Australian Dairy Plan

Measurement of profitability on Australian dairy farms

Historical trends and future targets

Appendix F

February 2020

ADIC Australian Dairy Industry Council Inc.

Dairy Australia

Australian Dairy Farmers

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Foreword

The declining number of profitable dairy farms across the country provides a stark backdrop to the work of the Australian Dairy Plan.

Analysis of farm profitability in this report puts numbers around how industry has felt about profitability for some time and the extent of the financial pressure on many dairy farmers. It is clear that the future health and success of this industry relies on turning this situation around as quickly as possible.

The value chain of dairy starts on the farm. Profitability impacts the capacity of farms to generate decent returns for farmers, to reward staff, to contribute to regional communities and generate economic growth.

Farm profitability issues also impact the wider industry in a number of ways. Low levels of profitability, for example, leads to declining milk production which in turn effects the ability of processors to operate their plant efficiently and make capital investment decisions.

Where there are competing interests for land and water use, the profitability of milk production will ultimately decide if farms continue in dairying.

This paper sets an industry target for farm profitability for the first time, based on a national analysis of farm business performance data monitored by Dairy Australia. It recommends using an economic term – earnings before interest and tax (EBIT) per unit of production (kilograms of milk solids; kg MS) – to provide an industry measure that directly reflects the ability of a dairy farm to generate profit.

We propose a new profit target of $1.50 EBIT/kg MS, which can sustain farm profitability. Our analysis shows on a national basis, only 16% of monitored farms reached this profit target last season, with real differences between regions.

One key factor contributing to low levels of profitability in the last decade is the lack of productivity growth on farm. Further analysis of ABARES data shows that total farm productivity growth has been flat due to the increased need and cost of key inputs, as farms manage the impact of climate volatility.

Increasing farm profitability is a priority of the Dairy Plan and we have set a target of 50% of farms achieving or exceeding the profit target of $1.50 EBIT/kg MS in at least 3 out of 5 years. The profitability of individual farms is central to our medium growth scenario of rebuilding current milk production by one billion litres to 9.3 billion litres by FY25.

I am confident that the Australian Dairy Plan, with its five commitments and its clear signals to sustain investment in RD&E, policy leadership and market development, will provide the industry leadership and direction required to turn the industry around.

I look forward to a concerted response by industry leaders and by governments to support the effort required to lift profitability and grow this important and successful Australian industry.

John Brumby AO
Independent Chair
Australian Dairy Plan

How does this profitability analysis link with *Appendix A: Growth Scenarios Paper*?

The growth scenarios paper assumes in the Medium growth scenario that the profit target is achieved (along with achieving targets for confidence and industry unity). The High growth scenario goes further, and would require a concerted effort to reduce and remove regional constraints as well as strong levels of profitability.

This reinforces the point that higher levels of profitability are required for the industry to regain the production losses of recent years.

Executive summary

The Australian Dairy Plan will set the commitments and supporting actions to create a more profitable, confident and united industry.

This paper focuses on profitability challenges affecting many dairy farms using farm business performance data gathered from Dairy Australia's Dairy Farm Monitor Project (DFMP) and Queensland Dairy Accounting Scheme (QDAS) programs.

Participants in these programs are selected to represent a distribution of farm size, herd size, geographical location within each region and may not fully represent the average dairy farm population. All dairy farmers can access this data through DairyBase to measure and compare their own farm business performance.

The primary measures for profitability in DairyBase are return on total assets (RoTA), return on equity (RoE) and earnings before interest and tax per kilogram of milk solids produced (EBIT/kg MS). These measures show how well the farm assets are used to provide a return to the owner and to others with capital invested in the business.

Wealth creation is made up of two avenues, the operational efficiency of the dairy business, and the capital appreciation of land and other assets. The focus of this paper is on the operational efficiency of the dairy farm business, as this is more within the control of the farmer and reflects the performance of the dairy business.

It is recommended that EBIT/kg MS be used as the measure and an industry target be set that more than 50% of farm businesses achieve >$1.50 EBIT/kg MS for at least 3 out of 5 years. For most farm businesses an EBIT of $1.50/kg MS will result in a RoTA of 5%. This will allow a farm business to pay interest and lease costs (in a moderate or low interest rate environment), reinvest back into the dairy business, reduce debt, or pay a dividend.

If this is achieved, we can expect growth in milk production to follow as the dairy industry will be able to confidently compete more effectively for land and water resources with other industries and be able to invest more in technologies that lead to increased production from existing resources.

Nationally the number of farms achieving >$1.50 EBIT/kg MS has declined to 16% in 2018–19, with an average of 22% over the past 5 years as a result of a series of challenging years.

