

*DairyNZ
Economic Survey
2017-18*



Introduction

The 2017-18 *DairyNZ Economic Survey* is the thirteenth annual survey of New Zealand dairy farmers using dairy farm business data from DairyBase®.

The Economic Survey of Factory Supply Dairy Farmers was first published in 1963-64 by the New Zealand Dairy Board. In 1988-89 the survey was undertaken by Livestock Improvement Corporation (LIC) and then Dexcel in 1999-00, when the name was changed to *Economic Survey of New Zealand Dairy Farmers*. From 2005-06 DairyNZ published the survey under the new title *DairyNZ Economic Survey*.

DairyNZ is the industry good organisation, representing New Zealand's dairy farmers. Funded by a levy on milksolids and together with government investment, our purpose is to deliver a better future for New Zealand dairy farmers and help them successfully navigate through change. We aim to do this by leading innovation in world-class dairy farming and by working always in the best interests of New Zealand's dairy farmers.

DairyBase® is owned and managed by DairyNZ on behalf of the dairy farmers of New Zealand.

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This publication is a reference compilation of dairy farmers' key financial data. DairyNZ have endeavoured to ensure that the information in this publication is accurate, but does not accept liability for any error or omission. No persons involved in data collection, processing, analysis or editing will be held accountable.

Data in this document can be used for other purposes provided it is correctly referenced. The correct reference for all data contained in this document is: *DairyNZ Economic Survey 2017-18*.

National and regional forecast information is available upon request. For further information regarding data contained in the *DairyNZ Economic Survey* or forecast information, contact the DairyNZ Economics Group.



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Executive Summary

Milk payout received by farmers in 2017-18 increased 83 cents to \$6.62 per kilogram milksolids. The break-even milk price increased to \$5.87 per kilogram milksolids, due to higher farm working expenses, increased tax payments and increased drawings. The increase in break-even milk price was almost as much as the increase in milk payout received. Milk production per cow and per hectare eased, due to a difficult and dry spring/early summer. Operating expenses jumped considerably (+53 cents), keeping a lid on operating profit per hectare of \$2,238 which was the fourth highest in the last decade. Operating return on dairy assets increased to 4.3 per cent, slightly above the decade average. A small negative total return on assets, was due to a decrease in dairy company share and livestock values. Equity decreased 5.7 per cent, while term liabilities increased slightly.

Owner-operators Summary

Physical KPIs	2016-17	2017-18
Peak cows milked	414	430
Effective hectares	147.8	151.4
Milksolids sold per cow	387	376
Milksolids sold per ha	1,085	1,067
Cows per FTE	148	148
TFP Productivity	-2.4%	-4.0%
Prices		
Payout received \$ per kg milksolids	5.79	6.62
Underlying on-farm inflation	0.4%	0.6%
Terms of trade	41.0%	7.4%
Cashflow		
Cash operating surplus	415,410	478,511
Discretionary cash	185,083	230,881
Cash available for living and growth	182,197	208,127
Cash surplus	66,272	-42,275
Profitability		
Dairy gross farm revenue per ha	6,928	7,715
Dairy operating expenses per ha	4,991	5,477
Dairy operating profit per ha	1,937	2,238
Dairy gross farm revenue per kg milksolids	6.39	7.23
Farm working expenses per kg milksolids	3.73	4.20
Dairy operating expenses per kg milksolids	4.60	5.13
Dairy operating profit per kg milksolids	1.79	2.10
Business profit before tax per all effective ha	555	810
Returns		
Operating return on dairy assets	3.9%	4.3%
Total return on assets	9.6%	-0.2%
Total return on equity	15.3%	-4.4%
Wealth Creation		
Growth in equity	540,892	-238,662
Growth in equity from profit	68,973	85,385
Growth in equity from capital	471,919	-324,047
Growth in equity %	15.4%	-5.7%
Risk		
Break-even milk price	5.17	5.87
Closing term liabilities per kg milksolids	25.00	25.31
Closing debt to asset %	49.4%	50.7%

50:50 Sharemilkers Summary

Physical KPIs	2016-17	2017-18
Peak cows milked	372	391
Effective hectares	132.0	137.2
Milksolids sold per cow	386	376
Milksolids sold per ha	1,089	1,072
Prices		
Payout received \$ per kg milksolids	2.82	3.21
Cashflow		
Cash operating surplus	167,540	169,323
Discretionary cash	127,442	113,174
Cash available for living and growth	143,718	132,051
Cash surplus	31,699	-12,736
Profitability		
Dairy gross farm revenue per ha	3,679	4,070
Dairy operating expenses per ha	2,983	3,352
Dairy operating profit per ha	696	718
Dairy gross farm revenue per kg milksolids	3.38	3.79
Farm working expenses per kg milksolids	2.10	2.42
Dairy operating expenses per kg milksolids	2.74	3.13
Dairy operating profit per kg milksolids	0.64	0.67
Business profit before tax per all effective ha	841	967
Returns		
Operating return on dairy assets	12.7%	11.5%
Total return on assets	25.1%	1.6%
Total return on equity	72.0%	-2.9%
Wealth Creation		
Growth in equity	238,849	6,473
Growth in equity from profit	69,859	53,694
Growth in equity from capital	168,990	-47,221
Growth in equity %	87.1%	1.6%
Risk		
Break-even milk price	2.35	2.96
Closing term liabilities per kg milksolids	4.05	3.81
Closing debt to asset %	53.6%	56.7%

The 2017-18 Season

A warm but unsettled spring, resulted in a challenging start to the 2017-18 season. October and November were very dry for most regions, creating dry soils and less pasture production than normal. This resulted in more palm kernel being fed. Summer was warm and wet across the country, allowing for reasonable pasture production and a strong finish to the season. Overall, New Zealand milk production for the 2017-18 season eased for the third consecutive season (-0.6%) which could have been lower had it not been for a favourable summer and autumn, along with increased use of palm kernel. In July 2017 *Mycoplasma bovis* was detected on a South Canterbury farm. Through the movement of livestock that had spread to 25 dairy farms and 15 dairy support farms by June 2018. A biosecurity was set up to protect dairy and beef farms from the impacts of the disease. This has been devastating for these farmers, particularly those requiring livestock movement controls and herd eradication, but overall the disease has had small impacts on stock numbers.

Owner-operator Summary

Operating profit of \$2,238 per hectare in 2017-18 was up 15.6 per cent on the previous season and was the fourth highest level of profitability in the last decade. The milk payout received of \$6.62 per kilogram milksolids was up 83 cents (+14.2%) on the price received in 2016-17. Both milksolids per cow (-3.0%) and milksolids per hectare (-1.6%) eased in 2017-18, but a larger average farm size meant total milksolids production per herd was slightly higher than the previous season. Livestock income in 2017-18 remained unchanged. Gross farm revenue of \$7.23 per kilogram milksolids in 2017-18 was, up on last season (+84 cents) and was 55 cents above the decade average of \$6.68.

Farm working expenses (FWE) of \$4.20 per kilogram milksolids was 46 cents higher (+12.4%) compared with 2016-17 and followed two seasons of FWEs below \$4. Increased expenditure on repairs and maintenance (+33.3%), regrassing (+23.1%), feed made and purchased (+23.0%), insurance (+12.7%), wages (+12.1%), and breeding and herd improvement (+11.2%) recorded the largest increases. Operating expenses jumped 53 cents to \$5.13 per kilogram milksolids, just below the record high of \$5.17 in 2013-14.

The break-even milk price increased 70 cents in 2017-18 to \$5.87 per kilogram milksolids reflecting increased farm working expenses (+46 cents), higher tax payments (+16 cents), increased drawings (+14 cents), although interest and rent decreased (-3 cents). A quarter of farms had a break-even milk price above the milk payout received in 2017-18.

The cash available for living and growth in 2017-18 was \$208,127 per farm, the highest level in five years. Following significant capital expenditure and changes in debt and drawings, a cash deficit of \$42,275 was recorded.

The operating return on dairy assets increased to 4.3 per cent in 2017-18, slightly above the ten-year average. However, the total return on assets was -0.2 per cent due to a reduction in capital values of milk company shares and livestock. Total return on equity was lower at -4.4 per cent.

Equity levels decreased 5.7 per cent (-\$238,662), with the positive growth in equity from profit more than offset by the decrease in asset values and small increase in liabilities.

Total liabilities as a percentage of total assets (loan to value ratio) increased to 50.7 per cent at the end of the season. Closing term liabilities per kilogram milksolids increased to \$25.31, with the sample showing Taranaki farms to have higher debt levels than other regions.

50:50 Sharemilkers Summary

Operating profit per hectare for 50:50 Sharemilkers (herd owning sharemilkers) recorded a small increase (+3.2%) to \$718 per hectare in 2017-18. Higher milk payouts received (+39 cents per kilogram milksolids), were largely offset by higher (+38 cents) operating expenses per kilogram milksolids of \$3.13. Milksolids production per cow and hectare were down slightly on last season.

The 2017-18 Sharemilkers break-even milk price increased 61 cents to \$2.96 per kilogram milksolids, similar to the level in 2014-15. Increased farm working expenses (+32 cents), higher taxes paid (+12 cents) and increased drawings (+11 cents) accounted for the majority of the increase in break-even milk price. The average discretionary cash decreased (-\$14,268) from the very healthy level last season to \$113,174 per farm. With increased capital expenditure, drawings and debt, a cash deficit of \$12,736 was recorded in 2017-18. This was the fourth season in the last six that a cash deficit has resulted.

Operating return on dairy assets at 11.5 per cent for Sharemilkers, was similar to last season, while total return on assets at just 1.6 per cent was very low, reflecting reduced livestock values. 2017-18 was the fifth year in the past decade of negative returns on equity (-2.9%).

Sharemilkers equity at \$421,859 in May 2018 was similar (+1.6%) to a year earlier, but was still below the average levels of equity between 2011 and 2015.

The level of debt to assets increased to 56.7 per cent at year end reflecting lower asset values, while term liabilities of \$3.81 per kilogram milksolids was down 5.8 per cent on the previous season.

Section 1: Background

The 2017-18 *DairyNZ Economic Survey* summarises a sample of dairy farm data from the DairyBase® database. DairyBase® is available to all levy paying New Zealand dairy farmers. Annual surveys prior to 2005-06 were undertaken by Livestock Improvement Corporation (LIC) and Dexel using a random sampling procedure stratified by region and herd size. In contrast, participation in DairyBase® is voluntary and at this stage contains farms with above average milk production performance. For this publication, groups of farms that closely match the average regional herd size, hectares and milksolids production as published in the *New Zealand Dairy Statistics 2017-18* were selected.

The purpose of DairyBase® is to improve the financial understanding and performance of dairy farmers using a benchmarking approach and is designed to link the physical and financial performance of farms. DairyBase® contains financial data from annual farm accounts, as well as physical data supplied by the farmer and estimated current market values of fixed assets. The DairyBase® support centre, accredited accountants and other rural professionals enter the data on behalf of their clients and the data is validated within DairyBase®.

Farmers wishing to benchmark their farm performance have access to a wide range of statistics in DairyBase®, including (where numbers permit) regional, district, herd sizes and production system data.

National forecast data for 2018-19 and 2019-20 are shown in Sections 9 and 10. These forecasts are based on regional models and are available on request from the DairyNZ Economics Group.

Section 2: Survey Description

2.1: Survey Methodology

Groups of farms that closely match the average regional herd size, hectares and milksolids production, as described in the *New Zealand Dairy Statistics 2017-18* were selected for this publication. The initial pool of herds included 445 Owner-operator and 183 50:50 Sharemilker (herd owning Sharemilker) herds, validated and committed to the DairyBase® database for the 2017-18 financial year. This excluded:

- multiple herds operating under one business identity, and
- herds with less than 100 cows.

Businesses were then excluded for the following reasons:

- less than 70 per cent of gross farm revenue derived from dairying,
- businesses with a significant change in land area during the year, and
- extreme outlier data.

The aim of the sample was to align the regional and national average herd sizes¹, hectares and milksolids production for each of these two ownership structures while retaining a reasonable number of farm businesses in each region. These regional and national averages are available in the *New Zealand Dairy Statistics 2017-18* publication.

The final number of herds included in this survey comprised 265 Owner-operator and 108 50:50 Sharemilker herds. Of the Owner-operator herds, 185 (70%) were North Island herds and 80 (30%) from the South Island. Of the Sharemilker herds, 83 (77%) were from the North Island and 25 (23%) were South Island herds.

2.2: Ownership Structure Definitions

An Owner-operator either owns, or leases, both the herd and the land. In contrast, a 50:50 Sharemilker owns the herd but not the milking land. Although the definition of Sharemilkers used in this survey is 50:50, in practice they may receive between 40 per cent and 60 per cent of the milk revenue. Herds with Variable Order Sharemilkers, and farm owners with sharemilking arrangements, were not included in this survey.

2.3: Sample Unit

The data used in this survey reflects the total dairying enterprise of each business. Where businesses have multiple ownership types, such as partnerships and trusts, the accounts of all entities are consolidated and entered as one.

2.4: Survey Weights

All North Island, South Island and national averages in this report have been weighted by the regional proportion of herds reported in the *New Zealand Dairy Statistics 2017-18* (Table 2.1). Owner-operator herds include those that employ a contract milker. Note: simply averaging the regional data shown in this document will not produce the same result as that shown for each island or for New Zealand.

Table 2.1: 2017-18 Regional Distribution of Herds

Region	Number of Owner-operator herds	% Owner-operator herds	Number of Sharemilker herds	% Sharemilker herds
1 Northland	756	9.0%	229	7.2%
2 Waikato	2,668	31.8%	1,152	36.5%
3 Bay of Plenty	664	7.9%	207	6.6%
4 Taranaki	1,109	13.2%	511	16.2%
5 Lower North Island	838	10.0%	211	6.7%
6 West Coast-Tasman	424	5.1%	97	3.1%
7 Marlborough-Canterbury	957	11.4%	306	9.7%
8 Otago-Southland	964	11.5%	446	14.1%
Total New Zealand	8,380	100.0%	3,159	100.0%

¹ Herd size is defined as the peak number of cows milked at any time during the year.

2.5: Herd Size Distributions

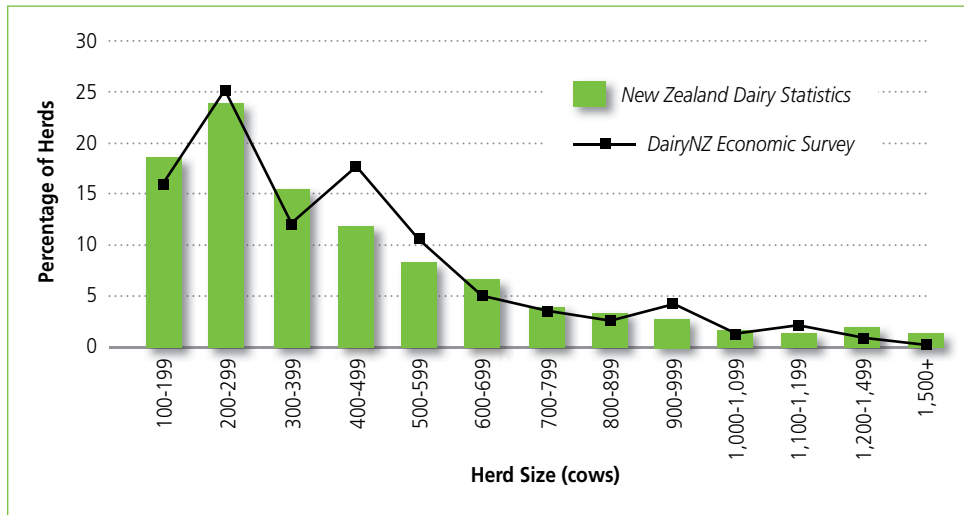
The *New Zealand Dairy Statistics 2017-18* recorded a national average herd size of 431 cows, one cow larger than the average *DairyNZ Economic Survey* Owner-operator herd of 430 cows.

A comparison of the Owner-operator herd distribution between the *DairyNZ Economic Survey* and the *New Zealand Dairy Statistics 2017-18* shows the DairyNZ survey:

- excludes herds under 100 cows;
- is over represented by herds between 400 and 600 cows; and
- is under represented by herds between 100 and 200 cows and between 300 and 400 cows.

Refer to Figure 2.1.

Figure 2.1: 2017-18 New Zealand Owner-operators Herd Size Distributions



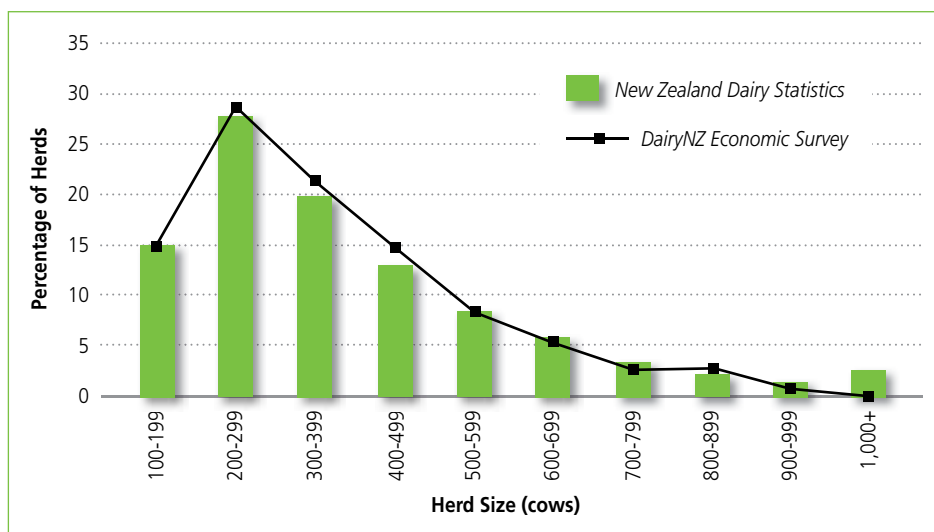
The *DairyNZ Economic Survey* national average herd size for 50:50 Sharemilkers of 391 cows is slightly larger than the 389 cows recorded in the *New Zealand Dairy Statistics 2017-18*.

Compared with the *New Zealand Dairy Statistics 2017-18* the *DairyNZ Economic Survey*:

- excludes herds under 100 cows;
- is under represented by herds over 1,000 cows.

Refer to Figure 2.2.

Figure 2.2: 2017-18 New Zealand 50:50 Sharemilkers Herd Size Distributions



2.6: Survey Regions

This survey uses geographic regions and districts as defined by the 73 Territorial Local Authorities. These districts are amalgamated into eight regions, five in the North Island and three in the South Island.

1 Northland

1. Far North
2. Whangarei
3. Kaipara
4. Rodney
5. North Shore City
6. Waitakere City
7. Auckland City

2 Waikato

8. Manukau City
9. Papakura
10. Franklin
11. Waikato
12. Hamilton City
13. Waipa
14. Otorohanga
15. Waitomo
16. Thames/Coromandel
17. Hauraki
18. Matamata/Piako
19. South Waikato
20. Taupo
21. Ruapehu

3 Bay of Plenty

22. Western Bay of Plenty
23. Tauranga
24. Rotorua
25. Kawerau
26. Whakatane
27. Opotiki
28. Gisborne
29. Wairoa

4 Taranaki

30. New Plymouth
31. Stratford
32. South Taranaki

5 Lower North Island

33. Wanganui
34. Rangitikei
35. Hastings
36. Napier City
37. Central Hawke's Bay
38. Tararua
39. Manawatu
40. Palmerston North City
41. Horowhenua
42. Kapiti Coast
43. Porirua City
44. Upper Hutt City
45. Lower Hutt City
46. Wellington City
47. Masterton
48. Carterton
49. South Wairarapa

6 West Coast-Tasman

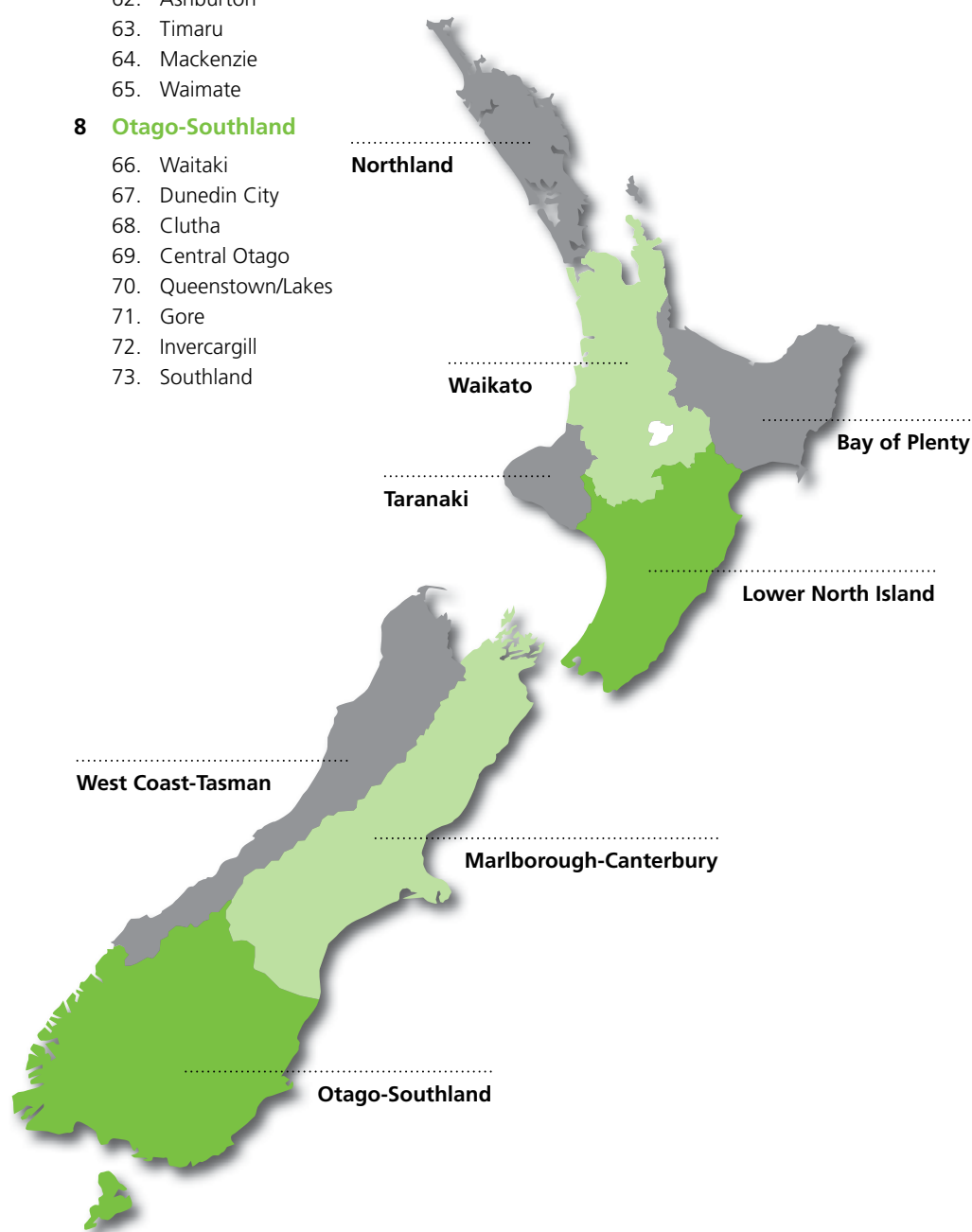
51. Tasman
52. Buller
53. Grey
54. Westland

7 Marlborough-Canterbury

50. Nelson City
55. Marlborough
56. Kaikoura
57. Hurunui
58. Waimakariri
59. Christchurch City
60. Banks Peninsula
61. Selwyn
62. Ashburton
63. Timaru
64. Mackenzie
65. Waimate

8 Otago-Southland

66. Waitaki
67. Dunedin City
68. Clutha
69. Central Otago
70. Queenstown/Lakes
71. Gore
72. Invercargill
73. Southland



2.7: Production Systems

Farms are categorised into one of five production systems based on the timing, purpose and amount of imported feed use, both purchased as supplements and grazing off for dry cows. Young stock grazing policies are excluded when categorising herds into the five production systems described below.

System 1: All grass, self-contained, all stock on the dairy platform – 5-10 per cent of Owner-operator herds

- No feed is imported. No supplement fed unless harvested off the effective milking area and dry cows are not grazed off the effective milking area.

System 2: Feed imported, either supplement or grazing off, fed to dry cows – 25-30 per cent of Owner-operator herds

- Approximately 4-14 per cent of total feed is imported. Variation in percentage as most cows are wintered off in high rainfall areas or cold climates.

System 3: Feed imported to extend lactation and for dry cows – 35-45 per cent of Owner-operator herds

- Approximately 10-20 per cent of total feed is imported.

System 4: Feed imported and used at both ends of lactation and for dry cows – 20-25 per cent of Owner-operator herds

- Approximately 20-30 per cent of total feed is imported onto the farm.

System 5: Imported feed used all year – 5-10 per cent of Owner-operator herds

- Approximately 25-40 per cent (but can be up to 55%) of total feed is imported.

This publication makes reference to low, medium and high input systems. These are defined as:

- **Low:** system 1 and system 2,
- **Medium:** system 3,
- **High:** system 4 and system 5.

2.8: Operating Profit Adjustments

Non-cash adjustments for resources used but not accounted for by cash income or expenditure are made when calculating the operating profit.

A summary of these adjustments is shown below. For more detail refer to the DairyBase® Operating Profit Adjustments document.

- **The value of change in dairy livestock numbers** is calculated and added to net dairy cash income to form gross farm revenue.

Note: this is the value due to change in livestock numbers.

The reason for this adjustment is that the revenue from net dairy cash income can be affected by decisions to change the herd size due to adverse events. For example, in drought years more stock are sold and therefore revenue through net livestock sales will be considerably higher. Similarly, in years following a drought livestock will be purchased to increase numbers to a more normal level. The adjustment offsets these changes with a value for change in livestock on hand.

The value of change in dairy livestock is calculated as follows: closing less opening livestock numbers, valued at closing herd scheme values.

- **Labour adjustment** – comprising two components: unpaid management based on the size of the herd and time worked, and unpaid labour valued at a market hourly rate.
- **Feed inventory adjustment** – closing less opening supplementary feed on hand, valued at a standard 32 cents per kilogram dry matter in 2017-18.
- **Owned support block adjustment** – valued on an assessed regional market lease rate per hectare.
- **Depreciation** – as recorded in the annual set of accounts.

2.9: Asset Values

DairyBase® calculates market values for land and buildings by using the most recent Rateable Valuations for each farm and adjusting these to 1 June 2017 and 1 June 2018 market values using sales data supplied by Quotable Value and REINZ plus discussions with regional real estate agents and valuers.

Opening and closing livestock values for each year are calculated using the Inland Revenue herd value scheme NAMV (National Average Market Values) for the appropriate age group of animals.

Plant, machinery and vehicle values are recorded at book value.

Off-farm assets and investments are shown as market values.

2.10: GST

The financial data is GST exclusive as these transactions are neutral to the farm operation.

Section 3: Physical Analysis

3.1: Introduction

The DairyNZ Economic Survey reports the trends in financial performance of dairy farms but not all the trends in physical performance. While not presented, there are key physical indicators of milk production such as days in milk, cow condition, reproductive performance, soil fertility, and fertiliser use data available from DairyBase®. It is the combination of the physical performance of the farm reflected through milksolids production, the cost of production and milk prices that drives the financial results.

3.2: 2017-18 Seasonal Conditions

New Zealand

The end of the 2016-17 season was wet for most of the country, particularly in the North Island as two ex-tropical cyclones delivered significant amounts of rain. Autumn 2017 temperatures were warm and these continued into the winter. Spring temperatures were also warmer than normal across the country and conditions were dry for most regions. Summer 2017-18 was the hottest on record, this was accompanied by variable rainfall across the country but two ex-tropical cyclones in February resulted in large rainfalls. Conditions late in the season were warm with mixed rainfall for many regions. With this challenging and variable weather, total milksolids production declined for the third consecutive season (-0.6%), milksolids production per cow (-3.4%) and per hectare (-2.1%) were also down on last season. Winter temperatures were mild, with variable rainfall throughout the winter months for most of the country. July was a particularly wet month due to the passage of several low-pressure systems which resulted in record high rainfall for parts of Canterbury and Otago. Milksolids production in winter 2017 was up 1.7 per cent on last season with June production up 20.4 per cent.

The start of spring was unsettled for many parts of the country due to more than normal low pressure systems over New Zealand. September milksolids production was down 1.3 per cent on last season and was the lowest since 2012-13. Spring 2017 was the second equal warmest spring on record. October and November were particularly dry for much of the country, especially for areas of Canterbury and the Lower North Island. By the end of spring, soils were significantly drier than normal. Overall, total milksolids production increased 1.8 per cent compared to the previous spring, although difficult conditions were experienced in both springs which impacted milk production.

Above normal temperatures in summer were caused by La Niña conditions in the tropical Pacific and a marine heatwave that kept air temperatures above the ocean warmer than usual. This combination contributed to summer 2017-18 being the warmest on record. December was accompanied by the continuation of dry spells experienced during spring but during the month of January tropical air masses brought rain for most of the country. February was characterised by two ex-tropical cyclones (Fehi and Gita) that brought significant amounts of rain to many parts of the country. Overall, summer 2017-18 was very warm and wet, and after a challenging, dry spring, milksolids production was still down on the same period last season (-5.3%).

Autumn weather was variable, with warmer than normal temperatures experienced during March, near average temperatures in April and changeable temperatures during May. Rainfall patterns were also mixed, with heavy rainfall events observed in March, leading on from a wet February. Adverse weather events from low pressure systems occurred in April, with storms bringing strong winds and flooding across the country. The end of May saw frosts and cold temperatures for parts of the South Island. Despite the varied weather, autumn milksolids production increased 1.4 per cent on last season.

Total milksolids production for 2017-18 decreased 0.6 per cent on the previous season as farmers were faced with challenging, dry spring conditions, a warm and wet summer and a mixed but favourable autumn.

Northland

Northland farmers started the 2017-18 season well with mild winter temperatures and rainfall slightly above normal levels. Compared to last season milksolids production from June to August was up 6.4 per cent. The warmer than normal temperatures continued into spring but rainfall eased, with October and November drier than normal. By summer, soil moisture levels were below average for the time of year. The dry spells continued into December but rain throughout January and February reduced soil moisture deficits. Overall, summer was much warmer and wetter than usual. The season finished with a fairly typical autumn, although slightly warmer than normal. A strong start to the season and favourable conditions during autumn allowed for total milksolids production for Northland to increase 1.4 per cent on last season.

Waikato

The 2017-18 season was difficult for many farmers in the Waikato despite a reasonable start to winter. Winter temperatures were warmer than normal and rainfall was slightly above average due to low pressure systems passing over the country in July. Milksolids production for the 3-month winter period was 2.5 per cent higher than last season. Despite a wetter than normal September, average rainfall was below average for spring as dry spells occurred during October and November. Following the dry end to spring, summer was wetter than normal as ex-tropical cyclones Fehi and Gita brought heavy rain to the Waikato region during February. Summer temperatures were also hotter than usual and had impacts on milksolids production which decreased 7.7 per cent on last season. Autumn weather was unsettled with variable rainfall across the region. Overall, the climatic conditions were challenging for many Waikato farmers and total milksolids production for the season declined 1.8 per cent from last season.

Bay of Plenty

Farmers in the Bay of Plenty region experienced a marked improvement in the seasonal conditions for 2017-18 compared to last season. Above average temperatures were felt throughout winter and there was slightly more rainfall than usual. Spring also started off warmer and wetter than normal but rain eased towards the end of spring. Milksolids production from September to November was 5.6 per cent higher than last year as a challenging, wet spring in 2016 dampened production. Summer temperatures and rainfall were both well above average which impacted on milksolids production slightly, however, this was followed by a favourable autumn which overall was near average for rainfall and slightly warmer than normal. Autumn milksolids production was 6.0 per cent higher than last season given the improved climatic conditions. Total milksolids production for the Bay of Plenty region increased 3.3 per cent on last season, but was still below the record high experienced in 2014-15.

Taranaki

2017-18 will not be remembered fondly by Taranaki dairy farmers. Winter was reasonably typical, albeit slightly warmer and wetter than normal. However, as the season progressed into spring, dry spells caused soil moisture deficits and impacted on spring pasture growth. Summer was much warmer than normal and the dry conditions continued until rain came in January. Summer milksolids production reflected the flow-on impacts from the dry spring and start to summer, which was 15.3 per cent lower than last year. Autumn conditions did not salvage milksolids production for Taranaki as it was wetter than normal due to some heavy rainfall events. Unfavourable climatic conditions for Taranaki severely impacted on milksolids production this season, with total milksolids down 8.1 per cent on last season to the lowest level it has been since 2012-13.

