

Technical Bulletin / Dairy

Comparing the profitability of a dairy business with off-farm investments

Key points

- Analysis of how a dairy business in northern Victoria performed from 2003 to 2015 showed the farm did well compared with other dairy businesses in Victoria and alternative off-farm investments over the same time.
- Compound annual return to capital for the farm over the 12 years studied was 12.4% (real, before tax). Over half the return came from the farming operations and the remainder from owning assets that appreciated in value, particularly water.
- The farm studied was well-managed and earned higher annual average returns than that of investments with similar risk elsewhere in the economy, such as shares, and matched it with the best performing of these alternative investments.



Introduction

With uncertain seasonal conditions, variable costs and prices and declining terms of trade, it might be easy to assume that returns from dairy farming would always be lower and more variable than other investment opportunities in the economy. In this case study analysis of a dairy business in northern Victoria, the return to capital over a run of years of dairying was compared with returns to capital from alternative off-farm investments that have similar risk to dairy, such as shares in the stock market, and others with less risk, such as bonds and cash.

Case study farm

The case study farm was chosen because it had accurate physical and financial records. In 1998, the non-dairy farming owners of the farm purchased 338 ha of land in the northern irrigation region of Victoria to establish a dairy business. Perennial ryegrass/white clover pastures and some lucerne stands were established. A 60-unit rotary dairy was installed, a feedpad was constructed and cows were purchased. A farm manager was employed and has been the primary decision-maker about operational matters. In the first year, about 450 cows were milked. An additional dryland area of 130 ha was leased to grow fodder for the milking herd and young stock.

Although the dairy business was established in 1998/99, a full set financial details was available only from 2003/04 and the following analysis was done for 2003 to 2015. The value of assets in July 2003 was just under \$3.5 million and the value of assets at the end of June 2015 was \$7.2 million (dollars of the day; Table 1).

Some significant changes have been made over this time. Milking cow numbers have fluctuated between 585 and 830, and milk protein plus fat production per cow has ranged from 530 kg to 670 kg. Other changes include modifications to irrigation infrastructure, buying another 100 ha and 100 ML of high reliability water share, purchasing a mixer wagon and building a calf shed with automated feeders.

Table 1. Value of assets July 2003 and on 30 June 2015. Values are in the dollar value of the year they were valued.

Capital	2003/04	2014/15
Livestock	\$774,000	\$1,216,000
Owned water	\$789,600	\$1,613,400
Plant and equipment	\$581,500	\$400,900
Stock feed inventories	\$50,000	\$280,400
Milk company shares	\$113,400	\$1,153,900
Owned land and improvements	\$782,000	\$2,114,400*
Leased area (130 ha)	\$383,800	\$524,200*
Total capital	\$3,474,300	\$7,303,200
Total capital (excluding leased land)	\$3,090,500	\$6,779,000
Assumed equity (75%)	\$2,317,900	\$5,084,300

*Land value was estimated by an independent property valuer.

Assessing returns to capital

Returns to capital were assessed using several measures. The returns from farming were also evaluated separately from returns from owning the assets and then combined to give total returns to capital. The measures used were:

- Annual return to total capital – annual gross income minus variable and overhead costs expressed as a percentage of the total capital managed (owned and leased).
- Average annual return to total capital – the arithmetic average of annual return to capital over a period of time.
- Compound annual growth rate – the mean annual growth rate of an investment after accounting for compounding returns over time. Compounding is where the value of an investment increases exponentially because interest is earned on both the principal and accumulated interest.

Results

The compound annual return to all capital managed in the case study business was 12.4% p.a. over the 12 years, indicating strong business performance. This result was generated through the appreciation of assets (7.6% p.a. compound) and returns from farming activities (8.5% p.a. compound) (Table 2).

Table 2. Returns to capital for the case study farm and from farms contributing to the Dairy Farm Monitor Project (DFMP). The Victorian average DFMP excludes the case study farm.

	Case study farm	Case study farm in DFMP	Victorian average DFMP (n = 13)
Time period	2003 - 2015 (12 years)	2006 - 2015 (9 years)	2006 - 2015 (9 years)
Compound annual return to capital managed (from owning assets and farming)	12.4%	14.6%	6.7%
Compound annual return from owning assets	7.6%	10.7%	2.9%
Compound annual return from farming	8.5%	8.2%	4.0%

Note: due to compounding, the compound annual return from farming and owning capital is not simply the sum of that from farming plus owning capital.

