



*DairyNZ
Economic Survey
2016-17*

DairyNZ 

Introduction

The 2016-17 *DairyNZ Economic Survey* is the twelfth 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 secure and enhance the profitability, sustainability and competitiveness of New Zealand dairy farming. 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 2016-17*.

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 increased from a low level in 2015-16 to a respectable \$5.79 per kilogram milksolids in 2016-17. Milk production per cow and per hectare increased slightly, following a favourable wet summer and autumn for most regions. Despite a small increase in farm working expenses, operating profit per hectare of \$1,937 was the second highest in the last five years. Operating return on dairy assets at 3.9 per cent was near the five-year average. Total return on assets at 9.6 per cent was the highest level since 2007-08. The break-even milk price increased to \$5.17 per kilogram milksolids, due to slightly higher farm working expenses, increased tax payments and lower livestock cash income. Equity increased 15.4 per cent from higher asset values (livestock and land) and improved profitability.

Owner-operators Summary

Physical KPIs	2015-16	2016-17
Peak cows milked	418	414
Effective hectares	148.1	147.8
Milksolids sold per cow	383	387
Milksolids sold per ha	1,082	1,085
Cows per FTE	144	148
TFP Productivity	10.9%	-2.4%
Prices		
Payout received \$ per kg milksolids	3.92	5.79
Underlying on-farm inflation	-0.3%	0.4%
Terms of trade	-27.8%	41.0%
Cashflow		
Cash operating surplus	141,757	415,410
Discretionary cash	-82,602	185,083
Cash available for living and growth	21,097	182,197
Cash surplus	-21,974	66,272
Profitability		
Dairy gross farm revenue per ha	4,804	6,928
Dairy operating expenses per ha	4,813	4,991
Dairy operating profit per ha	-9	1,937
Dairy gross farm revenue per kg milksolids	4.44	6.39
Farm working expenses per kg milksolids	3.64	3.73
Dairy operating expenses per kg milksolids	4.45	4.60
Dairy operating profit per kg milksolids	-0.01	1.79
Business profit before tax per all effective ha	-734	555
Returns		
Operating return on dairy assets	-0.1%	3.9%
Total return on assets	-4.1%	9.6%
Total return on equity	-12.5%	15.3%
Wealth Creation		
Growth in equity	-371,686	540,892
Growth in equity from profit	-225,348	68,973
Growth in equity from capital	-146,338	471,919
Growth in equity %	-9.3%	15.4%
Risk		
Break-even milk price	4.93	5.17
Closing term liabilities per kg milksolids	22.49	25.00
Closing debt to asset %	50.3%	49.4%

50:50 Sharemilkers Summary

Physical KPIs	2015-16	2016-17
Peak cows milked	379	372
Effective hectares	133.3	132.0
Milksolids sold per cow	381	386
Milksolids sold per ha	1,085	1,089
Prices		
Payout received \$ per kg Milksolids	1.88	2.82
Cashflow		
Cash operating surplus	11,433	167,540
Discretionary cash	-31,172	127,442
Cash available for living and growth	5,682	143,718
Cash surplus	-114,197	31,699
Profitability		
Dairy gross farm revenue per ha	2,568	3,679
Dairy operating expenses per ha	2,971	2,983
Dairy operating profit per ha	-403	696
Dairy gross farm revenue per kg milksolids	2.37	3.38
Farm working expenses per kg milksolids	2.08	2.10
Dairy operating expenses per kg milksolids	2.74	2.74
Dairy operating profit per kg milksolids	-0.37	0.64
Business profit before tax per all effective ha	- 75	841
Returns		
Operating return on dairy assets	-6.5%	12.7%
Total return on assets	-20.2%	25.1%
Total return on equity	-52.5%	72.0%
Wealth Creation		
Growth in equity	-167,611	238,849
Growth in equity from profit	-73,991	69,859
Growth in equity from capital	-93,620	168,990
Growth in equity %	-37.7%	87.1%
Risk		
Break-even milk price	2.51	2.35
Closing term liabilities per kg milksolids	4.07	4.05
Closing debt to asset %	69.2%	53.6%

The 2016-17 Season

A warm, wet and unsettled spring resulted in less milk production (-4.0%) during the peak of the 2016-17 season. Summer was mixed across the country, but in general most regions were wetter than normal in January allowing for reasonable pasture production. The exceptions were Northland and Bay of Plenty where dry conditions created challenges. Autumn was particularly wet in the North Island following a couple of severe tropical cyclones, which led to flooding in parts of Northland, Waikato and Bay of Plenty. However, for most areas the wet conditions stimulated pasture growth allowing for a strong finish to the season, reflected in high autumn milk production (+7.0% on the previous autumn). Overall, New Zealand milk production for the 2016-17 season eased 0.6 per cent despite difficult spring conditions and less cows.

Owner-operator Summary

Operating profit returned to a more normal level of \$1,937 per hectare in 2016-17 after the loss recorded in the previous season. The milk payout received of \$5.79 per kilogram milksolids was up \$1.87 (+47.8%) on the low prices in 2015-16. Milksolids per cow increased in 2016-17 but with fewer cows milked, total milksolids production per herd was similar to the previous season. Livestock income decreased in 2016-17 due to less culled cows. However, gross farm revenue of \$6.39 per kilogram milksolids was below the decade average of \$6.75.

Farm working expenses (FWE) of \$3.73 while up 9 cents on the previous season, remained at low levels as farmers continued to constrain expenditure following the recent downturn in milk prices. Increases in repairs and maintenance, regrassing, farm dairy, animal health and breeding, fertiliser, and vehicles and fuel were partially offset by decreases in wages, freight and general, stock grazing, ACC and administration.

Although dairy operating expenses per kilogram milksolids increased 15 cents to \$4.60, it was the second lowest level of operating expenses since 2009-10.

The break-even milk price increased 24 cents in 2016-17 to \$5.17 per kilogram milksolids reflecting increased farm working expenses (+9 cents), higher tax payments (+5 cents) and reduced livestock and other cash income (-7 cents).

The cash available for living and growth recovered to a respectable \$182,197 per farm. Following capital expenditure, changes in debt and drawings, a cash surplus of \$66,272 was recorded.

After accounting for the cost of borrowing and other farming activities, business profit before tax was \$555 per total hectare (effective dairy + effective support block + effective non-dairy).

The operating return on dairy assets (3.9%) in 2016-17 was slightly above the five year average. However, the total return on assets of 9.6 per cent increased to the highest level in a decade with the profit from dairy operations and an increase in asset values, particularly livestock. Total return on equity was a strong 15.3 per cent.

Equity levels recovered 15.4 per cent (+\$540,892) mostly due to higher asset values, particularly livestock, and improved profitability.

Total liabilities as a percentage of total assets (loan to value ratio) eased to 49.4 per cent at the end of the season. However, closing term liabilities per kilogram milksolids increased to \$25.00.

50:50 Sharemilkers Summary

50:50 Sharemilkers operating profit per hectare increased to \$696 per hectare in 2016-17. This was due to higher milk payouts received (nearly \$1 more than last season), while milksolids production per hectare was similar to last season. Dairy operating expenses per kilogram milksolids at \$2.74 was unchanged from 2015-16.

The 2016-17 Sharemilkers break-even milk price decreased 16 cents to \$2.35 per kilogram milksolids, which was the lowest level since 2006-07. Higher livestock revenue was the major contributor from more cows sold. The average cash operating surplus increased to \$167,540 per farm, contributing to the overall cash surplus of \$31,699. This follows the large cash deficit of \$114,197 in 2015-16.

Sharemilkers operating return on dairy assets increased to 12.7 per cent, similar to the decade average, while total return on assets increased to a high level of 25.1 per cent. Return on equity at 72.0 per cent was more than double the decade average.

Increased cow values and slightly lower liabilities lifted equity \$238,849 (+87.1%) during 2016-17. Sharemilkers equity at \$513,110 in 2017 was still below the average levels of equity between 2011 and 2015.

The level of debt to assets decreased significantly to 53.6 per cent at close, while term liabilities per kilogram milksolids of \$4.05 at close remained similar to the previous season.

Section 1: Background

The 2016-17 *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 2016-17* 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 production 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. 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 2017-18 and 2018-19 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 2016-17* were selected for this publication. The initial pool of herds included 440 Owner-operator and 183 50:50 Sharemilker (herd owning Sharemilker) herds, validated and committed to the DairyBase® database for the 2016-17 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 2016-17* publication.

The final number of herds included in this survey comprised 316 Owner-operator and 113 50:50 Sharemilker herds. Of the Owner-operator herds, 233 (74%) were North Island herds and 83 (26%) from the South Island. Of the Sharemilker herds, 81 (72%) were from the North Island and 32 (28%) 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 2016-17* (Table 2.1). 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: 2016-17 Regional Distribution of Herds

Region	Number of Owner-operator herds	% Owner-operator herds	Number of Sharemilker herds	% Sharemilker herds
1 Northland	788	9.3%	231	7.2%
2 Waikato	2,683	31.5%	1,193	37.2%
3 Bay of Plenty	679	8.0%	221	6.9%
4 Taranaki	1,124	13.2%	533	16.6%
5 Lower North Island	834	9.8%	223	7.0%
6 West Coast-Tasman	431	5.1%	99	3.1%
7 Marlborough-Canterbury	972	11.4%	288	9.0%
8 Otago-Southland	997	11.7%	415	13.0%
Total New Zealand	8,508	100.0%	3,203	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

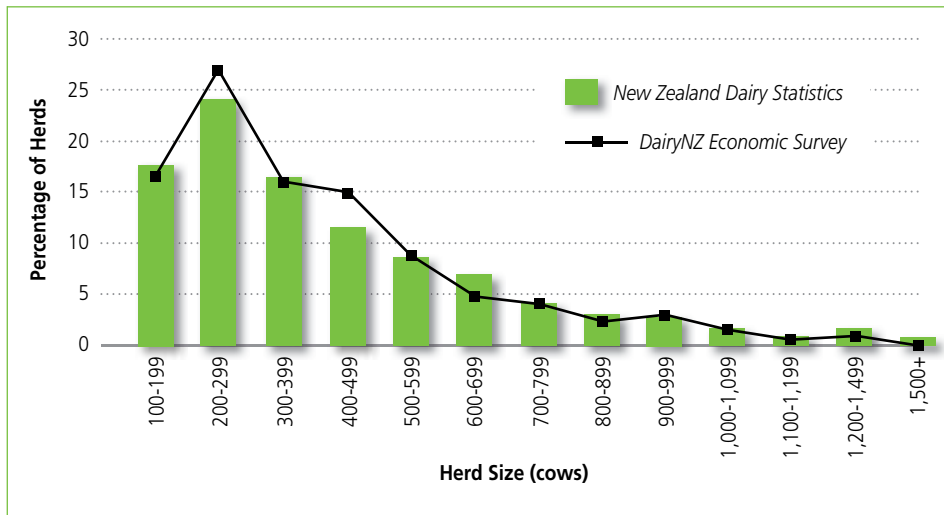
The *New Zealand Dairy Statistics 2016-17* recorded a national average herd size of 414 cows, the same as the average *DairyNZ Economic Survey* Owner-operator herd.

A comparison of the Owner-operator herd distribution between the *DairyNZ Economic Survey* and the *New Zealand Dairy Statistics 2016-17* shows the DairyNZ survey:

- excludes herds under 100 cows;
- is over represented by herds between 200 and 300 cows and between 400 and 500 cows; and
- is under represented by herds between 600 and 700 cows.

Refer to Figure 2.1.

