Dairy farms in the Murray–Darling Basin
Dale Ashton and Mark Oliver

Research by the Australian Bureau of Agricultural and Resource Economics and Sciences
ABARES research report 15.12
December 2015
Dairy farms in the Murray–Darling Basin

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

Postal address GPO Box 858 Canberra ACT 2601
Switchboard +61 2 6272 3933
Email info.abares@agriculture.gov.au
Web agriculture.gov.au/abares

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

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

Acknowledgements

This report uses data collected in the ABARES Murray–Darling Basin Irrigation Survey (MDBIS). This survey would not be possible without the cooperation and assistance of farmers and their accountants who provide information on farm operations. The 2012–13 and 2013–14 survey years were funded by the Murray–Darling Basin Authority. Earlier surveys were funded by the Department of the Environment, Water, Heritage and the Arts, the Department of Agriculture, Fisheries and Forestry and the National Water Commission.

The authors acknowledge comments provided on a draft of this report by Phil Townsend and Sandra Walpole of the Murray–Darling Basin Authority. Kenton Lawson of ABARES provided the maps used in this report. The authors are also grateful for the industry insights provided by dairy farmers, Dairy Australia and Australian Dairy Farmers at a workshop held at Tatura in Victoria during June 2015.
Contents

Summary 1

1 Introduction 2

2 Dairy production in the Murray–Darling Basin 4

3 Farm financial performance 9

4 Water use and technology 11

5 Water trading 15

Glossary 18

References 20

Figures

Figure 1 Decadal changes in selected dairy statistics, Australia, 1979–80 to 2009–10 5

Figure 2 Total milk production, southern Murray–Darling Basin, 1999–00 to 2013–14 6

Figure 3 Dairy farm numbers and area operated by herd size, Murray–Darling Basin, 2006–07 to 2014–15 7

Figure 4 Milk production and area operated by herd size, Murray–Darling Basin, 2006–07 to 2013–14 8

Figure 5 Farm cash income, dairy farms, Murray–Darling Basin, 2006–07 to 2014–15 9

Figure 6 Farm business debt, dairy farms, Murray–Darling Basin, 2006–07 to 2013–14 10

Figure 7 Indexes of water applied and area irrigated, dairy farms, Murray–Darling Basin, 2006–07 to 2014–15 12

Figure 8 Water use and fodder purchase indexes by herd size, Murray–Darling Basin, 2006–07 to 2014–15 13

Figure 9 Percentage of dairy farms by method of irrigation, Murray–Darling Basin, 2006–07 to 2014–15 14

Figure 10 Water application rates by technology, dairy farms, Murray–Darling Basin, 2006–07 to 2014–15 14

Figure 11 Percentage of dairy farms by allocation water trading activity, Murray–Darling Basin, 2006–07 to 2013–14 16

Figure 12 Selected water use data by allocation water trading activity, Murray–Darling Basin, 2006–07 to 2013–14 17
Maps

Map 1 Reporting regions, Murray-Darling Basin

Map 2 Dairy farm survey areas, 2012–13 to 2013–14, Murray-Darling Basin

Boxes

Box 1 Survey methodology
Summary

In this report data from the ABARES Murray–Darling Basin Irrigation Survey (MDBIS) are presented from 2006–07 to 2014–15, particularly 2012–13 to 2014–15. ABARES provides key farm performance measures for dairy farms and data on water trading and use of irrigation technologies. This report focuses on dairy farms located in the Murray and Goulburn–Broken regions of the southern Murray–Darling Basin.

Total milk production in the southern Murray–Darling Basin has trended downwards since the early 2000s. Since 2006–07 the number of registered dairy farms in the southern Murray–Darling Basin has fallen by around 25 per cent. Most of the decline was in small farms milking fewer than 200 head. The decline in the number of dairy farms is part of a long-term trend of declining dairy farm numbers across Australia.

Farm financial performance

Incomes of dairy farmers in the Murray–Darling Basin fluctuated widely over the survey period (2006–07 to 2014–15). This was largely a result of fluctuations in farmgate milk prices (because of changes in world dairy product prices), milk production and total input costs, particularly fodder.