Lower North Island

Winter for the Lower North Island was wet, with near average temperatures, although a bit warmer than normal during August. Spring started off wet, but this quickly subsided and by November conditions were dry for many parts of the region. Hot and dry conditions continued during December but the summer ended up wetter than normal overall as rainfall was plentiful in January and February. The difficult start to summer took its toll on milksolids production and was 7.7 per cent lower than last year. Autumn was generally warmer and wetter than normal, allowing for a solid finish to the season. Total milksolids production was down 2.8 per cent on last season due to the dry conditions throughout spring and early summer.

West Coast-Tasman

The West Coast-Tasman region experienced a dry spring, but it lived up to its reputation of being wet towards the end of the 2017-18 season. Winter was fairly typical for rainfall and temperatures were mild, particularly during August. Spring was warmer than normal, especially during November which was also reasonably dry. Summer temperatures were very warm, and the region was much wetter than usual. Ex-tropical cyclones Fehi and Gita caused heavy rain and flooding for the West Coast-Tasman region during February which caused slips that cut off Golden Bay. Takaka also had the wettest day of summer for the country. Summer milksolids production was impacted by the heavy rainfall events and was down 3.0 per cent on last season. The season finished with near normal temperatures and rainfall during autumn. Total milksolids production for the West Coast-Tasman region decreased 1.4 per cent compared to last season.

Marlborough-Canterbury

The Marlborough-Canterbury region had a mixed season, experiencing warm, cool, wet and dry periods throughout the season. The season started off much wetter than normal with record-breaking rainfall occurring in July for southern Canterbury. Winter temperatures were variable across the region but were generally warmer than normal for the month of August. Spring was warmer than normal with a wet September, however, as spring progressed conditions became very dry, especially in November. No rain was recorded at all for the month of November for Orari, Southern Canterbury. Dry spells continued throughout December, but tropical air masses brought plentiful rain in January and ex-tropical cyclones Fehi and Gita caused heavy downpours in February. Overall summer temperatures were much warmer than normal and the dry start to summer impacted on milksolids production, down 2.2 per cent compared to last season. The warm temperatures eased during autumn and an outbreak of Antarctic air passed over the South Island in May. Autumn rainfall was above average and intense periods of rain were experienced in April. Despite 2017-18 being a variable season for Marlborough-Canterbury, total milksolids production increased 1.4 per cent on last season.

Otago-Southland

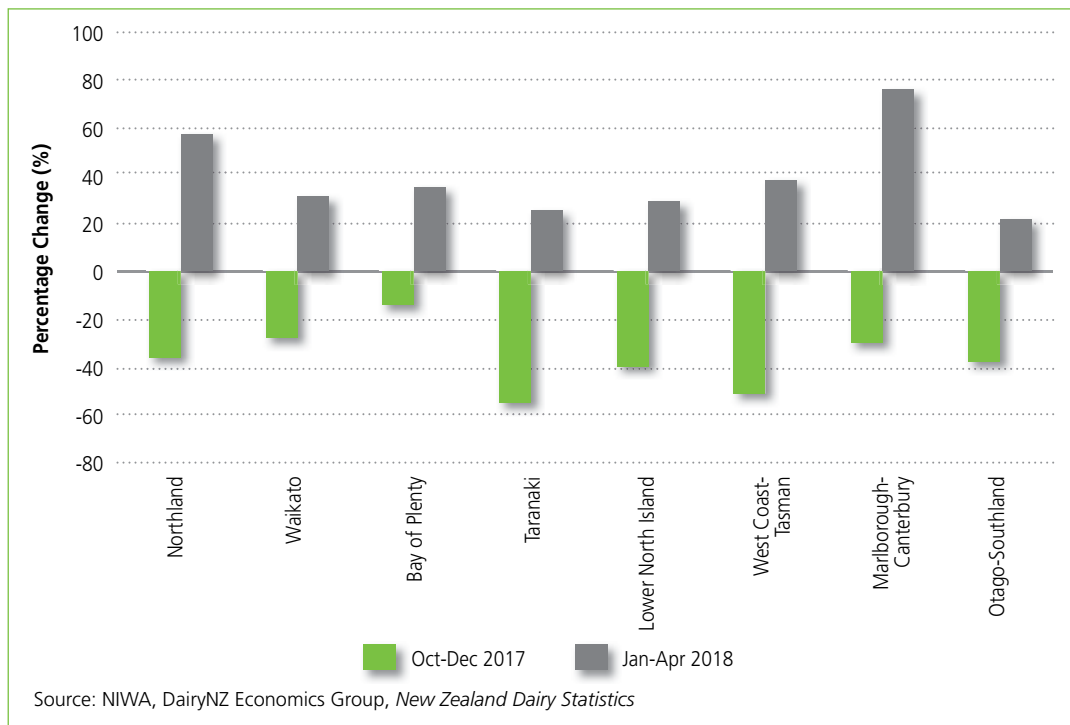
Winter 2017 was mild for the Otago-Southland region, but rainfall was well above average. Heavy rainfall in July led to severe flooding and the declaration of a state of emergency in Otago. The rain eased throughout spring and conditions soon became very dry, especially with the warmer than normal temperatures. Summer temperatures were also well above average and the dry conditions continued in January. February was characterised by heavy rainfall events as the two ex-tropical cyclones passed over the country. The difficult summer impacted on milksolids production which was 3.1 per cent lower than last season. Autumn temperatures were near average, although cool, southerly airflows were experienced towards the end of May. Rainfall for autumn was above average for most parts of the region. Overall, the Otago-Southland region experienced a variable season, however, total milksolids production was up 1.4 per cent on last season.

Rainfall Summary

NIWA supplies daily climate data for various points across New Zealand, this data is collated into district-level averages for each month. Within each region, mean rainfall for the October to December (spring) and January to April (summer) periods were weighted by the number of cows in the district in which the rainfall was recorded. The variation in the mean regional rainfall from ten-year-weighted averages is shown in Figure 3.1. Dry spring conditions were experienced across the country, with all regions receiving at least 14 per cent less rainfall than the ten-year-weighted regional averages. On average, New Zealand had 37 per cent less rainfall than the ten-year-weighted average over the three-months of spring. Taranaki (-55%) and West Coast-Tasman (-51%) only received half the amount of average rainfall which proved difficult for farmers and negatively impacted on milksolids production. The rest of the country experienced about a third less rainfall on average, the Bay of Plenty region had the smallest discrepancy in rainfall (-14%) compared to the ten-year-weighted average. North Island spring rainfall was 35 per cent below average while the average rainfall for the South Island was 41 per cent less than the ten-year-weighted average.

Summer conditions contrasted those observed in spring, with two ex-tropical cyclones passing over the country in February. Summer and the beginning of autumn was wetter than normal and all regions experienced at least 22 per cent more rainfall compared to the ten-year-weighted averages. Marlborough-Canterbury (+76%) and Northland (+57%) had the largest discrepancies in rainfall while Taranaki (+26%) and Otago-Southland (+22%) had the smallest discrepancies in rainfall compared to the ten-year-weighted regional averages. North Island summer and early autumn rainfall was 33 per cent above average while the average rainfall for the South Island was 42 per cent more than the ten-year-weighted average. Overall, New Zealand experienced a wet summer and early autumn, with 36 per cent more rainfall than average from January to April.

Figure 3.1: 2017-18 Variation in Rainfall from Ten-Year-Weighted Regional Averages



3.3: Feed Use

The trend in national feed use on New Zealand dairy farms for the last decade is provided in Table 3.1. Milksolids production and average liveweights sourced from New Zealand Dairy Statistics along with annual dry matter (DM) requirements for dairy cows in DairyNZ Facts and Figures were used to derive feed requirements per cow. Total feed eaten per (effective milking platform) hectare was calculated by multiplying feed requirements per cow by the average New Zealand stocking rate.

Total feed eaten increased 1.1 tonnes dry matter per hectare over the last decade, with 13.4 tonnes eaten per hectare in 2017-18. This has been constant for the last three seasons, reflected by steady milk production and was slightly below the peak in 2013-14 and 2014-15. Feed conversion efficiency (FCE), derived from milksolids production and feed eaten, showed that over the last decade cows have become more efficient at converting feed (dry matter) into milksolids through improved genetics, transition to more crossbred cows and more supplements and crops in the diet. In 2017-18, for every tonne of feed eaten, a cow produced 78.0 kilograms milksolids, compared to 74.6 kilograms milksolids 10 years ago.

Pasture (including hay and silage), crop and supplementary feed eaten per hectare have been estimated from national databases including areas planted, volumes harvested and import statistics for feeds commonly eaten by New Zealand dairy cows. Assumptions were made based on expert advice for the proportion of each feed type offered to dairy cows and utilisation rates. Pasture eaten has been fairly constant for the last decade while crop eaten has increased. Supplements show more variation from year to year as farmers adjust behaviour on-farm in response to volatility in milk price and seasonal conditions.

Table 3.1: Feed Demand, FCE and Types of Feed Eaten

Season	Total Feed Eaten (t DM/ha)	Pasture (t DM/ha)	Crop (t DM/ha)	Supplements (t DM/ha)	FCE (kg MS/ t DM)
2008-09	12.3	10.4	0.4	1.5	74.6
2009-10	12.6	10.8	0.5	1.3	73.3
2010-11	12.4	10.5	0.5	1.4	74.4
2011-12	13.3	11.2	0.6	1.5	77.2
2012-13	13.0	10.8	0.7	1.6	76.0
2013-14	13.6	11.0	0.9	1.7	78.4
2014-15	13.6	11.0	0.9	1.7	79.6
2015-16	13.4	10.8	0.9	1.6	79.6
2016-17	13.4	11.0	0.9	1.5	80.1
2017-18	13.4	10.9	0.9	1.7	78.0

Source: DairyNZ Economics Group, New Zealand Dairy Statistics, DairyNZ Facts and Figures, Statistics New Zealand

Note: the results in Table 3.1 may have altered slightly from those included in the DairyNZ Economic Survey 2016-17 as the feed data was updated.

The dairy industry has continued to grow over the last decade as additional land area has been converted to dairy and dairy support, although total effective dairy hectares have been fairly constant in recent years. During this period, the industry has also become more productive, reflected by increases in per cow milk production (Figure 3.4). Improved milk production has occurred from increased feed levels, particularly palm kernel extract (PKE), maize silage and in recent years fodder beet (Figure 3.2), as well as improvements in FCE. In 2017-18, pasture accounted for approximately 81 per cent of total feed eaten, with PKE (7%), maize silage (4%) and fodder beet (3%) the largest non-pasture feed components in the dairy cow's diet. All other crops and supplements eaten accounted for a combined 5 per cent of total feed eaten.

Figure 3.2: Trends in the Main Components of Feed Eaten

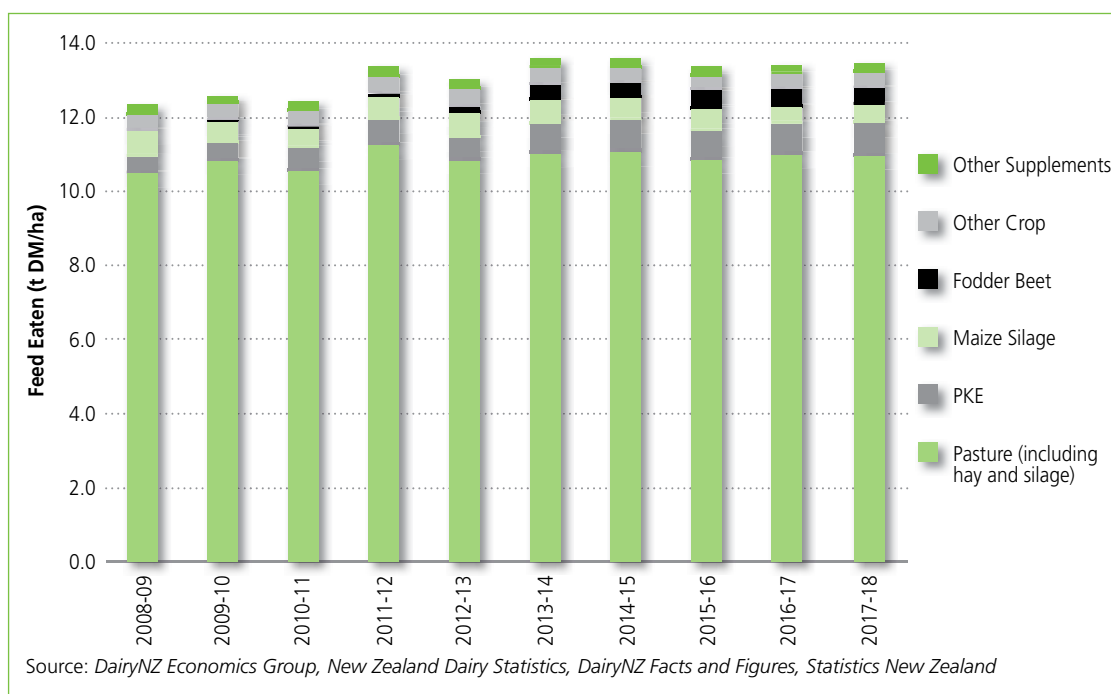
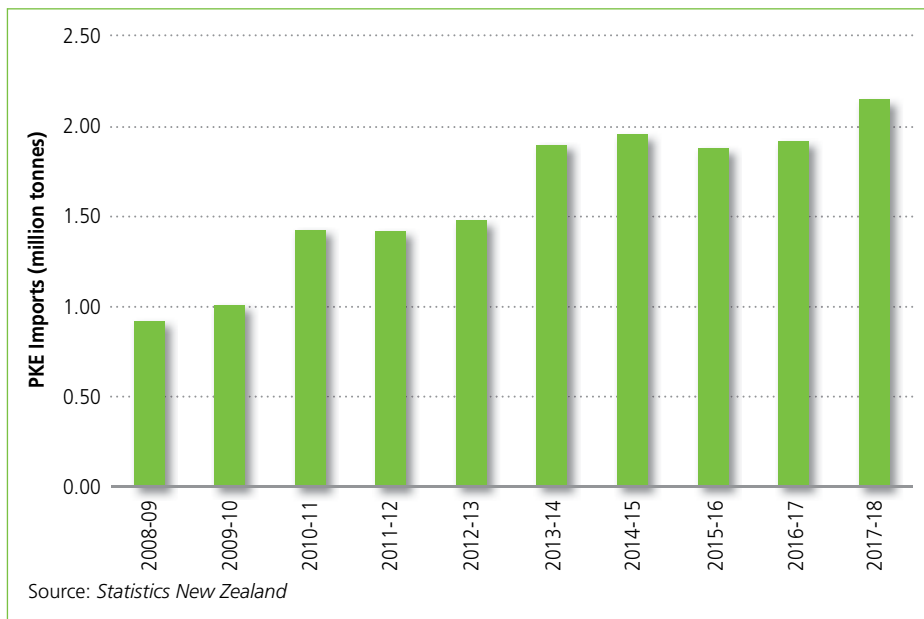


Figure 3.3 shows the volumes of PKE imports into New Zealand for years ending 30 June since 2008-09. Volumes increased to 1.89 million tonnes in 2013-14 and remained at this elevated level for the next three seasons. The volumes of PKE imports increased to a new high in 2017-18 (2.14 million tonnes) and were more than double those in 2008-09. The majority of PKE was imported from Indonesia and Malaysia in 2017-18.

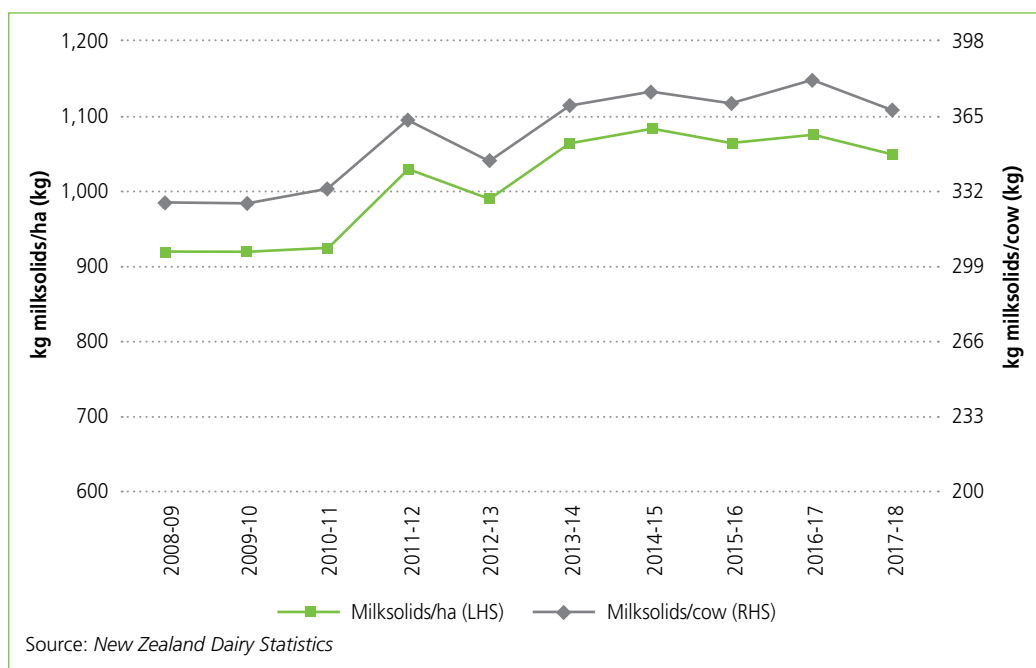
Figure 3.3: PKE Imports



3.4: Milk Production

Milk production on the average New Zealand dairy farm increased 0.6 per cent (+1,173 kg MS) in 2017-18 to 158,733 kilograms milksolids, as stated in the *New Zealand Dairy Statistics 2017-18*. This is the highest milksolids production per herd, slightly higher (+847 kg MS) than the previous record set in 2014-15. The record high milksolids production per herd is reflected by an increase in peak cows milked of 17 cows (+4.1%) to 431 cows per herd, in line with an increase in effective hectares per farm. The total number of herds in New Zealand has declined as some farms exited the industry or were purchased by other farm owners. Milksolids production per cow decreased by 13 kilograms (-3.4%) to 368 kilograms, the result of challenging spring and summer conditions across the country. Milksolids production per effective hectare (1,048 kg MS) also decreased 2.1 per cent, and with stocking rate remaining fairly constant, this reflects the reduction in milksolids production per cow. Figure 3.4 shows that milk production per cow and per hectare both decreased from last season. Farmers in most regions faced dry spring conditions and a wetter than normal summer, but total milk production declined.

Figure 3.4: Milksolids Production (per cow and per ha)



The average annual increase in milksolids production per herd since the 2008-09 season has been 4,762 kilograms or a least squares annual growth rate of 3.4 per cent². Contributing to this has been:

- **more hectares** – annual growth in milking area of 2.0 hectares (+1.4% per year);
- **more cows** – annual growth of 6.7 cows per herd (+1.6% per year);
- **higher stocking rate** – annual growth of 0.01 cows per hectare (+0.2% per year);
- **more milksolids per cow** – annual growth of 6.7 kilograms (+1.9% per year); and
- **more milksolids per hectare** – annual growth of 18.4 kilograms (+2.1% per year).

In summary, the annual growth in cows per farm (+1.6%) has been slightly higher than the growth in milking hectares per farm (+1.4%) and therefore the stocking rate has not changed much (+0.2%) over the last 10 years. This small increase in stocking rate, coupled with the growth in milksolids per cow (+1.9%) has resulted in an annual increase in milksolids per effective milking hectare of 2.1 per cent.

3.5: Stocking Rate

The average number of peak cows milked per effective milking hectare at 2.84 in 2017-18, was slightly higher than that a decade ago at 2.80, as reported in the *New Zealand Dairy Statistics 2017-18*. Over this 10-year period, farms have utilised more feed, however, stocking rate has declined since it reached its peak of 2.87 in 2013-14. In 2017-18, 68 per cent of farms had a stocking rate between 2.30 and 3.30 cows per effective milking hectare.

3.6: Productivity

Productivity is a measure of physical farm efficiency or how well a business converts input resources into production. For a dairy farm to become more efficient it must increase the production of milksolids and/or reduce inputs such as: labour, farm working inputs, repairs and maintenance, overheads, and assets such as land, livestock, infrastructure, and vehicles. Essentially this is “more from less”, although it is possible to be more efficient by producing less, providing inputs decrease by more than outputs.

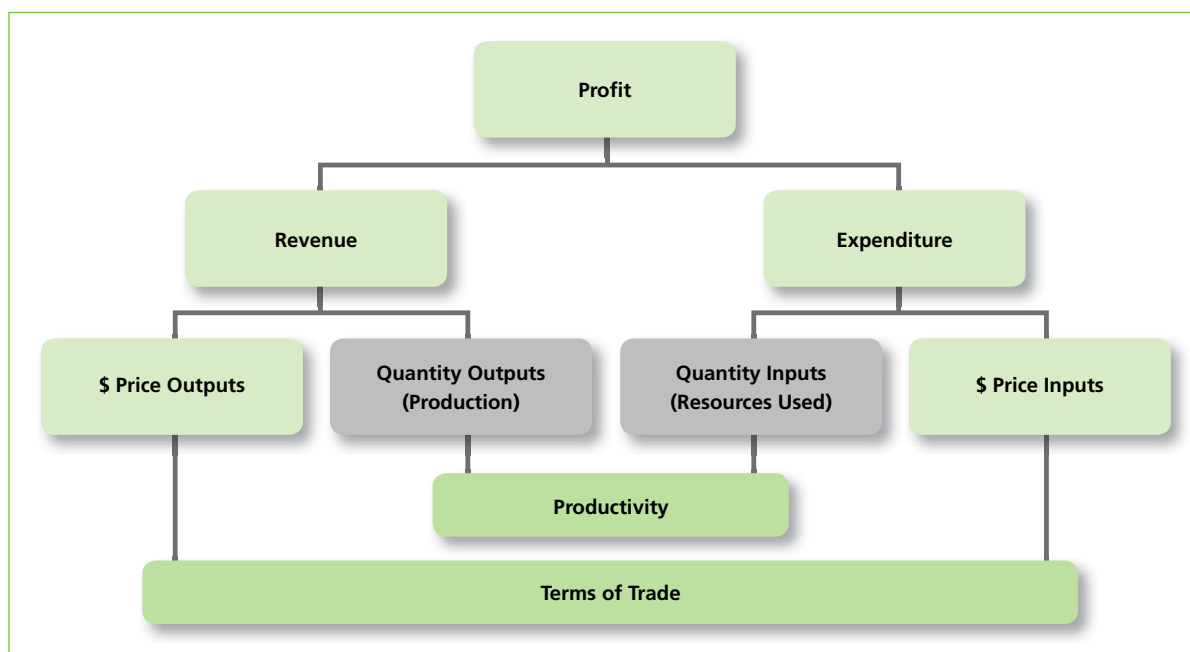
$$\text{Productivity} = \frac{\text{Physical Outputs (Production)}}{\text{Physical Inputs (Resources Used)}}$$

DairyNZ measures dairy farm productivity using the Total Factor Productivity (TFP) approach. TFP compares the efficiency of producing all outputs against the usage of all inputs (including assets) in the production process. The model uses Tornqvist indices based on changes to outputs and inputs on the average New Zealand dairy farm.

Input and output prices and productivity affect profit, as demonstrated in Figure 3.5. If the price of outputs such as milksolids and the price of inputs remain constant, the only way to increase profit is to improve productivity. Productivity is the only factor that can be controlled or influenced as prices are set by market forces outside the farm gate. However, the reverse also applies, if productivity shows no movement, the only way to increase profit is through a change in the terms of trade, either an increase in output prices and/or a decrease in input prices, neither of which can usually be affected by farmers.

² The milk production results published in the Economic Survey are slightly different to those discussed in this section, reflecting sampling differences.

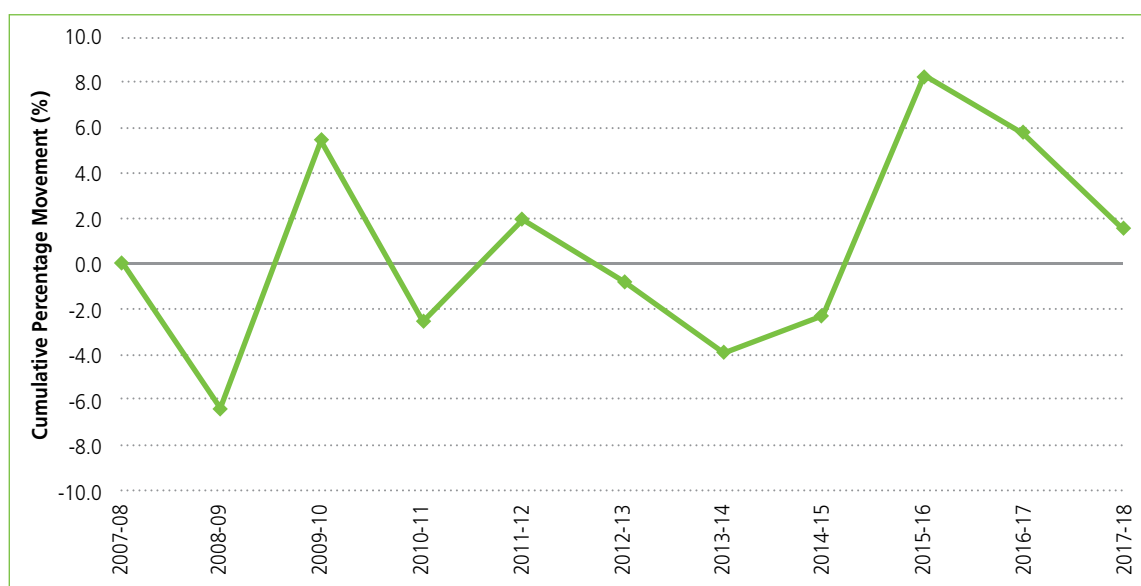
Figure 3.5: Components of Profit



Cumulative TFP movements for Owner-operators over the past 10 years are shown in Figure 3.6. It is interesting to note how volatile productivity changes are from year to year. Productivity decreased 4.0 per cent in 2017-18 as inputs increased twice as much as outputs. This was the second consecutive season of lower productivity, with difficult spring conditions being a common feature across the two seasons. Most inputs recorded increases in volume with the exception of electricity and dairy shed expenses. The largest expense item increases were recorded for vehicle and fuel, repairs and maintenance and supplementary feed made and purchased. Capital use (cows, hectares and dairy company shares) increased in 2017-18 while labour also increased slightly.

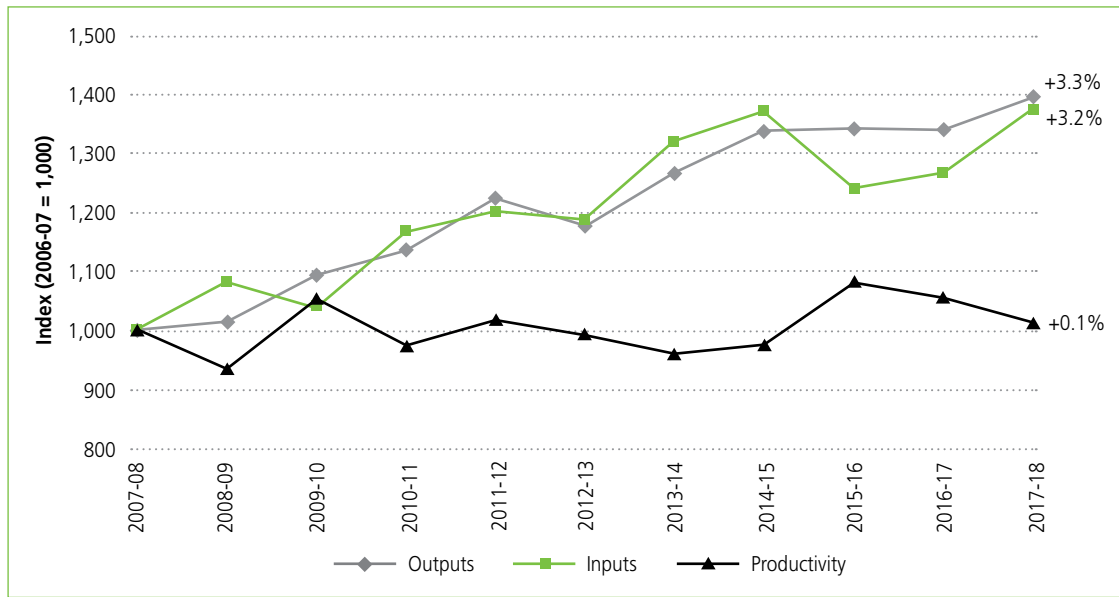
Overall, there has been a 1.4 per cent increase in TFP over the last 10 years. Productivity increased in four of the past 10 years, while productivity declined in six of these years. The two years (from 2008-09 to 2009-10 and from 2014-15 to 2015-16) of high productivity improvements were the years of substantially reduced milk prices, which prompted responses from farmers to reduce expenditure and the inputs used.

Figure 3.6: Cumulative Total Factor Productivity Movements (%)



In the decade ending June 2018, higher milk production per hectare has been generated by increases in the quantities of inputs, such as capital (cows and infrastructure) and farm working inputs (supplementary feed, and grazing). Over the last decade outputs and inputs have increased at very similar rate, see Figure 3.7.

Figure 3.7: Dairy Farm Output, Input and Productivity Movements



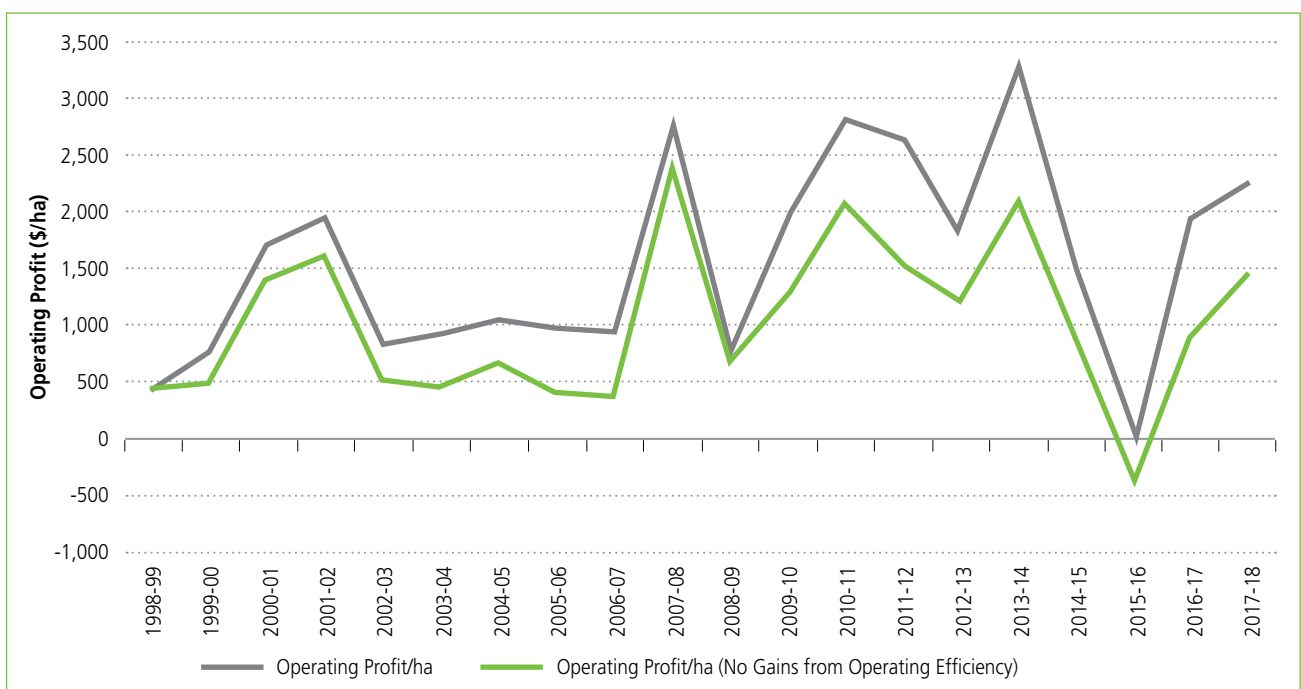
3.7: Profit from Productivity

Productivity improvements over time are essential to sustain or grow business profits and therefore to compete successfully with alternative uses for resources. DairyNZ has developed a measure for productivity based on operating profits.

Operating profit from productivity (PFP) is defined as the difference between actual operating profit and the operating profit that would have occurred with no productivity changes since a base year (i.e. in the absence of milksolids production increases and with operating expenses per kilogram milksolids increasing annually at the rate of dairy farm input price inflation), see Figure 3.8. In essence, PFP is a measure of cost-efficient milksolids production increases since the base year valued at the end year operating profit margin per kilogram milksolids. It excludes the cost of capital, although depreciation and changes in hectares are accounted for.