Figure 2.1: 2016-17 New Zealand Owner-operators Herd Size Distributions



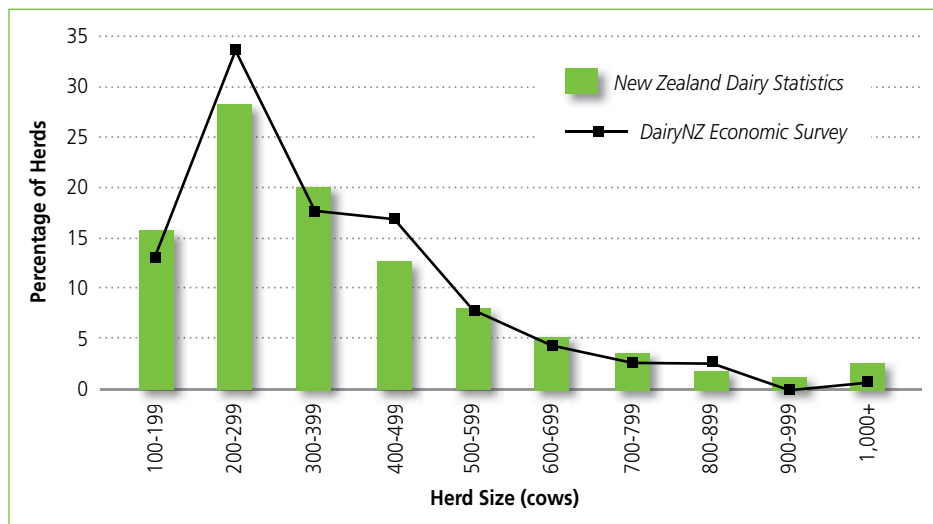
The *DairyNZ Economic Survey* national average herd size for 50:50 Sharemilkers of 372 cows is slightly lower than the 378 cows recorded in the *New Zealand Dairy Statistics 2016-17*.

Compared with the *New Zealand Dairy Statistics 2016-17* the *DairyNZ Economic Survey*:

- excludes herds under 100 cows;
- is under represented by herds between 100 and 200 cows;
- is over represented by herds between 200 and 300 cows and between 400 and 500 cows;
- is under represented by herds over 900 cows.

Refer to Figure 2.2.

Figure 2.2: 2016-17 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

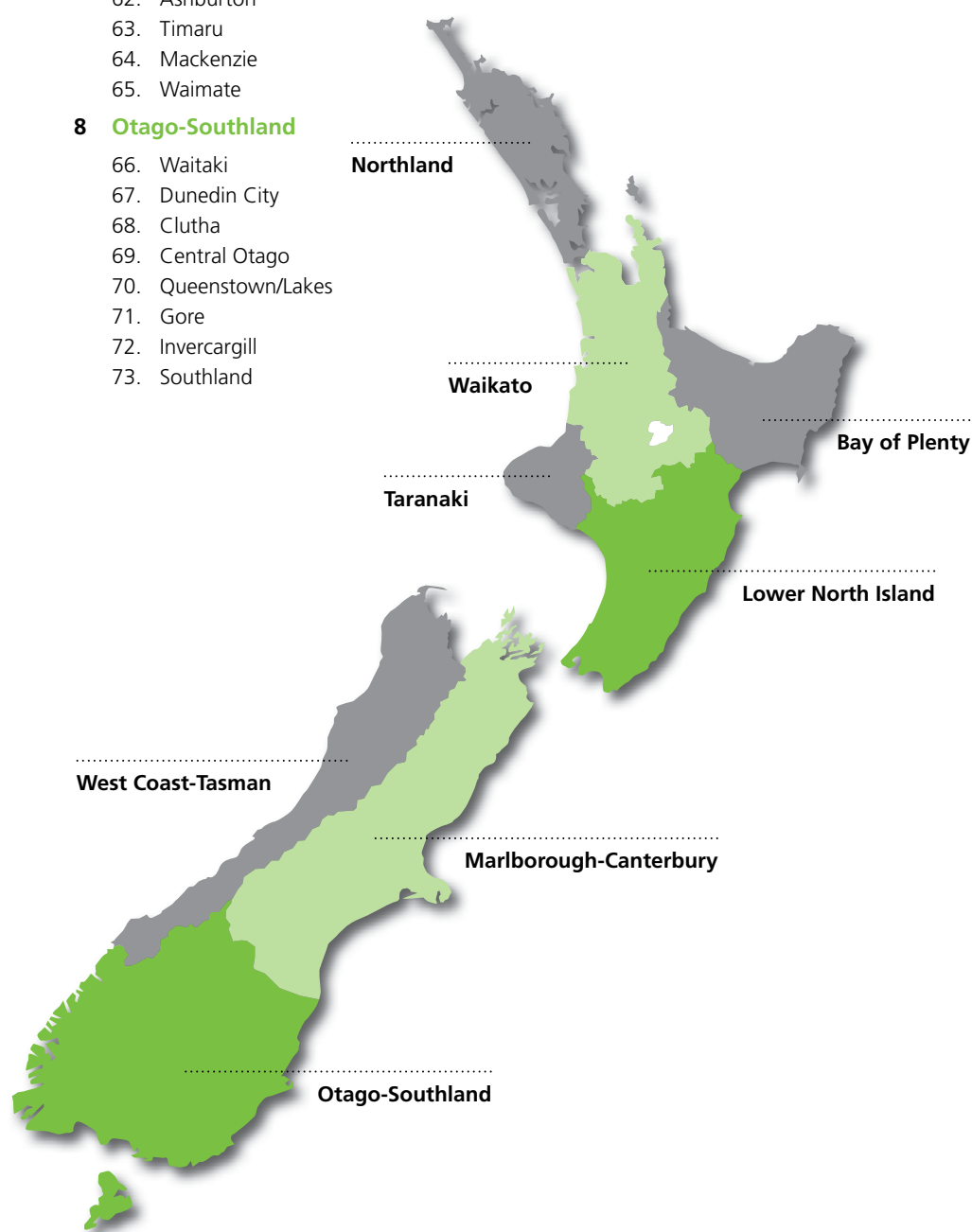
51. Tasman
52. Buller
53. Grey
54. Westland

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 – 20-25 per cent of Owner-operator herds

- Approx. 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

- Approx. 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

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

System 5: Imported feed used all year – 0-10 per cent of Owner-operator herds

- Approx. 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 30 cents per kilogram dry matter in 2016-17.
- **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 2016 and 1 June 2017 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: 2016-17 Seasonal Conditions

New Zealand

A particularly warm autumn ended the 2015-16 season and these warmer than normal temperatures continued into the 2016-17 season. It was the warmest winter on record since 1909. Spring although wet for most parts of the country, particularly Waikato and Bay of Plenty, was also warmer than average. Westerly and south-westerly wind flows in summer brought cooler than normal air temperatures and less rainfall, leading to drier than normal soils for many areas. Moist and warm tropical air masses passed over the country throughout autumn, alleviating soil moisture deficits that arose from the dry summer. Conditions for the season were mixed and challenging for many regions, with total milksolids production and total cow numbers both declining for the second consecutive season (-0.6% and -2.7%, respectively). Previous seasons low milk prices meant a heavy cull resulting in fewer and more efficient cows in the national herd, reflected in the increase in per cow production of 2.4 per cent in 2016-17.

Warm temperatures throughout winter were the result of northerly and westerly wind flows from the Tasman and tropics, combined with warm sea surface temperatures around New Zealand. Rainfall was variable for the season with heavy rainfall events occurring in Northland, Bay of Plenty and West Coast-Tasman while areas of Canterbury experienced relatively dry conditions. National milksolids production for winter 2016 decreased by 2.4 per cent compared to the previous winter.

Spring was unsettled for many parts of the country. Heavy rain events were frequent for Northland and Waikato with the Lower North Island and Otago-Southland also experiencing a wet spring. Western parts of the country, including Taranaki and West Coast-Tasman, observed more typical seasonal conditions for spring, but this was not translated into increased milksolids production for these regions. Total milksolids production for spring was down 4.0 per cent, the lowest it has been since 2012-13.

Summer for the 2016-17 season was characterised by cool temperatures, the result of more south westerly wind flows than normal. Most of the country experienced lower than normal levels of rain during December, this continued for Northland and Bay of Plenty during January. For the remaining parts of the country, January was wetter than normal and rainfall eased for the South Island throughout February. However, total milksolids production for the summer was down 0.9 per cent on last season.

Two ex-tropical cyclones delivered significant amounts of rain during autumn, resulting in the wettest autumn on record for the North Island. Autumn was particularly wet for Waikato, Bay of Plenty and northern and eastern parts of the South Island. Temperatures were warmer than normal for the North Island and parts of the South Island. Although autumn was challenging for regions affected by extreme rainfall events, milksolids production for autumn showed an increase on last season of 7.0 per cent as March production was strong across all regions.

Total milk production for 2016-17 eased 0.6 per cent through a difficult early spring, followed by a favourable wet summer and autumn.

Northland

Northland had a variable season, experiencing periods of heavy rain and flooding amidst the warm winter temperatures. Rain eased throughout spring and summer, with the region receiving less than 50 per cent of normal summer rainfall. A drought was declared in February, described as a medium scale adverse event, with farmers facing soil moisture deficits and feed shortages towards the end of summer. Autumn rainfall returned moisture to soils, but the remnants of two cyclones (Cyclone Debbie and Cyclone Cook) hammered Northland with heavy rain and winds in April. The dry summer conditions and cyclones took their toll on total milksolids production, with a decline of 2.6 per cent on last season.

Waikato

Waikato farmers started the season well with mild winter temperatures and near normal rainfall, but as the season progressed, periods of heavy rain in spring created challenges for pasture management. Northern Waikato experienced less rain than other areas leading to soil moisture levels below the spring norm. Regional spring milksolids production was down 7.5 per cent on last season, however cool temperatures throughout the summer and adequate autumn rainfall allowed a strong finish to the 2016-17 season. Despite some flooding events on the Hauraki Plains, autumn milksolids production was up 9.0 per cent on last season. However, due to a difficult spring and reasonably wet summer, total milksolids production for the Waikato declined 2.3 per cent in 2016-17.

Bay of Plenty

The 2016-17 season was difficult for many farmers in the Bay of Plenty despite a reasonable start to winter. Heavy rain events occurred towards the end of winter and continued into spring, leaving soils wet and prone to pugging damage. December and January were cool and dry, but in February warm and wet weather systems from the tropics brought more rain. As the season progressed into autumn, periods of heavy rain and strong winds from a sub-tropical low swept across the region. Further extreme weather events occurred in April, the remnants of Cyclone Debbie left the township of Edgecumbe and surrounding areas with severe flooding. This was closely followed by ex-tropical Cyclone Cook which brought strong winds and more heavy rain to an already saturated region. Areas of Rotorua and Te Puke experienced their wettest autumn on record. Understandably, milksolids production was down this season by 3.6 percent, the lowest total milksolids produced for the Bay of Plenty since 2011-12.

Taranaki

Taranaki's winter was reasonably typical, although wet in August. Tropical air masses passing over the country in spring brought warm temperatures and frequent rainfall. Strong westerly and south-westerly winds accompanied by cool temperatures were experienced in summer, occasional rainfall was enough to prevent soil moisture deficits in many areas. Like much of the North Island, autumn was wet, however Taranaki experienced little of the heavy rain events from the passing tropical cyclones. Milksolids production for the season increased 0.9 per cent on last season, however, this was still below the peak experienced in 2014-15.

Lower North Island

Winter for the Lower North Island was challenging. Variable rainfall for the region resulted in dry conditions for Wairarapa and heavy rainfall events for south-western coastal areas as storms passed over from the Tasman. Spring was warm and wet for much of the Lower North Island and was followed by a cool summer. January and February were particularly wet and this continued into autumn. Extreme rainfall events and warm temperatures from the tropics prevailed during autumn, with many areas of the Lower North Island left feeling the impacts of the passing cyclones in April. Total milksolids production for the Lower North Island declined 3.5 per cent on last season as cow numbers had decreased across the region. This was on top of the considerable decrease in production last season in response to a persistently dry conditions.

West Coast-Tasman

The West Coast of the South Island had a challenging 2016-17 season, beginning with a warm and wet winter. July was a particularly wet month for the region, with Reefton recording its wettest July on record. Despite warm spring temperatures and near normal rainfall, spring production was down 4.3 per cent on spring last season. Cool summer temperatures were experienced in the West Coast-Tasman region accompanied by variable rainfall. Autumn for the Tasman area was wet (the wettest autumn on record for Takaka), but dry for much of the West Coast of the South Island. Overall total milksolids production for the season declined 3.4 per cent.

Marlborough-Canterbury

A dry winter in 2016 with near normal temperatures in Marlborough-Canterbury allowed for a respectable start to the dairy season, with milksolids up 3.3 per cent on last season's winter. For Northern Canterbury, spring continued to be dry with soil moisture levels below normal for the time of year, while frequent rainfall in South Canterbury left soils wetter than usual. Throughout summer, conditions became progressively drier, with extensive bush fires across the Port Hills near Christchurch in February. Autumn rainfall improved soil moisture levels finishing the season off well. Despite a dry summer, the region had a modest increase in total milksolids production of 1.1 per cent on last season.