Operators of large and medium farms (by herd size) were able to take advantage of periods of favourable milk prices and production conditions to record well above average farm incomes in some years. Incomes of small farms, however, remained modest because of their lower capacity to increase milk production when seasonal conditions were favourable.

Water use and technology

The seasonal pattern of milk production on dairy farms has important implications for input use. Farmers adjust their calving and fodder systems to maximise production from water use, subject to seasonal price incentives and feed supply factors.

Farm-level data show that many farmers reduced water application rates without affecting the volume of milk produced because they increased use of purchased feeds.

Flood/furrow systems were the most commonly used technologies for applying water on irrigated dairy farms. A smaller proportion of farms used travelling irrigators and moveable spraylines.

Water trading

Water trading has provided dairy farmers with greater flexibility in managing their use of water.

The number of dairy farmers trading temporary water allocations varied from year to year from 2006–07 to 2013–14. In 2012–13 and 2013–14 the proportion of dairy farmers trading water increased significantly as a result of permanent water access entitlement sales and a change in business and risk management strategies. Many farmers had sold water access entitlements and, subject to price, opted to purchase temporary water as required.
1 Introduction


The MDBA is gathering information to better understand and assess the effect of Murray–Darling Basin Plan water reforms on Basin industries and communities. ABARES irrigation farm data will assist the MDBA with its assessments. Changing commodity prices, costs of farm inputs, and varying seasonal conditions and irrigation water availability are also important drivers of annual changes in farm incomes.

ABARES has prepared a series of reports based on MDBIS data for the major irrigated agricultural industries (cotton, dairy, horticulture, rice and wine grapes). This report focuses on dairy farms in the Murray and Goulburn–Broken regions in the southern Murray–Darling Basin (Map 1). These two regions are a subset of the CSIRO regions in its Murray–Darling Basin Sustainable Yields Project (CSIRO 2007). See Box 1 for a brief explanation of ABARES survey methodology.

The MDBA and ABARES held a workshop with dairy farmers, Dairy Australia and Australian Dairy Farmers at Tatura during June 2015 to discuss the survey results and other important issues.
Box 1 Survey methodology

The ABARES survey of irrigation farms in the Murray–Darling Basin included irrigated dairy farms in the Murray and Goulburn–Broken regions, the major dairy regions in the Basin. Farm financial and physical information collected included land area and value, crop and livestock production and sales, irrigation water use by crop and pasture, irrigation water delivery methods, farm receipts and costs, labour use, debts and assets, and market values of farm capital.

ABARES surveys are designed and samples selected on the basis of a framework drawn from the Australian Business Register, which is maintained by the Australian Bureau of Statistics. To be eligible for this survey, farms had to have engaged in irrigated agricultural activities during the survey year, had an estimated value of agricultural operations of $40 000 or more and be defined as broadacre, dairy or horticulture industry farms.

Farm-level estimates published by ABARES are calculated by weighting the data collected from each sample farm and then using that data to calculate population estimates. Further information on ABARES farm survey methodology can be found on the [ABARES Surveys web page](#).

Some changes in farm businesses occur relatively quickly in response to movements in commodity prices, farm input prices, seasonal conditions and other factors. Other changes occur slowly because of past investment decisions, the fixed nature of many farm assets and the length of time for a return on new investments. It is therefore important to consider the full range of factors affecting an industry when considering the impacts of water policy reforms.

Water policy reform has included reducing barriers to water trade, changing pricing for water storage and delivery, funding for more efficient irrigation and water infrastructure, purchasing by government of permanent water entitlements and implementing the Murray–Darling Basin Plan. This report provides data on the economic performance of dairy farms and includes data on participation in water trading and use of irrigation technologies.
2 Dairy production in the Murray–Darling Basin

Dairy farming in the Murray–Darling Basin is concentrated in the southern Basin areas of northern Victoria and to a lesser extent southern New South Wales (Map 2). Smaller numbers of farms are located near Forbes and Wagga Wagga in New South Wales, Toowoomba and Warwick in Queensland and around Murray Bridge in South Australia.