The three main contributory components of PFP are milksolids production increases since the base year, operating expenses savings in inflation adjusted terms since the base year, and end year operating profit per kilogram milksolids (influenced by milk prices). DairyNZ and dairy farmers must increasingly focus on achieving cost-efficient milksolids production and PFP provides a means for monitoring the value of productivity gains over time.

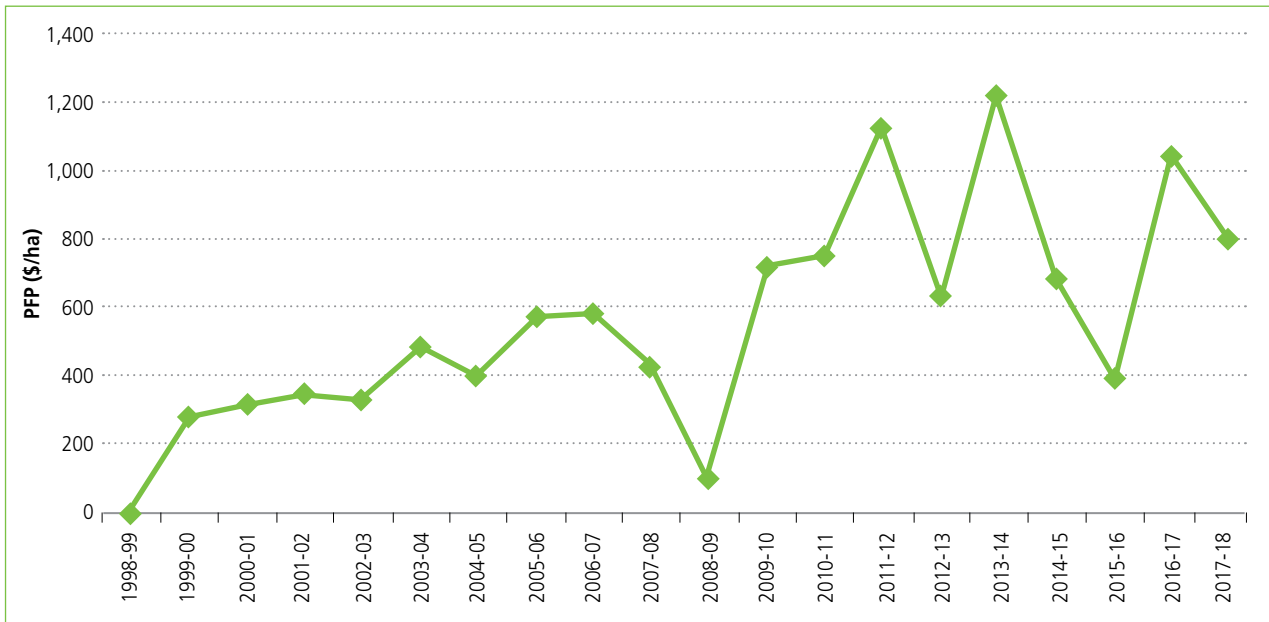
Figure 3.8: Profit from Productivity



PPF decreased from \$1,044 per hectare in 2016-17 to \$800 in 2017-18 (1998-99 base year PPF = \$0/ha). This decrease was mainly due to a decrease in productivity due to increased input use. If it were not for production gains and operating expenses control in relation to inflation since 1998-99, operating profit would have been \$1,438 per hectare, and not \$2,238.

Figure 3.9 shows the gains made in PPF were relatively steady from 1990-91 to 2006-07. However, sharper fluctuations in both milk prices and seasonal rainfall have caused PPF to be more volatile since. Although volatile, PPF levels have lifted to between \$600 and \$1,200 over the last eight years, compared with the period prior to 2010-11. Overall productivity gains have increased at an average rate of \$38 per hectare since 1998-99.

Figure 3.9: Profit from Productivity Gains since 1998-99

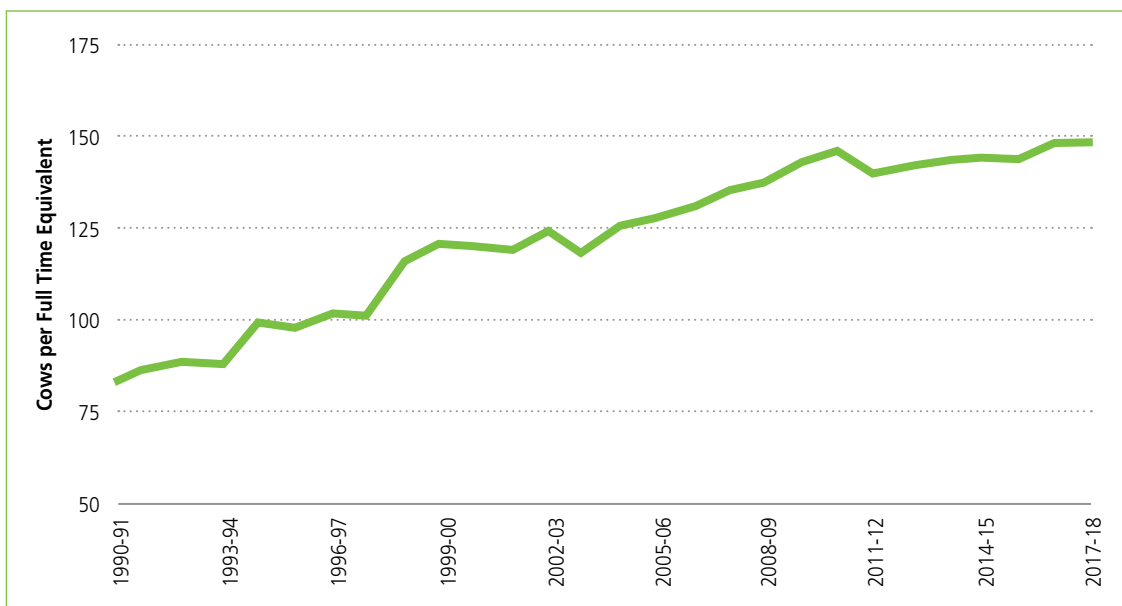


3.8: Labour Efficiency

Since 1990 the number of peak cows milked per full time equivalent (FTE) labour unit has increased from 83 to 148, a rate of 2.5 additional cows per year. The increased use of technology, large South Island dairy herds and labour saving techniques have driven this trend. Despite the increase in herd sizes. In 2017-18, the number of cows per FTE remained the same as the previous season, refer to Figure 3.10.

For the 2017-18 season, the South Island on average milked 23 more cows per FTE than the North Island (163 and 140 cows respectively). Nationally, half the farms milk between 118 and 169 cows per FTE.

Figure 3.10: Cows per Full Time Labour Equivalent



Section 4: Prices Received and Paid

4.1: Milk Payment

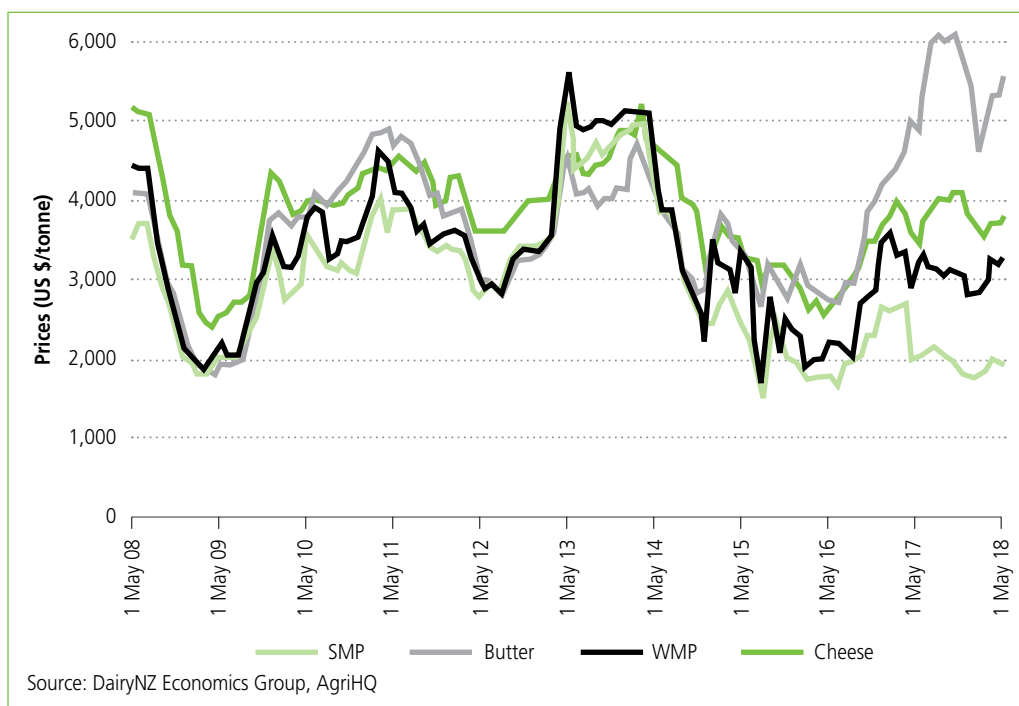
Owner-operators received an average cash payout of \$6.62 per kilogram milksolids sold for 2017-18 (net of the industry good levy, but includes advances, final payments, and dividends). This was an additional \$0.83 compared with 2016-17. Farmgate milk prices in June 2017 were reasonable as farmers started a new season, with the Fonterra forecast of \$6.00 per kilogram milksolids. The Fonterra forecast lifted in the first part of the season before ending at \$6.69 per kilogram milksolids.

International dairy powder prices fluctuated in 2017-18 (as seen in Figure 4.1) but were generally at a similar level at May 2018 compared to levels in May 2017. WMP finished the season at \$3,300 (+\$100), and SMP finished at \$1,960 (-\$65) per tonne. Cheese prices finished stronger at \$3,825 (+\$375) and butter, which finished at \$5,600, were around \$710 per tonne higher.

The NZD:USD exchange rate closed the 2017-18 season at the same level as it started, finishing at 69 cents with an average of 71 cents throughout the season, a similar average to 2016-17. The exchange rate in the last three seasons has been favourable for exporters and compares to 79 cents in 2014-15.

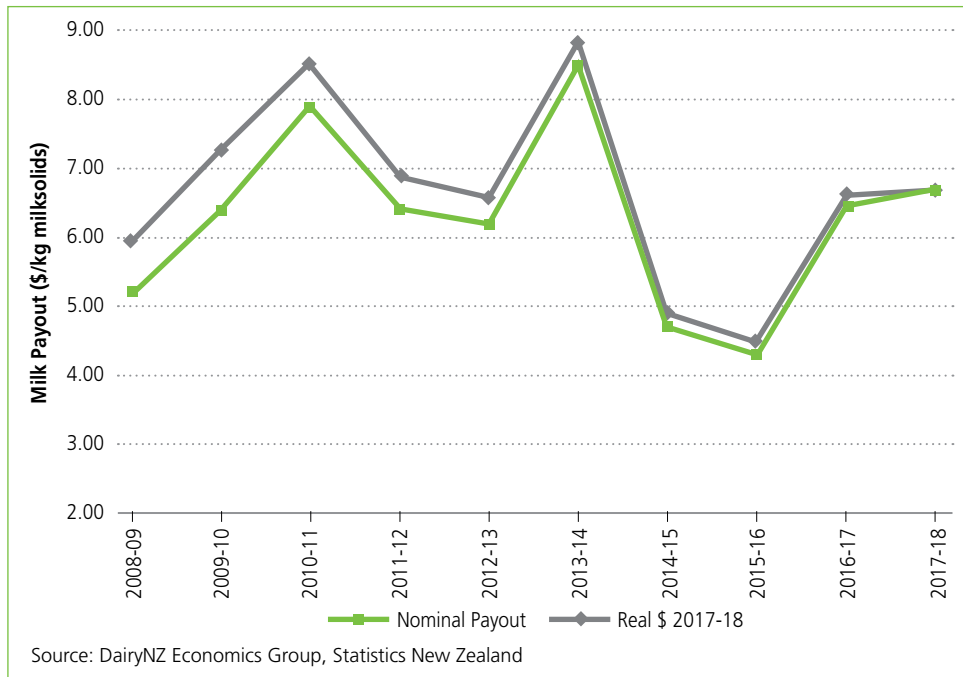
Whole milk powder comprised 39 per cent of New Zealand's dairy export earnings in 2017-18, which was the same in the 2016-17 season (39%). Skim milk powder decreased to 7 per cent from 9 per cent of export earnings. Cheese export earnings decreased slightly to 13 per cent of total dairy export earnings (from 14%), while butter increased for the third season in a row from 12 per cent to 15 per cent. Casein revenue declined to 9 per cent (previously 11%). Anhydrous milk fat accounted for 10 per cent of dairy export earnings in 2017-18 (previously 9%).

Figure 4.1: World Milk Commodity Prices (\$US per tonne)



The milk payout of \$6.62 per kilogram milksolids in 2017-18 was 30 cents above the decade average in inflation-adjusted terms (\$6.64) (Figure 4.2). While similar to the decade average, the modest increase from 2016-17 was encouraging for farmers given low milk prices over the previous few seasons. Average payout over the past 20 years, in real terms, was \$6.26 per kilogram milksolids, fairly similar to the average over the last 10 years.

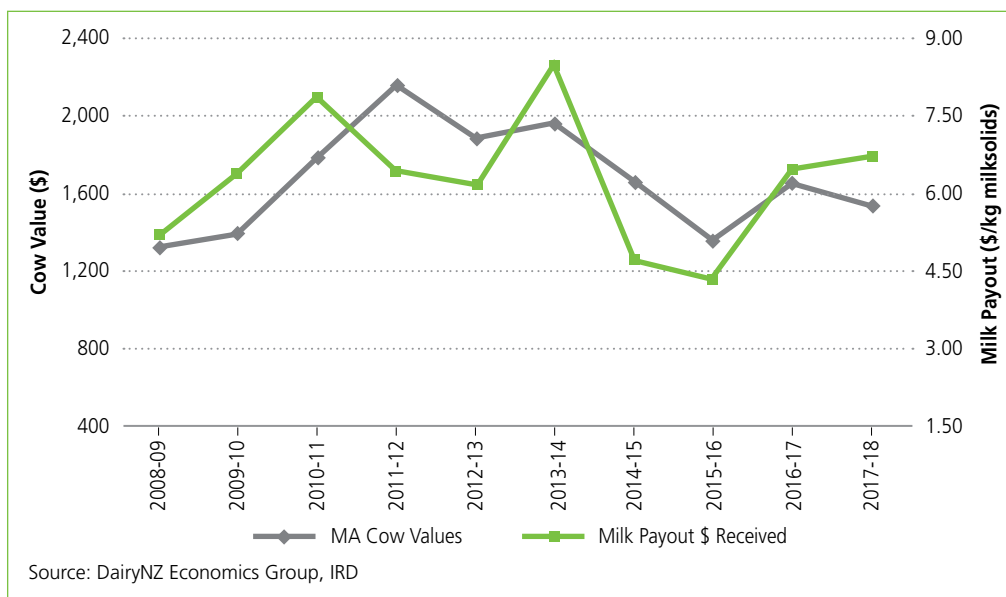
Figure 4.2: Trend in Milk Payout (Nominal and Real)



4.2: Livestock Prices

The value of mixed aged cows declined slightly to \$1,529 (-7%) in the 2017-18 season as milk prices stabilised. Cow values, in nominal terms, were below the decade-average of \$1,726. Figure 4.3 shows there has been a reasonably strong relationship between milk prices and the value of cows. Historically, cow values have followed the trend in milk prices, often with a slight time lag.

Figure 4.3: Trend in Cow Values Relative to Milk Payout

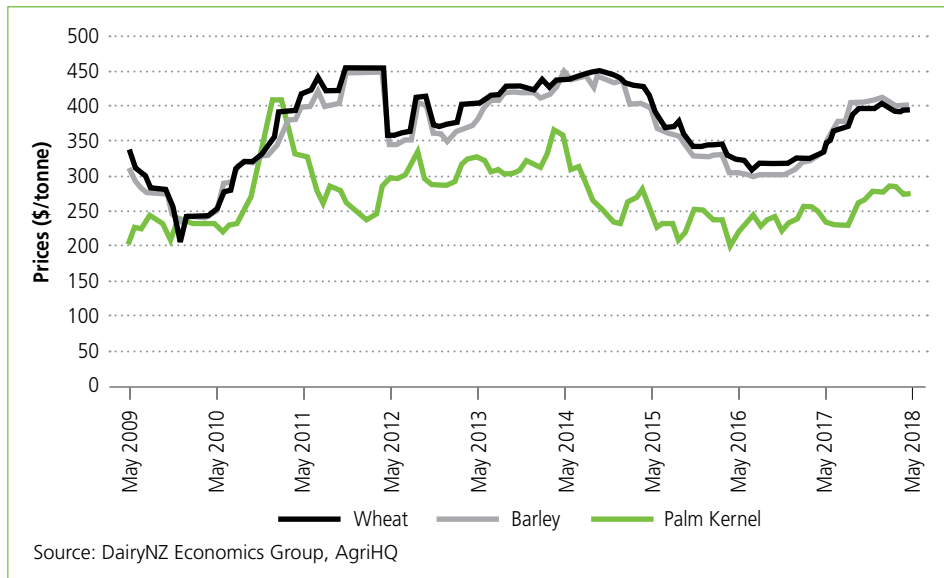


4.3: Feed and Fertiliser Prices

Feed and fertiliser prices between 2009-10 and 2017-18 are shown in Figures 4.4 and 4.5. Prices for wheat and barley increased strongly over the year, closing about \$75 per tonne higher than the previous season. Palm kernel prices decreased early in the season, before lifting again to close about \$25 per tonne higher than last season.

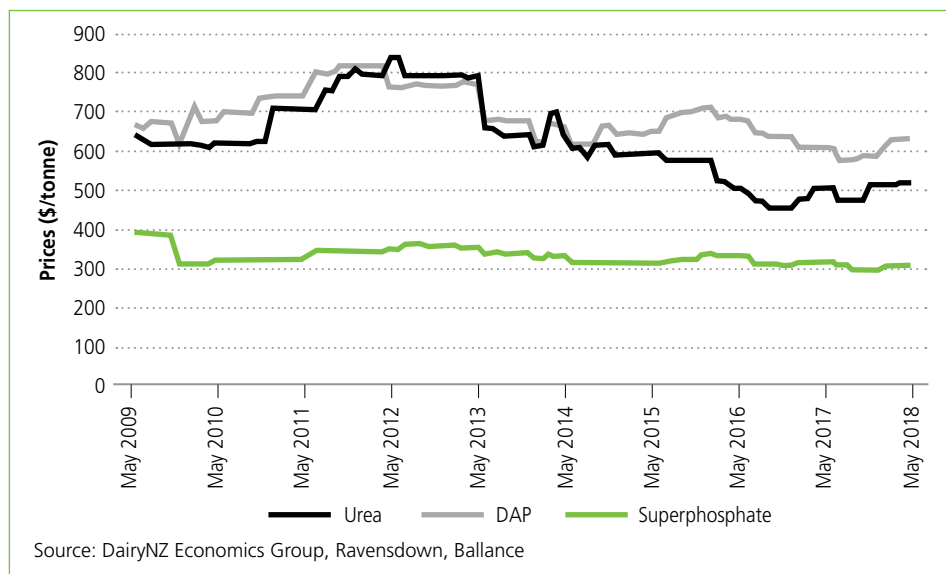
PKE imports increased 12.2 per cent year to June 2018, exceeding 2 million tonnes for the first time. A difficult spring in many parts of the country coupled with a dry start to summer in some areas, meant that feed was in short supply for some farmers which resulted in increased imports of PKE in the first half of the season. A wet late summer and autumn eased the impact of needing to purchase supplementary feed, in the second half of the season.

Figure 4.4: Feed Prices



There was a dip in fertiliser prices in the first half of the season, though Urea and DAP finished higher than they started the season (+\$16 and +\$19 per tonne respectively). Superphosphate prices declined -\$11 per tonne in 2017-18. Since 2013 there has been a downward trend in fertiliser prices.

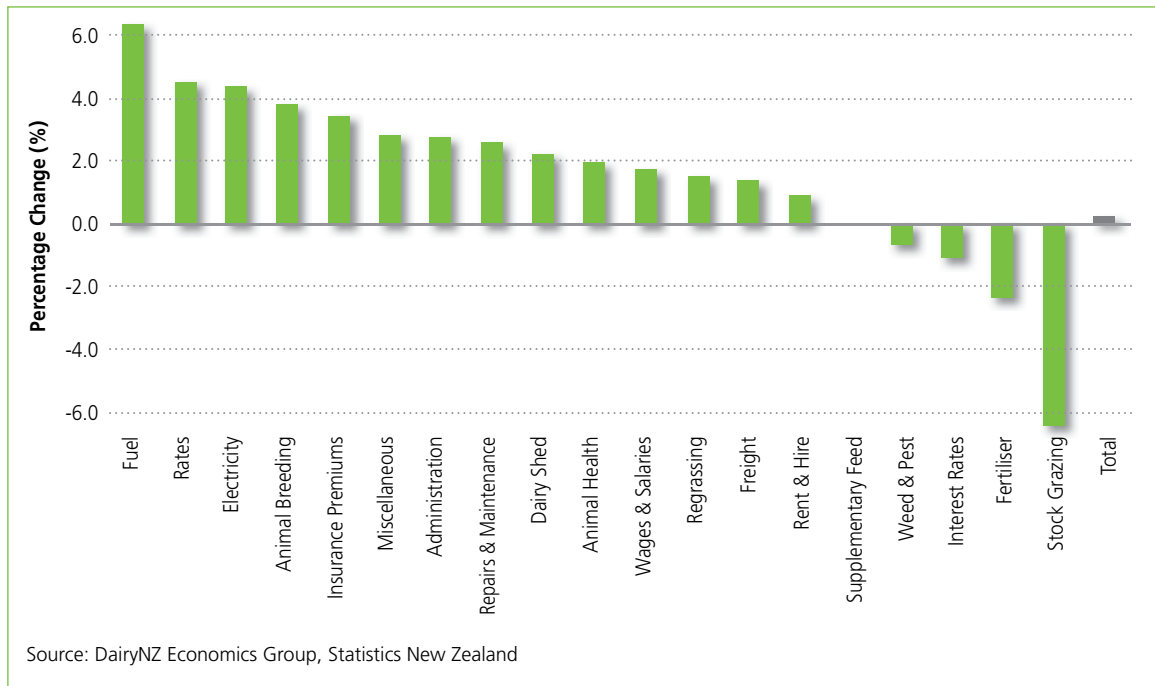
Figure 4.5: Fertiliser Prices



4.4: On-farm Inflation

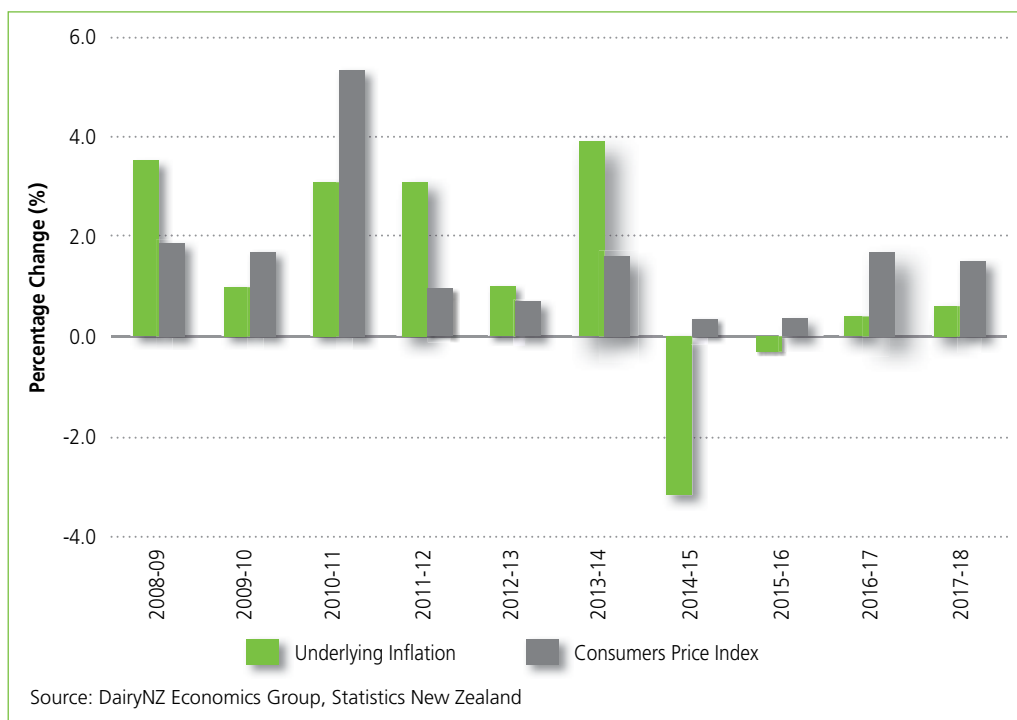
The movement in on-farm input prices is compiled by Statistics New Zealand in the Farm Expenses Price Index for dairy farms. The percentage movement of each category is weighted by a three-year rolling average of the contribution of each category to total expenditure. In the year to June 2018, the average price for inputs remained nearly unchanged (0.2%) after three seasons of lower or stable input prices. The price movements of individual categories for the 2017-18 season are shown in Figure 4.6. Decreases in individual price categories such as stock grazing (-9.3%) and fertiliser (-2.4%) were not enough to offset increases in other areas of expenditure. Increases included fuel prices (+6.4%), rates (+4.5%), electricity (+4.4%), and others, leading to an overall 0.2% per cent change for the season. For the past five seasons fertiliser input prices have fallen and interest rates have fallen for three consecutive seasons, while fuel prices increased for the last two seasons.

Figure 4.6: Dairy Input Price Changes – June 2017 to June 2018



If interest is removed, underlying prices increased slightly (+0.6%) (as seen in Figure 4.7). This slight increase in input prices was similar in 2016-17, before which there was two seasons of deflation (2014-15 and 2015-16). General inflation, as measured by the Consumers Price Index (CPI), experienced an increase (+1.5%) in the same period. Over the last ten years underlying dairy farm input prices (excluding interest rates) increased by 1.3 per cent per year on average. This was less than the general rate of inflation, which was 1.6 per cent per year.

Figure 4.7: Dairy Farm Input Price and CPI Changes – June 2008 to June 2018



4.5: Terms of Trade

Terms of trade is the ratio of prices received for outputs to prices paid for inputs. The ratio indicates the real purchasing power of each dollar of revenue at the farm gate relative to previous years. Terms of trade for the 2017-18 season increased 7.4 per cent, mainly due to higher milk prices, refer to Table 4.1. This was the second consecutive increase in terms of trade in line with the recovery in milk prices. Prices received (+12.8%) increased more than the 5.0 per cent increase in prices paid for inputs (including capital). Over the decade to 2017-18, the prices paid for inputs (including capital) have increased while the prices received for milk and livestock declined slightly.

Table 4.1: Dairy Farm Owner-operator Terms of Trade

	Prices Received Index	Prices Paid Index	Terms of Trade Index	Terms of Trade % Change
2007-08	1,000	1,000	1,000	
2008-09	740	1,053	703	-29.7%
2009-10	856	1,069	800	13.9%
2010-11	1,015	1,092	929	16.1%
2011-12	944	1,151	820	-11.8%
2012-13	898	1,166	770	-6.0%
2013-14	1,073	1,197	896	16.3%
2014-15	826	1,171	705	-21.3%
2015-16	585	1,149	509	-27.8%
2016-17	819	1,140	718	41.0%
2017-18	924	1,198	771	7.4%

Source: DairyNZ Economics Group, Statistics New Zealand, REINZ

Section 5: Financial Analysis – Owner-operator

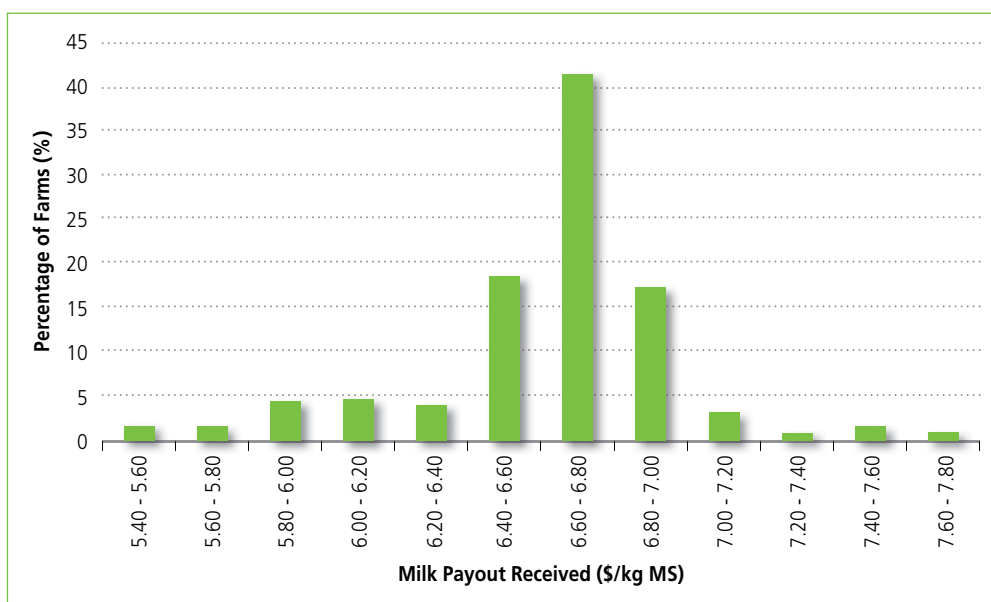
5.1: Revenue

The milk payout received (including dividend payments) in 2017-18 increased 83 cents (+14.2%) from the previous season to \$6.62 per kilogram milksolids. This was the highest milk payout received since 2013-14 and was 47 cents above the ten-year average of \$6.15 per kilogram milksolids. Milk production per cow and hectare, recorded by Economic Survey farms, decreased slightly in 2017-18 from the 2016-17 season, but due to an increase in herd sizes, total production per Owner-operator herd increased 0.8%.

Milk sales per farm (net of dairy levies) exceeded 1 million dollars (\$1,068,927) for only the second time, the first being in 2013-14 following record high milk prices. Milk revenue in 2017-18 accounted for 91.5 per cent of gross farm revenue. Revenue from livestock sales of \$80,967 in 2017-18 were similar to 2016-17. Livestock revenue accounted for 7.9 per cent of the total gross farm revenue per farm.

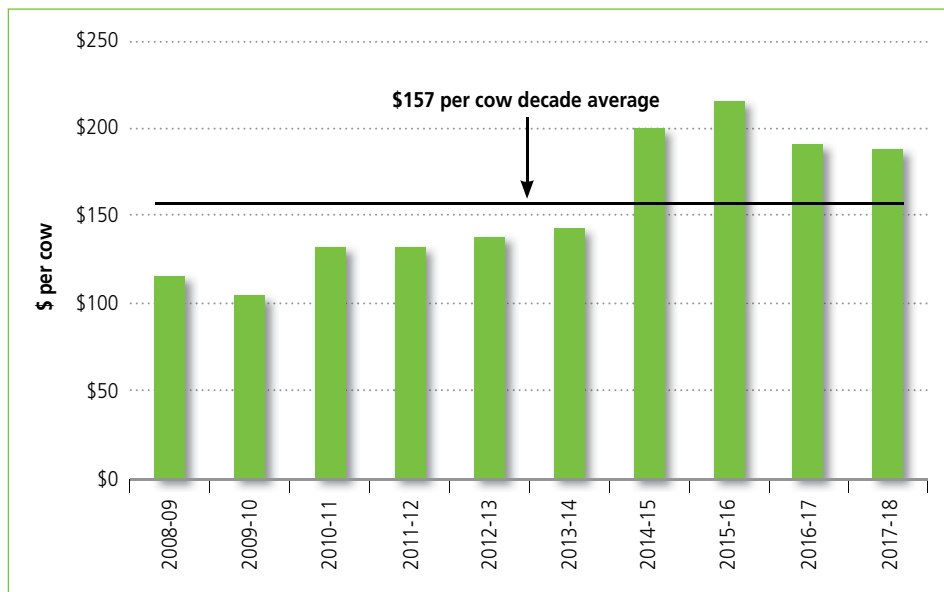
There is variation (\$2.20 per kg MS) in the milk price farmers receive within a season (Figure 5.1) due to differences in milk composition, transport distances, milk production timing, annual account balance dates, milk companies supplied, different systems such as organic production, penalties faced (grades), and whether a particular farm operated in the previous season. Seventy-seven per cent of farms received a milk payout (milk price plus dividend) between \$6.40 and \$7.00 per kilogram milksolids in 2017-18. Within this, 43 per cent received a milk payout between \$6.60 and \$6.80 per kilogram milksolids.