Otago-Southland

Despite slightly warmer than normal average winter temperatures, the Otago-Southland region still experienced occasional snowfall events. As the season progressed, the warm temperatures remained in spring and was combined with more rainfall than usual, particularly for Eastern Otago. Extreme weather events including thunderstorms and periods of torrential rain occurred in summer, with January being particularly cool and wet. Autumn was wetter than normal for Eastern Otago while areas of Southland were relatively dry, and regional average temperatures were near normal. Even with extreme weather events that affected the region, Otago-Southland had a particularly good season and total milksolids production increased 4.3 per cent on last season.

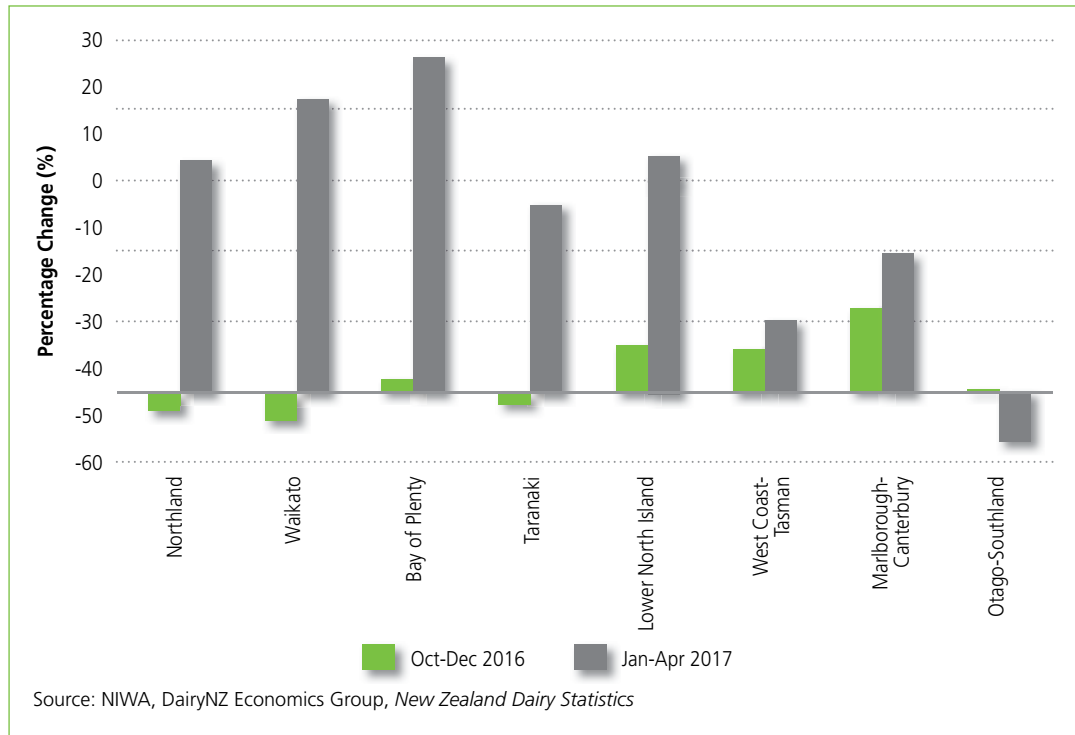
Rainfall Summary

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.

Across the country, near average rainfall was experienced during spring with four of the five North Island regions within 8 per cent of the ten-year-weighted regional averages. On average, New Zealand had 1 per cent more rainfall than the ten-year-weighted average over the three-month period. The Lower North Island (+14%), West Coast-Tasman (+12%) and Marlborough-Canterbury (+24%) showed the largest discrepancies in rainfall compared to the ten-year-weighted regional averages for spring, all receiving more rain than usual. The South Island experienced 11 per cent more rainfall than normal for spring, while the average rainfall for the North Island was 3 per cent below the ten-year-weighted average.

Extreme weather, including two ex-tropical cyclones, throughout summer and the beginning of autumn brought heavy rainfall events to many regions. All regions, with the exception of Otago-Southland, experienced more rainfall compared to the ten-year-weighted averages. Northland (+66%), Waikato (+84%) and Bay of Plenty (+95%) experienced summer/autumn rainfall much greater than the ten-year-weighted regional averages as a result of the extreme weather events. South Island summer/autumn rainfall was slightly more than average (+11%) while the average rainfall for the North Island was significantly higher than the ten-year-weighted average (+76%). Overall, New Zealand experienced a wet summer and early autumn, with 59 per cent more rainfall than average from January to April.

Figure 3.1: 2016-17 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 hectare was calculated by multiplying feed requirements per cow by the average New Zealand stocking rate.

Total feed eaten increased 1.2 tonnes dry matter per hectare from 2007-08, with 13.4 tonnes eaten per hectare in 2016-17. 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 2016-17, for every tonne of feed eaten, a cow produced 80.1 kilograms milksolids, compared to 72.7 kilograms milksolids 10 years ago.

Pasture, 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 and crop eaten have increased over the last decade, while 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)
2007-08	12.2	9.8	0.6	1.8	72.7
2008-09	12.3	10.2	0.6	1.5	74.6
2009-10	12.6	10.7	0.6	1.3	73.3
2010-11	12.4	10.2	0.6	1.6	74.4
2011-12	13.3	10.9	0.7	1.7	77.2
2012-13	13.0	10.3	0.8	1.9	76.0
2013-14	13.6	10.4	1.1	2.1	78.4
2014-15	13.6	10.6	1.0	2.0	79.6
2015-16	13.4	10.7	1.0	1.6	79.6
2016-17	13.4	11.0	1.0	1.4	80.1

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

As the dairy industry has continued to grow over the last decade, additional land area has been converted to dairy and dairy support. 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 pasture (including hay and pasture silage), palm kernel extract (PKE), maize silage and in recent years fodder beet (Figure 3.2), as well as improvements in FCE. In 2016-17, pasture accounted for approximately 82 per cent of total feed eaten, with PKE (6%), fodder beet (4%) and maize silage (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

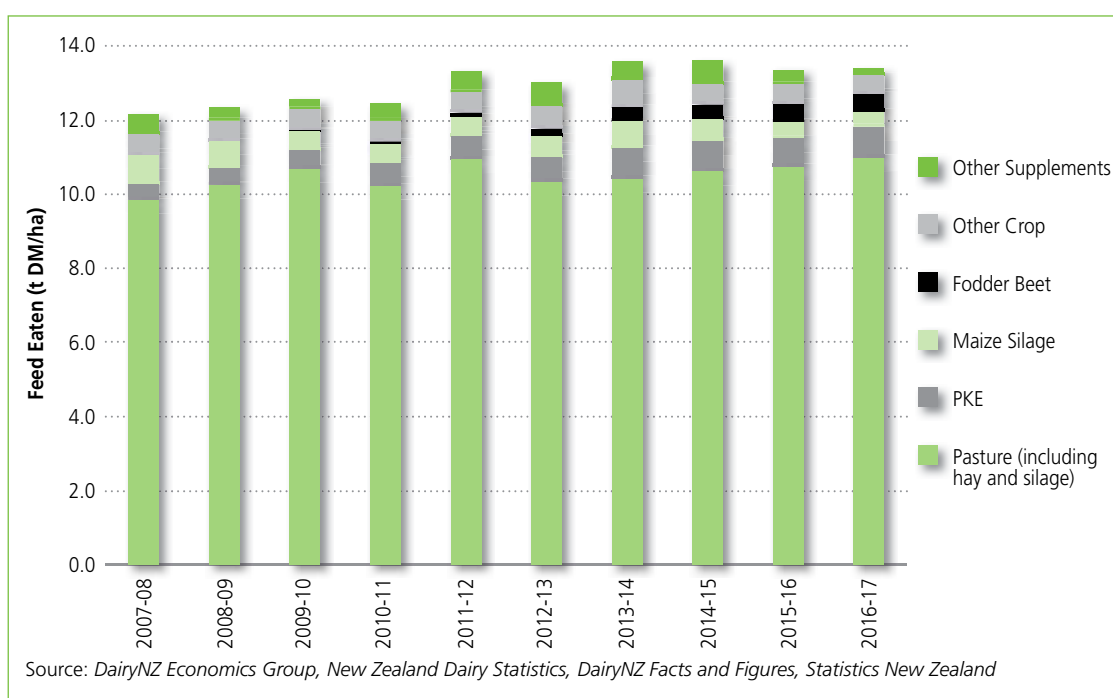
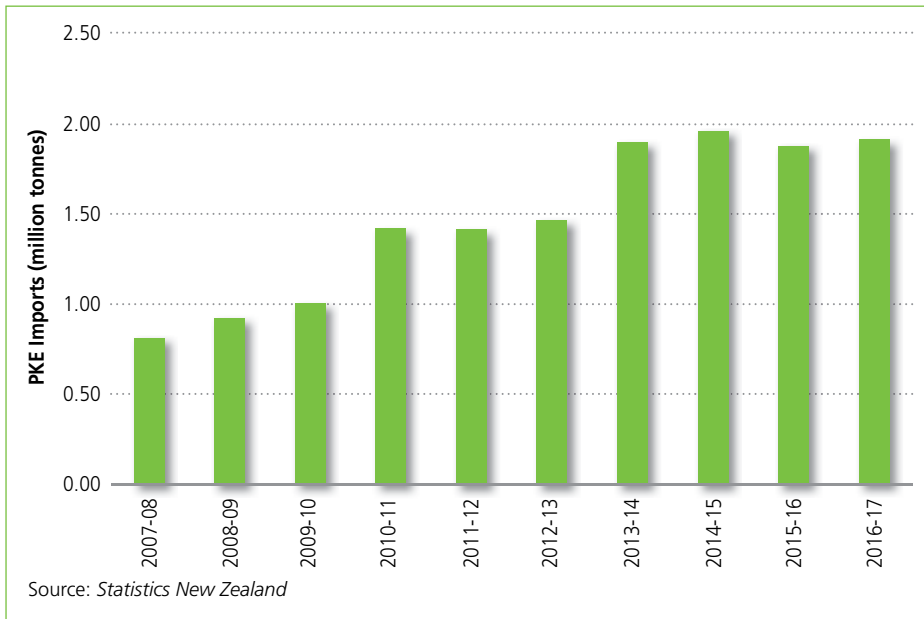


Figure 3.3 shows the volumes of PKE imports into New Zealand for years ending 30 June since 2007-08. Volumes increased to 1.89 million tonnes in 2013-14 and have remained at this elevated level since. The volumes of PKE imports in 2016-17 (1.91 million tonnes) were more than double those in 2007-08. The majority of the PKE was imported from Indonesia and Malaysia in 2016-17.

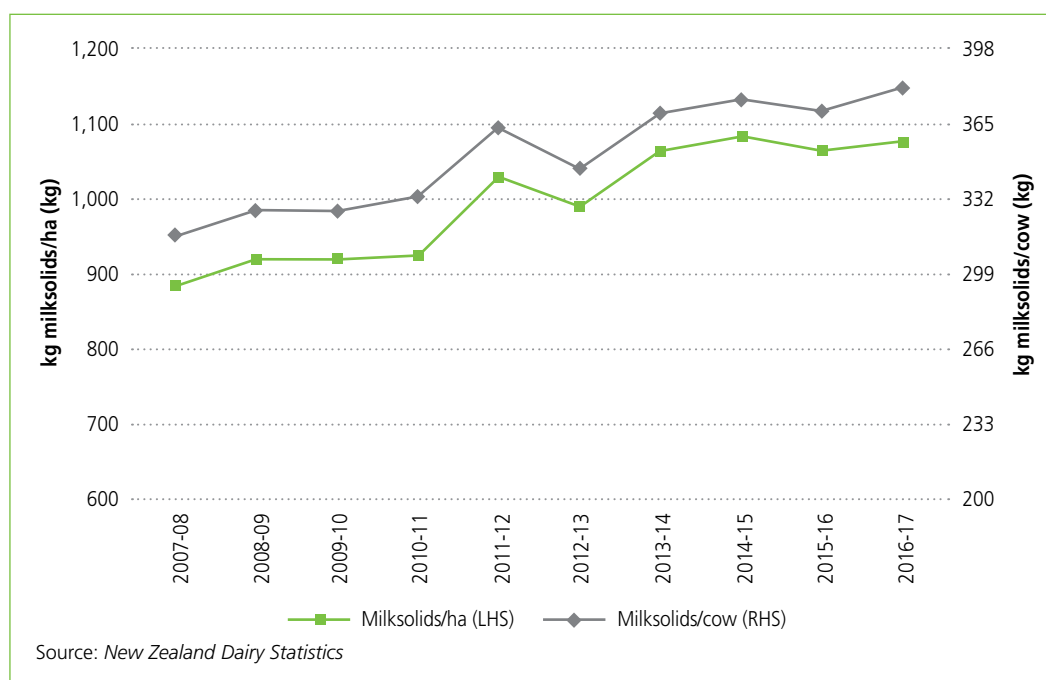
Figure 3.3: PKE Imports



3.4: Milk Production

Milk production on the average New Zealand dairy farm increased 0.9 per cent (+1,337 kg MS) in 2016-17 to 157,560 kilograms milksolids, as stated in the *New Zealand Dairy Statistics 2016-17*. This is the second highest milksolids production per herd, closely behind the peak recorded in 2014-15. Peak cows milked decreased by 5 cows (-1.2%) to 414 cows per herd, as previous seasons low milk prices stimulated farmers to re-evaluate their herd and reduced costs. Milksolids production per cow increased by 9 kilograms (+2.4%) to 381 kilograms, the highest per cow milksolids production on record, illustrating that farmers retained cows that are more efficient producers. Milksolids per effective hectare (1,071 kg MS) increased 0.8 per cent, a small increase that encompasses the reduction in cows per herd and the increase in milksolids production per cow. Figure 3.4 shows that milk production per cow and per hectare both increased on last season, with a new peak in per cow milksolids production being reached despite the challenging seasonal conditions in most regions, particularly during spring and summer.