The most recent ABARES survey of irrigation farms in the Murray–Darling Basin collected information from dairy farms in the Murray and Goulburn–Broken regions.


Since the early 1980s, the number of dairy farms in Australia has fallen by nearly two-thirds, the total area used for dairying has halved and the milk product processing and distribution sectors have been significantly rationalised. Despite these industry adjustments, total Australian milk production rose from 5.4 billion litres in 1979–80 to a peak of 11.2 billion litres in 2001–02, before declining to around 9.2 billion litres in 2013–14 (Figure 1) (ABARES 2015). In general, this restructuring has promoted a more efficient industry and has enabled growth to occur in the gross value of Australian dairy production per farm in real terms (Ashton et al. 2014).
Dairy farmers have adapted to the changing business environment by increasing both the size and intensity of their operations—by having more cows per farm and higher stocking rates, and making greater use of supplementary feeding. Farmers have also adopted new technologies, which have resulted in dairy farms becoming more capital intensive and less reliant on labour.

Total milk production in the southern Murray–Darling Basin mostly declined between the early 2000s and 2013–14 (Figure 2). Increases in milk production after 2010–11 were the result of improved seasonal conditions and water availability, and higher farmgate milk prices, largely driven by world prices for dairy products.
In this report, the population of dairy farms in the southern Murray–Darling Basin has been divided into three groups according to cow herd size:

- farms milking fewer than 200 cows
- farms milking between 200 and 350 cows
- farms milking more than 350 cows.

In 2014–15 around one-third of farms fell into each group.

In the southern Basin most of the decline in registered dairy farm numbers occurred in the group milking fewer than 200 head (Figure 3). The decline in the number of small farms occurred as some farmers exited the industry and some expanded the scale of their operations and moved into the larger categories shown in Figure 3. At the same time, the average farm area operated by the group with fewer than 200 cows increased by more than 50 per cent.

In the group milking between 200 and 350 cows, average farm area and farm numbers trended both upwards and downwards over the survey period. No consistent trend emerged. By 2014–15 registered farm numbers were slightly higher than in 2006–07, and average farm area was also higher.
For the group milking more than 350 cows, the trend in farm numbers was similar to the group with 200 to 350 cows. However, the group with more than 350 cows operated significantly larger farms than the other two groups. Average area operated by this group also showed a moderate upwards trend.

Figure 4 shows average area operated and average milk production from 2006–07 to 2013–14 for the three herd groups. Average farm area increased in the group milking fewer than 200 head, but the overall increase in average milk production was less than proportional. This means that milk production per hectare in this group fell as some of these farms diversified away from specialist milk production.

In general, the group milking fewer than 200 head was relatively more diversified than the other two groups. The group with fewer than 200 head generated roughly 60 per cent of total cash receipts from milk sales and a further 15 per cent each from crop sales and livestock sales. The groups with 200 to 350 and more than 350 cows both generated a minimum of around 85 per cent of total cash receipts from milk sales, 7 per cent from livestock sales and a negligible proportion from crop sales.

In contrast to the group with fewer than 200 cows, average milk production in the group with more than 350 cows increased proportionally more than farm area. This resulted in generally higher milk production per hectare. The groups with 200 to 350 and more than 350 cows both had broadly similar milk production per hectare between 2006–07 and 2013–14.
Figure 4 Milk production and area operated by herd size, Murray–Darling Basin, 2006–07 to 2013–14 average per farm

Note: Survey estimates for milk production are not available for 2014–15.
Source: Murray–Darling Basin Irrigation Survey
3 Farm financial performance

Farm financial performance is a key driver of change in the structure of the dairy industry. A key measure of farm financial performance is farm cash income.

Farm cash income is defined as total cash receipts minus total cash costs. It is a short term measure of the cash surplus available to a farm business for reinvestment or drawing family income after costs have been taken into account. Total cash receipts are the cash revenues received by a farm business. In most cases, milk sales are the largest receipt item. Other (usually minor) items include allocation water sales, contracting and government assistance payments.