Introduction

The DairyBase project is now well established and is supported by the DFMP which has been expanded to cover all dairy regions in Australia. DairyBase provides a comprehensive picture of farm performance nationally using consistent and industry agreed methods.

With the development of DairyBase and the expansion of the DFMP we can track farm profitability using high quality farm physical and financial data. This data is collected on-farm by farm business consultants, state government agencies and there is a very thorough validation process of individual datasets completed by the farm economist team at Dairy Australia and Agriculture Victoria.

EBIT/kg MS has been successfully used in extension activities and is industry agreed terminology that is becoming understood by more dairy farmers.

Which measure?

The primary measures for profitability in DairyBase are RoTA, RoE and EBIT/kg MS. These measures show how efficiently the farm assets are used to provide a return to the owner and to others with capital invested in the business.

Wealth creation is made up of two avenues, the operational efficiency of the dairy business and the capital appreciation of land and other associated assets.

Capital appreciation of land is often a significant component of wealth creation for dairy businesses over the longer-term. However, capital appreciation of land is largely determined by factors unrelated to the quality of farm management and is somewhat speculative until the property is sold. Hence, the focus of this paper is on the operational efficiency of the dairy farm business, as this is within the control of a farmer.

RoTA describes how efficiently the farm business has used all the assets under their management (owned, financed and leased assets) to generate a profit. It is used to compare the efficiency of a farm business between years and to compare with other farm businesses and alternative uses of the capital, such as bank deposits or investing in the share market.

The RoE is very relevant for an individual business as it represents the return to the assets that the business owns. However, this is not as useful as RoTA for an industry measure. If the individual business has a RoTA above the interest or lease rates, then the owner's wealth will increase more rapidly than if they had no debt or leased assets.

Ideally, RoTA should be the primary measure of economic efficiency, but because of variable land values and competitive forces outside of the dairy industry impacting land values, a measure that is more meaningful when applied nationally is EBIT/kg MS.

There are recognised limitations in the use of EBIT/kg MS, such as individual farm businesses that are willing to accept a lower margin (EBIT/kg MS) due to low debt, or businesses with significant variations in income other than milk. However, on an industry basis, where EBIT/kg MS is used as an indicator at regional and national levels, this measure does provide a robust indicator of profit. It is a measure that supports the required focus on margins and is increasingly used in farmer discussions across the dairy industry.

The process

EBIT/kg MS is used throughout Dairy Australia's training documents (Dairy Farm Business Analysis) and the farm business performance tool that farmers use, DairyBase. This has led to EBIT being the common language in extension and farmer discussion groups.

$1.50 EBIT/kg MS has historically been referenced in farm business extension resources as a robust figure and absolute number which farmers can relate to.

The profit measure formed the base for the DairyPlan warm up document and was tested further upon commencement of this profitability paper. Stakeholders involved in discussion around the profitability measure were key farm business consultants in the dairy industry, the DairyBase reference group and DairyNZ. ABARES were consulted for the productivity analysis.

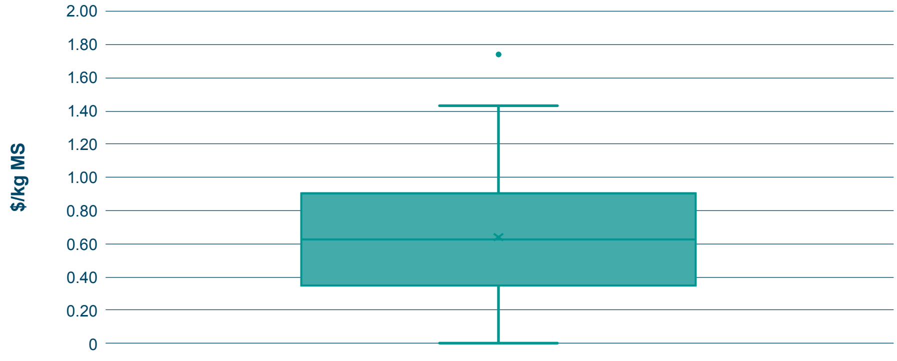
Why use the proposed $1.50 EBIT/kg MS?

It is recommended in the current low/moderate interest rate environment that $1.50 EBIT/kg MS be set as the industry target. This will allow most farm businesses to pay interest and lease costs, reinvest back into the dairy business, reduce debt or pay a dividend. A higher target would be appropriate for individual businesses depending on their goals, stage of business development and level of debt.

The following box plot represents the data on finance costs (interest and lease) from Victorian DFMP data. The DFMP typically has interest and lease costs at about $0.60/kg MS, so just under half of $1.50/kg MS would go on interest and lease, leaving the remainder to reinvest into the business, reduce debt, or pay a dividend. Each segment of this box plot represents 25% of farmers.