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



The average annual increase in milksolids production per herd since the 2007-08 season has been 5,549 kilograms or a least squares annual growth rate of 4.1 per cent². Contributing to this has been:

- **more hectares** – annual growth in milking area of 2.3 hectares (+1.6% per year);
- **more cows** – annual growth of 7.5 cows per herd (+1.9% per year);
- **higher stocking rate** – annual growth of 0.01 cows per hectare (+0.3% per year);
- **more milksolids per cow** – annual growth of 8.5 kilograms (+2.5% per year); and
- **more milksolids per hectare** – annual growth of 24.0 kilograms (+2.8% per year).

In summary, the annual growth in cows per farm (+1.9%) has been slightly higher than the growth in milking hectares per farm (+1.6%) and therefore the stocking rate has not changed much (+0.3%) over the last 10 years. This small increase in stocking rate, coupled with the growth in milksolids per cow (+2.5%) has resulted in an annual increase in milksolids per milking hectare of 2.8 per cent.

3.5: Stocking Rate

The average number of peak cows milked per effective milking hectare at 2.81 in 2016-17, was similar to 2007-08 at 2.79, as reported in the *New Zealand Dairy Statistics 2016-17*. Over this 10-year period, farms have been utilising more feed, however, stocking rate has declined since it reached its peak of 2.87 in 2013-14. In 2016-17, 66 per cent of farms had a stocking rate between 2.30 and 3.30 cows per 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.

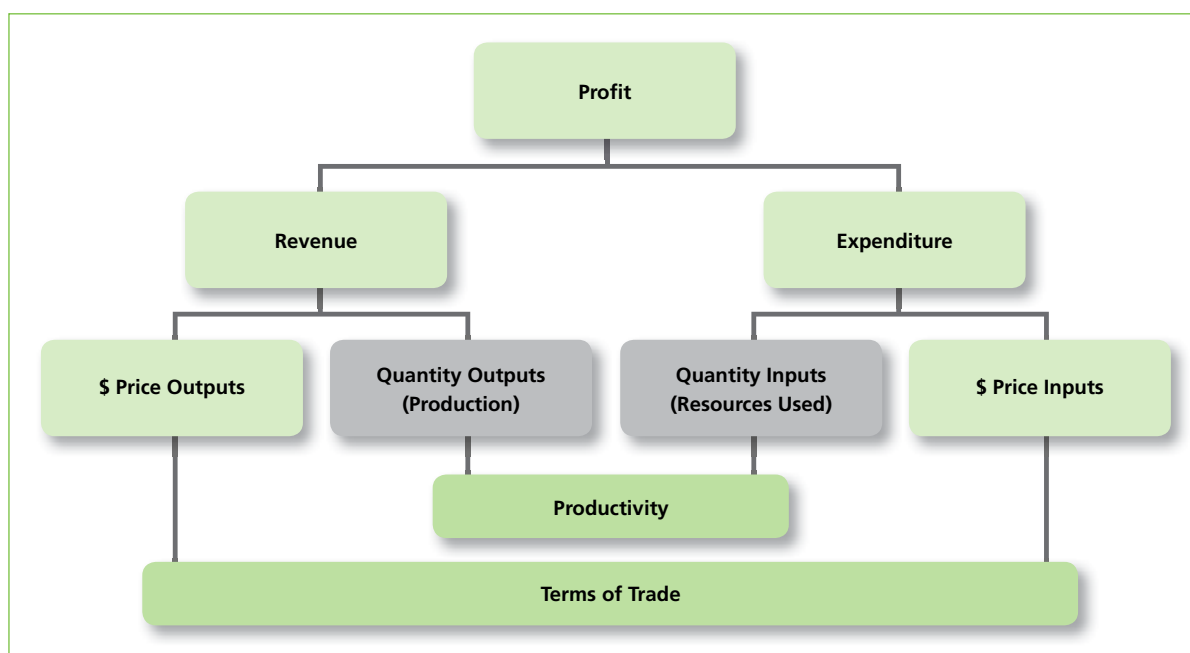
$$\text{Productivity} = \frac{\text{Physical Outputs (Production)}}{\text{Physical Inputs (Resources Used)}}$$

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.

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

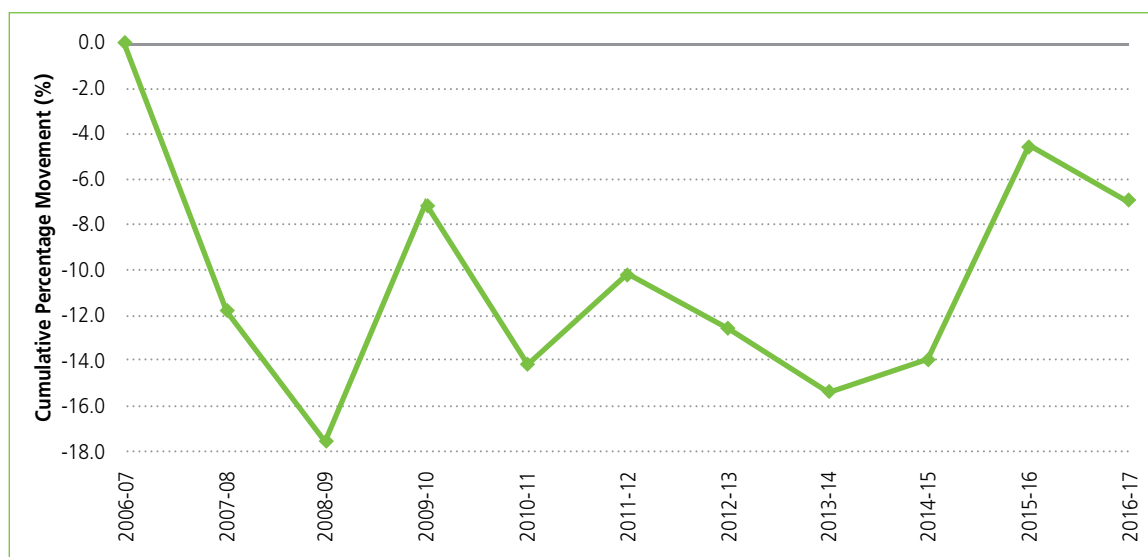
Figure 3.5: Components of Profit



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 2.4 per cent in 2016-17 as outputs were largely unchanged from the previous season and inputs increased in volume as farmers responded to milk price recovery. Most inputs recorded a small increase in volume with the exception of freight and supplementary feed. Capital use (cows, hectares and dairy company shares) was similar to 2015-16 while labour decreased slightly (-3.4%).

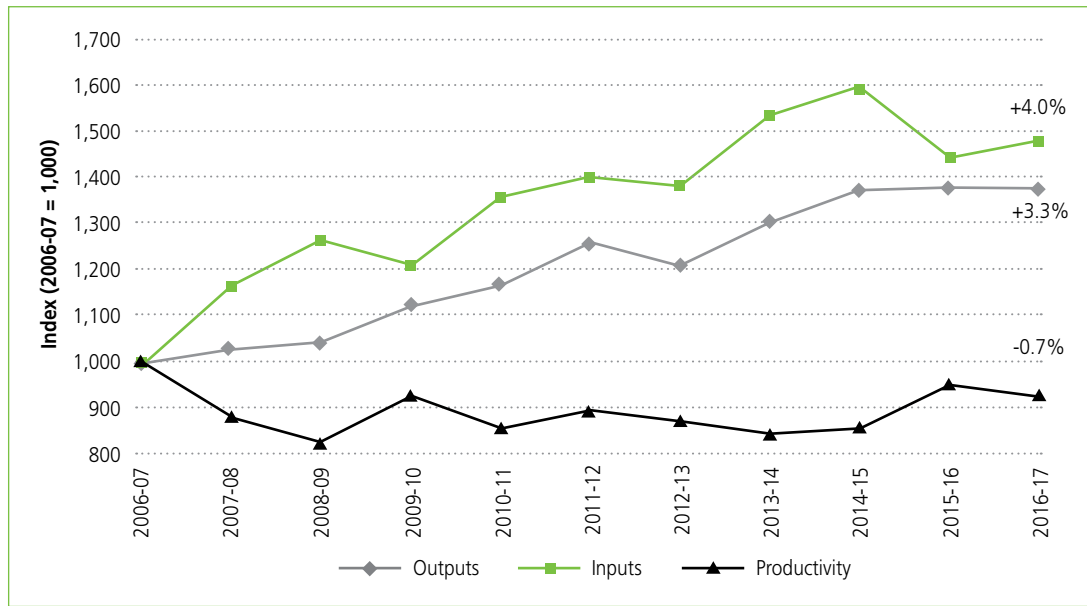
Overall, there has been a 6.9 per cent decline in TFP over the last 10 years, although the large decline in 2007-08 contributes significantly to the overall result. Productivity increased in four of the past 10 years, while productivity declined in six of the years.

Figure 3.6: Cumulative Total Factor Productivity Movements (%)



In the decade ending June 2017, 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, grazing and fertiliser). Over the last decade inputs have increased at a faster rate (+4.0% per year) than outputs (+3.3% per year), see Figure 3.7.

Figure 3.7: Dairy Farm Output, Input and Productivity Movements



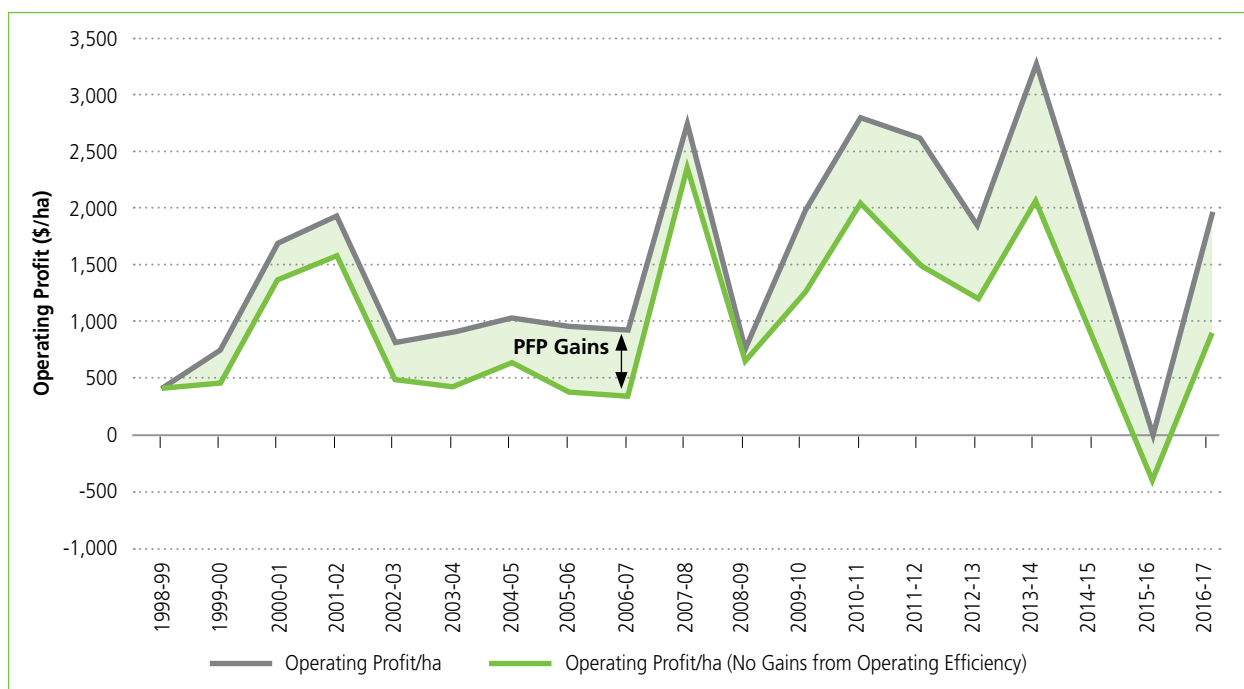
3.7: Profit from Productivity

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.