Figure 5.1: 2016-17 Milk Payout Received (\$ per kg MS)



Cash income from net livestock sales increased slightly (+\$1,472) to \$80,967 in 2017-18. Despite this increase, on a per cow basis livestock revenue eased to \$188 due to slightly lower cow slaughter values. However, livestock sales in 2017-18 were still well above the decade average of \$157 (Figure 5.2). High beef schedule prices have bolstered dairy farm incomes over the last four seasons.

Figure 5.2: Net Livestock Sales (\$ per cow)



Other dairy cash income increased to \$6,789 per farm. Dairy gross farm revenue on a typical New Zealand dairy farm at \$1,168,061 was 14.7 per cent higher (+\$144,154) than the previous season. On a per hectare basis, gross farm revenue of \$7,715, was higher than the per hectare gross farm revenue in 2016-17 but similar to the per hectare revenue in both 2011-12 (\$7,581) and 2012-13 (\$7,598). At \$7.23 per kilogram milksolids, gross farm revenue in 2017-18 was 55 cents (+13.2%) above the decade average of \$6.68.

Tables 7.1, 7.2, 7.3 and 7.4 show net cash income, cash farm working expenses and the adjustments made to calculate operating profit for the average New Zealand Owner-operator on a per farm, per cow, per hectare and per kilogram milksolids sold basis.

5.2: Expenditure

Changes in total farm expenditure are affected by changes in farm area and herd size, therefore per cow, per hectare and per kilogram milksolids are more appropriate measures of movement in individual items.

Average farm working expenses (i.e. cash expenses) per kilogram milksolids increased 46 cents (+12.4%) to \$4.20. This was the second highest expenditure behind the \$4.33 per kilogram milksolids recorded in 2013-14, prior to the downturn in milk prices.

On a per hectare basis, farm working expenses (FWEs) increased 10.6 per cent to \$4,479. This was a similar level of per hectare expenditure to 2014-15 and \$171 above the five year average of \$4,308 per hectare.

All Farm Working Expenditure (FWE) per hectare categories increased in 2017-18 with the exception of support block lease (-13.8%), irrigation (-4.8%), farm dairy (-4.4%), and electricity (-2.9%). The largest increases per hectare were recorded for expenditure on repairs and maintenance (+33.3%), regrassing (+23.1%), feed made, purchased and cropped (+23.0%), insurance (+12.7%), wages (+12.1%) and breeding and herd improvement (+11.2%).

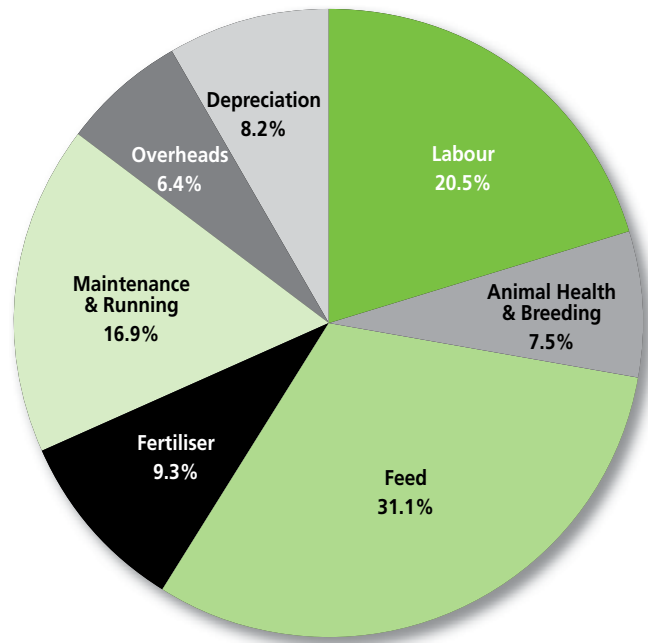
Increases in feed (+\$187), repairs and maintenance (+\$105), and wages (+\$76) accounted for 86 per cent of the \$429 increase in farm working expenses per hectare in 2017-18.

Farm working expenses were 58.6 per cent of net dairy cash income in 2017-18, a similar proportion as 2016-17 and close to the 60.8 per cent average for the last decade.

After adjustments to include non-cash items such as unpaid labour and management, feed inventory changes, owned support block and depreciation, dairy operating expenses increased 12.4 per cent to \$829,190 per farm. Dairy operating expenses in 2017-18 increased \$486 per hectare to \$5,477.

Figure 5.3 shows the major 2017-18 expenditure categories.

Figure 5.3: Proportion of Dairy Operating Expenditure: 2017-18



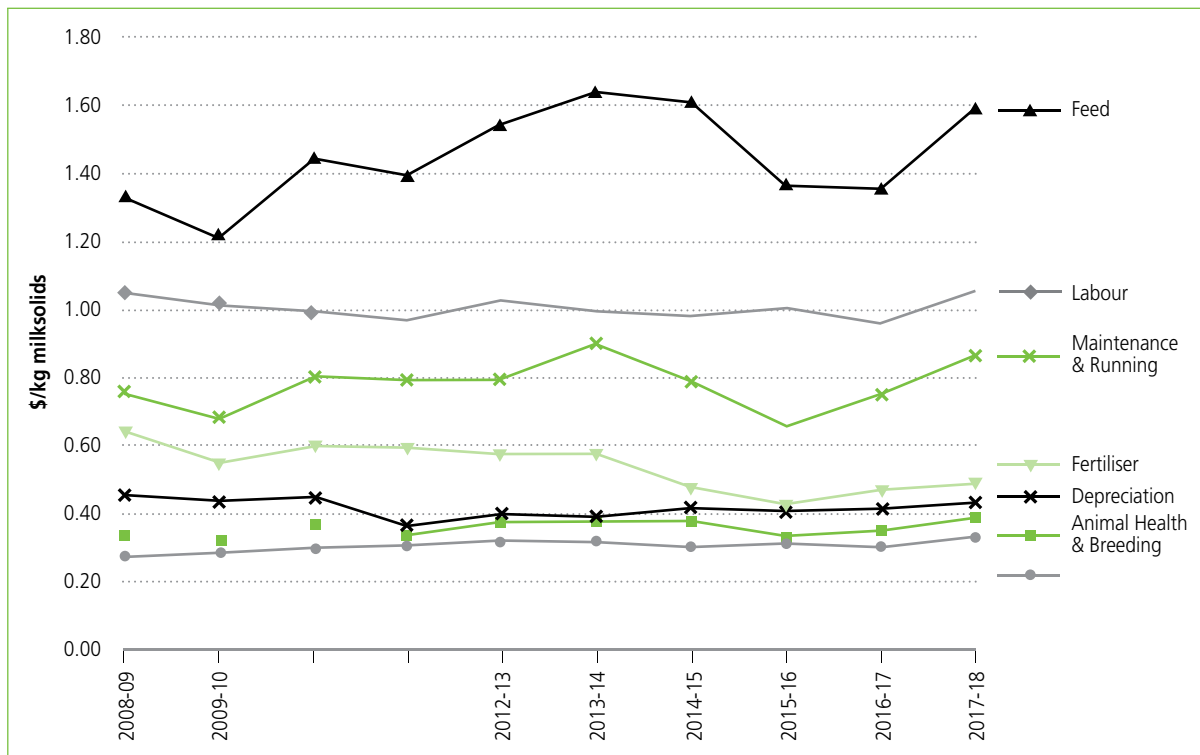
Feed was the largest category of expenditure at 31.1 per cent in 2017-18 and it has been the largest expense category since 2007-08. Labour was the second highest operating expense for dairy farms at 20.5 per cent of total operating expenditure. Maintenance and running costs (dairy shed, electricity, vehicles and fuel, repairs and maintenance, freight and general) and fertiliser contributed 16.9 and 9.3 per cent respectively in the year to June 2018.

Dairy operating expenses per kilogram milk solids of \$5.13 were 53 cents above the previous season. This was the second highest level of operating expenses and only the third time operating expenses per kilogram milk solids has exceeded \$5. Operating expenses per kilogram milk solids averaged \$4.83 over the last decade, encompassing a range of payouts and various seasonal weather conditions.

Figure 5.4 shows the changes in the categories of operating expenses per kilogram milk solids. Animal health and breeding, labour, depreciation and overheads have remained steady over the past decade but feed, fertiliser, and maintenance and running costs have been more variable, reflecting significant changes in income levels from one season to the next.

Feed, maintenance and running, and labour expenditure recorded the largest increases in 2017-18. It was the second consecutive season of increased maintenance and running costs, following two seasons of large decreases, in line with lower milk prices.

Figure 5.4: Operating Expenses \$ per kg MS (\$ Nominal)



5.3: Cash Flow and Liquidity

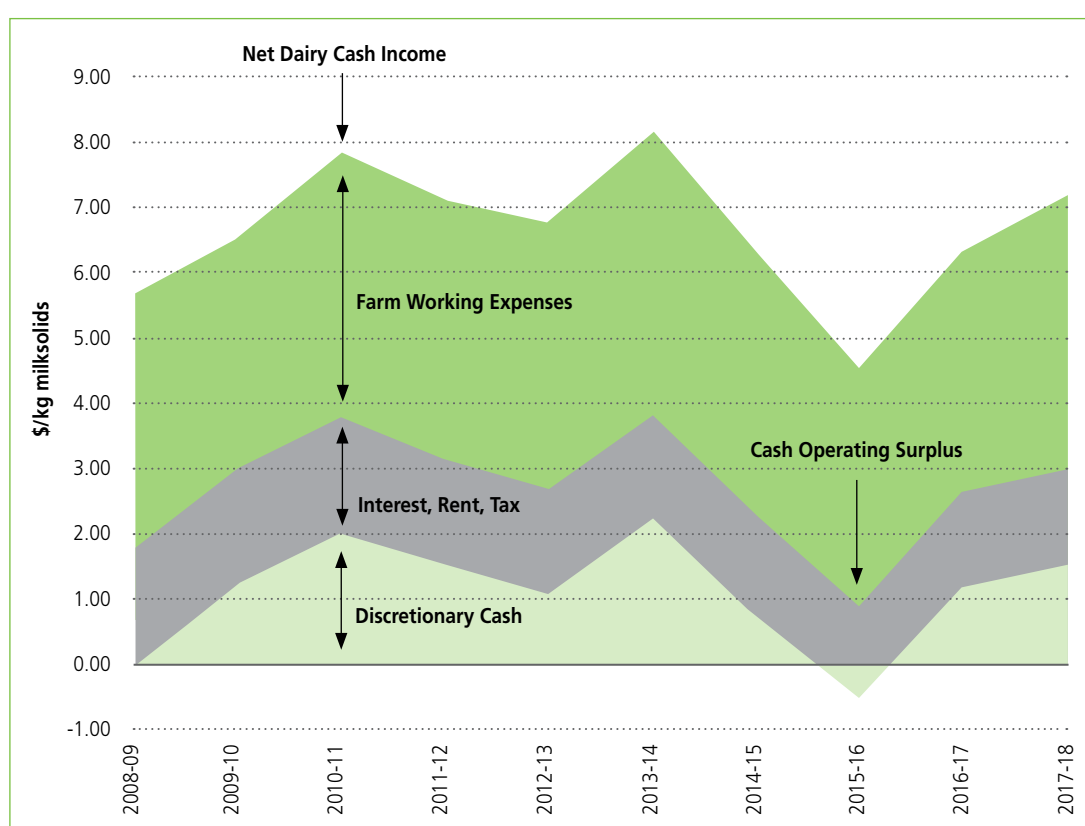
The cash operating surplus is the difference between net dairy cash income and farm working expenses. In 2017-18 the cash operating surplus of \$478,511 increased 15.2 per cent from the previous season due to higher milk prices. On a per kilogram milksolids basis the \$2.96 cash operating surplus was up 37 cents on the previous season and above the decade average surplus of \$2.67 per kilogram milksolids.

Once rent, interest and tax are paid and net income from non-dairy farming activities are added, the amount left is discretionary cash. Total discretionary cash in 2017-18 was at a high level of \$230,881 which equates to \$1.43 per kilogram milksolids (refer to Table 7.5).

Many farm businesses include cash funds and off-farm income in their annual accounts. The cash available after including these activities and any change of funds deposited or withdrawn from the IRD Income Equalisation Scheme is the cash available for drawings, debt repayments and/or capital development and purchases. Cash available for living and business growth in 2017-18 was \$208,127 per farm, the highest level since 2013-14.

Cash for living and growth can also be used to repay debt and for farm family drawings. During the year, term debt increased \$92,523 per farm, but there was also a large amount (\$238,591) spent on capital transactions. Drawings increased (+\$22,291) to \$104,334 per farm to similar levels prior to the downturn in milk prices. Tax payments more than doubled to \$41,532 per farm, reflecting increased profit in both the 2016-17 and 2017-18 seasons.

Figure 5.5: Cash Revenue and Expenditure (\$ per kg MS)



Despite the high profitability and cash available for living and growth a cash deficit of \$42,275 was recorded in 2017-18, due to high levels of capital expenditure. This was reflected in the change in working capital (change in current assets less the change in current liabilities). Table 5.1 shows a breakdown of the change in working capital including the source and application of cash funds. The majority of the source of funds (86.3%) in 2017-18 was from the current year's farming operations. The other major source of funds this season was increased debt (16.7% of total source of funds). Other remaining funds were sourced from off-farm income (3.3%) and non-dairy cash income (1.1%). Cash from the Income equalisation scheme was at a low level of just \$40 per farm in 2017-18. Funds were removed from the business (-7.4% of total source of funds), for the second consecutive season, indicating there may have been some private borrowings during the low milk price period.

After farming operations, forty per cent of the cash was spent on capital development and purchases, while interest and rent payments for borrowing (35.6%) was the other large cash expenditure area in 2017-18. Drawings for farm family living (17.5%) and tax payments (7.0%), was where the remainder of the cash was spent.

Table 5.1: Flow of Funds (\$ per farm)

	2016-17	2017-18
Change in Current Assets	56,493	-12,326
- Change in Current Liabilities	-9,780	29,949
Change in Working Capital	66,273	-42,275
Source of Funds		
Cash Operating Surplus	415,410	478,511
+ non-dairy cash income	3,371	6,064
+ net off-farm income	19,811	18,114
+ introduced funds	-24,004	-40,908
+ income equalisation	1,307	40
+ increase in term debt	75,868	92,523
= Total source of funds	491,763	554,344
Application of funds		
rent	19,582	20,703
+ interest	197,343	191,459
+ tax	16,773	41,532
+ capital transactions	109,749	238,591
+ drawings	82,043	104,334
= Total application of funds	425,490	596,619
Source less Application of funds	66,273	-42,275

The average farm received a milk payout of \$6.62 per kilogram milksolids in 2017-18, which was above the break-even price required of \$5.87 (Table 5.2). This indicates there was some funds available for capital transactions, mortgage (principal) payments or for reinvestment, as the break-even milk price is a measure of being able to meet farm working expenses, interest and rent, tax and drawings, less livestock and other dairy cash income received in the season.

The break-even milk price in the 2017-18 season was 70 cents per kilogram milksolids higher than the season prior, reflecting increased farm working expenses (+46 cents/kg MS), higher tax payments (+15 cents/kg MS) and higher drawings (+13 cents/kg MS). Interest and rent payments at \$1.31 per kilogram milksolids were down slightly (-4 cents/kg MS) while cash revenue from dairy livestock and other dairy cash income of 54 cents per kilogram milksolids remained similar to the previous season.

While the break-even milk price increased 13.5 per cent in 2017-18, it was still only 11 cents per kilogram milksolids above the decade average break-even milk price of \$5.76.

Liquidity is having the ability to meet financial payments. A quarter of farms in 2017-18 recorded break-even milk prices higher than their actual milk payouts received. These are the farms at liquidity risk, should milk prices decrease in the future. For dairy farmers, the largest cash costs are farm working expenses and interest and rent payments. These two costs combined provide a sense of how at risk farms are to changes in cash income. In 2017-18 these two costs totalled \$5.51 per kilogram milksolids on average.

Table 5.2: New Zealand Break-even Milk Price (\$ per kg MS)

	2013-14	2014-15	2015-16	2016-17	2017-18
Farm working expenses	4.33	4.07	3.64	3.73	4.20
plus interest and rent	1.29	1.36	1.36	1.35	1.31
plus tax	0.38	0.21	0.05	0.10	0.26
plus drawings	0.77	0.69	0.49	0.51	0.65
Total cash expenses	6.77	6.33	5.53	5.70	6.41
less livestock & other dairy cash income	0.42	0.56	0.60	0.53	0.54
Break-even milk price	6.35	5.77	4.93	5.17	5.87

5.4: Profitability

Operating profit is a key indicator of dairy farm financial performance. This measure, expressed on a per hectare basis, is particularly useful for comparing the profitability between farms. Operating profit incorporates adjustments to allow comparisons between farms, but does not include interest.

Table 7.1 shows the revenue and expenditure items included in operating profit, while Table 5.3 shows a summary of profit KPIs over the last five seasons.

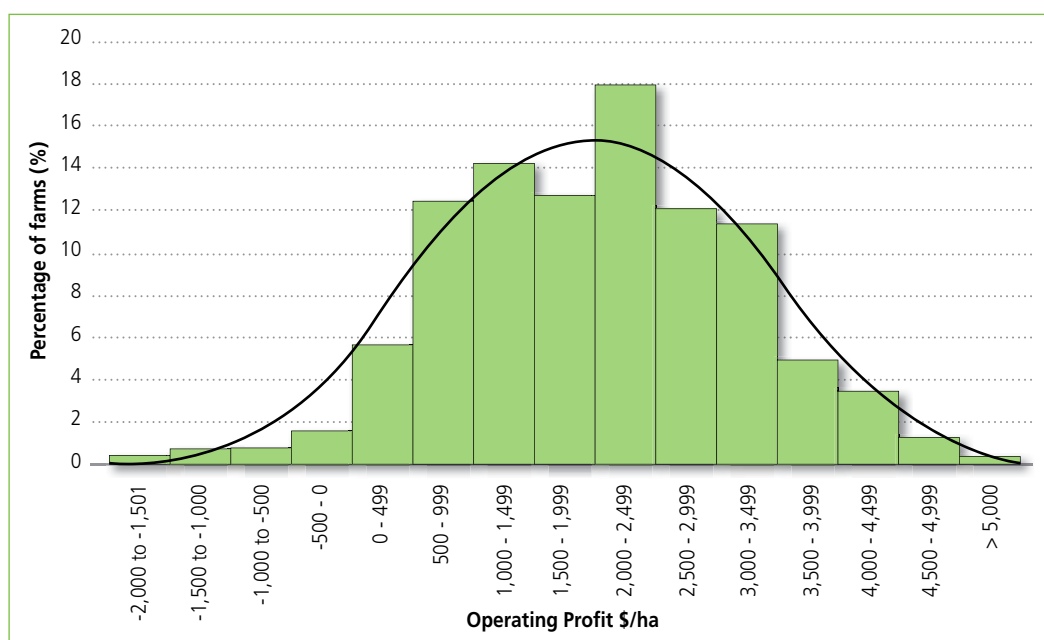
Table 5.3: Change in Profit since 2013-14

	2013-14	2014-15	2015-16	2016-17	2017-18	2016-17 to 2017-18 change
Operating profit per hectare	\$3,295	\$1,537	-\$9	\$1,937	\$2,238	\$301
Business profit per all effective hectares	\$1,981	\$478	-\$734	\$887	\$1,174	\$287
Operating return on dairy assets	7.2%	3.0%	-0.1%	3.9%	4.3%	
Inflation adjusted dairy operating profit per effective hectare	3,215	1,548	-9	1,948	2,238	\$290
Inflation adjusted business profit per all effective hectares	1,923	481	-742	892	1,174	\$282

Operating profit per hectare of \$2,238 in 2017-18 was the fourth highest level of profit in the last ten years, and up 15.6 per cent on the previous season. Business profit includes cash expenses such as rent and interest as well as off-farm income and is calculated across the total effective farm area which includes any support blocks and non-dairy areas. Business profit followed the trend in operating profit and increased by \$287 to \$1,174 per hectare.

Operating profit per hectare was normally distributed around the mean with a standard deviation of \$1,189 per hectare reflecting a wide range between farms. Ninety one per cent of farmers had operating profits between \$0 and \$4,000 per hectare, while 9.8 per cent of farmers had operating profits of over \$3,500 per hectare. Forty-three per cent of farms recorded operating profits between \$1,500 and \$3,000 per hectare. Only 3.4 per cent of farms recorded negative operating profits in 2017-18 (Figure 5.6).

Figure 5.6: Distribution of Owner-operators Operating Profit (\$ per ha)



Operating profit per hectare can be broken down using the following equation:

$$\frac{\text{Operating Profit \$}}{\text{ha}} = \frac{\text{kg MS}}{\text{ha}} \times \frac{(\text{Gross Farm Revenue \$} - \text{Operating Expenses \$})}{\text{kg MS}}$$

Operating profit for an average New Zealand dairy farm in 2017-18 had the following components:

\$2,238 (operating profit/ha) = 1,067 (kg MS/ha) x (\$6.62 GFR/kg MS - \$5.13 operating expenses/kg MS)

Tables 5.4 and 5.5 show the average size and profitability of farms by quartile. Quartiles have been constructed by ranking farms on operating profit per hectare across New Zealand.

Operating profit per hectare for top quartile farms averaged \$3,566 compared with \$523 for the bottom quartile group. Each quartile group produced more milksolids per hectare compared with the quartile lower. Top quartile farmers produced 72.9 per cent more kilograms milksolids per hectare than bottom farmers, with substantially less farm working expenses per kilogram milksolids.

While there is a range in gross farm revenue across the quartiles the most significant difference between the groups is their operating expenses per kilogram milksolids. Top farms are more efficient as demonstrated by lower operating expenses per kilogram milksolids. Operating expenses increased from the top quartile group through to the bottom quartile group from \$4.48 through to \$6.31 per kilogram milksolids. Inherently the top quartile farms increased operating expenses between 2016-17 and 2017-18 by 10.6 per cent, while for the bottom quartile operating expenses increased by 13.5 per cent.

Table 5.4: Groups of Farms Ranked by Quartile on Operating Profit \$ per ha

	Bottom Quartile	Bottom-Middle Quartile	Middle-Top Quartile	Top Quartile
Milking hectares	140	134	160	172
Cows	337	364	459	554
Stocking rate	2.4	2.7	2.9	3.2
Cows per FTE	132	133	151	168
Milksolids per cow	319	362	375	412
Milksolids per hectare	767	981	1,078	1,326
Gross farm revenue \$/kg MS	6.99	7.26	7.35	7.17
Operating expenses \$/kg MS	6.31	5.62	5.16	4.48
Operating profit \$/kg MS	0.68	1.64	2.19	2.69
Operating profit \$/ha	523	1,612	2,357	3,566
Operating return on dairy assets %	1.5%	3.7%	5.2%	6.8%
Term liabilities \$/kg MS	26.39	24.54	26.08	23.69

There was at least 1.5 percentage points difference between each of the quartiles of operating return on dairy assets, the largest of 2.2 percentage points between the bottom two quartiles. The top quartile averaged 6.8 per cent, compared to the bottom quartile of 1.5 per cent, but there is a wide spread of results between farms within each quartile.

Table 5.5 shows dairy operating profit per kilogram milksolids for the top quartile of farms over the last five years. It is important to note that this group of farms changes from year to year, although it is expected there is limited movement of farms between quartiles over seasons if they remain in the survey for multiple years.

On average the top quartile farms were 51 cows larger than the mean, although in two of the five years the top quartile had less cows than the average. Stocking rates of the top quartile were generally 0.3 cows per hectare higher compared to the average for New Zealand. Milksolids per hectare was between 170 and 270 kilograms higher in the top quartile group compared to the national average in four of the last five years.

Gross farm revenue for the top 25 per cent of farms was lower (-6 cents/kg MS) in 2017-18 in comparison to the average farm revenue, although the average difference across the last five years was 14 cents per kilogram higher for top 25% farms. Operating expenses were 65 cents per kilogram milksolids lower at \$4.48, compared to \$5.13 for the overall New Zealand average. This difference of 65 cents per kilogram milksolids was the same as the average difference in operating expenses per kilogram milksolids between the top quartile group and the New Zealand average over the last five years.

This shows that profitability is achieved by ensuring expenditure per kilogram milksolids is controlled in relation to milk price, while maintaining reasonably good levels of milksolids production per hectare.

Farm working expenses for the top quartile farms increased 50 cents to \$3.80 per kilogram milksolids in 2017-18 (refer to Table 5.5). This was a similar change to the overall New Zealand average (+46 cents), although farm working expenses for the top quartile remained 40 cents per kilogram milksolids below the NZ average.

Feed costs (made, purchased, cropped) in the top quartile group have averaged 76 cents over the past five years compared with 88 cents for the average New Zealand Owner-operator. The top quartile group had lower fertiliser expenditure, 41 cents in 2017-18 compared with the national average of 48 cents while achieving higher production levels. Vehicles and fuel (-7 cents/kg MS), repairs and maintenance (-6 cents/kg MS) and wages (-6 cents/kg MS) were also lower for top quartile farms compared to the average. Each year the top quartile group consistently has lower-than-average costs for most items, but the significant items are consistently feed, fertiliser, repairs and maintenance and wages on a per kilogram milksolids basis.

Operating profit per hectare of \$3,566 for the upper quartile was 59 per cent higher than the average farm operating profit of \$2,238 in 2017-18. The top quartile had a five-year average of \$3,168 operating profit per hectare, compared to \$1,800 for the average New Zealand farm, this is an additional \$1,368 per hectare per year on average.

Returns on dairy assets are consistently higher for the top quartile farms averaging 6.5 per cent compared to the New Zealand average of 3.7 per cent over the last five seasons.

Table 5.5: Top 25% NZ Owner-operator Ranked on Operating Profit per hectare

	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:					
Number of herds	75	74	70	79	66
Effective hectares	154.2	126.3	137.9	160.1	172
Peak cows milked	489	391	405	500	554
Stocking rate (cows/ha)	3.2	3.1	2.9	3.1	3.2
Kg milksolids sold	205,132	161,577	159,057	212,378	228,065
Milksolids sold per hectare	1,330	1,279	1,115	1,312	1,326
Milksolids sold per cow	419	413	386	420	412
PAYOUT RECEIVED: \$/kg MS sold	7.78	5.91	4.07	5.96	6.61
DAIRY CASH INCOME: \$/kg MS					
Milk sales (net of dairy levies)	7.78	5.91	4.07	5.96	6.61
Net livestock sales (sales - purchases)	0.36	0.57	0.61	0.47	0.42
Other dairy cash income	0.03	0.05	0.05	0.02	0.03
Net dairy cash income	8.17	6.53	4.73	6.45	7.06
CASH FARM WORKING EXPENSES: \$/kg MS					
Wages	0.56	0.49	0.47	0.51	0.60
Animal health	0.22	0.21	0.17	0.20	0.21
Breeding & herd improvement	0.12	0.14	0.13	0.13	0.14
Farm dairy	0.06	0.06	0.05	0.05	0.05
Electricity	0.11	0.11	0.11	0.10	0.10
Net feed made, purchased, cropped	0.90	0.78	0.58	0.69	0.83
Stock grazing	0.46	0.33	0.34	0.33	0.44
Support block lease	0.06	0.07	0.04	0.06	0.08
Fertiliser (incl Nitrogen)	0.50	0.39	0.33	0.37	0.41
Irrigation	0.06	0.06	0.02	0.07	0.10
Regrassing	0.06	0.06	0.04	0.05	0.07
Weed & pest	0.03	0.03	0.02	0.03	0.02
Vehicles & fuel	0.17	0.15	0.16	0.16	0.13
Repairs & maintenance	0.34	0.25	0.18	0.24	0.33
Freight & general	0.05	0.05	0.04	0.03	0.04
Administration	0.10	0.09	0.11	0.10	0.11
Insurance	0.05	0.06	0.06	0.06	0.06
ACC	0.02	0.02	0.02	0.02	0.02
Rates	0.09	0.10	0.13	0.10	0.07
Farm working expenses	3.96	3.45	3.00	3.30	3.80
Cash operating surplus	4.21	3.08	1.73	3.15	3.26
ADJUSTMENTS: \$/kg MS					
Value of change in dairy livestock	0.19	0.03	0.01	0.09	0.11
less Labour adjustment	0.29	0.33	0.43	0.36	0.24
plus Feed inventory adjustment	0.07	0.02	0.05	0.04	-
less Owned support block adjustment	0.10	0.09	0.04	0.08	0.08
less Depreciation	0.33	0.36	0.31	0.36	0.36
Net Adjustments	-0.46	-0.73	-0.73	-0.67	-0.57
OPERATING CASH & NON-CASH: \$/kg MS					
Dairy gross farm revenue	8.35	6.56	4.74	6.55	7.17
Dairy operating expenses	4.60	4.20	3.74	4.05	4.48
Dairy operating profit per kg MS	3.75	2.35	1.00	2.50	2.69
Dairy operating profit per effective ha	4,998	3,018	1,073	3,184	3,566
Operating return on dairy assets %	11.7%	6.0%	1.7%	6.2%	6.8%

In general, farm-to-farm variations in operating profit per hectare are not usually well linked to farm-to-farm variations in milk production per hectare. In 2017-18 the relationship shows an R squared value of 37 per cent (Figure 5.7). This indicates that higher levels of production per hectare do not guarantee higher levels of operating profit per hectare.

Figure 5.7: Operating Profit (\$ per ha) vs Production (kg MS per ha)

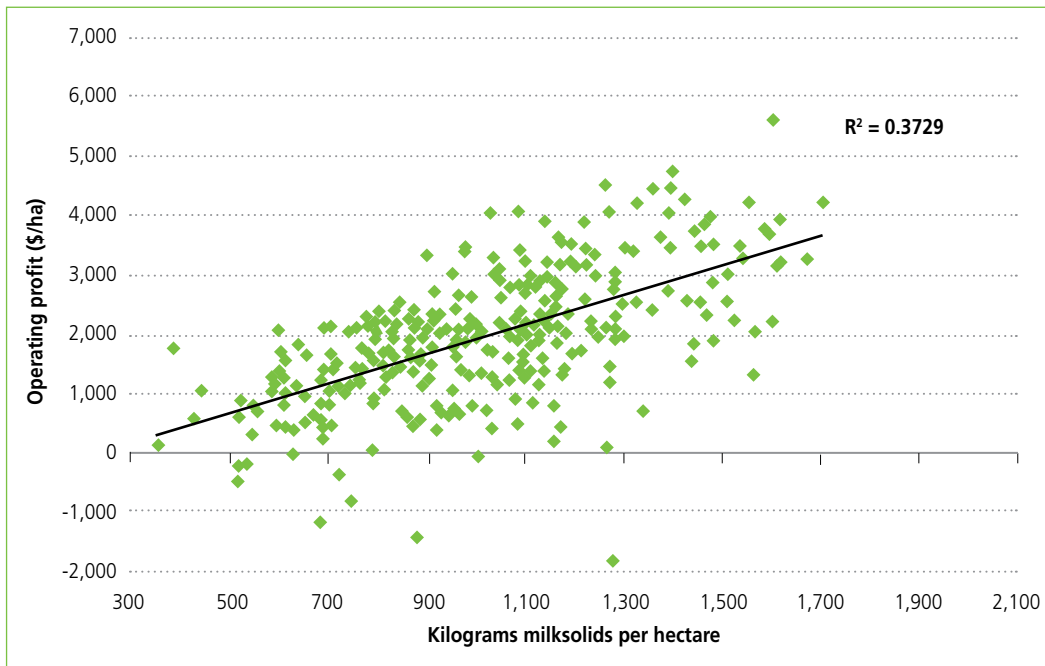
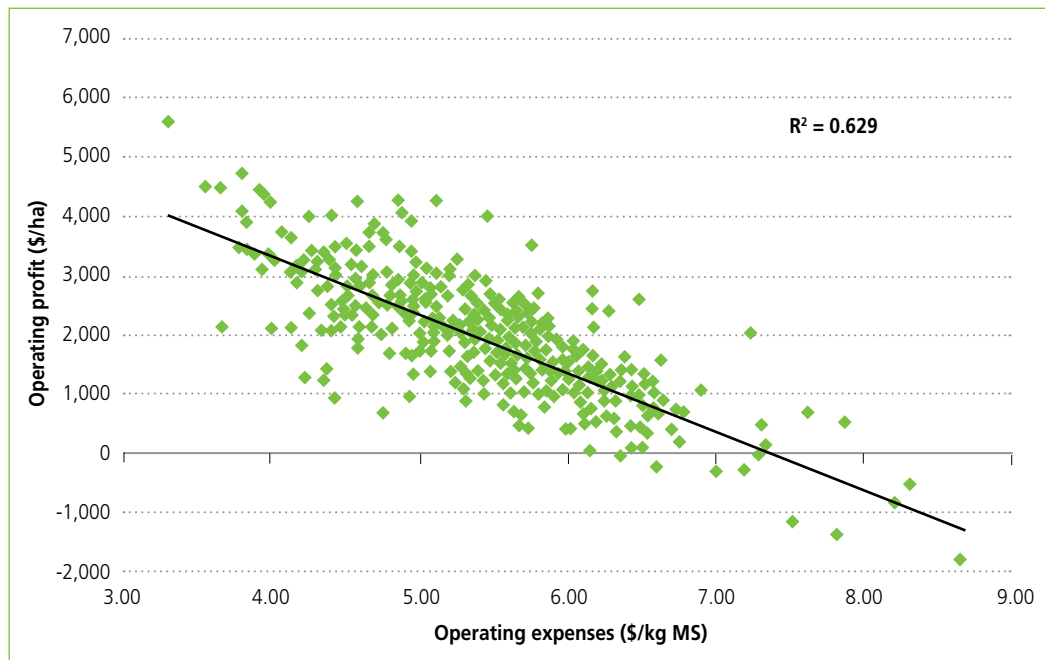


Figure 5.8 shows there is a good relationship between operating profit per hectare and the average cost of production (operating expenses/kg MS) amongst farms. This correlation is stronger than the previous season, although only slightly higher than 2009-10, 2014-15 and 2015-16. However, operating expenses per kilogram milksolids, relative to milk prices, is more relevant than either milk production or expenditure alone, in order to achieve high levels of profitability.