Total cash costs are payments made for materials and services and include administration costs, crop-related expenses, interest and permanent and casual labour. Capital and household expenditures are not included in total cash costs. Detailed definitions of terms used in ABARES surveys appear in the glossary.

Incomes of dairy farmers in the Murray–Darling Basin tended to fluctuate widely over the survey period, from 2006–07 to 2014–15 (Figure 5). This was a result of fluctuations in farmgate milk prices (largely because of changes in world dairy product prices) and variations in milk production and total costs (particularly fodder), which were heavily influenced by prevailing seasonal conditions.

Figure 5 Farm cash income, dairy farms, Murray–Darling Basin, 2006–07 to 2014–15 average per farm

Note: 2014–15 data are provisional estimates.
Source: Murray–Darling Basin Irrigation Survey

Large and medium farms (by herd size) were able to take advantage of periods of favourable milk prices and production conditions to record well above average farm incomes in some years. Incomes of small farms, however, remained modest because of their lower capacity to increase milk production when seasonal conditions are favourable. Some irrigators reported low farm incomes and low farm business equity ratios in each year. These farms are likely to face the greatest short-term financial pressures, including debt servicing difficulties.
Average farm debt increased from 2006–07 to 2014–15 in real terms (Figure 6). Increased borrowing by individual farms for land purchases or new on-farm infrastructure and equipment contributed to the increase in average debt, while demand for ongoing working capital also rose. However, increases in average farm debt over time were modest relative to dairy farmers’ capacity to service debt by generating income. Average debt relative to total farm cash receipts remained relatively steady over the period.

**Figure 6 Farm business debt, dairy farms, Murray–Darling Basin, 2006–07 to 2013–14 average per farm**

Note: Survey estimates for business debt are not available for 2014–15.
Source: Murray–Darling Basin Irrigation Survey

ABARES research (Ashton et al. 2014) shows that total factor productivity (TFP) of dairy farms in the southern Murray–Darling Basin increased between 1999–2000 and 2012–13. TFP is a measure of how effectively farms combine a quantity of inputs to produce a quantity of outputs across the whole farm. The increases observed in TFP for dairy farms in the southern Basin had two sources. First, as smaller and less productive farms exited the industry, the average productivity of remaining farms was higher. Second, many dairy farms invested in new technologies and management practices that resulted in fewer inputs being required to produce a given quantity of output.

This productivity growth occurred over a period when dairy farms increasingly moved towards more intensive and automated systems, which reduced labour and land requirements per unit of output produced. Ongoing adjustment pressures over many years resulted in large numbers of dairy farmers leaving the industry or, to a lesser extent, moving regions. By region, industry productivity growth was highest in Queensland and northern New South Wales—dairy regions that had undergone the most significant structural adjustment (Ashton et al. 2014).

Long-term productivity growth in the Murray region was affected by prolonged drought during the 2000s, which resulted in historically low irrigation water allocations over several years. Reduced availability of home-grown fodder meant many dairy farmers purchased additional feed, but this did not result in a proportional increase in output. In other cases, farmers dried-off cows, which led to declines in output without a proportional fall in total input use.
4 Water use and technology

Dairy farms in the Murray–Darling Basin use irrigation water to supplement rainfall to produce pasture and fodder crops. Irrigation allows farmers to have a more stable and productive supply of pasture than relying on highly variable seasonal rainfall. The volume of water used in an irrigation season depends on temporary water allocations, the price of water on the temporary market, the price of fodder and feed grains, and climate (that is, evapotranspiration and rainfall).

Allocation water refers to the volume of water that is actually made available to an irrigator in a given year and is usually expressed as a percentage of that irrigator’s water access entitlement. A water access entitlement is a legal right (sometimes referred to as a permanent right) to a specified volume of water under conditions stipulated by an irrigation water management authority. Allocation water can be used or traded and water access entitlements can also be bought and sold.