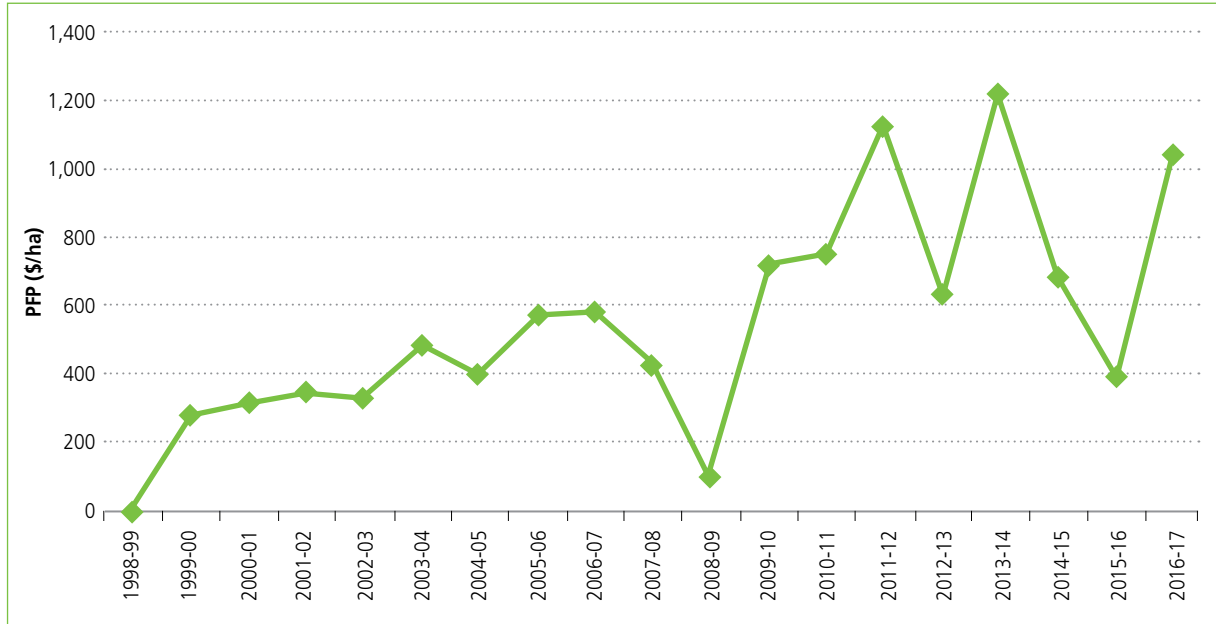
Figure 3.8: Profit from Productivity



PFP increased sharply from \$391 per hectare in 2015-16 to \$1,044 in 2016-17 (1998-99 base year PFP = \$0/ha). This increase was mainly due to the productivity gains being valued at a higher margin as milk prices recovered. If it were not for production gains and operating expenses control in relation to inflation since 1998-99, operating profit would have been \$892 per hectare, less than what did occur.

Figure 3.9 shows the gains made in PFP were relatively steady from 1990-91 to 2006-07. However, sharper fluctuations in both milk prices and seasonal rainfall have caused PFP to be more volatile since. Although volatile, PFP levels have lifted to between \$1,000 and \$1,200 over the last six years, compared with the period prior to 2010-11. Overall productivity gains have increased at an average rate of \$58 per hectare since 1998-99.

Figure 3.9: Profit from Productivity Gains since 1998-99

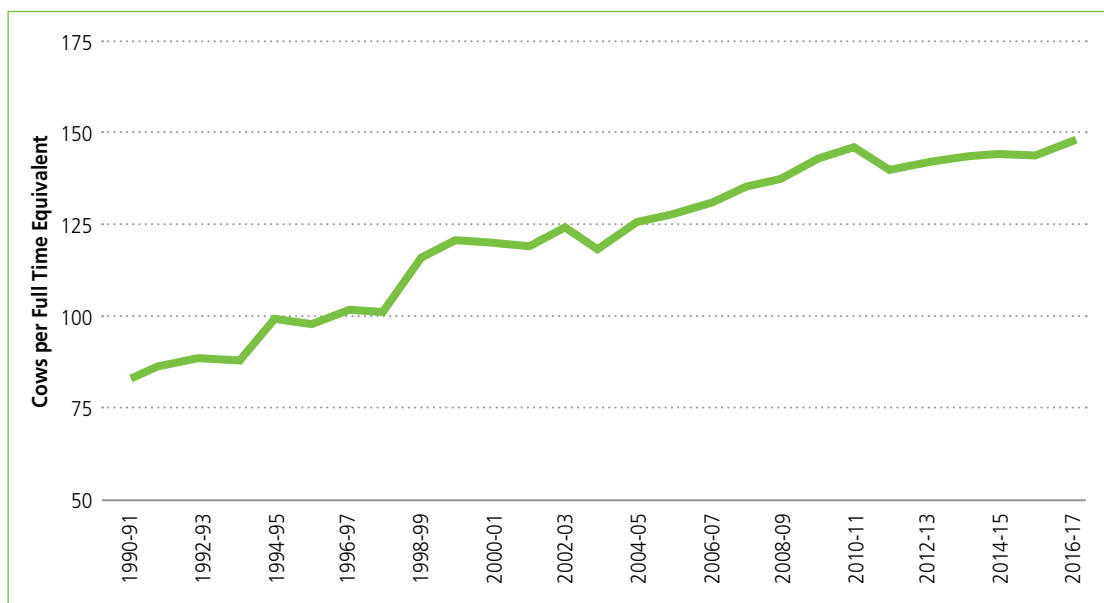


3.8: Labour Efficiency

Since 1990 the number of peak cows milked per full time equivalent (FTE) labour unit has increased from 83 to 148, a rate of 2.6 additional cows per year. The increased use of technology, large South Island dairy herds and labour saving techniques have driven this trend over the last two and a half decades. In 2016-17 the number of cows per FTE increased from 144 to 148, the highest it has been recorded, refer to Figure 3.10.

For the 2016-17 season, the South Island on average milked 25 more cows per FTE than the North Island (161 and 136 cows respectively). Nationally, half the farms milk between 120 and 165 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 \$5.79 per kilogram milksolids sold during 2016-17 (net of the industry good levy, but includes advances, final payments, and dividends). This was an additional \$1.87 compared with 2015-16, but still below the decade average of \$6.46, per kilogram milksolids.

Fonterra's forecast farmgate milk price in June 2016 was relatively low (\$4.25/kg MS) as farmers started a new season. Milk companies have their own milk payment systems, in 2016-17 Tatura farmers received more than Fonterra suppliers while Westland suppliers received less than other dairy companies. Break-even milk price was estimated by DairyNZ at \$5.05 at the time and therefore this low price outlook was discouraging. Fonterra's final Farmgate milk price in 2016-17 was \$6.12 but due to lower retrospective payments from the previous season farmers received less than this.

International dairy prices for 2016-17 (Figure 4.1) turned a corner in early August 2016 for whole milk powder (WMP) and butter. WMP prices increased 18.9 per cent in one auction (3 August 2016) to \$2,695 per tonne (USD) and butter lifted 14.1 per cent in a move towards higher milk prices.

Global milk supply started to moderate in spring 2016 and this coincided with an increase in demand from China for WMP.

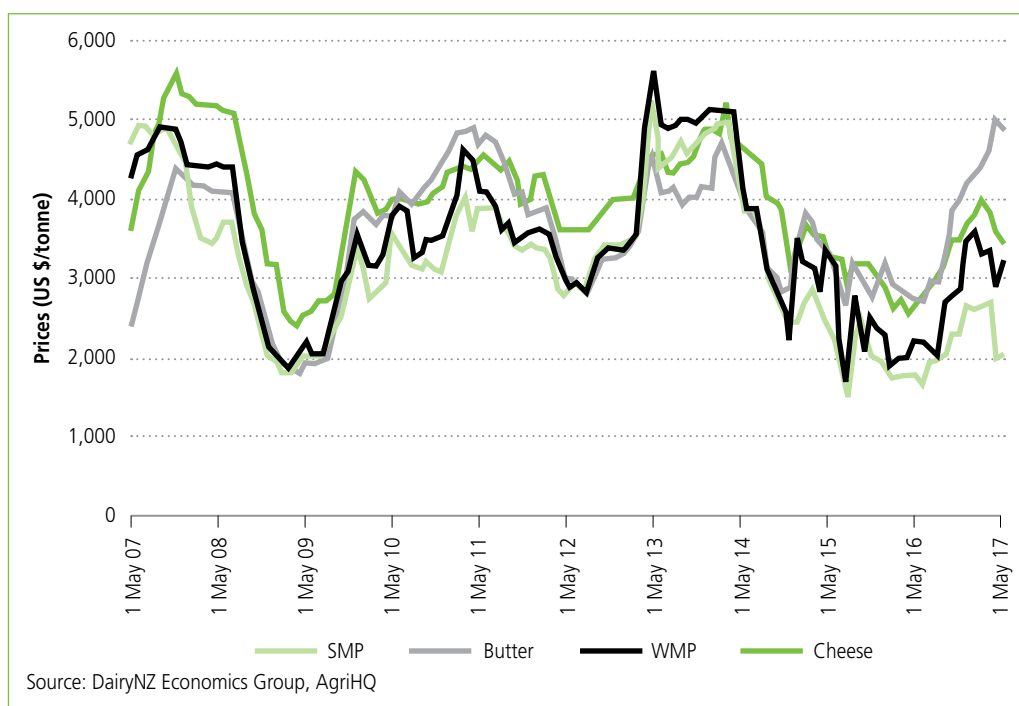
From June 2016 to May 2017 WMP prices rose from \$2,200 to \$3,200 per tonne, averaging \$2,879 for the season. This was 27 per cent higher than average WMP prices in 2015-16. Skim milk powder (SMP) and cheese also increased by \$375 and \$650 per tonne respectively during the season and averaged \$2,234 and \$3,435 per tonne. Prices for SMP and cheese were higher on average than in 2015-16 (+15% and +16% respectively). Butter was the other significant player in lifting the fortunes of farmers as prices soared from \$2,700 to \$4,890 per tonne over 12 months (average \$3,927) a 34 per cent increase from the average butter price in 2015-16.

The overall increase in commodity prices were not without their ups and downs during the season. WMP peaked in January (\$3,600) before decreasing to \$3,200 in May and butter rose to \$5,000 per tonne in April 2017 before easing back slightly to \$4,890 at end of the season.

The NZD:USD exchange rate in the 2016-17 season increased compared to 2015-16, finishing at 69 cents with an average of 71 cents throughout the season, slightly above 2015-16 (67 cents). The exchange rate in the last two seasons has been favourable for exporters and compares to 79 cents in 2014-15.