Figure 5.8: Operating Profit (\$ per ha) vs Operating Expenses (\$ per kg MS)



In high payout seasons, such as 2007-08, 2010-11, and 2013-14, the correlation between milksolids production per hectare and operating profit per hectare strengthens and the reverse is true in low milk payout seasons. The changes in relationships over the past decade are detailed in Table 5.6. Measuring the cost efficiency of milksolids production (operating expenses/kg MS) relative to milk price is more relevant than production or expenditure alone when focusing on how to achieve high profit margins.

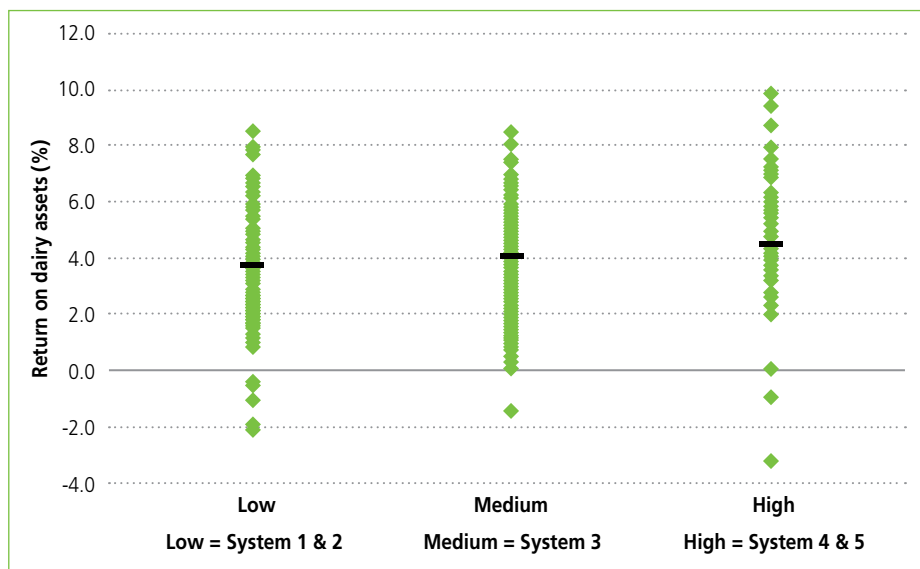
Table 5.6: Correlations between Production, Profit and Operating Expenses

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Payout received \$/kg MS	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
Milksolids kg MS/ha	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Dairy operating expenses \$/kg MS	4.84	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60	5.13
Dairy operating profit \$/ha	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238
R ² - dairy operating profit \$/ha & kg MS/ha	27.7%	53.3%	54.3%	35.5%	40.0%	45.7%	17.3%	0.2%	32.7%	37.3%
R ² - dairy operating profit \$/ha & operating expenses \$/kg MS	68.6%	61.8%	53.6%	53.0%	54.1%	46.7%	59.4%	60.4%	49.7%	62.9%

Operating return on dairy assets is a measure of the operating profit generated by the dairy assets employed at the start of the season. This measure excludes non-dairy activities and any change in capital value. The average operating return on dairy assets was 4.3 per cent in 2017-18, the highest level since 2013-14 and slightly above the five-year average of 4.1 per cent.

Grouping farm systems into low (systems 1 and 2), medium (system 3) and high input (systems 4 and 5) shows that the average operating return on dairy assets was a bit higher for medium and high input farms compared to low input farms in 2017-18 (Figure 5.9). The range within each system group is very similar across the three system groups, with operating return on dairy assets ranging between -3.3 per cent to 9.7 per cent.

Figure 5.9: Return on Dairy Assets Distribution



Business profit before tax is another measure of profitability which considers the cost of borrowing and other non-dairy activities. This is the overall profitability of the business enterprise and not just the dairy farm operation (Table 5.7)

Table 5.7: Business Profit before Tax

	2013-14	2014-15	2015-16	2016-17	2017-18
Dairy operating profit	470,808	223,630	1,291	286,227	338,871
+ Labour adjustment	59,309	59,021	56,341	61,154	63,920
+ Owned support block adjustment	15,338	14,889	14,126	14,359	16,786
+ Non-dairy operating profit	1,724	673	318	3,331	5,444
+ Net off-farm income	9,858	12,098	9,208	19,643	18,392
- Rent	23,366	22,250	20,047	19,582	20,703
- Interest	171,597	195,984	197,277	197,343	191,459
Business profit before tax	362,074	90,731	- 139,258	167,789	231,251
Business profit before tax per all effective hectares	1,981	478	- 734	887	1,174

The average dairy farm in 2017-18 made a business profit before tax of \$231,251, up \$63,462 per farm compared to the previous season. This business profit is equivalent to \$1,174 per all effective hectares (effective dairy + effective dairy support block + effective non-dairy). The dairy operating profit increased by \$52,644 on the previous season, while the labour adjustment, owned support block and non-dairy operating profit all increased between \$2,000 and \$3,000 per farm each. Combined interest and rent payments decreased by \$4,763 per farm in 2017-18.

Total effective hectares increased by 7.8 hectares from the season prior. The average Owner-operator had 151.4 effective dairy hectares, 37.3 effective support block hectares and 8.2 non-dairy effective hectares available for farming operations.

5.5: Dairy Assets

Total dairy assets eased 1.6 per cent (-\$123,988) to \$7.8 million in the year to 31 May 2018. Land and buildings accounted for 73.6 per cent of opening total dairy assets and remained unchanged in value at close. Livestock values decreased 6.9 per cent throughout the season, due to lower cow values. Investments (-6.4%) and current assets (-5.9%) declined by similar rates, while plant, machinery, and vehicles values increased slightly (+1.4%) between 1 June 2017 and 31 May 2018.

Land and buildings for Owner-operators valued at \$5.8 million at close of the 2017-18 season was equivalent to \$36.17 per kilogram milksolids.

The number of dairy farms sold of 226 in 2017-18 was up 9 farms (+4.1%), but remained at low levels. The REINZ average sales price per kilogram milksolids and per hectare for the last five seasons is shown in Table 5.8. Raw data from REINZ was weighted by the number of farms in each region and the analysis only includes farms considered to be economic units.

Dairy land prices have remained reasonably static over the last three seasons at around \$40 per kilogram milksolids and around \$38,000 per hectare. Land values for good, productive land in favourable locations are holding up, but it is the less desirable farms that have sold at lower prices.

Table 5.8: Average Sales Price and Number of Dairy Farms Sold

	2013-14	2014-15	2015-16	2016-17	2017-18
Farms sold	312	244	192	217	226
Average \$ sale price/kg MS	\$ 42.19	\$ 44.78	\$ 39.33	\$ 39.98	\$ 40.44
Average \$ sale price/ha	36,369	39,577	36,557	37,835	38,015
Average \$ sale price/ha (real 2017-18 dollars)	37,872	41,041	37,752	38,403	38,015

Livestock values per farm decreased 6.9 per cent in 2017-18, reflecting a decrease in stock prices (Section 4.2) and reduced confidence in the sector, possibly following the outbreak of *Mycoplasma bovis*. Livestock accounted for 9.9 per cent of the total closing dairy asset value, slightly below the proportion of 2016-17 total assets.

Investments, which are largely dairy company shares, accounted for a further 9.1 per cent (\$748,739) of the total \$8.2 million asset value. Investments decreased 6.4 per cent throughout the 2017-18 season, reflecting a decline in Fonterra share values.

5.6: Liabilities and Debt Servicing

Interest is the cash cost of borrowing funds, while rent is the cost of borrowing assets. Interest and rent totalled \$1.31 per kilogram milksolids down a little from the previous three seasons. The lower interest expenditure was due to a reduction in interest rates. Borrowing costs represented 18.2 per cent of gross farm revenue (Table 5.9). Therefore, for every dollar of gross income earned, 18.2 cents is required to pay interest and rent, a lower level than recent years when milk prices were not as high as 2017-18.

Term liabilities per kilogram milksolids in 2017-18 remained at a similar level to the previous season. The increase in term liabilities between 2015-16 and 2016-17 reflected an increase in non-bank loans such as private borrowing and Fonterra loans.

Table 5.9: Debt Servicing Ratios

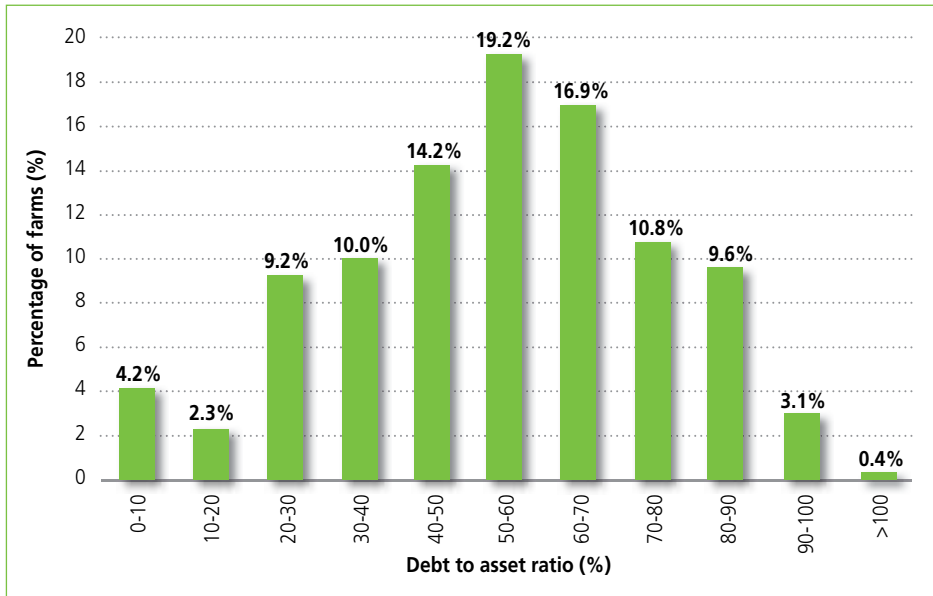
	2013-14	2014-15	2015-16	2016-17	2017-18
Interest & rent \$/kg MS	1.28	1.36	1.36	1.35	1.31
Interest & rent % GFR	15.5%	21.5%	30.5%	21.2%	18.2%
Term liabilities \$/kg MS	20.14	21.26	22.49	25.00	25.31

The debt to asset ratio increased from 49.4 per cent at the close of 2016-17 to 50.7 per cent in 2017-18 because of a small decline in asset values (-1.4%), and an increase in total liabilities (+3.0%). Debt to asset values had been around 50 per cent for the past three seasons but were at lower levels prior to that, refer to Table 7.6.

Term liabilities have increased 69 per cent over the last 10 years from \$2.4 million per farm in 2008-09 to \$4.1 million in 2017-18, although the average farm size has also increased 17 per cent over this period. Term liabilities increased 2.3 per cent from open to close of the 2017-18 season.

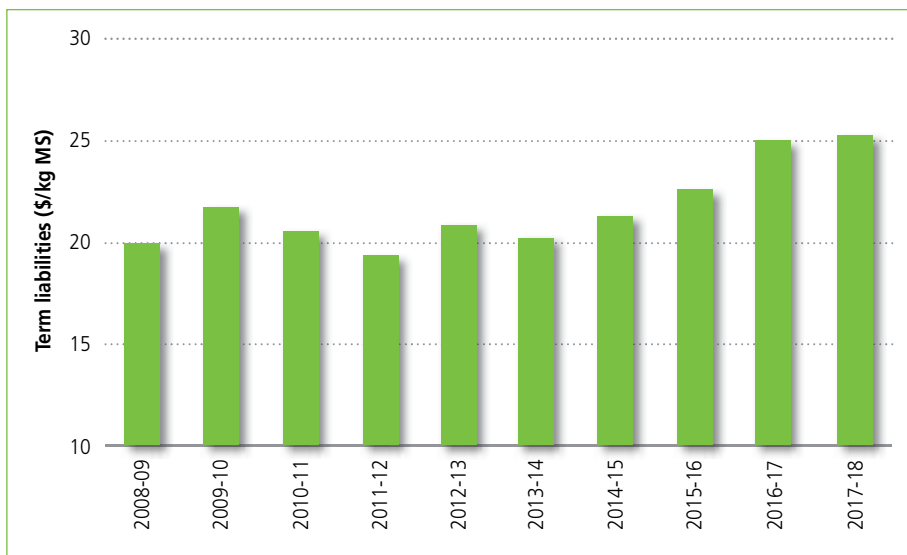
Figure 5.10 shows the debt to asset distribution in 2017-18, with an average of 50.7 per cent. Twenty-six per cent of farms have debt to asset ratios below 40 per cent. Twenty-four per cent of the farms had debt to asset ratios over 70 per cent, with approximately four per cent sitting in the high-risk area of over 90 per cent debt.

Figure 5.10: Debt to Asset Distribution: 2017-18



Over the last 10 years, the average farm has increased its milksolids production by 33 per cent, while term liabilities have increased twice as fast (+69%) to \$4.1 million per farm. Therefore, term liabilities per kilogram milksolids have increased during this period, increasing liquidity pressure on some farms through higher interest payments.

Figure 5.11: Trend in Closing Term Liabilities (\$ per kg MS)



Term liabilities include mortgages, other term liabilities and borrowings from family if there is an expectation they will be repaid. Term liabilities have increased at the rate of 54 cents per kilogram milksolids per year over the past decade. However, the majority of this increased occurred in the last five years, refer to Figure 5.11. The term liabilities of \$25.31 per kilogram milksolids in 2017-18 is thought to be a bit higher than the true national average level of around \$23 per kilogram milksolids. A higher proportion of highly indebted farms in the Taranaki Economic Survey sample has pushed this average up.

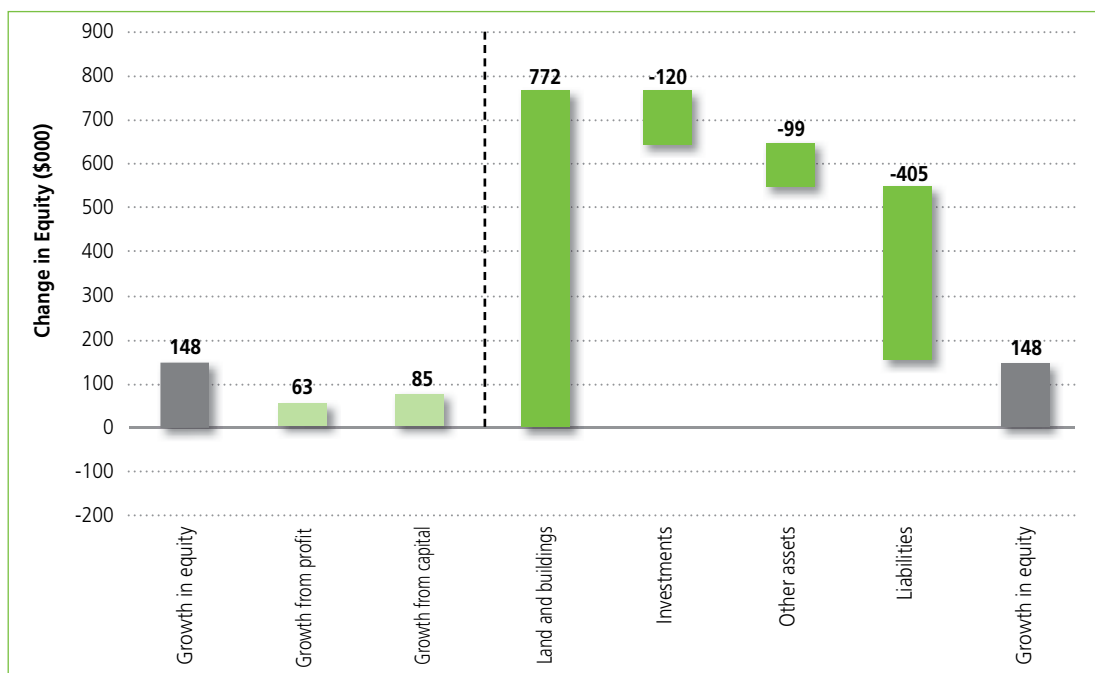
5.7: Equity

Equity (shareholders' funds or net worth) is the net value of the assets owned by the farm business (i.e. total assets less total liabilities at open and close of each year). At the opening of the 2017-18 season, dairy farm businesses had an average equity of \$4.20 million or 50 per cent of total fixed assets. This decreased to \$3.96 million at the end of the season or 48 per cent of total closing fixed asset values. The decrease in equity of \$238,662 (-5.7%) in 2017-18 was driven by a decline in investment and livestock values, coupled with an increase in liabilities.

The equity value of the average dairy farm business increased \$148,000 between 2013 and 2018 (Figure 5.12). Over the past five years, growth has been driven by increases in the value of land and buildings (+\$772,000), partially offset by the decline in investments (-\$120,000) and other asset values (-\$99,000).

Liabilities have increased \$405,000 over the past five years. Seventy-three per cent of the increase in asset values has been capitalised into increased borrowings.

Figure 5.12: Components of Equity Change (\$000) 2013 to 2018

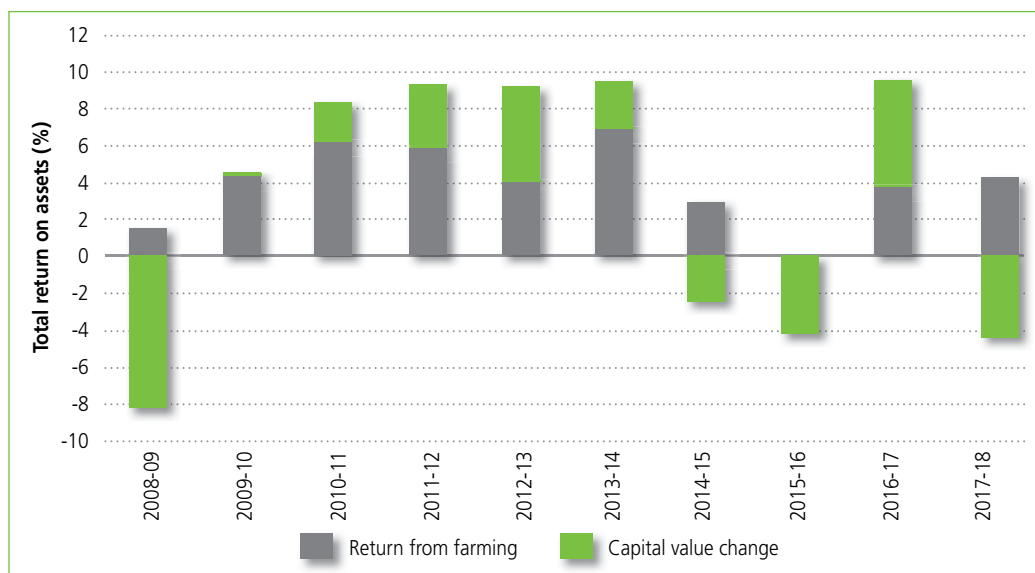


5.8: Returns

The return on dairy assets is discussed under farm profitability (Section 5.4). The total return on assets takes into account operating profit from both dairy and non-dairy farming operations, plus the change in value of capital assets. The total return on assets in 2017-18 was -0.2 per cent, the third negative return this decade. The 2017-18 total return on assets comprised 4.2 per cent net return from all farming operations with -4.4 per cent net return from capital.

For the past decade the total return on assets has ranged between -6.6 per cent and 9.5 per cent, driven by changes in the value of land and buildings, dairy company share values, livestock values and profits (Figure 5.13).

Figure 5.13: Owner-operators Total Return on Assets



The percentage return on equity is the return on owner's funds, including capital changes after interest is paid (Table 7.7). The return on equity will be higher than the total return on assets when the latter is greater than the cost of debt and vice versa. In 2017-18 the total return on equity was -4.4 per cent compared to -0.2 per cent total return on assets. Both 2014-15 and 2015-16 realised negative returns on equity due to low profitability, but in 2017-18 the negative return was due to reduced capital values.

Ideally, the return on assets should be above the returns for alternative investments of similar risk, such as shares or other forms of property investment. The ten-year average return on equity was 3.0 per cent which is a reasonably low return.

5.9: Regional Analysis

DairyBase® classifies farms into eight regions, five in the North Island and three in the South Island (refer to Section 2.6). Table 5.10 shows key 2017-18 performance indicators for the average farm in these eight regions. North Island, South Island, and New Zealand data was weighted by Owner-operator herd numbers in each region.

Taranaki had the lowest average herd size of 294 cows, 57 cows below the North Island average (351). Lower North Island had the largest herd size in the North Island (411), followed by the Bay of Plenty (389). Average herd sizes in the South Island were considerably larger (+81%) than in the North Island. In the South Island, Marlborough-Canterbury had the largest herd size with 772 cows, 136 cows above the South Island average of 636 cows, while the average herd size in Otago-Southland was 600 cows.

There is a range of stocking rates nationwide with Northland (2.2 cows/ha) and West Coast-Tasman (2.3 cows/ha) having the lowest stocking rates. Marlborough-Canterbury had the highest stocking rate at 3.5 cows per hectare, while the rest of the regions had an average stocking rate of either 2.7 or 2.8.

West Coast-Tasman recorded the lowest average milksolids production per cow of all the regions (324 kg MS), only a little lower than the average for Northland (330 kg MS/cow). The other four North Island regions recorded milksolids per cow between 351 and 363. Marlborough-Canterbury and Otago-Southland recorded similar production per cow of 413 and 415 kilograms milksolids per cow, although on a per hectare basis Marlborough-Canterbury production is considerably higher due to more cows per hectare.

Cows per full time equivalent (FTE) were higher in the South Island (163) than the North Island (140). Waikato and the Bay of Plenty had the highest number of cows per FTE in the North Island (144 for both regions), but lower than both Otago-Southland (171) and Marlborough-Canterbury which had 161.

Farms in most regions recorded average milk payouts between \$6.54 and \$6.75 per kilogram milksolids, with the exception of West Coast-Tasman where the average milk payout received was \$6.04 per kilogram milksolids due to a lower milk price paid by Westland Milk Products in 2017-18.

Regional average farm working expenses (FWE) per kilogram milksolids were higher for Bay of Plenty (\$4.53), Taranaki and West Coast-Tasman (\$4.42 for both regions) while all other regions average farm working expenses ranged between \$4.11 and \$4.23 per kilogram milksolids.

Figure 5.14 shows the regional gross farm revenue, operating expenses, and operating profit levels on a per hectare basis in 2017-18. Marlborough-Canterbury (\$3,015), Otago-Southland (\$2,898) and the Waikato region (\$2,322) recorded the highest operating profits per hectare, while West Coast-Tasman recorded the smallest operating profit at \$722 per hectare.

Most regions recorded average operating expenses per hectare between \$5,000 and \$5,500. Northland (\$4,003) and West Coast-Tasman (\$4,275) recorded the lowest expenses per hectare, while Marlborough-Canterbury had the highest at \$7,181, more than three thousand dollars more than the average for Northland in 2017-18. Due to the much higher gross farm revenue for Marlborough-Canterbury farms, they were the most profitable (\$3,015) region on a per hectare basis.

Generally, Marlborough-Canterbury, Otago-Southland and Waikato farms experienced high levels of profitability in 2017-18 relative to other regions.

Figure 5.14: Regional GFR, Operating Expenses and Operating Profit per ha, 2017-18

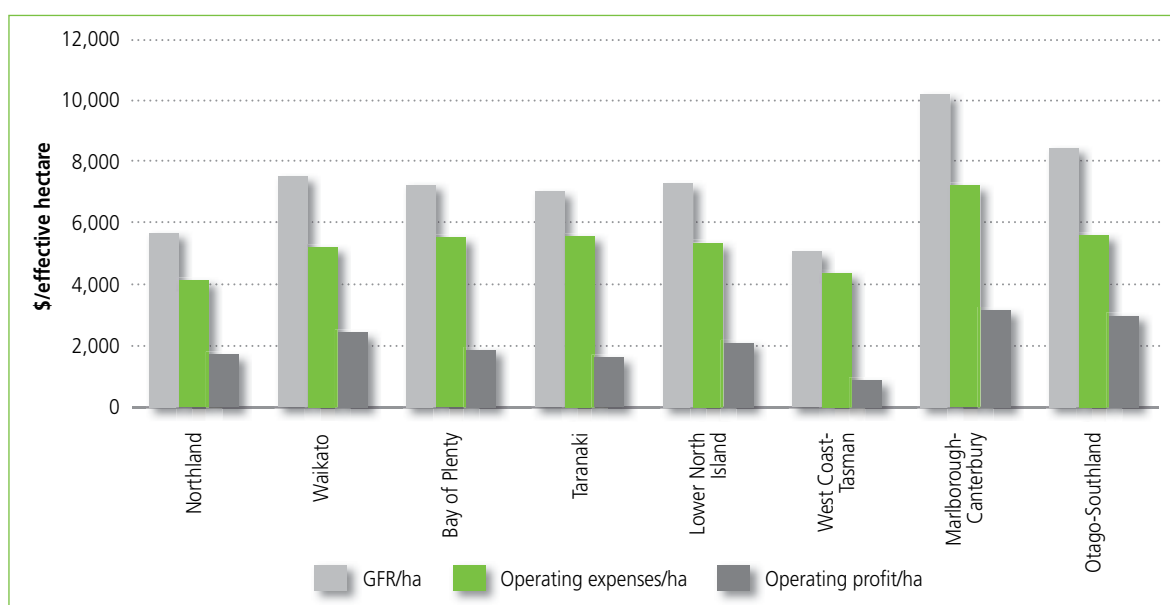


Table 5.10: Regional Owner-operators Profitability

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough - Canterbury	Otago-Southland	North Island	South Island	New Zealand
PHYSICAL CHARACTERISTICS:											
Number of herds	32	48	27	55	23	21	37	22	185	80	265
Effective hectares	139.0	127.0	139.6	105.3	150.7	172.2	223.3	214.2	128.5	211.0	151.4
Peak cows milked	311	360	389	294	411	404	772	600	351	636	430
Stocking rate (cows/ha)	2.2	2.8	2.8	2.8	2.7	2.3	3.5	2.8	2.7	3.0	2.8
Kg milksolids sold	102,530	130,538	140,149	103,058	146,486	130,909	318,830	248,760	124,895	257,179	161,567
Milksolids sold per hectare	738	1,028	1,004	979	972	760	1,428	1,161	972	1,219	1,067
Milksolids sold per cow	330	363	360	351	356	324	413	415	356	404	376
PAYOUT RECEIVED: \$/kg MS sold	6.69	6.64	6.54	6.72	6.75	6.04	6.56	6.65	6.66	6.56	6.62
DAIRY CASH INCOME \$:											
Milk sales (net of dairy levies)	6.69	6.45	6.45	6.45	6.45	6.20	6.45	6.45	6.45	6.41	6.62
Net livestock sales (sales - purchases)	0.86	0.52	0.56	0.41	0.46	0.50	0.38	0.40	0.52	0.40	0.50
Other dairy cash income	0.07	0.05	0.04	0.05	0.03	0.04	0.02	0.02	0.05	0.02	0.04
Net dairy cash income	7.62	7.02	7.06	6.91	6.94	6.73	6.85	6.87	7.02	6.83	7.16
CASH FARM WORKING EXPENSES:											
Wages	0.60	0.61	0.68	0.49	0.75	0.64	0.73	0.65	0.62	0.69	0.66
Animal health	0.24	0.24	0.23	0.22	0.24	0.20	0.19	0.24	0.24	0.21	0.23
Breeding & herd improvement	0.18	0.16	0.16	0.17	0.16	0.16	0.14	0.14	0.17	0.14	0.16
Farm dairy	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Electricity	0.14	0.11	0.12	0.11	0.12	0.09	0.09	0.10	0.12	0.09	0.11
Net feed made, purchased, cropped	0.86	1.04	1.05	1.37	0.90	0.81	0.83	0.89	1.07	0.86	0.94
Stock grazing	0.11	0.27	0.22	0.29	0.19	0.30	0.54	0.51	0.24	0.51	0.36
Support block lease	0.09	0.04	0.11	0.06	0.10	0.09	0.06	0.08	0.07	0.07	0.07
Fertiliser (incl Nitrogen)	0.55	0.46	0.54	0.43	0.45	0.90	0.48	0.46	0.48	0.51	0.48
Irrigation	0.00	0.00	0.01	0.00	0.03	0.01	0.20	0.00	0.01	0.10	0.05
Regrassing	0.11	0.06	0.10	0.06	0.06	0.12	0.07	0.08	0.07	0.08	0.08
Weed & pest	0.05	0.04	0.03	0.03	0.06	0.05	0.02	0.04	0.04	0.03	0.04
Vehicles & fuel	0.30	0.22	0.26	0.23	0.23	0.28	0.14	0.19	0.24	0.18	0.20
Repairs & maintenance	0.53	0.36	0.45	0.45	0.39	0.29	0.28	0.40	0.41	0.33	0.39
Freight & general	0.05	0.06	0.07	0.06	0.04	0.11	0.04	0.04	0.06	0.05	0.05
Administration	0.11	0.12	0.16	0.15	0.13	0.09	0.11	0.11	0.13	0.11	0.12
Insurance	0.09	0.08	0.09	0.10	0.10	0.10	0.07	0.07	0.09	0.07	0.08
ACC	0.04	0.02	0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.02	0.02
Rates	0.13	0.13	0.17	0.14	0.14	0.07	0.06	0.07	0.14	0.06	0.11
Farm working expenses	4.23	4.11	4.53	4.42	4.18	4.42	4.13	4.16	4.25	4.17	4.20
Cash operating surplus	3.38	2.91	2.52	2.49	2.76	2.32	2.72	2.71	2.77	2.66	2.96
ADJUSTMENTS:											
Value of change in dairy livestock	-0.02	0.02	0.01	0.04	-0.07	0.04	0.03	0.04	0.01	0.03	0.07
less Labour adjustment	0.67	0.44	0.43	0.62	0.40	0.57	0.20	0.25	0.48	0.25	0.40
plus Feed inventory adjustment	0.05	-0.04	-0.04	0.05	0.03	0.02	0.02	0.02	-0.01	0.02	-0.01
less Owned support block adjustment	0.16	0.06	0.07	0.05	0.18	0.14	0.13	0.10	0.09	0.12	0.10
less Depreciation	0.41	0.36	0.49	0.43	0.47	0.42	0.48	0.36	0.41	0.43	0.42
Net Adjustments	-1.21	-0.87	-1.02	-1.02	-1.08	-1.07	-0.77	-0.65	-0.97	-0.75	-0.86
OPERATING CASH & NON-CASH:											
Gross Farm Revenue /kg MS	7.59	7.04	7.07	6.95	6.87	6.77	6.88	6.91	7.03	6.86	7.23
Operating Expenses /kg MS	5.43	5.00	5.56	5.48	5.19	5.53	4.93	4.85	5.23	4.95	5.13
Operating Profit /kg MS	2.17	2.04	1.51	1.47	1.68	1.24	1.95	2.06	1.80	1.91	2.10
Gross Farm Revenue /ha	5,601	7,462	7,209	7,021	7,281	4,997	10,196	8,408	7,098	8,698	7,715
Operating Expenses /ha	4,003	5,139	5,465	5,517	5,313	4,275	7,181	5,511	5,118	6,041	5,477
Operating Profit /ha	1,598	2,322	1,745	1,504	1,969	722	3,015	2,898	1,980	2,658	2,238

Table 5.11 examines some of the key financial measures for average farms in each region.