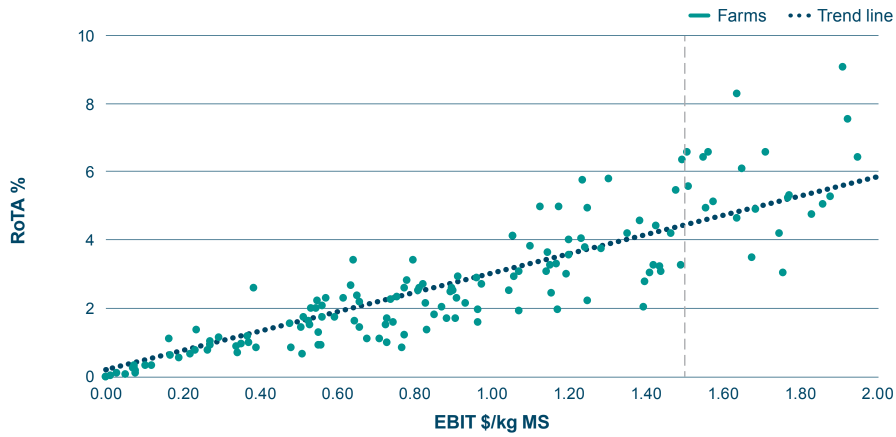
For most farm businesses an EBIT of $1.50/kg MS will result in a RoTA of 5% as illustrated in Figure 2.

Figure 1 Victorian finance costs (interest and lease) 2018–19



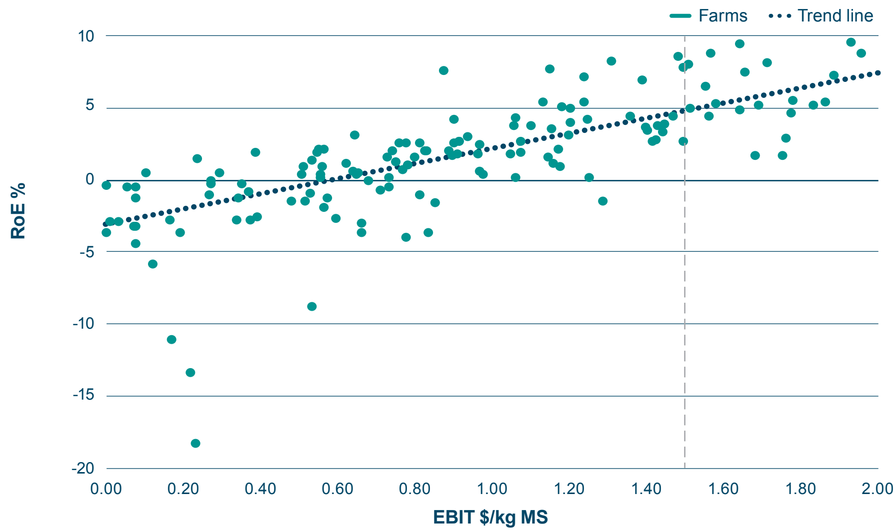
Source: DFMP

Figure 2 Australian DFMP EBIT $/kg MS vs RoTA (2018–19)



Source: DFMP

Figure 3 Australian DFMP EBIT $/kg MS vs RoE (2018–19)



Source: DFMP/QDAS

What is reasonable to aim for over the next 5 years?

There is scope for the industry to recover and grow total milk production in the future, but this will require more profitable farm businesses. Using the DFMP and QDAS historical data, we have observed a general association where over 50% of farm participants in a region have achieved >$1.50 EBIT/kg MS, regional milk production has also increased (DA analysis of DFMP/QDAS data).

Nationally the number of farms achieving >$1.50 EBIT/kg MS has declined to 16% in 2018–19, with an average of 22% over the past 5 years as a result of a series of challenging years. For sustained industry growth we believe this percentage would need to increase to more than 50% of farm businesses achieving >$1.50 EBIT/kg MS for at least 3 out of 5 years.

Getting farms above $1.50/kg MS is about improved management skills, adoption of R and D, proactive business culture, improved terms of trade and seasonal conditions.

Productivity and profitability

Productivity is not the same thing as production. Production referred to in this paper is the output of the activity of dairy farming – milk produced. Productivity in agriculture is defined as the physical ratio of output (kg MS) to the physical value of inputs (i.e. hectares of land, units of labour etc).

Productivity and profitability are closely related in that the more productive (efficient) a farm business is the more profitable it is. Moreover, faster productivity growth generally translates into more rapid growth in farm profitability (Islam *et al* 2014). However, total production may have no direct relationship to profitability.

