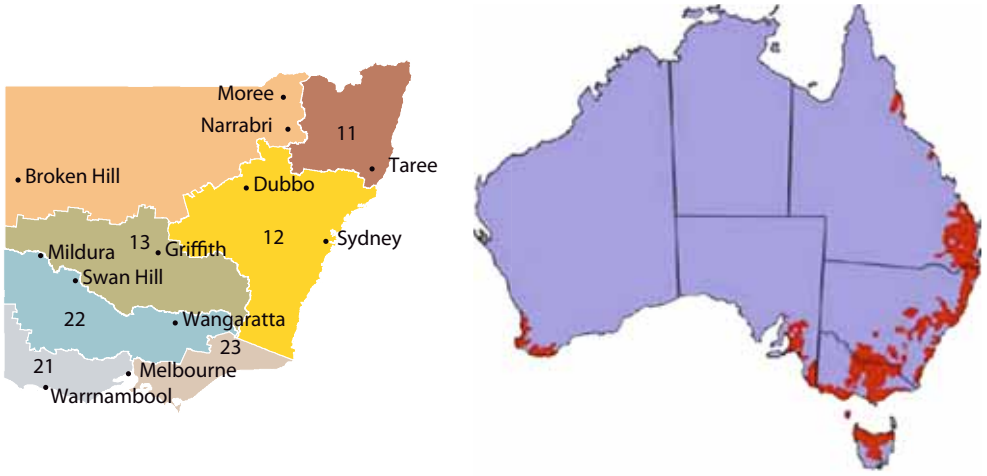
Broadacre and dairy statistics are also available by region. These regions, shown in maps 2 and 3, represent the finest level of geographical aggregation for which the survey is designed to produce reliable estimates.

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

map 2 **Australian broadacre zones and regions**



map 3 Australian Dairy Industry Survey regions of New South Wales and Victoria



Definitions of items

Owner manager The primary decision-maker for the farm business. This person is identified by discussion between interviewer and interviewee as (one of) the key decision-maker(s) in the farm business. This person is usually responsible for the day-to-day operation of the farm and may own or have a share in the farm business. Termed 'operator' or 'cooperator' in previous ABARE publications.

Physical items

Total area operated Includes all land operated by the farm business, whether owned or rented by the business, but excludes land sharefarmed on another farm.

Labour Measured in work-weeks, as estimated by the owner manager or manager. It includes all work on the farm by the owner manager, partners, family, hired permanent and casual workers, and sharefarmers but excludes work by contractors.

Hired labour Excludes the farm business manager, partners and family labour, and work by contractors. Expenditure on contract services appears as a cash cost.

Beef cattle Cattle kept primarily for the production of meat, irrespective of breed.

Dairy cattle Cattle kept or intended mainly for the production of milk or cream.

Financial items

Capital The value of farm capital is the value of all the assets used on a farm, including the value of leased items but excluding machinery and equipment either hired or used by contractors. The value of 'owned' capital is the value of farm capital excluding the value of leased machinery and equipment.

ABARE uses the owner manager's valuation of the farm property. The valuation includes the value of land and fixed improvements used by each farm business in the survey, excluding land sharefarmed off the sample farm. Residences on the farm are included in the valuations.

Livestock are valued at estimated market prices for the land use zones within each state. These values are based on recorded sales and purchases by sample farms.

Prior to 2001-02, ABARE maintained an inventory of plant and machinery for each sample farm. Individual items were valued at replacement cost, depreciated for age. Each year, the replacement cost was indexed to allow for changes in that cost.

Since 2001-02, total value of plant and machinery has been based on market valuations provided by the owner manager for broad categories of capital such as tractors, vehicles, irrigation plant, etc.

The total value of items purchased or sold during the survey year was added to or subtracted from farm capital at 31 December of the relevant financial year, irrespective of the actual date of purchase or sale.

Farm business debt

Estimated as all debts attributable to the farm business, but excluding personal debt, lease financed debt and underwritten loans including harvest loans. Information is collected at the survey interview, supplemented by information contained in the farm accounts.

Change in debt

Estimated as the difference between debt at 1 July and the following 30 June within the survey year, rather than between debt at 30 June in consecutive years. It is an estimate of the change in indebtedness of a given population of farms during the financial year and is thus unaffected by changes in sample or population between years.

Farm liquid assets

Assets owned by the farm business which can be readily converted to cash. They include savings bank deposits, interest bearing deposits, debentures and shares. Excluded are items such as real estate, life assurance policies and other farms or businesses.

Receipts and costs

Receipts for livestock and livestock products sold are determined at the point of sale. Selling charges and charges for transport to the point of sale are included in the costs of sample farms.

Receipts for crops sold during the survey year are gross of deductions made by marketing authorities for freight and selling charges. These deductions are included in farm costs. Receipts for other farm products are determined on a 'farm-gate' basis. All cash receipt items are the revenue received in the financial year.

Farm receipts and costs relate to the whole area operated, including areas operated by on-farm sharefarmers. Thus, cash receipts include receipts from the sale of products produced by sharefarmers. If possible, on-farm sharefarmers' costs are amalgamated with those of the sample farm. Otherwise, the total sum paid to sharefarmers is treated as a cash cost.

Some sample farm businesses engage in off-farm contracting or sharefarming, employing labour and capital equipment also used in normal on-farm activities. Since it is not possible to accurately allocate costs between off-farm and on-farm operations, the income and expenditure attributable to such off-farm operations are included in the receipts and costs of the sample farm business.

Total cash receipts

Total of revenues received by the farm business during the financial year, including revenues from the sale of livestock, livestock products and crops, plus the value of livestock transfers off a property. It includes revenue received from agistment, royalties, rebates, refunds, plant hire, contracts, sharefarming, insurance claims and compensation, and government assistance payments to the farm business.

Total cash costs

Payments made by the farm business for materials and services and for permanent and casual hired labour (excluding owner manager, partner and other family labour). It includes the value of livestock transfers onto the property as well as any lease payments on capital, produce purchased for resale, rent, interest, livestock purchases and payments to sharefarmers. Capital and household expenditures are excluded from total cash costs.

- Handling and marketing expenses include commission, yard dues, levies etc. for farm produce sold.
- Administration costs include accountancy fees, banking and legal expenses, postage, stationery, subscriptions and telephone.

- Contracts paid refers to expenditure on contracts such as harvesting. Capital and land development contracts are not included.
- Other cash costs include stores and rations, seed purchased, electricity, artificial insemination and herd testing fees, advisory services, motor vehicle expenses, traveling expenses and insurance. While 'other cash costs' may comprise a relatively large proportion of total cash costs, individually the components are relatively small overall, and as such, have not been listed.

Financial performance measures

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

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