Table 5.11: Regional Owner-operators Financial Position

	Northland	Waikato	Bay of Plenty	Taranaki	Lower North Island	West Coast-Tasman	Marlborough - Canterbury	Otago-Southland	North Island	South Island	New Zealand
Returns:											
Operating return on dairy assets %	5.2%	4.1%	3.6%	2.2%	4.2%	2.7%	4.8%	6.2%	3.8%	5.2%	4.3%
Total return on assets %	0.9%	-0.1%	-0.2%	-1.9%	1.3%	-0.4%	0.2%	-0.6%	-0.2%	-0.1%	-0.2%
Total return on equity %	-3.1%	-3.7%	-3.6%	-8.4%	-1.3%	-10.2%	-3.7%	-6.3%	-4.1%	-5.0%	-4.4%
Wealth Creation:											
Growth in equity %	-3.4%	-4.2%	-2.9%	-8.5%	-1.5%	-4.3%	-4.8%	-13.7%	-4.4%	-8.0%	-5.7%
Debt:											
Closing term liabilities / kg MS	\$ 21.35	\$ 25.93	\$ 24.54	\$ 35.00	\$ 25.90	\$ 23.70	\$ 23.77	\$ 23.10	\$ 26.76	\$ 23.48	\$ 25.31
Debt to asset %	48.2%	47.5%	45.1%	54.3%	48.0%	64.7%	49.3%	59.6%	48.6%	54.4%	50.7%

Regional average operating return on dairy assets ranged from 2.2 per cent to 6.2 per cent. Taranaki (2.2%) and West Coast-Tasman (2.7%) were the lowest due to a difficult season in Taranaki and lower milk prices and profits for West-Coast Tasman farmers. Marlborough-Canterbury (6.2%), and Northland (5.2%) had the highest operating returns on dairy assets in 2017-18.

The national total return on assets (including change in asset values) was -0.2 per cent. The Lower North Island (1.3%), Northland (0.9%), and Marlborough-Canterbury (0.2%) recorded positive total returns on assets, while Taranaki (-1.9%) recorded the lowest total return on assets. All other regions had small negative returns in 2017-18.

Return on equity is the return on owner's funds, including capital changes after interest is paid. All regions experienced negative total returns on equity following last season's positive returns. The largest negative return on equity was recorded for West Coast-Tasman (-10.2%) followed by Taranaki (-8.4%) and the smallest was for Lower North Island (-1.3%).

Average term debt per kilogram milksolids increased nationally in 2017-18 and was higher in the North Island (\$26.76) compared to the South Island (\$23.48). There was some variation between regions with Taranaki (\$35.00) the highest, while Northland was the lowest (\$21.35). The high level of borrowing recorded for Taranaki reflects a high proportion of farms (38%) in the sample with over \$40 term liabilities per kilogram milksolids.

Debt to asset levels were lower in the North Island (48.6%) than the South Island (54.4%) with averages across all regions ranging between 45 per cent and 65 per cent.

5.10: Production System Analysis

DairyBase® categorises farms into five production systems based on the quantity of feed purchased (including cow grazing) and the timing and use of imported feed (refer to Section 2.7 for production system descriptions). For the following analysis the systems have been combined to produce three categories; low (systems 1 and 2), medium (system 3) and high (systems 4 and 5).

Within each production system there is variation in milksolids production and profitability. Production system type is not a good indicator of profitability (refer to Figure 5.9); a farm can be profitable (or unprofitable) operating any system. Profit is less to do with the production system type, and more to do with the management, milksolids production and the costs within the production system.

Average herd sizes, milking area and stocking rates increase from low systems through to high. Average milksolids produced per cow and per hectare also follow this trend, reflecting higher inputs of supplementary feed. Milksolids per cow was 58 kilograms higher for the average of medium system farms (381 kg MS/cow) compared to the average of low system farms (323 kg MS/cow). High input systems recorded an average of 407 kilograms milksolids per cow, which was 26 kilograms higher than the average for medium farms and 84 kilograms per cow more than low input farms. Once stocking rates are included, average milksolids per hectare for medium input farms (1,080) was 247 kilograms higher than low input farms (832) and 178 kilograms less than the average for high input farms (1,258).

Dairy cash income per kilogram milksolids was the highest for low input systems at \$7.20 due to livestock sales being greater than the other two systems on a per kilogram milksolids basis. Medium (\$7.12) and high input systems (\$7.13) had similar average dairy cash incomes per kilogram milksolids.

Farm working expenses per kilogram milksolids were similar for low input systems (\$4.21) and medium input systems (\$4.20), while high input system had average farm working expenses \$4.29 per kilogram milksolids. Once adjustments were accounted for, average operating expenses per kilogram milksolids were similar for all system types.

Cash operating surplus per kilogram milksolids was the highest for low input systems (\$2.99) and was seven cents lower for medium system. High input systems recorded the lowest average cash operating surplus of \$2.84.

Operating profit per kilogram milksolids was the highest for medium input farms, although the spread between each of the systems was only 15 cents in 2017-18. Operating profit per hectare was highest for high input systems (\$2,516), while the profits were slightly lower for medium system farms (\$2,213). Low input systems were the least profitable (\$1,576) in 2017-18. This was due largely to the variations in milksolids production per hectare as average costs were similar across the systems.

The operating return on dairy assets was lower for average low input farms (3.7%). Medium input farms operating return on dairy assets averaged 4.1 per cent and was 4.5 per cent for average high input farms. Once capital and non-dairy operations were accounted for, total returns on assets were similar for medium (0.1%) and high (-0.1%) input systems. Low input systems averaged slightly lower for total return on assets (-0.7%). A similar trend was observed for total return on equity, where medium (-4.4%) and high input systems (-4.3%) were similar, and low input systems were lower (-5.6%).

The debt to asset ratio was similar for low (49.3%) and high (50.0%) input systems and a little higher (53.2%) for medium input systems. Closing term liabilities per kilogram milksolids were highest for medium systems (\$28.04). The average term liabilities for low input systems were the same as at the national average (\$25.31), while high input systems (\$23.33) had the lowest level in 2017-18.

All farm system types had negative average growth in equity percentages, the opposite from last season. Growth in equity for low input systems was the same as medium input systems at -5.2 per cent, while high input systems recorded the largest negative growth in equity of -6.0 per cent.

Table 5.11: Owner-operators Production Systems

FARM SYSTEM	1&2 (Low)	3 (Medium)	4&5 (High)	NZ
% feed Imported	Low input, grass or 4-14% for dry cows	10-20% for dry cows & to extend lactation	more than 20% imported feed	Average
PHYSICAL CHARACTERISTICS:				
Number of herds	96	98	71	265
Effective area (ha)	136.4	145.9	179.8	151.4
Peak cows milked	351	413	555	430
Stocking rate (cows/ha)	2.6	2.8	3.1	2.8
Kg milksolids sold	113,515	157,505	226,109	161,567
Milksolids sold per hectare	832	1,080	1,258	1,067
Milksolids sold per cow	323	381	407	376
FTEs	2.5	2.8	3.6	2.9
Cows/FTE	140	148	154	148
Milksolids sold per FTE	45,406	56,252	62,808	55,713
DAIRY CASH INCOME: \$/kg MS				
Milk sales (net of dairy levies)	6.55	6.63	6.59	6.62
Net livestock sales (sales - purchases)	0.60	0.44	0.50	0.50
Other dairy cash income	0.05	0.05	0.04	0.04
Net dairy cash income	7.20	7.12	7.13	7.16
CASH FARM WORKING EXPENSES: \$/kg MS				
Wages	0.67	0.62	0.70	0.66
Animal health & breeding	0.41	0.38	0.36	0.39
Supplementary feed	0.69	0.98	1.05	0.94
Grazing & support block lease	0.38	0.39	0.51	0.43
Fertiliser, irrigation, regrassing, W&P	0.76	0.67	0.64	0.65
Maintenance & running	0.92	0.82	0.74	0.81
Overheads	0.38	0.34	0.29	0.33
Farm working expenses	4.21	4.20	4.29	4.20
Cash operating surplus	2.99	2.92	2.84	2.96
NON CASH ADJUSTMENTS: \$/kg MS				
Value of change in dairy livestock	0.01	0.11	0.05	0.07
Labour adjustment	0.59	0.43	0.27	0.40
Depreciation	0.39	0.43	0.48	0.42
Other adjustments	0.12	0.12	0.14	0.12
Dairy gross farm revenue	7.21	7.23	7.18	7.23
Dairy operating expenses	5.31	5.18	5.18	5.13
Dairy operating profit	1.90	2.05	2.00	2.10
PROFITABILITY:				
Gross farm revenue /ha	5,996	7,803	9,032	7,715
Operating expenses /ha	4,420	5,590	6,516	5,477
Operating profit /ha	1,576	2,213	2,516	2,238
Operating profit margin %	26.3%	28.4%	27.9%	29.0%
RETURNS:				
Operating return on dairy assets %	3.7%	4.1%	4.5%	4.3%
Total return on assets %	-0.7%	0.1%	-0.1%	-0.2%
Total return on equity %	-5.6%	-4.4%	-4.3%	-4.4%
WEALTH CREATION:				
Growth in equity %	-5.2%	-5.2%	-6.0%	-5.7%
DEBT:				
Closing term liabilities /kg MS	\$ 25.31	\$ 28.04	\$ 23.33	\$ 25.31
Debt to asset %	49.3%	53.2%	50.0%	50.7%

Section 6: Financial Analysis – 50:50 Sharemilkers

Tables 8.1, 8.2, 8.3 and 8.4 show net cash income, cash farm working expenses and the adjustments made to calculate operating profit for the average New Zealand 50:50 Sharemilker on a per farm, per cow, per hectare and per kilogram milksolids sold basis.

6.1: Revenue

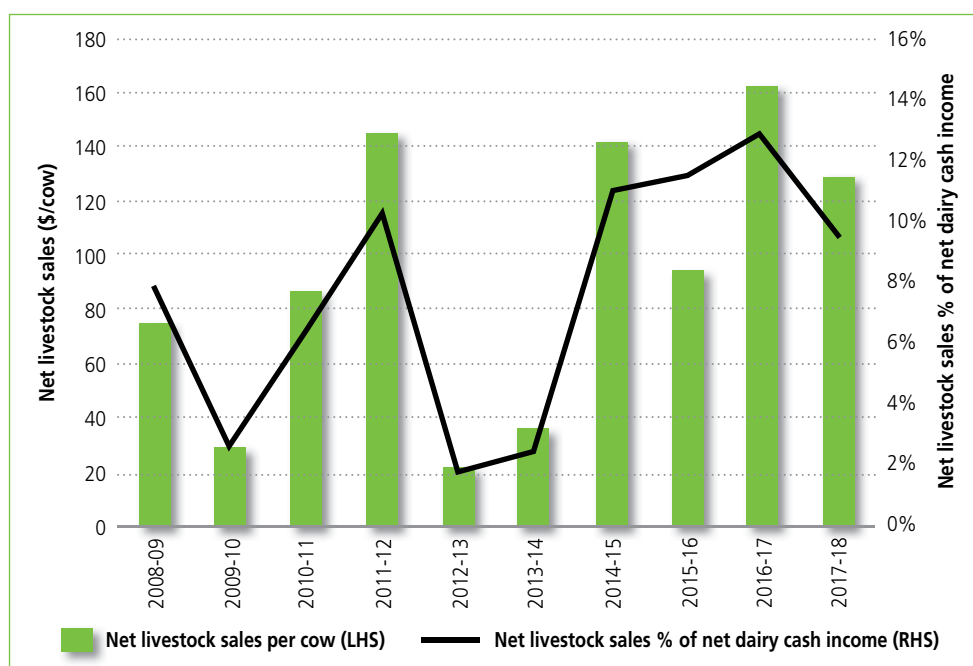
The price received for milk increased from \$2.82 to \$3.21 per kilogram milksolids in 2017-18, an increase of 39 cents (13.8%) from the previous season. This was a welcome relief from the low milk prices experienced over the last three seasons, with this being the first time since 2013-14 that the price surpassed the decadal average of \$3.02.

Income from milk sales increased by 17 per cent to \$472,702, while net livestock sales decreased 17 per cent to \$50,428. Other dairy income of \$2,321 per herd was similar to the previous season. These income sources add to a total net dairy cash income of \$525,451 for the season, which was 12 per cent above the result for 2016-17 and 69 per cent above that for 2015-16. Milk production per hectare was slightly down on the last couple of years, but this was more than compensated by the increase in price noted above.

Net livestock sales have become a more prominent source of income for sharemilkers over the last four seasons. Although down in 2017-18 to \$129 per cow, net livestock sales per cow were the fourth highest in the last decade. Livestock sales as a proportion of net dairy cash income fell from its historical high reported in 2016-17, to a level closer to its long-term average. Figure 6.1 shows the trend for the past decade.

Milk production per herd increased slightly for sharemilkers (+2.4%), reflecting an average 5.1 per cent increase in cow numbers and 3.9 per cent increase in milking area.

Figure 6.1: Sharemilkers Net Livestock Income



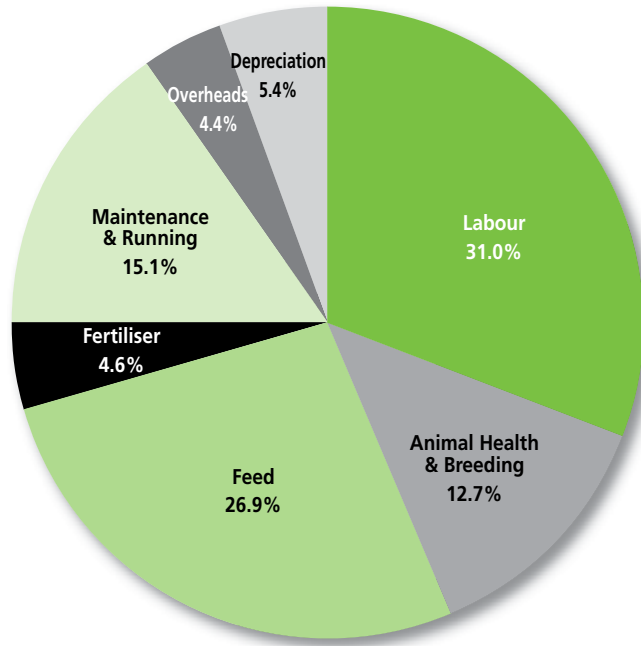
6.2: Expenditure

Farm working expenses (FWE) increased significantly relative to recent years. It averaged \$356,128 per sharemilking business or \$2.42 per kilogram milksolids. At a herd level, these costs are 18 to 19 per cent higher than those observed in 2015-16 and 2016-17, reflecting some catch up in expenditure and greater optimism in response to a stronger price signal.

Various cost items increased by around 20 per cent or more at a herd level; these included wages, herd improvement, feed, grazing, and regrassing. These larger increases demonstrate a willingness of farmers to further invest in their farm assets as milk prices continued to lift over the last couple of seasons.

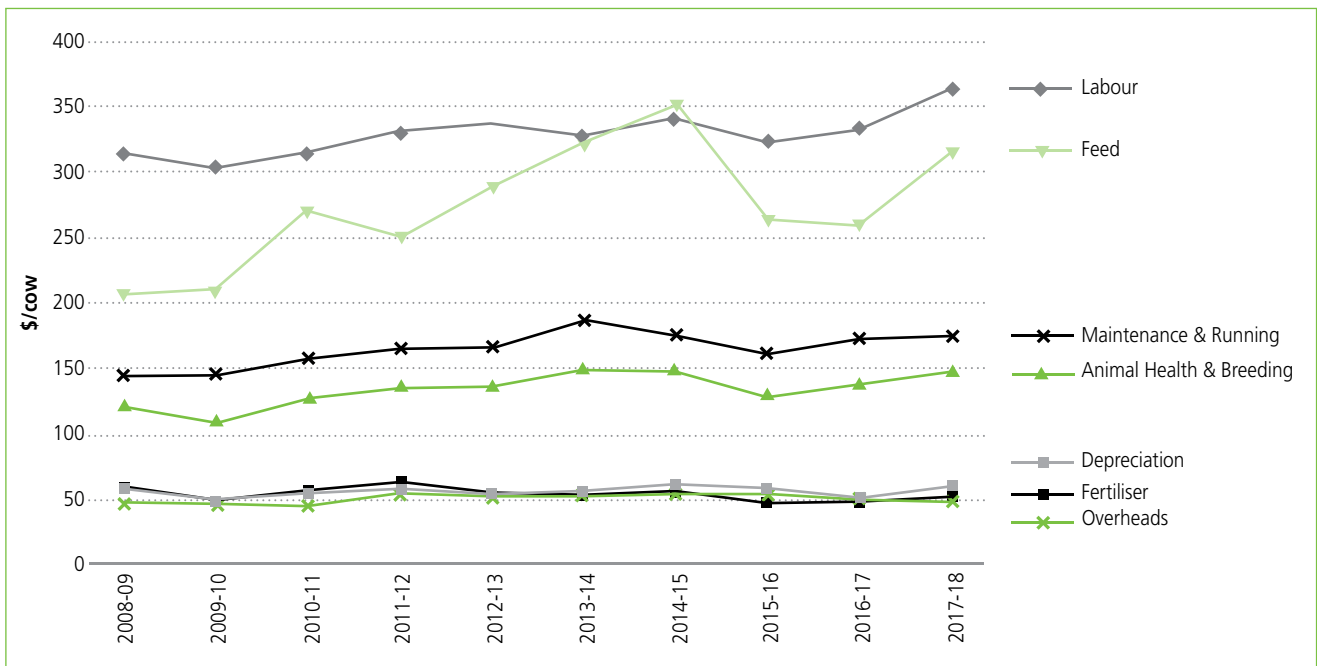
After adjustments for resources used but not paid for in the cash account (e.g. unpaid family labour), operating expenses per kilogram milksolids were \$3.13 per kilogram milksolids. This was up 39 cents per kilogram milksolids on 2016-17 and around 9 per cent above the decadal average of \$2.87. The components of dairy operating expenditure are shown in Figure 6.2.

Figure 6.2: Proportion of Dairy Operating Expenditure: 2017-18



On a per cow basis, most expense categories for Sharemilkers continued to increase in 2017-18, though at different rates. Major changes were increases in wages (14%), breeding (15%), feed (24%), grazing (30%), and regrassing (17%). Wages and breeding expenditures on a per cow basis were the highest reported over the last decade, while feed and grazing expenses approached those last seen during 2014-15. Fertiliser, depreciation and overheads have remained reasonably constant per cow.

Figure 6.3: Sharemilkers Expenses per Cow



6.3: Profitability

Dairy operating profit per kilogram milksolids in 2017-18 was \$0.67 for the average 50:50 Sharemilker, equal to the decadal average of \$0.67 and only three cents above that from 2016-17. Net dairy cash income per kilogram milksolids increased 9.5 per cent, relative to last season. However, farm working expenses also increased by 15 per cent. Overall, dairy operating profit per kilogram milksolids only increased by 4.7 per cent relative to last season. In comparison, operating profit per effective cow and per hectare increased by 2.0 per cent and 3.2 per cent respectively.

Figure 6.4 shows changes in Sharemilkers operating profit (the point at the top of the green bar), operating expenses and gross farm revenue per hectare over the last decade. The ten-year average for operating profit per hectare was \$706, with the 2017-18 season being slightly above this level at \$718 per hectare. Gross farm revenue per hectare (\$4,070) was 8.1 per cent above its decadal average, while operating expenses per hectare (\$3,352) were 9.6 per cent higher.

Figure 6.4: Gross Farm Revenue, Operating Expenses and Operating Profit (\$ per ha)

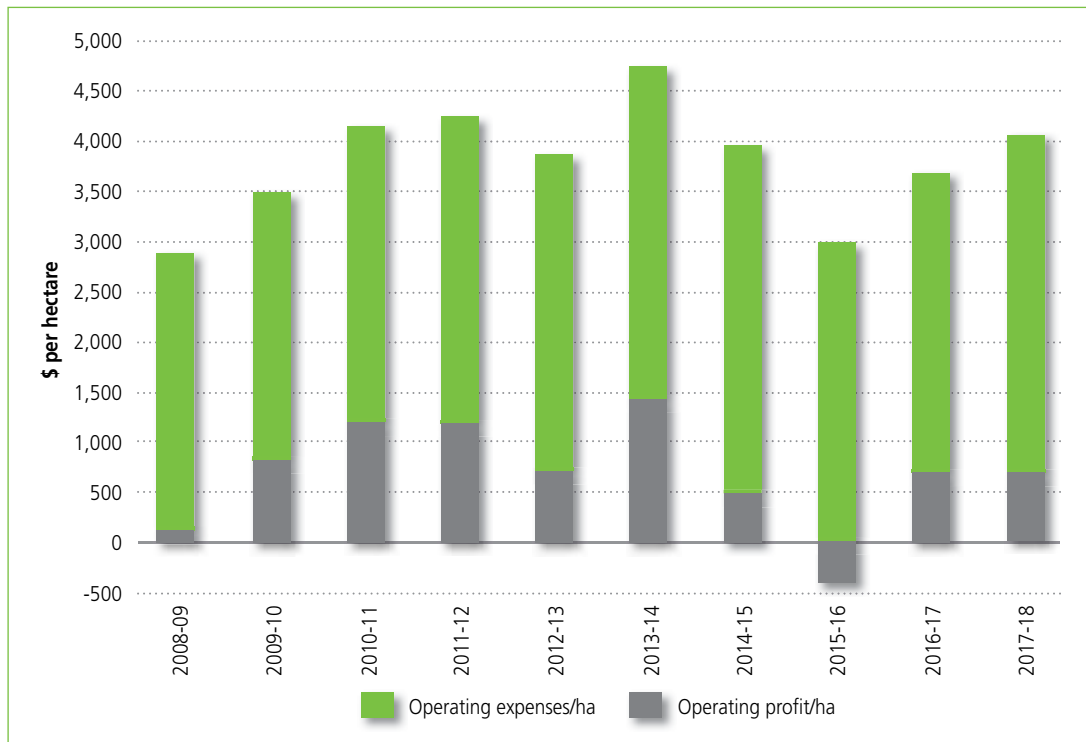


Figure 6.5 shows the distribution of 2017-18 operating profit per hectare. It is approximately normally distributed around the mean of \$718 per hectare with a standard deviation of \$576 per hectare. Eighty-nine per cent of Sharemilkers had positive operating profit, leaving 11% of Sharemilkers below \$0 per hectare. Thirty per cent of Sharemilkers achieved operating profits of over \$1,000 per hectare.

Figure 6.5: Distribution of Sharemilkers Operating Profit (\$ per ha)

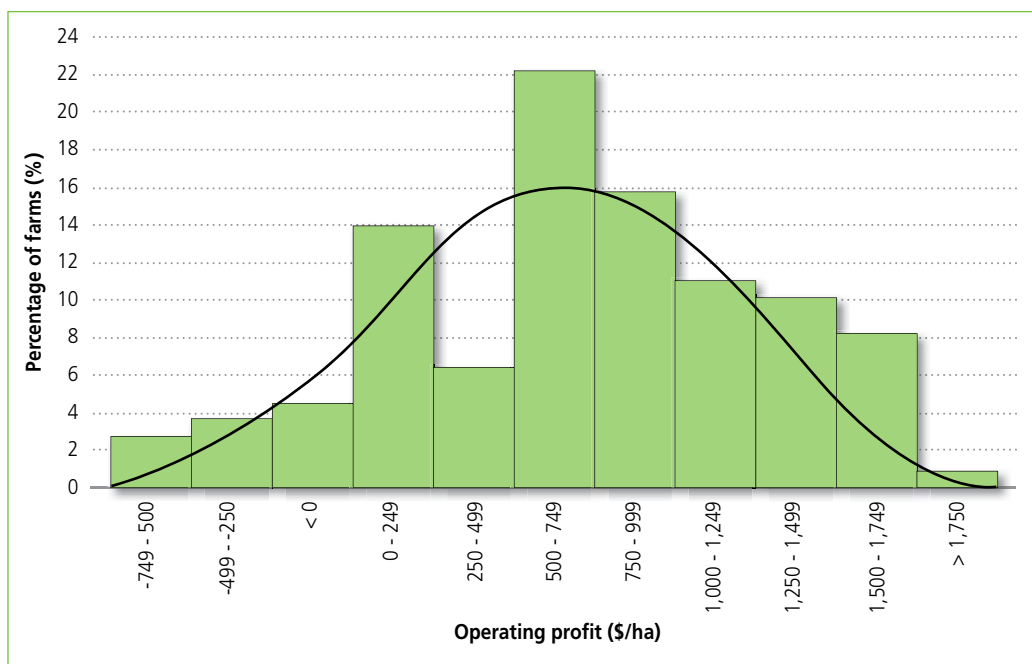


Table 6.1 compares the top quartile of 50:50 Sharemilkers and the average 50:50 Sharemilker for production, gross farm revenue, operating expenses and operating profit. For the top 25 per cent of Sharemilkers, average operating profit was \$93 higher per hectare and 26 cents higher per kilogram milksolids than for the average Sharemilker. This difference is due to a combination of higher gross farm revenue (+\$0.26/kg MS) and lower operating expenses (-\$0.28/kg MS).

Table 6.1: 2017-18 Operating Profit Components

	2017-18 Average	2017-18 Top 25%*	Difference	% difference
Milksolids sold per hectare	1,072	1,165	93	9%
Dairy gross farm revenue/kg MS	\$3.79	\$4.05	\$0.26	7%
Dairy operating expenses/kg MS	\$3.13	\$2.85	-\$0.28	-9%
Dairy operating profit/kg MS	\$0.67	\$1.20	\$0.53	79%
Dairy operating profit/ha	\$718	\$1,403	\$685	95%

*Ranked on operating profit per hectare

The average operating return on dairy assets in 2017-18 was 11.5 per cent, which was on a par with the decadal average of 10.7 per cent. Operating return on dairy assets is highly variable for Sharemilkers, with this metric having a standard deviation of 8.6% over the last decade. It is more variable for Sharemilkers, relative to Owner-operators, due to year-to-year variations in both operating profit and the value of livestock, the latter which makes up the majority of Sharemilkers' capital.

Overall, profitability for the average Sharemilkers business as measured by business profit before tax was \$154,478 per farm. As the adjustment for unpaid labour and the value of the change in dairy livestock is not accounted for in business profit, this figure is substantially higher than operating profit per farm (\$98,570).

6.4: Cash Flow and Liquidity

The flow of funds (Table 6.2) shows the components of the change in working capital, including the source and application of cash funds. Funds for 2017-18 were mostly from farm operations (89% of inward funds), with a small amount coming from introduced funds (8% of inward funds) and other sources (3% of inward funds). Term debt was reduced as Sharemilkers repaid principal (\$20,730) on loans by the close of the season.

Of the funds applied, 41 per cent was spent on drawings, 27 per cent was spent on capital transactions and 17 per cent was spent on interest payments. Tax payments required 13 per cent of funds at \$24,119 per herd in 2017-18.

Table 6.2: 2017-18 Flow of Funds (\$ per farm)

	2016-17	2017-18
Change in Current Assets	22,455	2,932
- Change in Current Liabilities	- 9,244	15,668
Change in Working Capital	31,699	-12,736
Source of Funds		
Cash Operating Surplus	167,540	169,323
+ non-dairy cash income	1,798	1,996
+ off-farm income	2,281	4,071
+ introduced funds	12,583	14,806
+ income equalisation	1,412	0
+ increase in term debt	- 17,644	-20,730
= Total source of funds	167,970	169,466
Application of Funds		
rent	1,047	2,320
+ interest	34,629	31,626
+ tax	6,220	24,199
+ capital transactions	36,654	49,540
+ drawings	57,721	74,517
= Total application of funds	136,271	182,202
Source less Application of funds	31,699	-12,736

The average 50:50 Sharemilkers cash operating surplus was \$169,323, which was well above the decadal average of \$151,084. This level of cash operating surplus for 2017-18 translates to around \$1.15 per kilogram milksolids, two cents below last season's level.

In 2017-18, the average level of discretionary cash of \$113,174 per farm was well above the decadal average of \$92,290. It continued the strong position also observed in 2016-17, in strong contrast to the instance in 2015-16 where discretionary cash was negative (-\$31,172). Typically, these funds are required to reduce debt, sustain drawings and to fund capital expenditure.

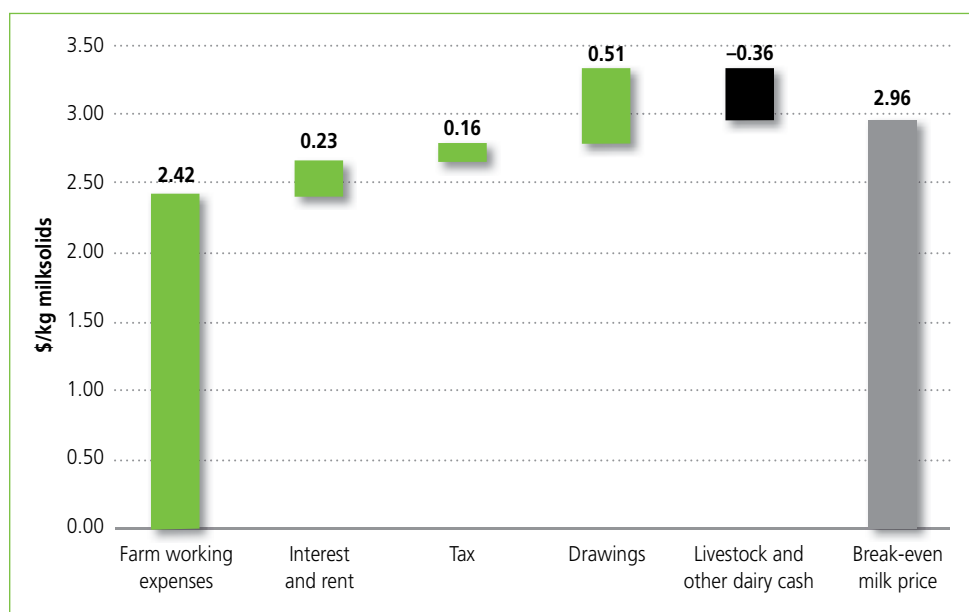
The break-even milk price indicates how much milk income is required for farmers to cover farm working expenses, interest and rent, tax and drawings. The average 50:50 Sharemilker required \$2.96 per kilogram milksolids to break-even in 2017-18. This is higher than the 20-year average break-even milk price of \$2.45 in nominal terms, and is similar to the level of break-even milk price observed in 2014-15 (\$2.93). The main drivers of a higher break-even milk price in 2017-18 were significant increases in farm working expenses, tax, and drawings.

Table 6.3: Break-even Milk Price (\$ per kg MS)

	2013-14	2014-15	2015-16	2016-17	2017-18
Farm working expenses	2.42	2.34	2.08	2.10	2.42
Interest and rent	0.27	0.24	0.27	0.25	0.23
Tax	0.21	0.17	0.04	0.04	0.16
Drawings	0.53	0.55	0.39	0.40	0.51
Total cash expenses	3.43	3.30	2.78	2.79	3.32
less Livestock & other dairy cash income	0.12	0.38	0.27	0.44	0.36
Break-even milk price	3.31	2.93	2.51	2.35	2.96

The components of break-even milk price are shown in Figure 6.6.

Figure 6.6: Break-even Milk Price



6.5: Dairy Assets

Total dairy assets decreased in value by \$8,262 during the 2017-18 season, closing at \$0.96 million per herd. Livestock accounted for 72 per cent of total closing dairy assets, following a 3.5 per cent decrease in value throughout the season. Plant, machinery and vehicles increased in value by 9.4 per cent from open to close of the season.

6.6: Liabilities and Debt Servicing

For the 2017-18 season, term liabilities declined from \$3.96 at open to \$3.81 per kilogram milksolids at close as farmers repaid some debt. Interest and rent expenditure at 23 cents per kilogram milksolids was 2 cents less than the previous season due to the lower levels of debt and lower interest rates. Interest and rent per dollar of gross farm revenue decreased from 7.3 per cent to 6.1 per cent, still well below the long-term average of 8.6 per cent.