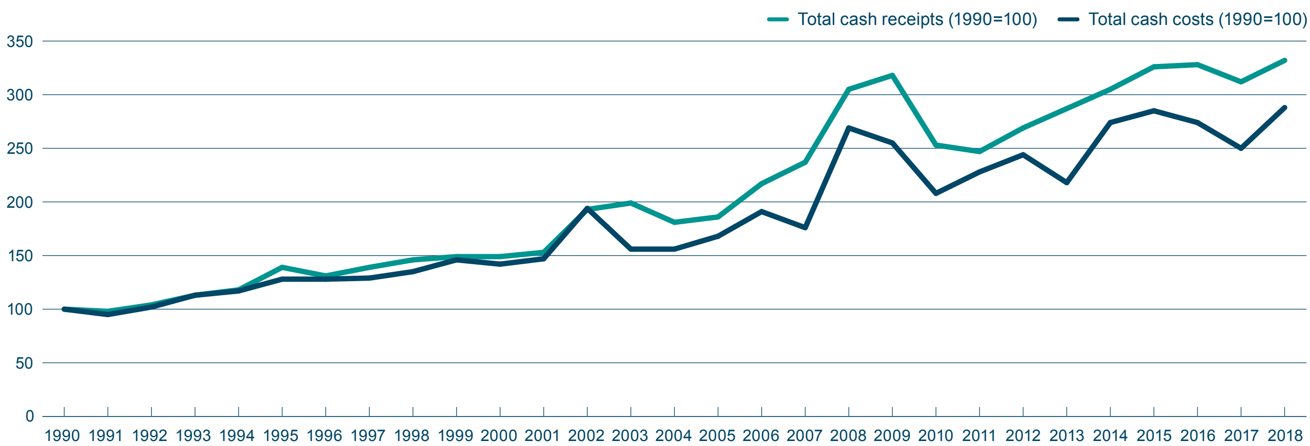
Figure 4 shows a national index for cash costs of dairy businesses versus cash receipts. This illustrates the cost price squeeze where farm input costs are increasing at a faster rate than the price received for their outputs. The way farmers can adjust to ever shrinking margins is through improving their productivity i.e. more output per unit of input.

O'Donnell (2010) found that the terms of trade for the Australian agricultural sector declined by about -1% per annum between 1970 and 2001. To maintain profitability, we would need productivity improvements of at least 1% per annum.

Table 1 shows productivity in the Australian dairy industry between 1978–79 and 2017–18. Improvements in productivity averaged 1.6% per year over this period, largely driven by output increasing by an average of 1.2% per year and input use declining by an average of 0.4% per year (ABARES 2019).

However, productivity improvements have been variable over this period and have become more challenging with time. This has a significant impact on profitability and requires further investigation.

Figure 4 National index of dairy farm cash costs over cash receipts



Source: ABARES

National figure for the proposed $1.50 EBIT/kg MS

Figure 5 shows the proportion of farms achieving $1.50 EBIT/kg MS across the whole industry. This uses DFMP/QDAS data and has been weighted regionally by the percentage of national milk production each region contributes (i.e. fluctuations in the proportion of Victorian participants achieving >$1.50 EBIT will have more impact on the national figure than other regions, as Victoria makes up a larger percentage of the national milk pool).

Table 1 Dairy industry productivity 1978–79 to 2017–18

	1978–79 to 2017–18	Decade pre-2000	2000–01 to 2017–18	Last decade (pre 2017–18)
Productivity improvements	1.6%	2.0%	0.7%	0.0%