The case study farm was compared with other dairy businesses in the Victorian Dairy Farm Monitor Project. At the time of the analysis, nine years of data were available from the Dairy Farm Monitor project, so the compound annual return for the case study farm was recalculated for the period 2006 – 2015 (Table 2). Data from 13 farms involved in the Dairy Farm Monitor Project for each of the nine years were used to calculate the compound annual returns in the last column of Table 2.

The compound annual return for the case study farm was more than double that of the average of farms in the Dairy Farm Monitor Project. Part of the reason for the exceptional performance of this case study farm is that asset values, particularly water, increased significantly. From a farm operation point of view, the case study also had consistently high returns from farming by industry standards. Over the time period studied, the farm had a relatively high cost system compared with the average of farms in the Dairy Farm Monitor Project, but it also had high gross income, as a result of high milk production and high labour efficiency. Home grown feed also comprised more than 50% of metabolisable energy consumed, which enabled the business to have lower purchased feed costs.

Comparing the case study farm with off-farm investments

Before investing in dairying in 1998, the owners of the case study business could have invested elsewhere in the economy to increase their wealth. The compound annual growth rate of various investments was compared with that of the case study farm (Table 3). Compared with other available investments in the economy, the compound annual growth rate of the case study farm was higher than the average return for shares, property, bonds and cash.

Table 3. Compound annual growth rate (CAGR) from total capital managed in the case study farm and various alternative investments (2003 – 2015). Data taken from Russell Investments/ASX (2015). Numbers reported are gross returns (i.e. before different tax structures or fees).

Investment Class	CAGR (%)
Case study farm	12.4
Australian shares	7.1
Residential investment property	7.0
Australian bonds	6.5
Cash	3.4

Comparing the risk and return of the case study farm with off-farm investments

When comparing alternative investments, the variability in return is as important as the size of the return. In Figure 1, return is average annual return to total capital (i.e. the arithmetic average of return to capital), while risk is indicated by the standard deviation in return to total capital. So that the data from the Dairy Farm Monitor project could be included, the time period covered from 2006 and 2015.

Investment types whose performance falls toward the right hand side of the graph are considered 'riskier' than those indicated by points toward the left hand side. The case study business had earnings over the time studied that were comparable to earnings from the Australian Share Market over the same time, and experienced less volatility. However, the time period represented in Figure 1 includes the global financial crisis, which had a significant impact on some investments, such as the share market.

Summary

The results of this study indicate that from 2003 to 2015, the case study farm performed well compared with the average of other Victorian dairy farms and alternative investments. Achieving a compound return to capital of 12.4% in a time of volatile costs, prices and water availability, suggests a robust and well-managed business with a strong balance sheet. Greater than half of this return came about from farming operations, and slightly less than half through appreciation of land and water assets.

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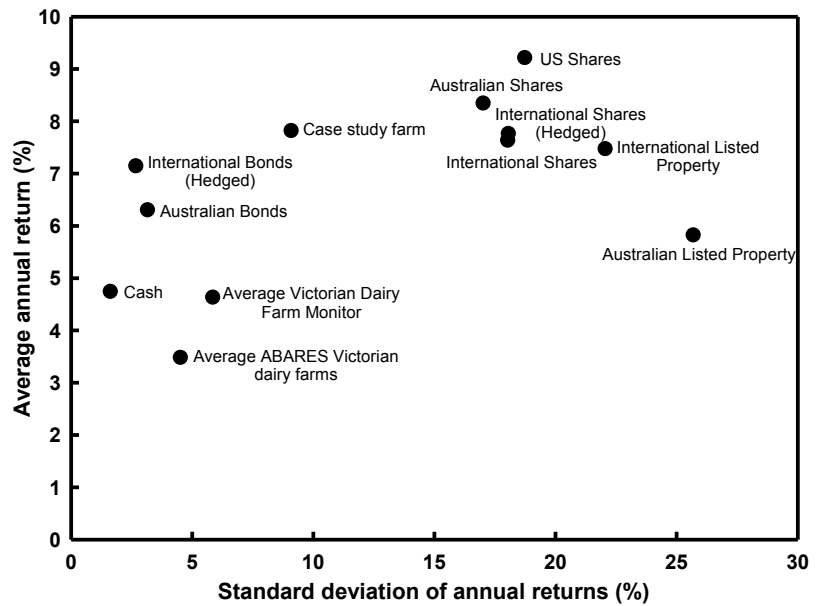


Figure 1. Average and standard deviation of annual returns from various investments (2006 – 2015). Data taken from Vanguard Investments Australia (2015), the Dairy Farm Monitor Project and ABARES.

References

- Russell Investments/ASX (2015) 'Long-term investing report.' (Russell Investments: Sydney)
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