Dairy feeding regimes can range from being entirely pasture and forage crop based to being based predominantly on grains and concentrates. Dairy farmers’ demand for irrigation water is consequently derived from their need to grow dairy feed (mainly pasture) on-farm and the mix of pasture and grain in feed rations. The extent to which irrigation water is available to supplement rainfall for pasture growth also affects dairy farmers’ demand for irrigation water.

Results vary widely across farms, but the survey data reveal a small positive relationship between the volume of irrigation water used and milk yield per cow. This reflects the importance of water (irrigation and rainfall) to pasture and crop production and, consequently, milk production. For individual farms this relationship is heavily affected by prevailing seasonal conditions and the extent to which purchased feed is substituted for feed grown on-farm.

Water allocations and rainfall were extremely low from 2006–07 to 2009–10 as a result of severe drought and reduced water in storages. In response to worsening drought and consequent worsening pasture production, some dairy farmers increased the amount of concentrated rations (including grain, supplements and hay) they fed to maintain milk production. At the same time, feed grain prices rose as the impact of drought on winter and summer grain production became more apparent. Conversely, some farmers chose to reduce cow numbers rather than pay higher grain and fodder costs.

The average total volume of water applied to crops and pasture increased significantly as water availability and seasonal conditions improved from 2010–11 onwards (Figure 7). This increase in total water used was more a result of increases in average area irrigated than increases in water application rates per hectare.

Individual farm data show that some farms had large fluctuations in area of crops and pasture irrigated from year to year. Even when water was scarce and prices rose, some farms consistently irrigated relatively small areas each year to maintain their core breeding herd.

The volume of water used and water application rates per hectare on individual farms can fluctuate widely from year to year in response to changes in allocations, traded water prices and seasonal conditions. However, it is difficult to analyse long-term trends in water use, efficiency and modernisation of irrigation infrastructure because the data do not include the period before the severe drought of the mid 2000s.
The seasonal pattern of milk production on dairy farms has important implications for input use. Dairy farmers typically choose calving patterns to maximise their profitability—largely influenced by seasonal price incentives and feed supply factors. These then determine seasonal demand for feed, water and other inputs.

From 2006–07 to 2014–15 around 65 per cent of dairy farms in the Murray and Goulburn–Broken regions used a year-round calving pattern, 26 per cent used split calving and 9 per cent used seasonal calving. In year-round calving herds calve for at least 10 months of the year; in split calving herds calve at two or three distinct times of the year (for example, in spring and autumn); and in seasonal calving all cows calve at a single time each year (Dairy Australia 2015).

The relationship between water use and milk yield was strongest for those with year-round calving. This reflects the need to use irrigation water to produce pasture and fodder crops to maintain milk production during summer and winter when less pasture is available.

Dairy farms can respond to a long-term reduction in water availability by changing their milking pattern from year-round to seasonal or split milking. However, milk supply contracts often lock farmers into higher-cost, year-round supply.

The mix of pasture and grains in a feeding regime depends on the cost of producing pasture and fodder crops relative to the price of grains. Consequently, when water prices rise, the marginal cost of producing pasture and fodder crops increases and dairy farms may substitute other inputs (such as purchased hay or grain) for irrigated pasture and crops and/or change the feeding regime. Figure 8 shows indexes—proportional yearly changes from a base year—for average total water applied and estimated quantities of fodder purchased, by herd size. Water use declined during the drought years for the groups of both 200 to 350 cows and more than
350 cows. From 2006–07 to 2009–10 many smaller farms did not have the same capacity as larger farms to purchase fodder and water because of weaker financial performance.