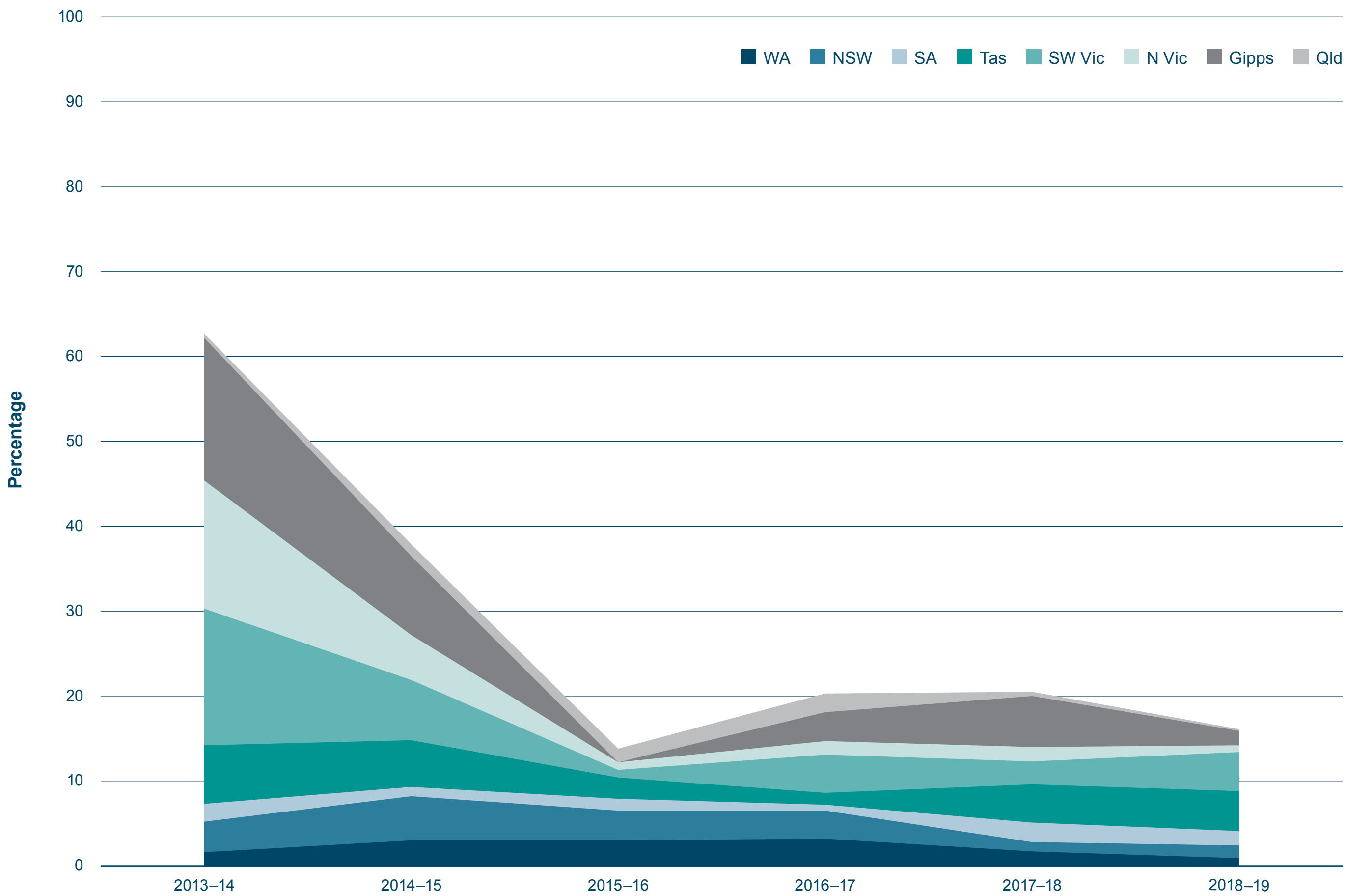
Source: Adapted from ABARES Australian Dairy Industry Survey

Table 2 Proportion of DFMP/QDAS farms achieving above $1.50 EBIT/kg MS

	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19
Australia	63%	38%	14%	20%	20%	16%

Source: DFMP/QDAS

Figure 5 Proportion of DFMP/QDAS farms by region achieving >$1.50 EBIT/kg MS



Source: DFMP/QDAS

Regional breakdown

The regional breakdown looks at the proportion of farm datasets achieving >$1.50 EBIT/kg MS in any given year. This has not been weighted by regional milk production as it only looks at individual regions.

Since the DFMP launched in 2007, the Victorian regions have been in a three-year cycle of financial performance.

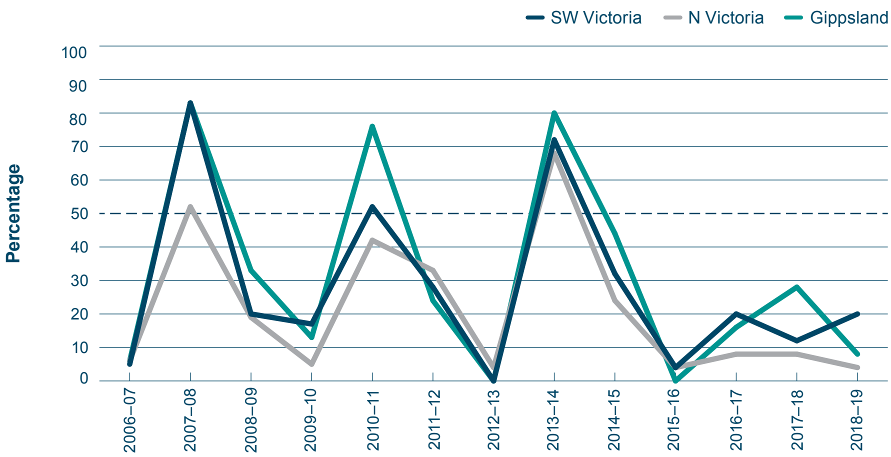
This has continued for 10 years, where every three years an event (drought, price crash, GFC as examples) has impacted farm profitability in the year following a strong industry performance.