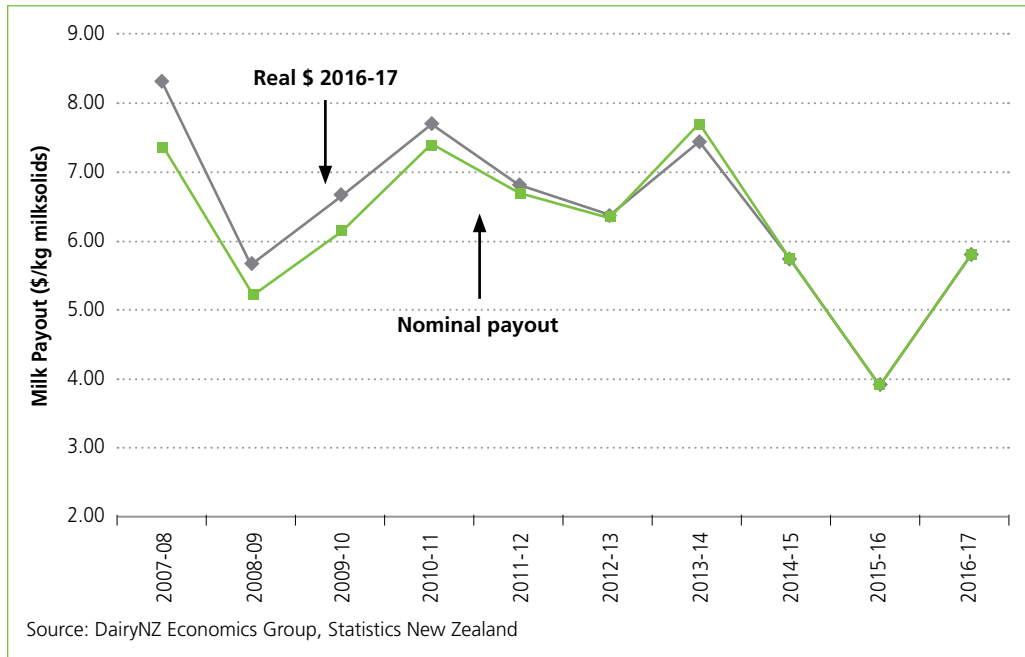
Whole milk powder comprised 39.4 per cent of New Zealand's dairy export earnings in 2016-17, an increase from 37.8 per cent in 2015-16. Skim milk powder decreased from 10.0 to 9.3 per cent of export earnings. Cheese export earnings decreased slightly to 13.7 per cent of total dairy export earnings (from 14.1%), while butter increased for the second season in a row from 10.6 to 11.6 per cent. Casein revenue declined to 10.9 per cent (-2.1 percentage points). Anhydrous milk fat accounted for 9.2 per cent of dairy export earnings in 2016-17 (+0.3 percentage points). Other dairy commodity types (such as UHT milk and buttermilk) increased this season to 6.0 per cent (+0.4 percentage points) with increasing demand from Asia.

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



In inflation adjusted terms, the milk payout of \$5.79 per kilogram milk solids in 2016-17 was 66 cents below the decade average of \$6.46 (Figure 4.2). While below the decade average, the 47 per cent increase from 2015-16 was a welcome relief for farmers and a positive indication of a return towards more normal levels of payout. Average payout over the past 20 years, in real terms, was \$6.18 per kilogram milk solids.

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

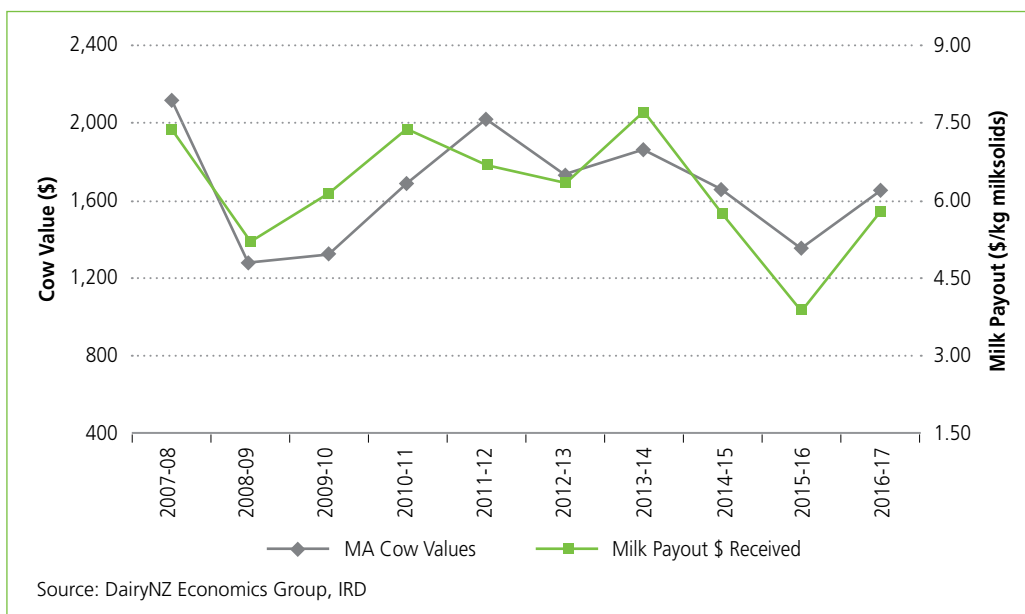


4.2: Livestock Prices

The value of mixed aged cows increased to \$1,649 (+21.6%) in the 2016-17 season as milk prices rebounded from the previous season and the outlook for dairy improved. Cow values, in nominal terms, were very close to the decade-average of \$1,665.

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

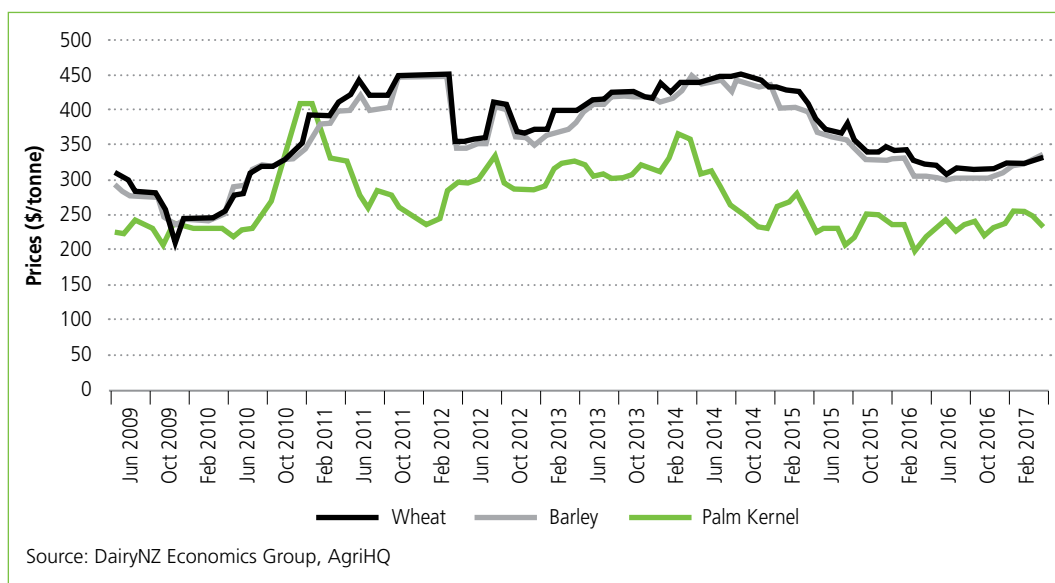
In general, fertiliser prices were lower in 2016-17 while feed prices remained at low levels compared to the last seven years. Feed and fertiliser prices between 2009-10 and 2016-17 are shown in Figures 4.4 and 4.5.

When comparing the average seasonal prices for 2016-17 against 2015-16:

- Barley decreased to \$312 per tonne (-7.4%), the second consecutive season of reduced prices,
- Wheat decreased to \$321 per tonne (-8.2%), a continued decline from a peak in 2014-15,
- Palm Kernel (PKE) firmed averaging \$240 per tonne (+5.5%). Prices largely remained in the \$220-250 per tonne price range throughout the season.

PKE imports increased 2.2 per cent from 1.87 million tonnes to 1.91 million tonnes in the year to June 2017, refer to Figure 3.3. A poor spring in many parts of the country coupled with a wet summer in some areas, due to cyclones, meant that feed was in short supply for some farmers and contributed to increased imports of PKE in the second half of the season. This level of PKE use avoided milk production declining further.

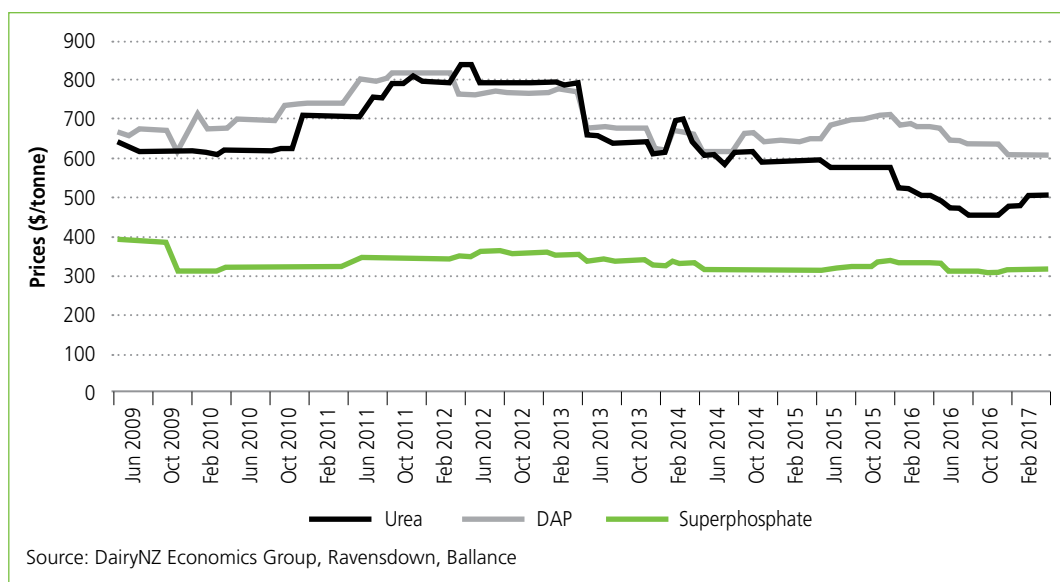
Figure 4.4: Feed Prices



Superphosphate prices declined in spring 2009 and have remained relatively constant. In 2016-17, superphosphate averaged \$315 per tonne, a slight decrease (-3.1%) on the 2015-16 seasonal average price of \$325 per tonne.

Urea and DAP prices have fluctuated more than superphosphate prices from season to season and followed a similar trend until early 2014 when urea prices started to decline. During the 2015-16 season prices diverged from each other more than normal, however in 2016-17 both urea and DAP decreased in price. The average seasonal price for urea declined 13.6 per cent on last season from \$557 to \$481 per tonne, and the average seasonal price for DAP decreased 8.4 per cent on last season from \$691 to \$633 per tonne.

Figure 4.5: Fertiliser Prices



4.4: On-farm Inflation

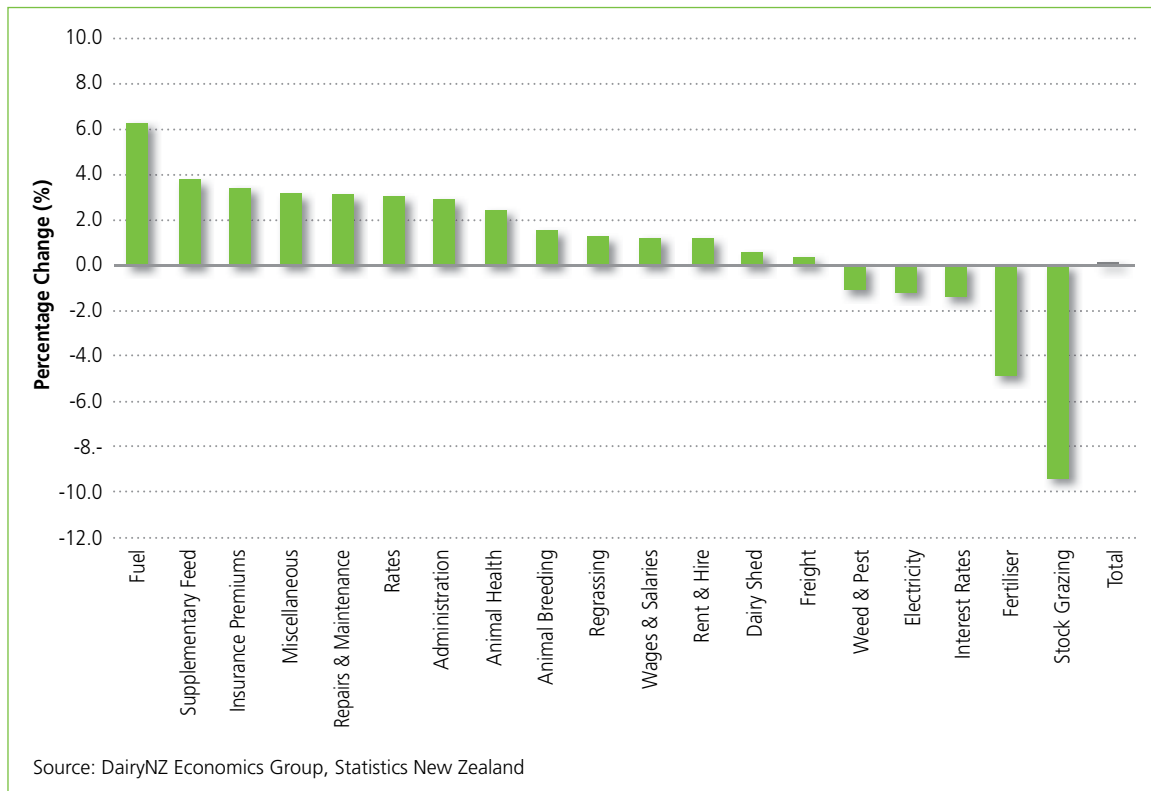
The movement in on-farm input prices is compiled by Statistics New Zealand in the Farm Expenses Price Index for dairy farms. The percentage movement of each category is weighted by a three-year rolling average of the contribution of each category to total expenditure. In the year to June 2017, the average price for inputs remained unchanged (0.0%) after two seasons of input price decreases.