Table 6.4: Debt Servicing Ratios

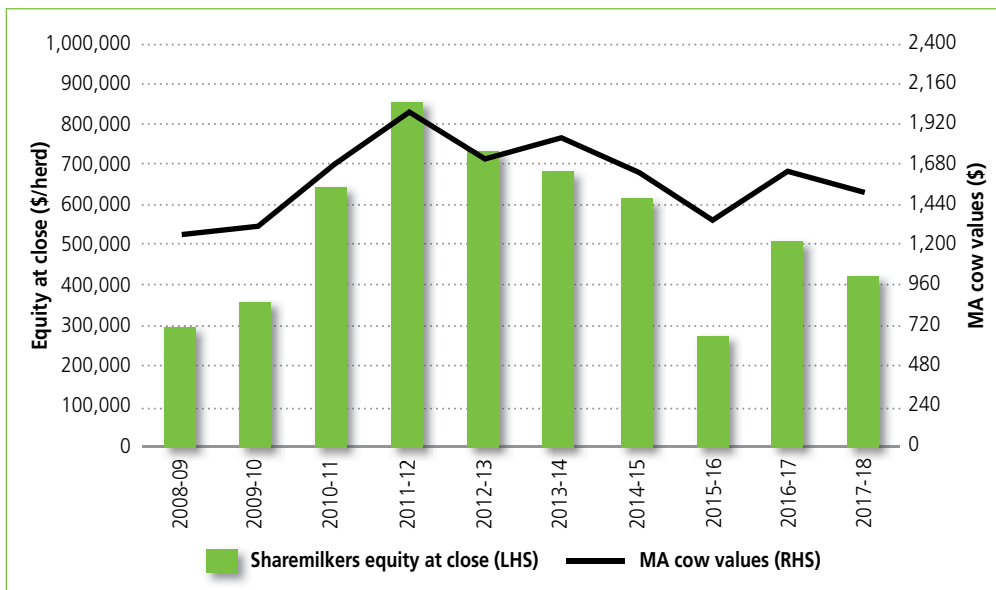
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Interest & rent \$/kg MS	0.44	0.38	0.35	0.26	0.27	0.27	0.24	0.27	0.25	0.23
Interest & rent % GFR	15.0%	10.9%	8.2%	6.5%	7.0%	6.2%	7.1%	11.5%	7.3%	6.1%
Closing term liabilities \$/kg MS	4.80	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05	3.81

6.7: Equity

At 1 June 2017, Sharemilkers had an average equity of \$415,386 in their dairy farm business, or 44 per cent of total dairy assets. Both total assets and total liabilities eased by around 1 per cent over the season, resulting in very little movement in total equity across the 2017-18 season.

Figure 6.7 shows Sharemilkers equity has fluctuated considerably over the last decade due to large changes in cow values. Equity decreased in 2017-18 due to lower livestock values, relative to the previous season.

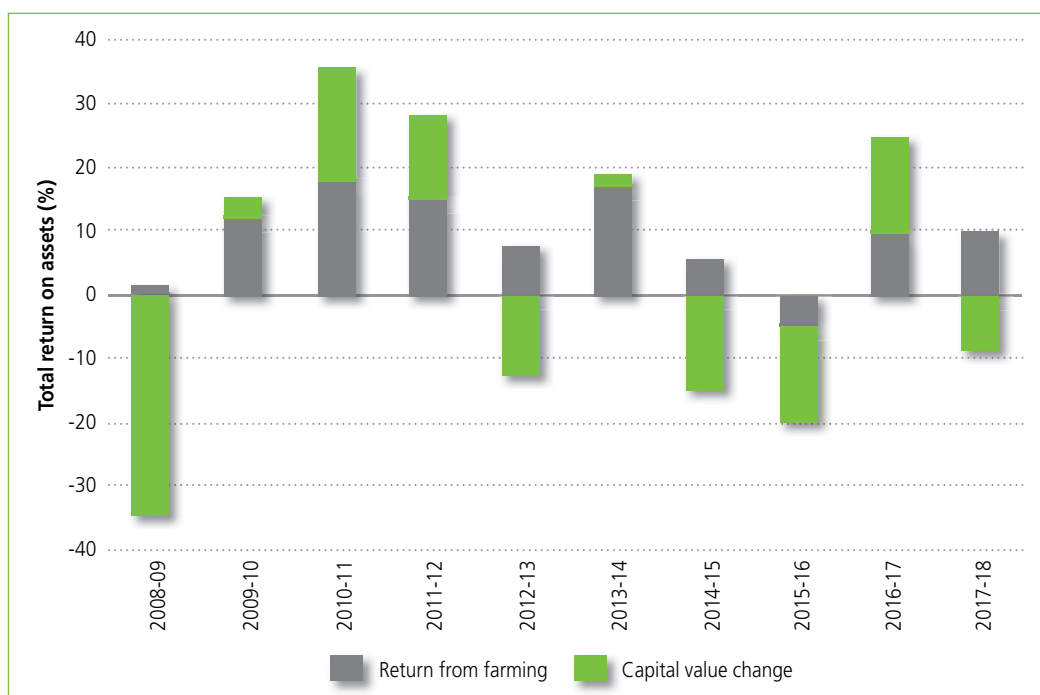
Figure 6.7: Sharemilkers Equity and Cow Values



6.8: Returns

The operating return on dairy assets (excluding capital appreciation) is discussed under profitability (see Section 6.3). Total return on assets (profit including capital change generated by the assets employed) in 2017-18 was 1.6 per cent, as shown in Figure 6.8. Net returns from dairy activity yielded \$96,501 across the 2017-18 season, but these were greatly moderated by a decrease in capital value of \$84,007 per herd. Accordingly, total return on assets in 2017-18 was well below the decadal average of 5.9 per cent. Sharemilker returns are more volatile than those earned by Owner-operators due to livestock being their most significant asset class and livestock values fluctuating with greater magnitude than land prices.

Figure 6.8: Sharemilkers Total Return on Assets



Total returns on Sharemilkers equity averaged a loss of 2.9% in 2017-18. This was well below the decadal average of 13.3%, and reflected the large change in capital value that also greatly affected the total return on assets in this season.

6.9: Regional Analysis

Tables 6.5 and 6.6 show key performance indicators for the average farm in the Waikato, Taranaki, Otago-Southland and each island. Sharemilker herd numbers in all regions within each island are used to weight the data.

Key Points from Table 6.5 include:

- Average herd size in the South Island was 259 cows larger than the North Island.
- Average milk production per cow was 17.8 per cent higher in the South Island than the North Island.
- Gross farm revenue, operating expenses and operating profit per hectare were higher in the South Island compared with the North Island (+\$781, +\$667, and +\$113 respectively).
- On average, farm working expenses per kilogram milksolids were higher for South Island farms compared with North Island farms (+\$0.19).
- Operating expenses per kilogram milksolids were lower in the South Island (-\$0.11) compared with the North Island, and the highest operating expenses per kilogram milksolids were in the Taranaki at \$3.43.

Table 6.5: Regional Sharemilkers Profitability

	Waikato	Taranaki	Otago-Southland	North Island	South Island	New Zealand
PHYSICAL CHARACTERISTICS:						
Number of herds	40	24	<20	83	25	108
Effective hectares (ha)	115.6	95.5	206.8	116.3	193.9	137.2
Peak cows milked	329	271	599	321	580	391
Stocking rate (cows/ha)	2.8	2.8	2.9	2.8	3.0	2.8
Kg milksolids sold	119,676	92,936	245,616	113,669	238,220	147,143
Milksolids sold per hectare	1,035	973	1,188	977	1,229	1,072
Milksolids sold per cow	364	343	410	354	411	376
Cows per FTE	150	136	162	146	161	15
Milksolids produced per FTE	54,398	46,468	66,383	51,668	66,172	56,593
PAYOUT RECEIVED: \$/kg MS sold	2.80	2.94	2.86	2.85	2.79	2.82
DAIRY CASH INCOME: \$/kg MS						
Milk sales (net of dairy levies)	2.80	2.94	2.86	2.85	2.79	2.82
Net livestock sales (sales - purchases)	0.48	0.42	0.40	0.47	0.36	0.42
Other dairy cash income	0.02	0.02	-	0.02	0.01	0.02
Net dairy cash income	3.30	3.38	3.26	3.34	3.16	3.26
CASH FARM WORKING EXPENSES: \$/kg MS						
Wages	0.34	0.21	0.43	0.32	0.41	0.36
Animal health	0.24	0.24	0.20	0.23	0.20	0.22
Breeding & herd improvement	0.14	0.15	0.13	0.15	0.14	0.14
Farm dairy	0.05	0.05	0.04	0.05	0.04	0.05
Electricity	0.10	0.12	0.09	0.11	0.10	0.11
Net feed made, purchased, cropped	0.43	0.36	0.40	0.41	0.35	0.39
Stock grazing	0.20	0.17	0.28	0.18	0.32	0.24
Support block lease	0.02	0.01	0.01	0.02	0.01	0.01
Fertiliser (incl Nitrogen)	0.11	0.12	0.14	0.12	0.14	0.13
Irrigation	-	-	0.01	-	0.04	0.02
Regrassing	0.02	0.01	0.03	0.01	0.02	0.02
Weed & pest	0.02	0.02	0.02	0.01	0.01	0.01
Vehicles & fuel	0.18	0.17	0.16	0.18	0.15	0.16
Repairs & maintenance	0.07	0.09	0.09	0.06	0.08	0.07
Freight & general	0.05	0.05	0.04	0.05	0.04	0.05
Administration	0.09	0.10	0.07	0.09	0.07	0.08
Insurance	0.03	0.03	0.02	0.03	0.02	0.03
ACC	0.02	0.01	0.01	0.02	0.02	0.02
Rates	0.01	-	-	0.01	-	0.00
Farm working expenses	2.35	2.39	2.42	2.34	2.53	2.42
Cash operating surplus	0.95	0.99	0.84	1.00	0.63	0.84
ADJUSTMENTS: \$/kg MS						
Value of change in dairy livestock	0.06	0.16	0.14	0.12	0.12	0.12
less Labour adjustment	0.58	0.67	0.36	0.62	0.34	0.50
plus Feed inventory adjustment	-	0.02	0.01	-0.01	-	-0.00
less Owned support block adjustment	-	0.01	-	-	-	0.00
less Depreciation	0.15	0.14	0.13	0.15	0.12	0.14
Net Adjustments	- 0.67	- 0.64	- 0.34	- 0.66	- 0.34	- 0.53
OPERATING CASH & NON-CASH:						
Gross farm revenue /kg MS	3.80	3.71	3.80	3.86	3.71	3.79
Operating expenses /kg MS	3.11	3.43	2.95	3.18	3.07	3.13
Operating profit /kg MS	0.69	0.28	0.85	0.69	0.64	0.67
Gross farm revenue /ha	3,930	3,613	4,512	3,774	4,555	4,071
Operating expenses /ha	3,218	3,336	3,506	3,105	3,772	3,352
Operating profit /ha	712	277	1,006	670	783	719

Operating return on dairy assets was 2.3 per cent higher in the South Island, compared to the North Island (Table 6.6). Otago-Southland had the highest operating return of the benchmarked groups with 16.8 per cent, reflecting higher operating profit in 2017-18. Overall, these levels of return are high relative to those available for many other investment opportunities.

Return on equity was higher for South Island Sharemilkers than those in the North Island. However, these numbers were all negative, given changes in equity arising from a net loss in livestock value for many Sharemilkers.

South Island Sharemilkers had a higher closing debt to asset ratio of 66 per cent, compared with 53 per cent for North Island farms. Waikato farms had the lowest debt to asset ratio for the benchmarked regions, at 52 per cent.

Term liabilities per kilogram milksolids was around 25 per cent lower in the South Island, compared to the North Island. The North Island has a lower debt to asset ratio; however, this effect is dominated by the overall higher level of milk solids production observed in the South Island.

Growth in equity percentage was positive across both islands. The South Island showed a larger increase of 5.0 per cent, relative to 0.4 per cent observed in the North Island. This pattern was also notable in the 2016-17 data. However, the levels here are much lower than those reported in 2016-17, which were 69 per cent and 136 per cent for the North Island and South Island, respectively.

Table 6.6: Regional Sharemilkers Financial Position

	<i>Waikato</i>	<i>Taranaki</i>	<i>Otago-Southland</i>	<i>North Island</i>	<i>South Island</i>	<i>New Zealand</i>
Returns:						
Operating return on dairy assets %	11.1%	3.8%	16.8%	10.6%	12.9%	11.5%
Total return on assets %	0.9%	-4.7%	6.7%	0.7%	3.0%	1.6%
Total return on equity %	-3.0%	-17.4%	9.0%	-3.4%	-2.4%	-3.0%
Wealth Creation:						
Growth in equity %	2.0%	-14.5%	10.8%	0.4%	5.0%	1.6%
Debt:						
Closing term liabilities / kg MS	4.16	6.55	2.97	4.28	3.20	3.81
Debt to asset %	51.7%	63.3%	55.6%	52.7%	65.9%	57.1%

Section 7: Time Series Tables – Owner-operators

Table 7.1: Cash Operating Surplus and Operating Profit - \$ per farm

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	632,202	795,575	979,430	990,172	899,388	1,164,274	923,621	628,192	928,944	1,068,927
Net livestock sales (sales - purchases)	42,134	40,072	51,283	52,637	55,381	57,832	83,804	90,596	79,495	80,967
Other dairy cash income	5,119	6,137	6,341	6,063	7,151	6,338	6,466	5,819	5,633	6,789
Net dairy cash income	679,455	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683
CASH FARM WORKING EXPENSES:										
Wages	69,967	78,139	80,413	88,015	91,013	90,565	97,790	103,689	92,630	106,331
Animal health	25,587	26,104	31,352	31,621	32,944	35,800	36,553	30,906	34,577	37,497
Breeding & herd improvement	15,002	14,253	17,601	17,850	20,267	20,485	23,746	19,702	21,986	25,043
Farm dairy	7,423	7,524	8,184	9,781	10,225	10,068	9,693	7,902	9,636	9,433
Electricity	11,438	13,240	13,754	14,489	16,028	17,342	17,636	17,646	18,352	18,256
Net feed made, purchased, cropped	94,681	83,985	114,290	117,928	124,172	156,489	152,147	118,281	120,103	151,337
Stock grazing	42,290	40,917	48,080	55,505	52,914	53,919	64,319	64,317	58,368	58,254
Support block lease	6,071	9,618	8,881	12,361	12,543	11,519	11,992	12,385	12,322	10,882
Fertiliser (incl Nitrogen)	77,521	70,422	79,692	87,658	81,705	86,711	75,738	66,595	73,964	77,478
Irrigation	5,009	5,105	5,658	4,326	5,807	4,527	9,367	7,987	8,527	8,314
Regrassing	8,269	7,446	8,861	6,696	8,709	10,423	9,776	7,751	9,913	12,503
Weed & pest	3,770	3,928	4,874	5,074	4,714	6,387	5,502	5,561	5,631	5,951
Vehicles & fuel	22,870	23,035	25,686	29,014	30,026	32,423	28,918	26,704	29,220	31,584
Repairs & maintenance	38,527	32,798	46,688	51,664	43,114	62,561	52,240	35,753	46,630	63,665
Freight & general	6,232	5,922	6,739	7,612	7,630	9,030	8,700	8,666	7,755	8,518
Administration	14,904	14,259	15,671	17,080	17,765	17,697	17,680	18,974	17,895	19,675
Insurance	5,303	6,147	7,159	8,042	9,084	9,718	10,773	10,252	10,947	12,635
ACC	3,551	4,002	4,289	5,712	3,937	4,321	4,134	3,690	3,445	3,785
Rates	9,786	11,946	12,597	13,790	14,147	15,873	15,915	16,089	16,761	17,031
Farm working expenses	468,201	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662	678,172
Cash operating surplus	211,254	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410	478,511
ADJUSTMENTS:										
Value of change in dairy livestock	2,511	327	9,883	20,201	11,428	24,912	2,632	-13,067	9,835	11,378
less Labour adjustment	57,610	52,969	51,797	54,748	55,162	59,309	59,021	56,341	61,154	63,920
plus Feed inventory adjustment	6,892	-744	3,313	4,782	-2,534	5,340	-210	3,453	2,790	-2,413
less Owned support block adjustment	13,178	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359	16,786
less Depreciation	54,779	56,300	58,898	52,172	56,258	57,383	66,154	62,967	66,295	67,899
Net Adjustments	-116,164	-120,321	-108,561	-95,491	-117,127	-101,778	-137,642	-143,048	-129,183	-139,640
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	681,966	842,111	1,046,937	1,069,073	973,348	1,253,356	1,016,523	711,540	1,023,907	1,168,061
Dairy operating expenses	586,876	579,438	658,913	699,910	715,299	782,548	792,893	712,831	737,680	829,190
Dairy operating profit	95,090	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227	338,871
Dairy operating profit per ha	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238

Owner-operators

Table 7.2: Cash Operating Surplus and Operating Profit - \$ per cow

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.40
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1102	1082	1085	1067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	1,761	2,110	2,557	2,520	2,265	2,896	2,204	1,503	2,244	2,486
Net livestock sales (sales - purchases)	117	106	134	134	139	144	200	217	192	188
Other dairy cash income	14	16	17	15	18	16	15	14	14	16
Net dairy cash income	1,893	2,233	2,708	2,669	2,423	3,056	2,420	1,734	2,449	2,690
CASH FARM WORKING EXPENSES:										
Wages	195	207	210	224	229	225	233	248	224	247
Animal health	71	69	82	80	83	89	87	74	84	87
Breeding & herd improvement	42	38	46	45	51	51	57	47	53	58
Farm dairy	21	20	21	25	26	25	23	19	23	22
Electricity	32	35	36	37	40	43	42	42	44	42
Net feed made, purchased, cropped	264	223	298	300	313	389	363	283	290	352
Stock grazing	118	109	126	141	133	134	154	154	141	135
Support block lease	17	26	23	31	32	29	29	30	30	25
Fertiliser (incl Nitrogen)	216	187	208	223	206	216	181	159	179	180
Irrigation	14	14	15	11	15	11	22	19	21	19
Regrassing	23	20	23	17	22	26	23	19	24	29
Weed & pest	11	10	13	13	12	16	13	13	14	14
Vehicles & fuel	64	61	67	74	76	81	69	64	71	73
Repairs & maintenance	107	87	122	131	109	156	125	86	113	148
Freight & general	17	16	18	19	19	22	21	21	19	20
Administration	42	38	41	43	45	44	42	45	43	46
Insurance	15	16	19	20	23	24	26	25	26	29
ACC	10	11	11	15	10	11	10	9	8	9
Rates	27	32	33	35	36	39	38	38	40	40
Farm working expenses	1,304	1,217	1,411	1,487	1,478	1,631	1,558	1,394	1,446	1,577
Cash operating surplus	588	1,016	1,297	1,182	945	1,424	862	339	1,003	1,113
ADJUSTMENTS:										
Value of change in dairy livestock	7	1	26	51	29	62	6	-31	24	26
less Labour adjustment	160	141	135	139	139	148	141	135	148	149
plus Feed inventory adjustment	19	-2	9	12	-6	13	-1	8	7	-6
less Owned support block adjustment	37	28	29	34	37	38	36	34	35	39
less Depreciation	153	149	154	133	142	143	158	151	160	158
Net Adjustments	-324	-319	-283	-243	-295	-253	-329	-342	-312	-325
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	1,900	2,234	2,734	2,720	2,452	3,118	2,426	1,702	2,473	2,716
Dairy operating expenses	1,635	1,537	1,720	1,781	1,802	1,947	1,892	1,705	1,782	1,928
Dairy operating profit per cow	265	697	1,013	939	650	1,171	534	-3	691	788

Owner-operators

Table 7.3: Cash Operating Surplus and Operating Profit - \$ per effective hectare

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	4,901	5,928	7,092	7,037	6,379	8,147	6,348	4,242	6,285	7,060
Net livestock sales (sales - purchases)	327	299	371	374	393	405	576	612	538	535
Other dairy cash income	40	46	46	43	51	44	44	39	38	45
Net dairy cash income	5,267	6,273	7,509	7,455	6,822	8,597	6,968	4,893	6,861	7,640
CASH FARM WORKING EXPENSES:										
Wages	542	582	582	626	645	634	672	700	627	702
Animal health	198	195	227	225	234	251	251	209	234	248
Breeding & herd improvement	116	106	127	127	144	143	163	133	149	165
Farm dairy	58	56	59	70	73	70	67	53	65	62
Electricity	89	99	100	103	114	121	121	119	124	121
Net feed made, purchased, cropped	734	626	828	838	881	1,095	1,046	799	813	1,000
Stock grazing	328	305	348	394	375	377	442	434	395	385
Support block lease	47	72	64	88	89	81	82	84	83	72
Fertiliser (incl Nitrogen)	601	525	577	623	579	607	521	450	500	512
Irrigation	39	38	41	31	41	32	64	54	58	55
Regrassing	64	55	64	48	62	73	67	52	67	83
Weed & pest	29	29	35	36	33	45	38	38	38	39
Vehicles & fuel	177	172	186	206	213	227	199	180	198	209
Repairs & maintenance	299	244	338	367	306	438	359	241	315	421
Freight & general	48	44	49	54	54	63	60	59	52	56
Administration	116	106	113	121	126	124	122	128	121	130
Insurance	41	46	52	57	64	68	74	69	74	83
ACC	28	30	31	41	28	30	28	25	23	25
Rates	76	89	91	98	100	111	109	109	113	112
Farm working expenses	3,629	3,419	3,914	4,152	4,161	4,590	4,485	3,936	4,050	4,479
Cash operating surplus	1,638	2,854	3,596	3,302	2,661	4,007	2,483	957	2,811	3,161
ADJUSTMENTS:										
Value of change in dairy livestock	19	2	72	144	81	174	18	-88	67	75
less Labour adjustment	447	395	375	389	391	415	406	380	414	422
plus Feed inventory adjustment	53	-6	24	34	-18	37	-1	23	19	-16
less Owned support block adjustment	102	79	80	96	104	107	102	95	97	111
less Depreciation	425	420	426	371	399	402	455	425	449	448
Net Adjustments	-900	-897	-786	-679	-831	-712	-946	-966	-874	-922
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	5,287	6,275	7,581	7,598	6,903	8,771	6,986	4,804	6,928	7,715
Dairy operating expenses	4,549	4,318	4,771	4,974	5,073	5,476	5,449	4,813	4,991	5,477
Dairy operating profit per ha	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937	2,238

Owner-operators

Table 7.4: Cash Operating Surplus and Operating Profit - \$ per milksolids sold

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
Net livestock sales (sales - purchases)	0.35	0.31	0.39	0.36	0.39	0.38	0.52	0.57	0.50	0.50
Other dairy cash income	0.04	0.05	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04
Net dairy cash income	5.60	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33	7.16
CASH FARM WORKING EXPENSES:										
Wages	0.58	0.61	0.60	0.59	0.64	0.60	0.61	0.65	0.58	0.66
Animal health	0.21	0.20	0.24	0.21	0.23	0.24	0.23	0.19	0.22	0.23
Breeding & herd improvement	0.12	0.11	0.13	0.12	0.14	0.14	0.15	0.12	0.14	0.16
Farm dairy	0.06	0.06	0.06	0.07	0.07	0.07	0.06	0.05	0.06	0.06
Electricity	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11
Net feed made, purchased, cropped	0.78	0.65	0.86	0.80	0.87	1.03	0.95	0.74	0.75	0.94
Stock grazing	0.35	0.32	0.36	0.38	0.37	0.36	0.40	0.40	0.36	0.36
Support block lease	0.05	0.07	0.07	0.08	0.09	0.08	0.07	0.08	0.08	0.07
Fertiliser (incl Nitrogen)	0.64	0.55	0.60	0.59	0.58	0.57	0.47	0.42	0.46	0.48
Irrigation	0.04	0.04	0.04	0.03	0.04	0.03	0.06	0.05	0.05	0.05
Regrassing	0.07	0.06	0.07	0.05	0.06	0.07	0.06	0.05	0.06	0.08
Weed & pest	0.03	0.03	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.04
Vehicles & fuel	0.19	0.18	0.19	0.20	0.21	0.21	0.18	0.17	0.18	0.20
Repairs & maintenance	0.32	0.25	0.35	0.35	0.30	0.41	0.33	0.22	0.29	0.39
Freight & general	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.05
Administration	0.12	0.11	0.12	0.12	0.13	0.12	0.11	0.12	0.11	0.12
Insurance	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.06	0.07	0.08
ACC	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.02	0.02	0.02
Rates	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10	0.11
Farm working expenses	3.86	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73	4.20
Cash operating surplus	1.74	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59	2.96
ADJUSTMENTS:										
Value of change in dairy livestock	0.02	0.00	0.07	0.14	0.08	0.16	0.02	-0.08	0.06	0.07
less Labour adjustment	0.47	0.41	0.39	0.37	0.39	0.39	0.37	0.35	0.38	0.40
plus Feed inventory adjustment	0.06	-0.01	0.02	0.03	-0.02	0.04	0.00	0.02	0.02	-0.01
less Owned support block adjustment	0.11	0.08	0.08	0.09	0.10	0.10	0.09	0.09	0.09	0.10
less Depreciation	0.45	0.44	0.44	0.35	0.40	0.38	0.41	0.39	0.41	0.42
Net Adjustments	-0.96	-0.93	-0.82	-0.65	-0.82	-0.67	-0.86	-0.89	-0.81	-0.86
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	5.62	6.53	7.87	7.23	6.85	8.28	6.34	4.44	6.39	7.23
Dairy operating expenses	4.84	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60	5.13
Dairy operating profit per kg MS	0.78	2.04	2.92	2.49	1.82	3.11	1.39	-0.01	1.79	2.10

Owner-operators

Table 7.5: Cashflow

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
Net dairy cash income	679,455	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072	1,156,683
Farm working expenses	468,201	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662	678,172
Cash operating surplus	211,254	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410	478,511
DISCRETIONARY CASH										
less Rent (excl support block)	14,567	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582	20,703
less Interest	192,746	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343	191,459
less Tax	22,126	14,442	36,388	46,816	35,383	58,155	34,078	7,939	16,773	41,532
plus Net Non-dairy cash income	1,862	1,518	2,446	790	1,125	2,355	486	904	3,371	6,064
Discretionary Cash	-16,323	155,713	257,896	224,736	143,970	321,823	109,446	-82,602	185,083	230,881
OTHER CASH INCOME										
plus Net off-farm income	14,220	12,695	12,323	11,018	12,427	9,991	12,078	9,238	19,811	18,114
plus Introduced funds	9,231	37,142	6,240	-2,871	40,918	-44,275	28,307	77,696	-24,004	-40,908
plus Income equalisation	1,528	3,556	-274	-2,004	1,178	-4,756	-9,579	16,765	1,307	40
Cash available for living and growth	8,656	209,106	276,185	230,879	198,493	282,783	140,252	21,097	182,197	208,127
OTHER CASH EXPENDITURE										
less Net capital transactions	258,664	117,688	136,393	164,026	185,532	143,703	201,119	76,697	109,749	238,591
less Net debt	-276,681	-57,011	2991	22,153	-123,346	-10,790	-93,026	-111,777	-75,867	-92,523
less Net drawings	80,167	84,261	97,099	83,781	92,872	116,224	110,437	78,151	82,043	104,334
Cash Surplus/Deficit	-53,494	64,168	39,702	-39,081	43,435	33,646	-78,278	-21,974	66,272	-42,275
CASHFLOW PER KG MILKSOLIDS SOLD:										
Net dairy cash income	5.60	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33	7.16
Farm working expenses	3.86	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73	4.20
Cash operating surplus	1.74	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59	2.96
DISCRETIONARY CASH										
less Rent (excl support block)	0.12	0.15	0.15	0.13	0.16	0.15	0.14	0.13	0.12	0.13
less Interest	1.59	1.52	1.39	1.18	1.23	1.13	1.22	1.23	1.23	1.19
less Tax	0.18	0.11	0.27	0.32	0.25	0.38	0.21	0.05	0.10	0.26
plus Net non-dairy cash income	0.02	0.01	0.02	0.01	0.01	0.02	0.00	0.01	0.02	0.04
Discretionary Cash	-0.13	1.21	1.94	1.52	1.01	2.12	0.68	-0.52	1.15	1.43
OTHER CASH INCOME										
plus Net off-farm income	0.12	0.10	0.09	0.07	0.09	0.07	0.08	0.06	0.12	0.11
plus Introduced funds	0.08	0.29	0.05	-0.02	0.29	-0.29	0.18	0.48	-0.15	-0.25
plus Income equalisation	0.01	0.03	0.00	-0.01	0.01	-0.03	-0.06	0.10	0.01	0.00
Cash available for living and growth	0.07	1.62	2.08	1.56	1.40	1.87	0.87	0.13	1.14	1.29
OTHER CASH EXPENDITURE										
less Net capital transactions	2.13	0.91	1.03	1.11	1.31	0.95	1.25	0.48	0.68	1.48
less Net debt	-2.28	-0.44	0.02	0.15	-0.87	-0.07	-0.58	-0.70	-0.47	-0.57
less Net drawings	0.66	0.65	0.73	0.57	0.65	0.77	0.69	0.49	0.51	0.65
Cash surplus/deficit	-0.44	0.50	0.30	-0.26	0.31	0.22	-0.49	-0.14	0.41	-0.26

Owner-operators

Table 7.6: Capital Structure and Wealth Creation

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
DAIRY ASSETS at OPEN										
Land & buildings	4,155,465	4,226,924	4,402,009	4,247,819	4,109,797	4,474,344	5,055,041	5,473,880	5,518,535	5,849,932
Plant, machinery and vehicles	171,122	212,797	185,881	213,589	193,255	224,385	233,302	258,077	254,722	252,258
Livestock	910,766	571,893	607,371	821,346	1,013,686	873,333	967,406	812,241	640,378	834,061
Investments (excl non-dairy)	760,461	657,001	658,358	616,654	628,020	899,384	892,639	688,384	791,795	800,126
Current assets	189,358	120,852	235,731	221,577	168,694	221,155	285,915	176,424	138,254	208,018
Total dairy assets at open	6,187,172	5,789,467	6,089,350	6,120,985	6,113,452	6,692,601	7,434,303	7,409,006	7,343,684	7,944,395
plus Non-dairy assets	177,620	207,001	227,726	243,626	226,186	225,437	207,058	258,166	267,387	403,636
Total assets	6,364,792	5,996,468	6,317,076	6,364,611	6,339,638	6,918,038	7,641,361	7,667,172	7,611,071	8,348,031
LIABILITIES at OPEN										
Term liabilities	2,139,935	2,736,810	2,721,810	2,868,307	2,834,656	3,039,137	3,317,150	3,493,221	3,932,350	3,996,989
Current liabilities	184,908	183,275	101,438	167,634	174,851	154,442	182,128	197,175	160,682	149,261
Total liabilities	2,324,843	2,920,085	2,823,248	3,035,941	3,009,507	3,193,579	3,499,278	3,690,396	4,093,032	4,146,250
Owners equity at open	4,039,949	3,076,383	3,493,828	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781
DAIRY ASSETS at CLOSE										
Land & buildings	4,335,249	4,348,461	4,424,626	4,367,922	4,384,302	4,788,661	5,368,063	5,289,448	5,854,250	5,843,351
Plant, machinery and vehicles	186,400	204,911	189,607	227,328	196,594	252,083	233,593	243,360	249,436	255,794
Livestock	547,490	612,361	807,201	1,017,760	874,419	939,582	804,897	651,096	815,984	776,831
Investments (excl non-dairy)	639,133	618,712	676,231	649,996	967,958	817,865	751,874	810,143	823,402	748,739
Current assets	126,309	152,996	294,029	188,455	186,427	279,218	186,858	151,773	194,747	195,692
Total dairy assets at close	5,834,581	5,937,441	6,391,694	6,451,461	6,609,700	7,077,409	7,345,285	7,145,820	7,937,819	7,820,407
plus Non-dairy assets	224,204	221,772	256,722	271,339	260,335	236,874	224,823	258,766	280,232	411,434
Total assets	6,058,785	6,159,213	6,648,416	6,722,800	6,870,035	7,314,283	7,570,108	7,404,586	8,218,051	8,231,841
LIABILITIES at CLOSE										
Term liabilities	2,416,615	2,793,821	2,718,819	2,846,154	2,958,002	3,049,927	3,410,176	3,604,999	4,008,218	4,089,512
Current liabilities	171,743	151,251	120,034	173,593	149,149	178,859	161,349	194,497	150,902	179,210
Total liabilities	2,588,358	2,945,072	2,838,853	3,019,747	3,107,151	3,228,786	3,571,525	3,799,496	4,159,120	4,268,722
Owners equity at close	3,470,427	3,214,141	3,809,563	3,703,053	3,762,884	4,085,497	3,998,583	3,605,090	4,058,931	3,963,119
Growth in equity	-569,522	137,758	315,735	374,383	432,753	361,038	-143,500	-371,686	540,892	-238,662
Growth in equity from profit	-129,380	26,052	123,991	123,506	16,257	187,695	-53,784	-225,348	68,973	85,385
Growth in equity from capital	-440,142	111,706	191,744	250,877	416,496	173,343	-89,716	-146,338	471,919	-324,047
Growth in equity %	-14.1%	4.5%	9.0%	11.2%	13.0%	9.7%	-3.5%	-9.3%	15.4%	-5.7%
Closing debt to asset %	41.5%	46.5%	40.0%	43.3%	43.7%	41.9%	45.8%	50.3%	49.4%	50.7%
Closing term liabilities per kg MS	19.91	21.65	20.44	19.24	20.82	20.14	21.26	22.49	25.00	25.31