Table 3 DFMP/QDAS farms by region achieving >$1.50 EBIT/kg MS

	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19
WA	43%	79%	75%	74%	40%	22%
NSW	30%	43%	29%	26%	9%	13%
SA	37%	20%	25%	13%	42%	30%
Tas	81%	60%	28%	15%	45%	45%
SW Vic	72%	32%	4%	20%	12%	20%
North Vic	68%	24%	4%	8%	8%	4%
Gipps	80%	44%	0%	16%	28%	8%
Qld	11%	33%	38%	46%	12%	5%

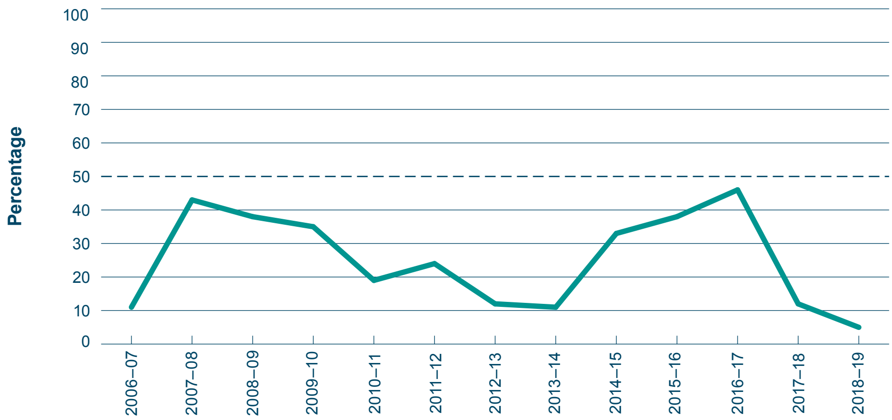
Source: DFMP/QDAS

Figure 6 Victoria – percentage of farms achieving >$1.50 EBIT/kg MS



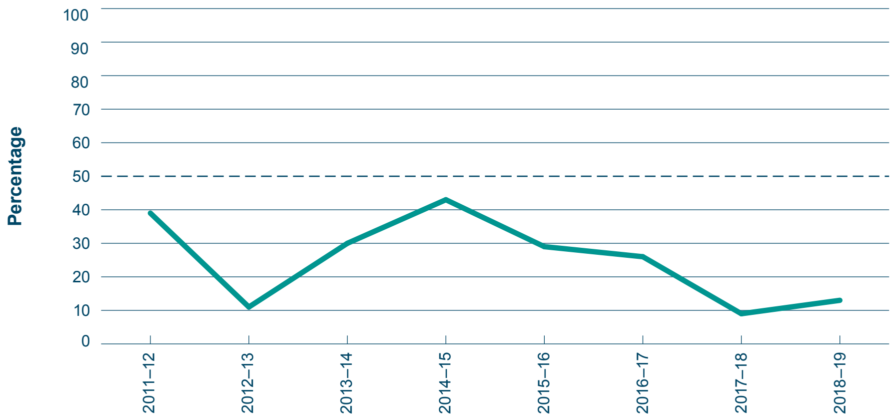
Source: DFMP

Figure 7 Queensland – percentage of farms achieving >$1.50 EBIT/kg MS



Source: QDAS

Figure 8 NSW – percentage of farms achieving >$1.50 EBIT/kg MS



Source: DFMP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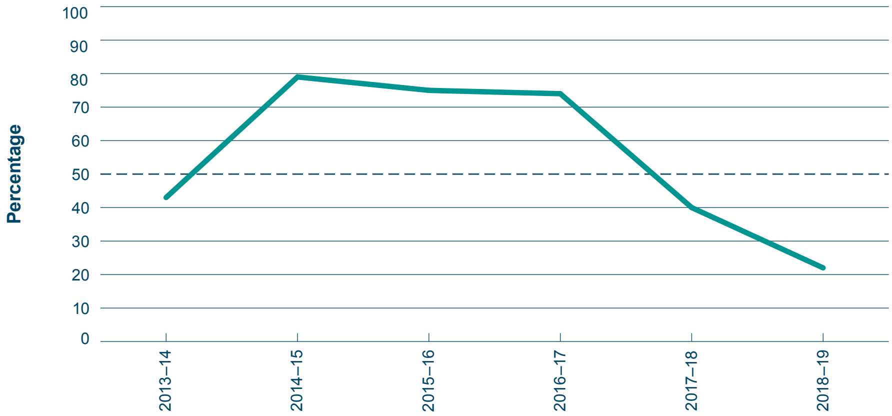
Over the past four years, Victoria has been impacted by back to back events impacting performance and has not seen the traditional recovery year between such events. This has resulted in a small proportion of DFMP participants achieving this $1.50 EBIT/kg MS target since 2015–16.