The price movements of individual categories for the 2016-17 season are shown in Figure 4.6.

Decreases in individual price categories such as stock grazing (-9.3%), fertiliser (-4.7%), interest rates (-1.2%), electricity (-1.1%) and weed and pest (-1.0%) were counterbalanced by increases in other areas of expenditure. Fuel prices increased (+6.3%) and feed, insurance, repairs and maintenance, rates and miscellaneous categories also increased between 3 and 4 per cent, leading to no overall price change for the season.

For the past four seasons fertiliser input prices have decreased, while interest rates have also decreased for two consecutive seasons. Stock grazing prices fluctuate from one year to the next with the decrease in 2016-17 similar to the increase in 2015-16.

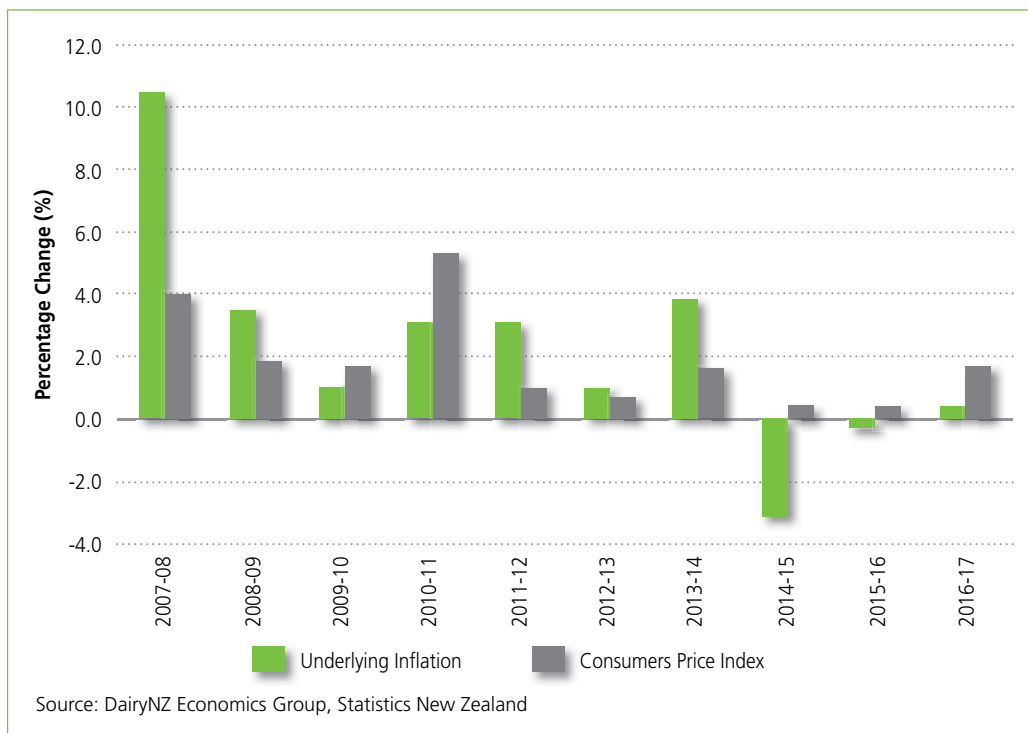
Figure 4.6: Dairy Input Price Changes – June 2016 to June 2017



If interest is removed, underlying prices increased slightly by 0.4% (Figure 4.7). This slight increase in input prices follows two seasons of deflation (2014-15 and 2015-16). General inflation, as measured by the Consumers Price Index (CPI), experienced an increase of 1.7 per cent in the same period.

Over the last 10 years, underlying dairy farm input prices (excluding interest rates) increased by 2.3 per cent per year on average. This was slightly higher than the general rate of inflation, which was 1.9 per cent per year.

Figure 4.7: Dairy Farm Input Price and CPI Changes – June 2007 to June 2017



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 2016-17 season increased 41.0 per cent, mainly due to higher milk prices, refer to Table 4.1. This was the largest increase in terms of trade since 2007-08 when a significant spike in milk prices occurred. 2016-17 was the third consecutive season of slightly lower prices paid for inputs (deflation). Over the decade to 2016-17, the prices received for milk and livestock have increased faster than prices paid for inputs (including capital).

Table 4.1: Dairy Farm Owner-operator Terms of Trade

	Prices Received Index	Prices Paid Index	Terms of Trade Index	Terms of Trade % Change
2006-07	1,000	1,000	1,000	
2007-08	1,695	1,103	1,537	53.7%
2008-09	1,255	1,161	1,080	-29.7%
2009-10	1,451	1,179	1,230	13.9%
2010-11	1,720	1,205	1,428	16.1%
2011-12	1,600	1,270	1,260	-11.8%
2012-13	1,523	1,286	1,184	-6.0%
2013-14	1,819	1,321	1,377	16.3%
2014-15	1,401	1,292	1,084	-21.3%
2015-16	992	1,267	783	-27.8%
2016-17	1,389	1,258	1,104	41.0%

Source: DairyNZ Economics Group, Statistics New Zealand, REINZ

Section 5: Financial Analysis – Owner-operator

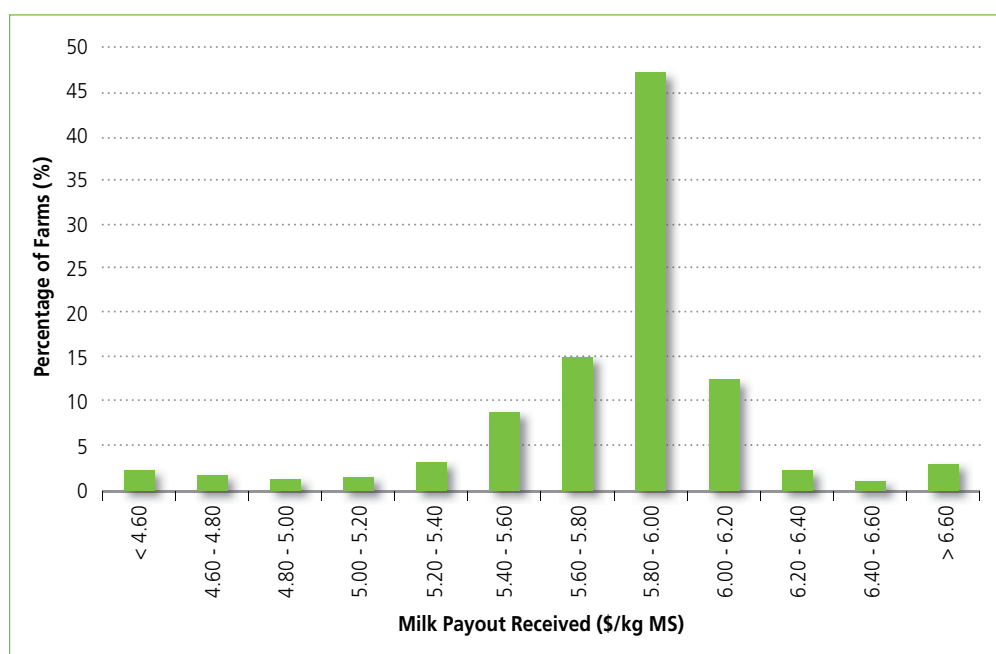
5.1: Revenue

Milk prices in 2016-17 recovered from the record low level in the previous season. The milk payout received by Owner-operators was \$5.79, similar to that received in 2014-15. Milksolids per cow and hectare, recorded by Economic Survey farms, increased slightly in 2016-17 from the 2015-16 season.

Milk sales per farm (net of dairy levies) of \$928,944 were similar to the average level since 2010-11. Milk revenue accounted for 90.7 per cent of gross farm revenue. Revenue from livestock sales declined in 2016-17, reflecting less cows culled than the previous season. Livestock revenue accounted for 8.7 per cent of the total gross farm revenue per farm.

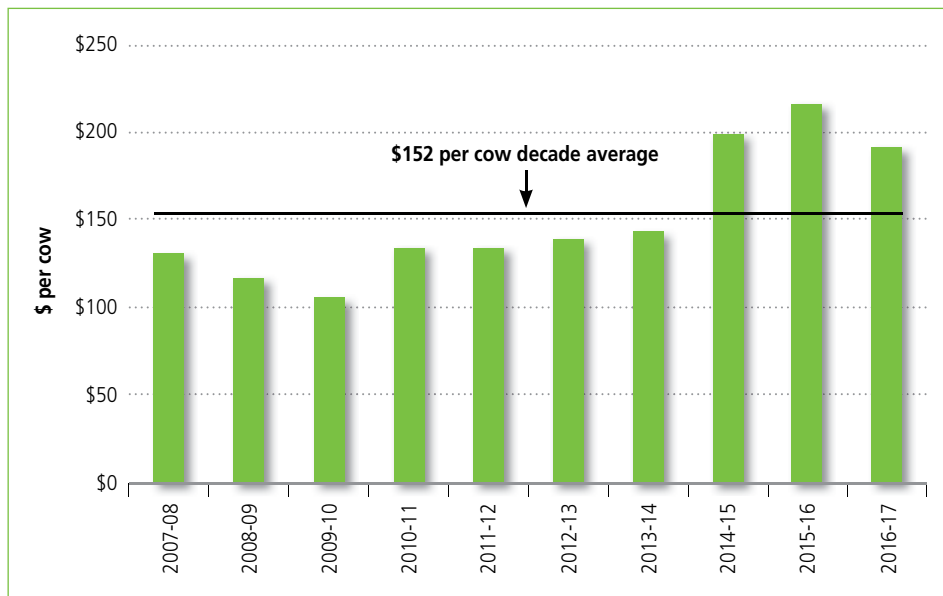
There is variation in the milk price farmers receive within a season (Figure 5.1) due to differences in milk composition, transport distances, milk production timing, annual account balance dates, milk companies supplied, different systems such as organics, penalties faced (grades), and whether a particular farm operated in the previous season. Eighty five per cent of farms received a milk payout (milk price plus dividend) between \$5.40 and \$6.20 per kilogram milksolids in 2016-17. Within this, nearly half received a milk payout between \$5.80 and \$6.00 per kilogram milksolids.

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



Cash income from net livestock sales decreased (-\$11,101) to \$79,495 in 2016-17. Despite the decrease, on a per cow basis, livestock revenue in 2016-17 at \$192, was well above the decade average of \$152 (Figure 5.2). High beef schedule prices coupled with increased culling have bolstered farm incomes over the last three seasons, which has been timely given the lower milk prices during much of this period.

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



With unchanged other dairy cash income, dairy gross farm revenue on a typical New Zealand dairy farm at \$1,023,907 was 43.9 per cent higher (+\$312,367) than the low level of the previous season. On a per hectare basis, gross farm revenue of \$6,928, was very similar to the per hectare revenue in both 2014-15 (\$6,986) and 2012-13 (\$6,903). At \$6.39 per kilogram milksolids, gross farm revenue in 2016-17 was below the decade average of \$6.75.