Figure 8 Water use and fodder purchase indexes by herd size, Murray–Darling Basin, 2006–07 to 2014–15

average per farm

Note: 2014–15 data are provisional estimates.
Sources: ABARES 2015; ABARES estimate; Murray–Darling Basin Irrigation Survey

Over the survey period, most dairy farms changed the way they managed water—such as through timing of irrigations and use of soil moisture monitoring—rather than the technologies used to apply water. Flood/furrow systems were the most commonly used technologies for applying water to pasture on dairy farms (Figure 9). Smaller proportions of farms used travelling irrigators. Other investments included laser levelling, metering and piping irrigation canals.
Dairy farms in the Murray–Darling Basin

Figure 9 Percentage of dairy farms by method of irrigation, Murray–Darling Basin, 2006–07 to 2014–15

Note: 2014–15 data are provisional estimates.
Source: Murray–Darling Basin Irrigation Survey

Water use and application rates declined from 2006–07 to 2008–09 as irrigators modified their irrigation practices to accommodate reduced water allocations. An improvement in water availability in 2009–10 resulted in increased water use on farms and higher application rates per hectare as many dairy farms returned to using pre-drought irrigation management practices (Figure 10).

Figure 10 Water application rates by technology, dairy farms, Murray–Darling Basin, 2006–07 to 2014–15

Note: 2014–15 data are provisional estimates.
Source: Murray–Darling Basin Irrigation Survey
5 Water trading

The southern Murray–Darling Basin is Australia’s main water market. In 2012–13 the Basin accounted for around 94 per cent of the total volume of permanent entitlement and allocation trade in Australia (NWC 2014). The southern Basin contains several hydrologically connected water systems, which cross the borders of New South Wales, Victoria and South Australia. The southern Basin has around 80 per cent of the Basin’s total water storage capacity and interstate trading is possible, so it accounts for more than 80 per cent of total Basin trade (BOM 2011; NWC 2014).

Water policy reform in Australia has driven growth in both the number of irrigators participating in water markets and the total volume of water traded each year relative to total entitlements. New entrants to the southern Murray–Darling Basin water market—using water for agricultural and non-agricultural purposes—are competing for a reduced pool of water.

Water trading has provided dairy farmers with greater flexibility in managing their water use. For example, survey results show that some dairy farms reduced water use for dairy production during drought in the mid 2000s and instead generated income from selling water allocations or entitlements.

In 2006–07—the first year drought severely affected irrigation allocations for dairy farmers—many dairy farmers initially purchased water on the temporary market and continued to irrigate pasture and crops. As the price of temporary water rose, it became more cost effective for dairy farmers to sell water allocations and purchase fodder and feed grains than produce fodder on farm. The survey results show that the ability to trade water allocations was also important in seasons with higher water availability.

The number of dairy farms trading water allocations varied from year to year from 2006–07 to 2013–14 but the majority of farms in any given year did not trade water allocations until 2012–13 and 2013–14 (Figure 11). The proportion of dairy farms buying temporary water increased in 2012–13 and 2013–14. Some dairy farmers at the workshop indicated this was because of changes in business strategy to source water from temporary markets rather than holding permanent entitlements.
Some dairy farms now have no or few permanent water entitlements and completely rely on the temporary water market. These farmers are purchasing water as part of routine farm business activities using various trading strategies, including:

- buying water when it is needed, subject to farm cash flow and water prices
- buying water early in the season and holding for future use to hedge against seasonal conditions and/or higher water prices
- buying water in small parcels throughout the season when the price is low enough
- buying fodder when the cost of purchasing water and producing fodder on-farm rises above the cost of purchasing fodder
- carrying over water allocations from the previous season to hedge against rising water prices or to sell if not required
- leasing temporary water from other irrigators.

Figure 12 shows average area irrigated, average total water applied and volumes bought and sold for three groups of dairy farms—classified as net buyers, net sellers or non-traders. Net buyers tended to irrigate larger areas and apply higher volumes of water than farms in the other two groups. The volume of water purchased as a proportion of total water applied by net buyers varied from around 25 per cent in 2007–08 to almost 70 per cent in 2010–11.
The net sellers group sold more water than they used between 2008–09 and 2011–12 (Figure 12). For all years except 2013–14, this group sold a minimum of 30 per cent of their total estimated water available. In 2009–10 more than 95 per cent of estimated water available was sold.