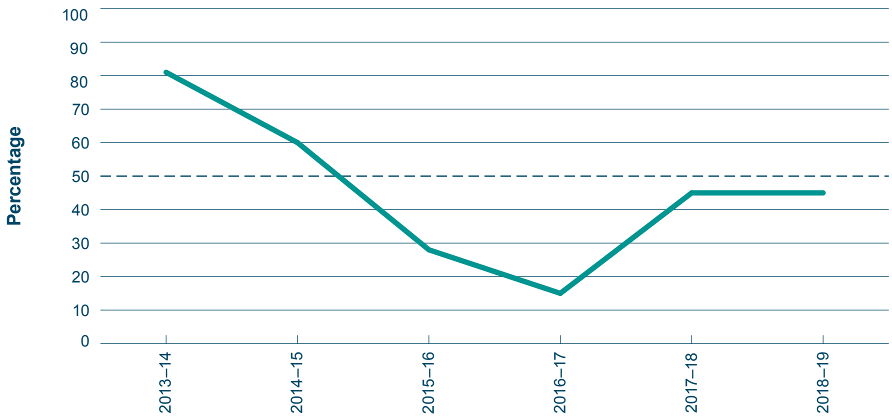
One notable difference between Victoria and other regions is the level of volatility throughout the 13 years. This can be somewhat attributed to the variation of milk price received between years of Victorian participants compared with northern Australia regions.

Figure 9 WA – percentage of farms achieving >$1.50 EBIT/kg MS



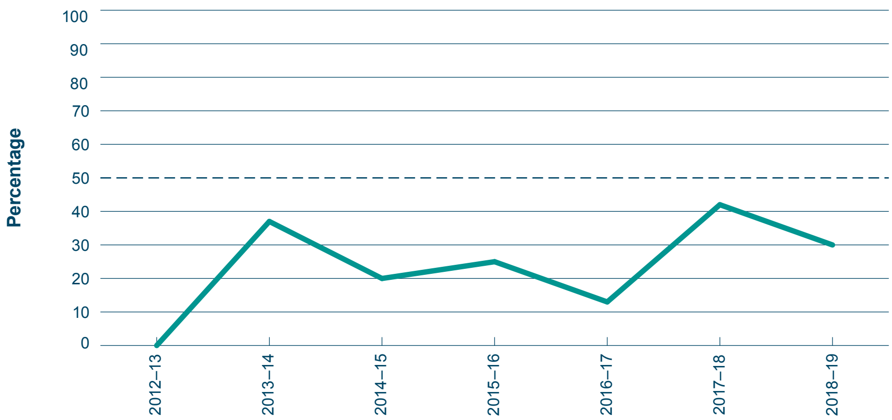
Source: DFMP

Figure 10 Tasmania – percentage of farms achieving >$1.50 EBIT/kg MS



Source: DFMP

Figure 11 SA – percentage of farms achieving >$1.50 EBIT/kg MS



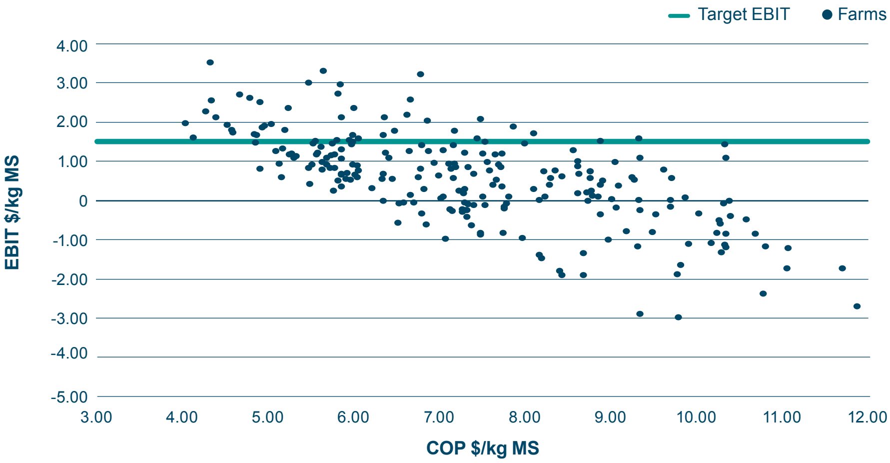
Source: DFMP

Cost of production and milk price

Figures 12 and 13 illustrates the difficulty of setting a meaningful target around COP. The graph shows farmers achieving >$1.50 EBIT/kg MS, and the range of COP and milk price for the businesses that achieved this.