Owner-operators

Table 7.7: Returns

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	208	223	214	204	217	301	296	279	316	265
Effective hectares	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8	151.4
Peak cows milked	359	377	383	393	397	402	419	418	414	430
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8	2.8
Kg milksolids sold	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302	161,567
Milksolids sold per hectare	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085	1,067
Milksolids sold per cow	338	343	347	376	358	377	383	383	387	376
PAYOUT RECEIVED: \$/kg MS sold	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79	6.62
RETURN on DAIRY ASSETS %										
Dairy operating profit	95,090	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227	338,871
plus Owned support block adjustment	13,178	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359	16,786
less Rent	14,567	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582	20,703
Net return from dairy	93,701	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004	334,954
Total dairy assets (less current) at open	5,997,814	5,668,615	5,853,619	5,899,408	5,944,758	6,471,446	7,148,388	7,232,582	7,205,430	7,736,377
Operating return on dairy assets %	1.6%	4.5%	6.5%	6.2%	4.2%	7.2%	3.0%	-0.1%	3.9%	4.3%
TOTAL RETURN ON ASSETS %										
Net return from dairy	93,701	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004	334,954
plus Net non-dairy profit	689	356	-1,100	-280	1,288	1,724	-673	-318	3,331	5,444
plus Change in capital value	-504,133	12,586	126,766	207,084	315,704	169,567	-175,947	-301,565	430,903	-353,833
Total return	-409,743	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238	-13,435
Total assets (less current) at open	6,175,434	5,875,616	6,081,345	6,143,034	6,170,944	6,696,883	7,355,446	7,490,748	7,472,817	8,140,013
Total return on assets %	-6.6%	4.6%	8.3%	9.3%	9.2%	9.5%	0.5%	-4.1%	9.6%	-0.2%
TOTAL RETURN ON EQUITY %										
Total return	-409,743	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238	-13,435
plus Net off-farm income	13,659	12,479	12,442	10,810	12,360	9,858	12,098	9,208	19,643	18,392
less Interest	192,746	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343	191,459
Total return for equity	-588,830	84,372	332,447	406,439	405,054	472,332	-144,237	-497,164	537,538	-186,502
Equity at open	4,039,949	3,076,383	3,493,828	3,328,670	3,330,131	3,724,459	4,142,083	3,976,776	3,518,039	4,201,781
Total return on equity %	-14.6%	2.7%	9.5%	12.2%	12.2%	12.7%	-3.5%	-12.5%	15.3%	-4.4%

Section 8: Time Series Tables – 50:50 Sharemilkers

Table 8.1: Cash Operating Surplus and Operating Profit - \$ per farm

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	306,998	395,138	488,379	489,513	441,112	520,870	434,377	272,370	405,691	472,702
Net livestock sales (sales - purchases)	27,137	11,253	33,805	56,522	8,419	13,423	54,333	35,783	60,598	50,428
Other dairy cash income	4,749	2,810	5,149	5,206	2,844	3,407	2,381	3,368	2,419	2,321
Net dairy cash income	338,884	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708	525,451
CASH FARM WORKING EXPENSES:										
Wages	42,695	43,184	48,112	51,719	57,928	51,400	52,915	48,799	51,624	61,841
Animal health	27,364	25,912	31,820	33,464	32,842	34,651	35,418	28,668	31,232	34,238
Breeding & herd improvement	15,886	15,389	17,663	19,251	21,195	20,468	22,026	20,299	20,065	24,196
Farm dairy	5,638	5,918	6,369	6,386	6,077	6,631	6,653	6,629	6,886	7,538
Electricity	10,828	12,549	12,884	13,868	13,765	14,439	15,840	15,435	15,505	15,362
Net feed made, purchased, cropped	43,908	42,078	60,080	62,553	70,461	74,677	77,650	53,410	55,474	72,032
Stock grazing	23,520	28,426	35,791	29,714	30,296	39,026	50,175	42,034	34,075	46,703
Support block lease	3,259	4,698	2,997	2,971	5,199	1,308	1,403	2,206	1,834	1,666
Fertiliser (incl Nitrogen)	21,132	18,837	22,083	24,548	22,666	20,377	21,454	18,608	18,616	21,151
Irrigation	690	1,098	1,108	655	933	1,778	2,135	3,991	2,462	2,043
Regrassing	1,807	1,578	3,314	3,256	2,388	2,821	2,560	2,502	2,442	3,026
Weed & pest	988	1,326	1,425	1,616	1,534	1,392	1,582	1,383	1,948	1,869
Vehicles & fuel	20,311	20,241	24,795	25,313	26,602	25,153	23,726	20,049	22,926	24,851
Repairs & maintenance	8,731	8,612	9,808	11,617	9,703	12,113	10,305	9,029	10,234	11,702
Freight & general	6,441	6,651	6,571	6,420	8,502	8,892	8,661	6,782	6,600	7,871
Administration	10,427	10,536	11,034	11,656	12,014	12,063	12,413	11,778	11,542	11,785
Insurance	2,707	3,124	3,199	4,093	4,379	4,016	4,255	4,906	4,254	4,970
ACC	3,980	3,703	3,388	5,357	4,169	3,914	3,248	3,054	2,937	2,982
Rates	646	619	866	1,025	987	623	1,253	526	512	302
Farm working expenses	250,958	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168	356,128
Cash operating surplus	87,926	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540	169,323
ADJUSTMENTS:										
Value of change in dairy livestock	19,219	45,716	40,245	27,593	80,132	70,394	32,000	30,838	16,893	32,946
less Labour adjustment	70,048	71,129	74,092	76,757	74,703	68,733	77,508	73,553	72,041	80,608
plus Feed inventory adjustment	2,646	261	912	3,819	-441	1,573	176	1,708	-486	1,860
less Owned support block adjustment	3,298	1,597	2,218	1,217	3,315	685	1,245	695	508	251
less Depreciation	20,660	19,077	21,960	22,024	23,266	21,798	25,243	23,409	19,521	24,700
Net Adjustments	-72,141	-45,826	-57,113	-68,586	-21,593	-19,249	-71,820	-65,111	-75,663	-70,753
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	358,103	454,917	567,578	578,834	532,507	608,094	523,091	342,359	485,601	558,397
Dairy operating expenses	342,318	346,021	400,665	411,661	433,365	425,385	457,492	396,037	393,724	459,827
Dairy operating profit	15,785	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877	98,570
Dairy operating profit per ha	127	834	1,221	1,222	719	1,427	497	-403	696	718

Table 8.2: Cash Operating Surplus and Operating Profit - \$ per cow

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	858	1,051	1,259	1,262	1,120	1,419	1,134	719	1,091	1,209
Net livestock sales (sales - purchases)	76	30	87	146	21	37	142	94	163	129
Other dairy cash income	13	7	13	13	7	9	6	9	7	6
Net dairy cash income	947	1,088	1,359	1,421	1,148	1,465	1,282	822	1,260	1,344
CASH FARM WORKING EXPENSES:										
Wages	119	115	124	133	147	140	138	129	139	158
Animal health	76	69	82	86	83	94	92	76	84	88
Breeding & herd improvement	44	41	46	50	54	56	58	54	54	62
Farm dairy	16	16	16	16	15	18	17	17	19	19
Electricity	30	33	33	36	35	39	41	41	42	39
Net feed made, purchased, cropped	123	112	155	161	179	203	203	141	149	184
Stock grazing	66	76	92	77	77	106	131	111	92	119
Support block lease	9	12	8	8	13	4	4	6	5	4
Fertiliser (incl Nitrogen)	59	50	57	63	58	56	56	49	50	54
Irrigation	2	3	3	2	2	5	6	11	7	5
Regrassing	5	4	9	8	6	8	7	7	7	8
Weed & pest	3	4	4	4	4	4	4	4	5	5
Vehicles & fuel	57	54	64	65	68	69	62	53	62	64
Repairs & maintenance	24	23	25	30	25	33	27	24	28	30
Freight & general	18	18	17	17	22	24	23	18	18	20
Administration	29	28	28	30	30	33	32	31	31	30
Insurance	8	8	8	11	11	11	11	13	11	13
ACC	11	10	9	14	11	11	8	8	8	8
Rates	2	2	2	3	3	2	3	1	1	1
Farm working expenses	701	677	782	813	842	915	923	792	810	911
Cash operating surplus	246	411	577	608	306	550	359	30	450	433
ADJUSTMENTS:										
Value of change in dairy livestock	54	122	104	71	203	192	84	81	45	84
less Labour adjustment	196	189	191	198	190	187	202	194	194	206
plus Feed inventory adjustment	7	1	2	10	-1	4	0	5	-1	5
less Owned support block adjustment	9	4	6	3	8	2	3	2	1	1
less Depreciation	58	51	57	57	59	59	66	62	52	63
Net Adjustments	-202	-122	-147	-177	-55	-52	-188	-172	-203	-181
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	1,000	1,210	1,463	1,492	1,352	1,657	1,366	903	1,305	1,428
Dairy operating expenses	956	920	1,033	1,061	1,100	1,159	1,194	1,045	1,058	1,176
Dairy operating profit per cow	44	290	430	431	252	498	171	-142	247	252

Table 8.3: Cash Operating Surplus and Operating Profit - \$ per effective hectare

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	2,470	3,026	3,573	3,578	3,199	4,069	3,291	2,043	3,073	3,445
Net livestock sales (sales - purchases)	218	86	247	413	61	105	412	268	459	368
Other dairy cash income	38	22	38	38	21	27	18	25	18	17
Net dairy cash income	2,726	3,133	3,858	4,030	3,280	4,201	3,720	2,337	3,551	3,830
CASH FARM WORKING EXPENSES:										
Wages	343	331	352	378	420	402	401	366	391	451
Animal health	220	198	233	245	238	271	268	215	237	250
Breeding & herd improvement	128	118	129	141	154	160	167	152	152	176
Farm dairy	45	45	47	47	44	52	50	50	52	55
Electricity	87	96	94	101	100	113	120	116	117	112
Net feed made, purchased, cropped	353	322	440	457	511	583	588	401	420	525
Stock grazing	189	218	262	217	220	305	380	315	258	340
Support block lease	26	36	22	22	38	10	11	17	14	12
Fertiliser (incl Nitrogen)	170	144	162	179	164	159	163	140	141	154
Irrigation	6	8	8	5	7	14	16	30	19	15
Regrassing	15	12	24	24	17	22	19	19	19	22
Weed & pest	8	10	10	12	11	11	12	10	15	14
Vehicles & fuel	163	155	181	185	193	197	180	150	174	181
Repairs & maintenance	70	66	72	85	70	95	78	68	78	85
Freight & general	52	51	48	47	62	69	66	51	50	57
Administration	84	81	81	85	87	94	94	88	87	86
Insurance	22	24	23	30	32	31	32	37	32	36
ACC	32	28	25	39	30	31	25	23	22	22
Rates	5	5	6	7	7	5	9	4	4	2
Farm working expenses	2,019	1,949	2,219	2,306	2,405	2,623	2,679	2,251	2,282	2,596
Cash operating surplus	707	1,185	1,639	1,723	876	1,578	1,041	86	1,269	1,234
ADJUSTMENTS:										
Value of change in dairy livestock	155	350	294	202	581	550	242	231	128	240
less Labour adjustment	564	545	542	561	542	537	587	552	546	588
plus Feed inventory adjustment	21	2	7	28	-3	12	1	13	-4	14
less Owned support block adjustment	27	12	16	9	24	5	9	5	4	2
less Depreciation	166	146	161	161	169	170	191	176	148	180
Net Adjustments	-580	-351	-418	-501	-157	-150	-544	-488	-573	-516
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	2,881	3,483	4,152	4,231	3,862	4,751	3,963	2,568	3,679	4,070
Dairy operating expenses	2,754	2,649	2,931	3,009	3,143	3,323	3,466	2,971	2,983	3,352
Dairy operating profit per ha	127	834	1,221	1,222	719	1,427	497	-403	696	718

Table 8.4: Cash Operating Surplus and Operating Profit - \$ per milksolids sold

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
Net livestock sales (sales - purchases)	0.22	0.09	0.25	0.39	0.06	0.10	0.36	0.25	0.42	0.34
Other dairy cash income	0.04	0.02	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02
Net dairy cash income	2.79	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26	3.57
CASH FARM WORKING EXPENSES:										
Wages	0.35	0.33	0.36	0.35	0.41	0.37	0.35	0.34	0.36	0.42
Animal health	0.23	0.20	0.24	0.23	0.23	0.25	0.23	0.20	0.22	0.23
Breeding & herd improvement	0.13	0.12	0.13	0.13	0.15	0.15	0.15	0.14	0.14	0.16
Farm dairy	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.05	0.05	0.05
Electricity	0.09	0.10	0.10	0.09	0.10	0.10	0.10	0.11	0.11	0.10
Net feed made, purchased, cropped	0.36	0.32	0.45	0.43	0.50	0.54	0.51	0.37	0.39	0.49
Stock grazing	0.19	0.22	0.27	0.20	0.21	0.28	0.33	0.29	0.24	0.32
Support block lease	0.03	0.04	0.02	0.02	0.04	0.01	0.01	0.02	0.01	0.01
Fertiliser (incl Nitrogen)	0.17	0.15	0.16	0.17	0.16	0.15	0.14	0.13	0.13	0.14
Irrigation	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.03	0.02	0.01
Regrassing	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Weed & pest	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Vehicles & fuel	0.17	0.16	0.18	0.17	0.19	0.18	0.16	0.14	0.16	0.17
Repairs & maintenance	0.07	0.07	0.07	0.08	0.07	0.09	0.07	0.06	0.07	0.08
Freight & general	0.05	0.05	0.05	0.04	0.06	0.06	0.06	0.05	0.05	0.05
Administration	0.09	0.08	0.08	0.08	0.09	0.09	0.08	0.08	0.08	0.08
Insurance	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03
ACC	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.02	0.02	0.02
Rates	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00
Farm working expenses	2.07	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10	2.42
Cash operating surplus	0.73	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17	1.15
ADJUSTMENTS:										
Value of change in dairy livestock	0.16	0.35	0.30	0.19	0.57	0.51	0.21	0.21	0.12	0.22
less Labour adjustment	0.58	0.55	0.55	0.52	0.53	0.50	0.51	0.51	0.50	0.55
plus Feed inventory adjustment	0.02	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.01
less Owned support block adjustment	0.03	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00	0.00
less Depreciation	0.17	0.15	0.16	0.15	0.16	0.16	0.17	0.16	0.14	0.17
Net Adjustments	-0.59	-0.35	-0.42	-0.47	-0.15	-0.14	-0.48	-0.45	-0.53	-0.48
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	2.95	3.51	4.22	3.94	3.77	4.39	3.46	2.37	3.38	3.79
Dairy operating expenses	2.82	2.67	2.98	2.81	3.07	3.07	3.03	2.74	2.74	3.13
Dairy operating profit per kg MS	0.13	0.84	1.24	1.14	0.70	1.32	0.43	-0.37	0.64	0.67

50:50 Sharemilkers

Table 8.5: Cashflow

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
Net dairy cash income	338,884	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708	525,451
Farm working expenses	250,958	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168	356,128
Cash operating surplus	87,926	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540	169,323
DISCRETIONARY CASH										
less Rent (excl support block)	2,031	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047	2,320
less Interest	51,736	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629	31,626
less Tax	17,877	5,085	23,930	31,344	27,351	29,237	25,101	5,492	6,220	24,199
plus Net non-dairy cash income	688	1,498	2,645	1,458	139	2,036	2,511	2,243	1,798	1,996
Discretionary Cash	16,970	101,708	156,053	168,000	56,095	136,757	77,870	-31,172	127,442	113,174
OTHER CASH INCOME										
plus Net off-farm income	3,472	6,014	5,508	3,753	4,244	3,989	3,817	4,546	2,281	4,071
plus Introduced funds	6,087	-3,583	8,612	11,331	8,480	13,155	24,197	26,601	12,583	14,806
plus Income equalisation	8,035	1,535	519	-379	4,325	-2,621	-6,091	5,707	1,412	0
Cash available for living and growth	34,564	105,674	170,692	182,705	73,144	151,280	99,793	5,682	143,718	132,051
OTHER CASH EXPENDITURE										
less Net capital transactions	129,125	12,833	27,519	48,945	70,590	60,379	89,030	26,407	36,654	49,540
less Net debt	-130,212	24,238	58,537	56,442	-40,067	-973	-50,721	37,011	17,644	20,730
less Net drawings	55,161	55,876	67,893	75,857	72,999	72,813	83,335	56,461	57,721	74,517
Cash Surplus/Deficit	-19,510	12,727	16,743	1,461	-30,378	19,061	-21,851	-114,197	31,699	-12,736
CASHFLOW PER KG MILKSOLIDS SOLD:										
Net dairy cash income	2.79	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26	3.57
Farm working expenses	2.07	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10	2.42
Cash operating surplus	0.73	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17	1.15
DISCRETIONARY CASH										
less Rent (excl support block)	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.01	0.01	0.02
less Interest	0.43	0.37	0.33	0.23	0.23	0.25	0.21	0.26	0.24	0.21
less Tax	0.15	0.04	0.18	0.21	0.19	0.21	0.17	0.04	0.04	0.16
plus Net non-dairy cash income	0.01	0.01	0.02	0.01	0.00	0.01	0.02	0.02	0.01	0.01
Discretionary Cash	0.14	0.78	1.16	1.14	0.40	0.99	0.52	-0.22	0.89	0.77
OTHER CASH INCOME										
plus Net off-farm income	0.03	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.03
plus Introduced funds	0.05	-0.03	0.06	0.08	0.06	0.09	0.16	0.18	0.09	0.10
plus Income equalisation	0.07	0.01	0.00	0.00	0.03	-0.02	-0.04	0.04	0.01	0.00
Cash available for living and growth	0.29	0.82	1.27	1.25	0.52	1.09	0.66	0.04	1.00	0.90
OTHER CASH EXPENDITURE										
less Net capital transactions	1.06	0.10	0.20	0.33	0.50	0.44	0.59	0.18	0.26	0.34
less Net debt	-1.07	0.19	0.43	0.38	-0.28	-0.01	-0.34	0.26	0.12	0.14
less Net drawings	0.45	0.43	0.50	0.52	0.52	0.53	0.55	0.39	0.40	0.51
Cash surplus/deficit	-0.16	0.10	0.12	0.01	-0.22	0.14	-0.14	-0.79	0.22	-0.09

Table 8.6: Capital Structure and Wealth Creation

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128	132	133.3	132.0	137.2
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
DAIRY ASSETS at OPEN										
Land & buildings	80,323	66,517	105,003	28,567	86,836	15,098	30,040	11,402	18,684	11,326
Plant, machinery and vehicles	90,751	93,586	95,481	106,678	117,383	108,099	126,212	125,820	117,301	128,521
Livestock	887,282	540,948	598,372	788,495	948,782	763,980	845,693	691,128	569,288	691,303
Investments (excl non-dairy)	9,071	4,996	13,340	12,004	12,323	9,835	14,950	7,629	15,904	7,852
Current assets	85,650	61,330	82,002	118,029	106,625	82,670	138,435	103,524	46,993	95,392
Total dairy assets at open	1,153,077	767,377	894,198	1,053,773	1,271,949	979,682	1,155,330	939,503	768,170	934,394
plus Non-dairy assets	103,177	162,078	112,936	139,545	111,848	148,952	126,234	152,207	195,254	136,930
Total assets	1,256,254	929,455	1,007,134	1,193,318	1,383,797	1,128,634	1,281,564	1,091,710	963,424	1,071,324
LIABILITIES at OPEN										
Term liabilities	452,125	608,678	594,089	510,469	473,652	513,263	456,746	552,001	599,319	581,994
Current liabilities	96,134	80,763	77,308	101,391	96,334	97,513	88,015	95,703	89,844	73,944
Total liabilities	548,259	689,441	671,397	611,860	569,986	610,776	544,761	647,704	689,163	655,938
Owners equity at open	707,995	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261	415,386
DAIRY ASSETS at CLOSE										
Land & buildings	101,550	67,558	103,473	28,759	95,068	15,631	45,015	10,361	19,483	11,326
Plant, machinery and vehicles	99,716	95,020	106,965	126,654	129,332	132,115	126,025	121,846	125,203	140,605
Livestock	548,293	624,904	827,120	985,447	887,135	870,676	731,576	594,679	734,331	667,438
Investments (excl non-dairy)	19,455	6,734	14,062	17,438	13,086	11,543	17,568	7,796	23,409	8,439
Current assets	60,051	73,704	105,744	117,026	83,659	115,486	114,664	87,303	69,448	98,324
Total dairy assets at close	829,065	867,920	1,157,364	1,275,324	1,208,280	1,145,451	1,034,848	821,985	971,874	926,132
plus Non-dairy assets	139,842	158,786	107,949	136,933	144,476	165,597	172,672	163,079	203,511	146,603
Total assets	968,907	1,026,706	1,265,313	1,412,257	1,352,756	1,311,048	1,207,520	985,064	1,175,385	1,072,735
LIABILITIES at CLOSE										
Term liabilities	582,337	584,440	535,552	454,027	513,719	514,236	507,467	589,012	581,675	561,264
Current liabilities	90,045	80,410	84,307	98,927	103,746	111,268	86,095	119,657	80,600	89,612
Total liabilities	672,382	664,850	619,859	552,954	617,465	625,504	593,562	708,669	662,275	650,876
Owners equity at close	296,525	361,856	645,454	859,303	735,291	685,544	613,958	276,395	513,110	421,859
Growth in equity	-411,470	121,842	309,717	277,845	-78,520	167,686	-122,845	-167,611	238,849	6,473
Growth in equity from profit	-34,586	77,675	112,617	104,473	43,782	118,099	4,979	-73,991	69,859	53,694
Growth in equity from capital	-376,884	44,167	197,100	173,372	-122,302	49,587	-127,824	-93,620	168,990	-47,221
Growth in equity %	-58.1%	50.8%	92.2%	47.8%	-9.6%	32.4%	-16.7%	-37.7%	87.1%	1.6%
Closing debt to asset %	67.4%	62.0%	44.3%	33.7%	42.1%	42.7%	43.8%	69.2%	53.6%	56.7%
Closing term liabilities per kg MS	4.80	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05	3.81

Table 8.7: Returns

	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
PHYSICAL CHARACTERISTICS:										
Number of herds	120	115	100	96	92	114	111	109	113	108
Effective hectares	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0	133.0
Peak cows milked	358	376	388	388	394	367	383	379	372	391
Stocking rate (cows/ha)	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8	2.8
Kg milksolids sold	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685	147,143
Milksolids sold per hectare	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089	1,072
Milksolids sold per cow	339	345	347	378	358	377	394	381	386	376
PAYOUT RECEIVED: \$/kg MS sold	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82	3.21
RETURN on DAIRY ASSETS %										
Dairy operating profit	15,785	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877	98,570
plus Owned support block adjustment	3,298	1,597	2,218	1,217	3,315	685	1,245	695	508	251
less Rent	2,031	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047	2,320
Net return from dairy	17,052	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338	96,501
Total dairy assets (less current) at open	1,067,427	706,047	812,196	935,744	1,165,324	897,012	1,016,895	835,979	721,177	839,002
Operating return on dairy assets %	1.6%	15.4%	20.6%	17.6%	8.4%	20.1%	6.1%	-6.5%	12.7%	11.5%
TOTAL RETURN ON ASSETS %										
Net Return from dairy	17,052	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338	96,501
plus Net non-dairy profit	473	896	2,563	684	445	2,052	2,671	2,203	2,387	2,758
plus Change in capital value	-410,064	26,356	166,673	143,404	-158,797	18,825	-171,303	-147,670	135,959	-84,007
Total return	-392,539	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252
Total assets (less current) at open	1,170,604	868,125	925,132	1,075,289	1,277,172	1,045,964	1,143,129	988,186	916,431	975,932
Total return on assets %	-33.5%	15.7%	36.3%	28.7%	-4.7%	19.2%	-9.4%	-20.2%	25.1%	1.6%
TOTAL RETURN ON EQUITY %										
Total return	-392,539	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684	15,252
plus Net off-farm income	2,615	5,545	5,342	3,716	4,136	3,968	3,909	4,542	2,300	4,168
less Interest	51,736	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629	31,626
Total return for equity	-441,660	93,863	297,021	278,321	-89,187	170,239	-134,838	-233,264	197,355	-12,206
Equity at open	707,995	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261	415,386
Total return on equity %	-62.4%	39.1%	88.5%	47.9%	-11.0%	32.9%	-18.3%	-52.5%	72.0%	-2.9%

Section 9: Operating Profit Forecasts – Owner-operators

Table 9.1: Cash Operating Surplus and Operating Profit 2018-19

Date: 24 April 2019

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	152.0			
Peak cows milked	433			
Kg Milksolids sold	163,975	379	1,078	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	1,079,280	2,493	7,098	6.58
Net livestock sales (sales - purchases)	74,926	173	493	0.46
Other dairy cash income	5,677	13	37	0.03
Net Dairy Cash Income	1,159,882	2,679	7,628	7.07
CASH FARM WORKING EXPENSES:				
Wages	108,206	250	712	0.66
Animal health	38,489	89	253	0.23
Breeding & herd improvement	25,707	59	169	0.16
Farm dairy	9,881	23	65	0.06
Electricity	19,241	44	127	0.12
Net feed made, purchased, cropped	158,340	366	1,041	0.97
Stock grazing	60,387	139	397	0.37
Support block lease	11,357	26	75	0.07
Fertiliser (incl nitrogen)	82,344	190	542	0.50
Irrigation	8,677	20	57	0.05
Regrassing	12,587	29	83	0.08
Weed & pest	6,048	14	40	0.04
Vehicles & fuel	34,625	80	228	0.21
Repairs & maintenance	61,896	143	407	0.38
Freight & general	8,872	20	58	0.05
Administration	20,141	47	132	0.12
Insurance	13,519	31	89	0.08
ACC	3,912	9	26	0.02
Rates	17,515	40	115	0.11
Farm Working Expenses	701,743	1,621	4,615	4.28
Cash Operating Surplus	458,139	1,058	3,013	2.79
ADJUSTMENTS:				
Value of change in dairy livestock	6,178	14	41	0.04
less Labour adjustment	63,612	147	418	0.39
plus Feed inventory adjustment	-747	-2	-5	0.00
less Owned support block adjustment	17,056	39	112	0.10
less Depreciation	69,034	159	454	0.42
Net Adjustments	-144,271	-333	-949	-0.88
OPERATING CASH & NON-CASH:				
Dairy Gross Farm Revenue	1,166,060	2,693	7,669	7.11
Dairy Operating Expenses	852,192	1,968	5,605	5.20
Dairy Operating Profit	313,868	725	2,064	1.91

Source: DairyNZ Economics Group, DairyBase

Owner-operators

Table 9.2: Cash Operating Surplus and Operating Profit 2019-20

Date: 24 April 2019

PHYSICAL CHARACTERISTICS:	<i>per farm</i>	<i>per cow</i>	<i>per hectare</i>	
Effective area (ha)	152.6			
Peak cows milked	433			
Kg Milksolids sold	165,548	382	1,085	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	1,158,400	2,675	7,590	7.00
Net livestock sales (sales - purchases)	74926	173	491	0.45
Other dairy cash income	5,677	13	37	0.03
Net Dairy Cash Income	1,239,003	2,861	8,118	7.48
CASH FARM WORKING EXPENSES:				
Wages	109,398	253	717	0.66
Animal health	38,981	90	255	0.24
Breeding & herd improvement	25,922	60	170	0.16
Farm dairy	10,028	23	66	0.06
Electricity	19,511	45	128	0.12
Net feed made, purchased, cropped	148,627	343	974	0.90
Stock grazing	61,056	141	400	0.37
Support block lease	11,670	27	76	0.07
Fertiliser (incl nitrogen)	81,735	189	536	0.49
Irrigation	8,677	20	57	0.05
Regrassing	12,671	29	83	0.08
Weed & pest	6,106	14	40	0.04
Vehicles & fuel	35,123	81	230	0.21
Repairs & maintenance	62,336	144	408	0.38
Freight & general	8,962	21	59	0.05
Administration	20,332	47	133	0.12
Insurance	13,670	32	90	0.08
ACC	4,076	9	27	0.02
Rates	17,877	41	117	0.11
Farm Working Expenses	696,758	1,609	4,565	4.21
Cash Operating Surplus	542,245	1,252	3,553	3.27
ADJUSTMENTS:				
Value of change in dairy livestock	4,808	11	32	0.03
less Labour adjustment	63,768	147	418	0.39
plus Feed inventory adjustment	303	1	2	0.00
less Owned support block adjustment	17,321	40	113	0.10
less Depreciation	69,034	159	452	0.42
Net Adjustments	-145,011	-335	-950	-0.88
OPERATING CASH & NON-CASH:				
Dairy Gross Farm Revenue	1,243,811	2,873	8,149	7.51
Dairy Operating Expenses	846,577	1,955	5,547	5.11
Dairy Operating Profit	397,234	917	2,603	2.40

Source: DairyNZ Economics Group, DairyBase

Section 10: Operating Profit Forecasts – 50:50 Sharemilkers

Table 10.1: Cash Operating Surplus and Operating Profit 2018-19

Date: 24 April 2019

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	132.2			
Peak cows milked	373			
Kg Milksolids sold	140,519	377	1,063	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	449,636	1,207	3,402	3.20
Net livestock sales (sales - purchases)	44,618	120	338	0.32
Other dairy cash income	2,492	7	19	0.02
Net Dairy Cash Income	496,746	1,333	3,758	3.54
CASH FARM WORKING EXPENSES:				
Wages	58,266	156	441	0.41
Animal health	33,432	90	253	0.24
Breeding & herd improvement	23,685	64	179	0.17
Farm dairy	7,360	20	56	0.05
Electricity	15,462	41	117	0.11
Net feed made, purchased, cropped	72,207	194	546	0.51
Stock grazing	41,640	112	315	0.30
Support block lease	1,792	5	14	0.01
Fertiliser (incl nitrogen)	21,130	57	160	0.15
Irrigation	1,685	5	13	0.01
Regrassing	2,920	8	22	0.02
Weed & pest	1,807	5	14	0.01
Vehicles & fuel	26,268	70	199	0.19
Repairs & maintenance	10,708	29	81	0.08
Freight & general	7,626	20	58	0.05
Administration	11,670	31	88	0.08
Insurance	5,179	14	39	0.04
ACC	2,964	8	22	0.02
Rates	316	1	2	0.00
Farm Working Expenses	346,116	929	2,618	2.46
Cash Operating Surplus	150,630	404	1,140	1.07
ADJUSTMENTS:				
Value of change in dairy livestock	12,024	32	91	0.09
less Labour adjustment	79,750	214	603	0.57
plus Feed inventory adjustment	-190	-1	-1	0.00
less Owned support block adjustment	229	1	2	0.00
less Depreciation	24,329	65	184	0.17
Net Adjustments	-92,475	-248	-700	-0.66
OPERATING CASH & NON-CASH:				
Dairy Gross Farm Revenue	508,770	1,365	3,849	3.62
Dairy Operating Expenses	450,615	1,209	3,409	3.21
Dairy Operating Profit	58,155	156	440	0.41

Source: DairyNZ Economics Group, DairyBase

50:50 Sharemilkers

Table 10.2: Cash Operating Surplus and Operating Profit 2019-20

Date: 24 April 2019

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	132.8			
Peak cows milked	374			
Kg Milksolids sold	142,343	381	1,072	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	483,605	1,294	3,642	3.40
Net livestock sales (sales - purchases)	44,618	119	336	0.31
Other dairy cash income	2,492	7	19	0.02
Net Dairy Cash Income	530,715	1,420	3,997	3.73
CASH FARM WORKING EXPENSES:				
Wages	58,969	158	444	0.41
Animal health	33,766	90	254	0.24
Breeding & herd improvement	23,919	64	180	0.17
Farm dairy	7,485	20	56	0.05
Electricity	15,663	42	118	0.11
Net feed made, purchased, cropped	67,807	181	511	0.48
Stock grazing	42,175	113	318	0.30
Support block lease	1,808	5	14	0.01
Fertiliser (incl nitrogen)	20,976	56	158	0.15
Irrigation	1,715	5	13	0.01
Regrassing	2,944	8	22	0.02
Weed & pest	1,820	5	14	0.01
Vehicles & fuel	26,712	71	201	0.19
Repairs & maintenance	10,779	29	81	0.08
Freight & general	7,702	21	58	0.05
Administration	11,790	32	89	0.08
Insurance	5,233	14	39	0.04
ACC	3,080	8	23	0.02
Rates	326	1	2	0.00
Farm Working Expenses	344,670	922	2,596	2.42
Cash Operating Surplus	186,045	498	1,401	1.31
ADJUSTMENTS:				
Value of change in dairy livestock	9,226	25	69	0.06
less Labour adjustment	79,826	214	601	0.56
plus Feed inventory adjustment	595	2	4	0.00
less Owned support block adjustment	231	1	2	0.00
less Depreciation	24,329	65	183	0.17
Net Adjustments	-94,565	-253	-712	-0.66
OPERATING CASH & NON-CASH:				
Dairy Gross Farm Revenue	539,941	1,444	4,066	3.79
Dairy Operating Expenses	448,461	1,200	3,377	3.15
Dairy Operating Profit	91,480	245	689	0.64

Source: DairyNZ Economics Group, DairyBase