In addition to the temporary allocation water market, the market for permanent water access entitlements has also provided irrigators with a tool for managing their farm businesses. The ABARES irrigation survey results show that some dairy farmers sold part or all of their entitlements to the government. At least part of the proceeds from entitlement sales were used to reduce farm debt. Some irrigators sold entitlements and ceased irrigating or farming altogether, but others continued irrigated farming by purchasing seasonal water allocations or entitlements.

Source: Murray–Darling Basin Irrigation Survey
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of land at business premises</td>
<td>Includes all land operated by the business, whether owned or rented.</td>
</tr>
<tr>
<td>Capital</td>
<td>Value of capital employed by the business is market value of all assets used, including leased items but excluding machinery and equipment either hired or used by contractors. Market valuations were provided by the owner–manager of surveyed businesses. Included market value of land and fixed improvements used by the business but excluded value of the owner–manager’s house. House value deducted from total value of land and fixed improvements was the present day replacement cost, depreciated for age.</td>
</tr>
<tr>
<td>Debt</td>
<td>Estimated as business debt. Includes all debts attributable to the business excluding personal debt and underwritten loans. Information collected at the survey interview was supplemented by information in the business accounts.</td>
</tr>
<tr>
<td>Depreciation</td>
<td>Estimated by applying diminishing value depreciation method to market value of capital items at 30 June. Capital items are categorised into several groups and relevant depreciation rates are applied. Capital groups include vehicles; handling, harvesting and packing equipment; cultivation and sowing equipment; computers, electronic and communications equipment; other plant and equipment; and buildings on the business premises.</td>
</tr>
<tr>
<td>Equity ratio</td>
<td>Calculated as business equity as a percentage of owned capital at 30 June.</td>
</tr>
<tr>
<td>Farm business profit</td>
<td>Cash operating surplus plus build-up in trading stocks, less depreciation, less the imputed value of the owner–manager, partners and family labour.</td>
</tr>
<tr>
<td>Hired labour</td>
<td>Excludes owner–manager, partners and family labour, and work undertaken by contractors. Expenditure on contract services appears as a cash cost.</td>
</tr>
<tr>
<td>Imputed labour cost</td>
<td>Payments for owner–manager and family labour may bear little relationship to 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 Pastoral Award 2010 rates.</td>
</tr>
<tr>
<td>Labour</td>
<td>Measured in work weeks, as estimated by the owner–manager. Includes all work on the business by the owner–manager, partners, family and hired permanent and casual workers but excludes work done by contractors.</td>
</tr>
<tr>
<td>Off-farm income</td>
<td>Income not derived from the surveyed farm business. Includes all off-farm income from wages and salaries, other businesses, other investments and Commonwealth social support payments. Estimated for owner–manager and spouse only.</td>
</tr>
<tr>
<td>Owner–manager</td>
<td>Primary decision-maker for the business. This person is identified by discussion between interviewer and interviewee as (one of) the key decision-maker(s). Primary decision-maker usually responsible for day-to-day operation of business and may own or have a share in the business.</td>
</tr>
<tr>
<td>Profit at full equity</td>
<td>Return to capital and management plus interest, rent and finance lease payments. It is the return produced by all resources used in the business.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Rate of return</td>
<td>Return to all capital used. Computed by expressing farm business profit as a percentage of total opening capital of the business.</td>
</tr>
<tr>
<td>Total cash costs</td>
<td>Payments made by business for materials and services and for permanent and casual hired labour (excluding partner and other family labour). Includes value of any lease payments on capital, produce purchased for resale, rent, interest, cropping and livestock related purchases. Capital and household expenditures are excluded from total cash costs. Handling and marketing expenses include commission and levies for business produce sold. Administration costs include accountancy fees, banking and legal expenses, postage, stationery, subscriptions and telephone. Other cash costs include relatively small cost items like stores, advisory services and travelling expenses.</td>
</tr>
<tr>
<td>Total cash receipts</td>
<td>Total of revenues received by the business during the financial year, including revenues from sale of crops, livestock and livestock products. Includes revenue received from royalties, rebates, refunds, plant hire, contracts, insurance claims and compensation, and government assistance payments.</td>
</tr>
</tbody>
</table>
References

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