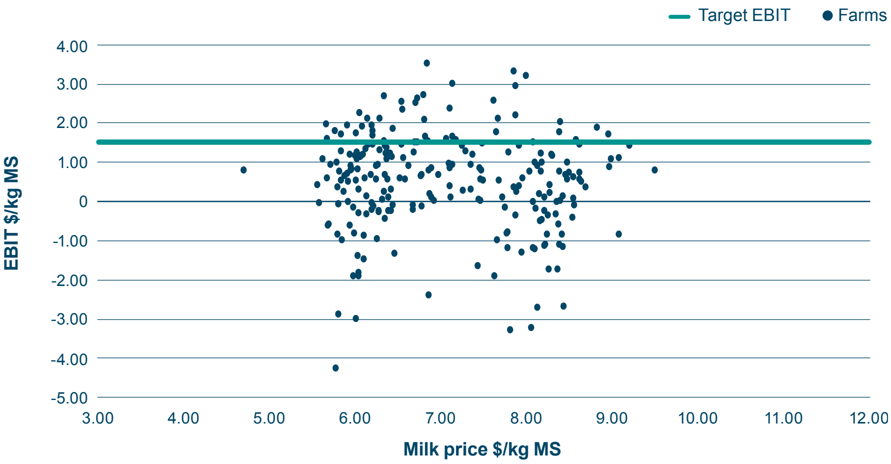
These two graphs illustrate the enormous diversity in the way farmers use their resources available to generate profit.

Figure 12 2018–19 range of COP for farms



Source: DFMP/QDAS

Figure 13 2018–19 range of milk price for farms



Source: DFMP/QDAS

Notes

- Tasmanian data has not been validated at the time the analysis was completed, therefore the 2017–18 figure has been used for this region.
- The participants in the DFMP and QDAS sample are selected to represent a distribution of farm size, herd size, geographical location within each region. However, the farm selected may not fully represent the average dairy farm population.
- There is some changeover of participants each year in the datasets from a total sample size of 20–60 datasets per region in 2018/19, >230 Australian datasets per year. To mitigate the potential risk of change in participants affecting the measurement of individual farmers longitudinal data, the proposed method is to measure the proportion of individuals achieving >$1.50 EBIT/kg MS each year. The target is to have >50% of individuals achieving this at least 3 out of 5 years.

Glossary and references

Glossary

ABARES Australian Bureau of Agricultural and Resource Economics and Sciences

DairyBase is a web-based tool that enables dairy farmers to measure and compare their farm business performance over time

Dairy Farm Monitor Project (DFMP) provides a comprehensive physical and financial analysis for farms across Australia. The information enables dairy farmers to compare their farm performance and identify areas for improvement.

Queensland Dairy Accounting Scheme (QDAS) provides a comprehensive physical and financial analysis for farms across Australia. The information enables dairy farmers to compare their farm performance and identify areas for improvement.

Return on Total Assets (RoTA) shows how well a business uses its total assets, including all leased assets. It indicates the amount of profit earned relative to the amount of money invested in all assets.

Return on Equity (RoE) This is a measure of the rate of return on the owner's investment in the business.

Earnings Before Interest and Tax (EBIT) is the key measure of profit from operating the business before interest, lease and tax payments have been deducted.

Kg MS Kilograms of milk solids (fat + protein) is a unit of production

Productivity in agriculture is defined as the physical ratio of output (kg MS) to the physical value of inputs (i.e. hectares of land, units of labour etc) for the whole farm

Production milk produced

Operational efficiency how effectively a farmer uses their resources

Farmer terms of trade the ratio of prices received to prices paid

Cost price squeeze farm input costs are increasing at a faster rate than the price received for their outputs. This means farmers have to increase their productivity to remain profitable.

References

Islam, N., Xayavong, V., and Kingwell, R. (2014). Broadacre farm productivity and profitability in south-western Australia, *Australian Journal of Agricultural and Resource Economics* 58(2), 147–170.

O'Donnell, C. (2010). Measuring and decomposing agricultural productivity and profitability changes, *Australian Journal of Agricultural and Resource Economics* 54(4), 527–560.

ISBN 978-1-925347-62-3 (digital)

1575.30 Feb 20