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 hectare increased slightly by 2.9 per cent to \$4,050. This was still the second lowest level of farm working expenses since 2010-11.

All Farm Working Expenditure (FWE) categories increased in 2016-17 except for wages (-10.5%), freight and general (-10.3%), stock grazing (-9.1%), ACC (-6.5%) and administration (-5.5%). On a per hectare basis, large increases were recorded for repairs and maintenance (+30.7%), regrassing (+28.2%), farm dairy (+22.2%), animal health (+12.1%), breeding and herd improvement (+11.8%), fertiliser (+11.3%), and vehicles and fuel (+9.6%).

Expenditure on feed, (including supplements, harvested and cropped) marginally increased \$14 (+1.7%) to \$813 per hectare, and was still the single largest expenditure item.

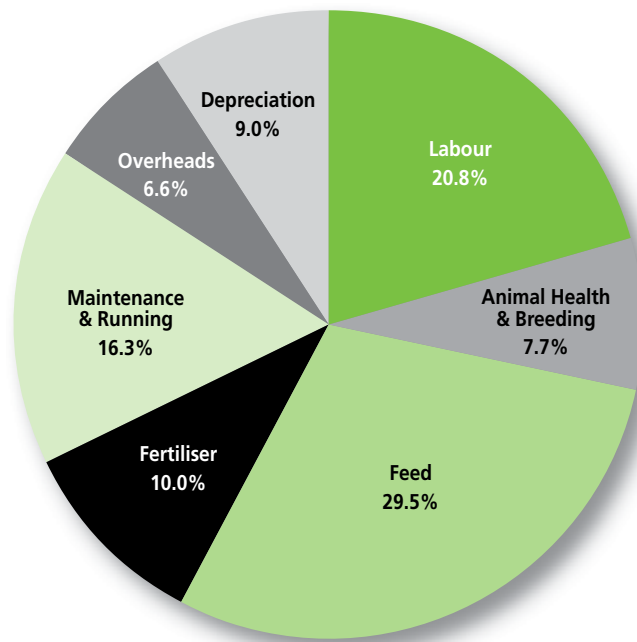
Farm working expenses increased, on a per kilogram milksolids basis, from a low \$3.64 in 2015-16 to \$3.73 in 2016-17. This was the third lowest level of farm working expenses per kilogram in the last decade and well below the high of \$4.33 in 2013-14.

Farm working expenses were 59.0 per cent of net dairy cash income in 2016-17, a much lower proportion than the previous year and close to the 60.0 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 3.5 per cent to \$737,680 per farm. Dairy operating expenses in 2016-17 increased \$178 per hectare to \$4,991.

Dairy operating expenses per kilogram milksolids of \$4.60 were 15 cents above the previous season. This was the second lowest level of operating expenses since 2009-10. Figure 5.3 shows the major 2016-17 expenditure categories.

Figure 5.3: Dairy Operating Expenditure: 2016-17



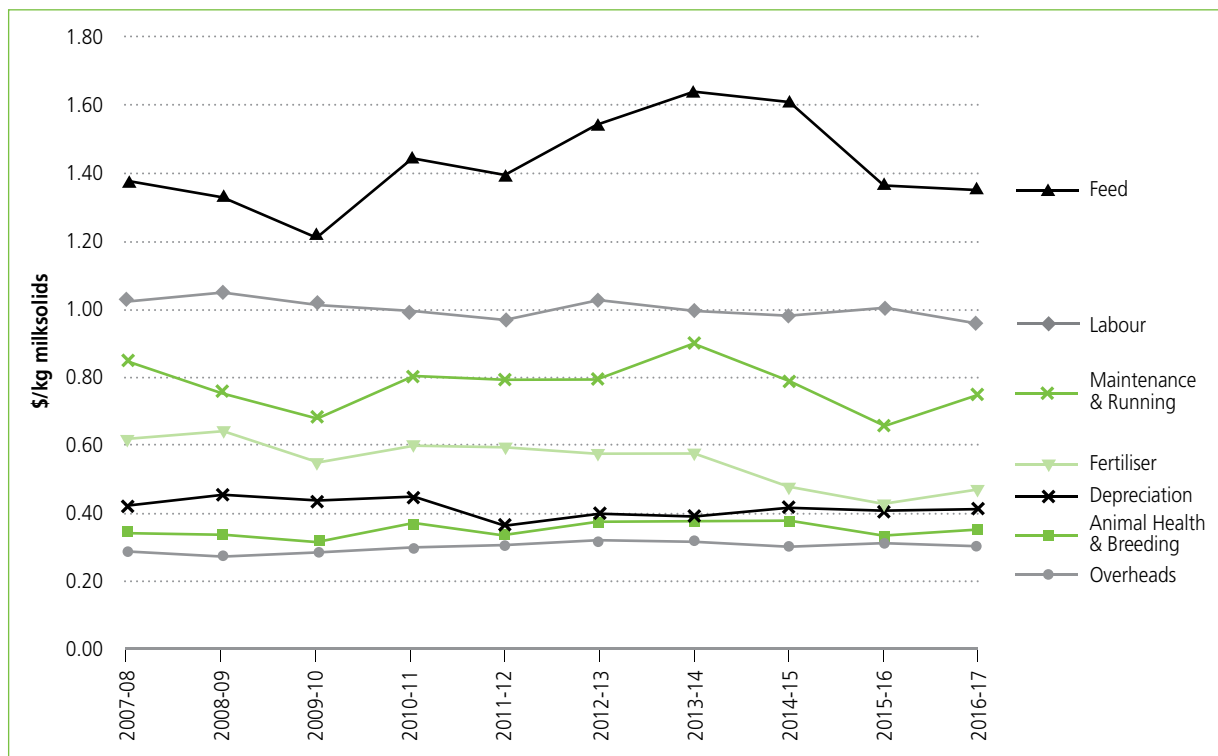
Feed was the largest category of expenditure at 29.5 per cent in 2016-17, despite reducing by 3.1 percentage points from the previous season. Labour was the second highest operating expense for dairy farms at 20.8 per cent of total operating expenditure. Maintenance and running costs and fertiliser contributed 16.3 and 10.0 per cent respectively in the year to June 2017, similar to their contribution in the 2015-16 season.

Operating expenses per kilogram milk solids averaged \$4.81 over the last decade, encompassing a range of payouts along with the global financial crisis and various seasonal weather conditions. Operating expenses exceeded \$5.00 per kilogram milk solids in 2012-13 and 2013-14. However, the \$4.60 operating expenses recorded in 2016-17 was only up slightly after farmers corrected their expenditure sharply in response to low milk prices in 2015-16.

Figure 5.4 shows the changes in the categories of operating expenses per kilogram milk solids. Animal health and breeding, labour 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.

Fertiliser and maintenance and running expenditure recorded the largest increases in 2016-17, following two seasons of large decreases. Expenditure on feed in 2016-17 was similar to the previous season and a much lower level than the previous three seasons.

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



5.3: Cash Flow and Liquidity

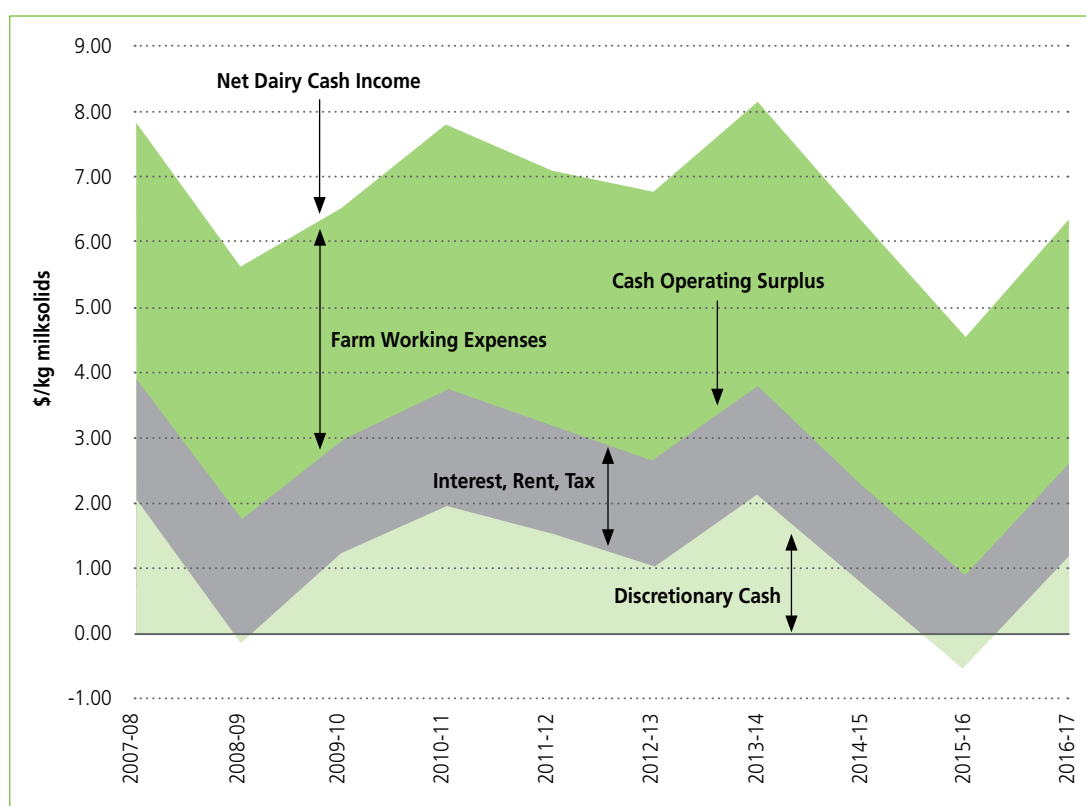
The cash operating surplus is the difference between net dairy cash income and farm working expenses. The 2016-17 season cash operating surplus returned to more normal levels of \$415,410 following a very low level in 2015-16. On a per kilogram milksolids basis the \$2.59 cash operating surplus was up \$1.71 on the previous season.

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 2016-17 was a healthy \$185,083 which equates to \$1.15 per kilogram milksolids (refer to Table 7.5). This is in stark contrast to the previous season where discretionary cash was -\$82,602 (-\$0.52/kg MS) and additional funds were required to pay the bills.

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 2016-17 was \$182,197 per farm, similar to the level of discretionary cash as off-farm income nearly offsets the funds removed from the business.

Cash for living and growth can also be used to repay debt and for farm family drawings. During the year, term debt increased \$75,867 per farm in line with the \$109,749 spent on capital transactions. Drawings increased slightly (+\$3,892) to \$82,043 per farm. Tax payments doubled to \$16,773 per farm, reflecting increased profit in the 2016-17 season. This was still a low level of tax paid compared to the decade average of \$32,557 per farm.

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



The cash surplus of \$66,272 can be calculated from 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 (84.5%) in 2016-17 was from the current year's farming operations. The other major source of funds this season was increased debt (15.4% of total source of funds). Other remaining funds were sourced from off-farm income (4.0%), non-dairy cash income (0.7%), and, income equalisation (0.3%). Funds were removed from the business (-4.9% of total source of funds), following a high level of introduced funds the previous season.

After farming operations, half the cash was spent on interest and rent payments for borrowing (51.0%), capital development and purchases (25.8%), and drawings for farm family living (19.3%). Four per cent of the year's funds were spent on tax, which was twice as much as the previous year.

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

	2015-16	2016-17
Change in Current Assets	-24,651	56,493
- Change in Current Liabilities	-2,678	-9,780
Change in Working Capital	-21,973	66,273
Source of Funds		
Cash Operating Surplus	141,757	415,410
+ non-dairy cash income	904	3,371
+ net off-farm income	9,238	19,811
+ introduced funds	77,696	-24,004
+ income equalisation	16,765	1,307
+ increase in term debt	111,778	75,868
= Total source of funds	358,138	491,763
Application of funds		
rent	20,047	19,582
+ interest	197,277	197,343
+ tax	7,939	16,773
+ capital transactions	76,697	109,749
+ drawings	78,151	82,043
= Total application of funds	380,111	425,490
Source less Application of funds	-21,973	66,273

The average farm received a milk payout of \$5.79 per kilogram milksolids in 2016-17, which was above the break-even price required of \$5.17 (Table 5.2). 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. This indicates there was some funds available for capital transactions, mortgage (principal) payments or for reinvestment.

The break-even milk price in the 2016-17 season was 24 cents per kilogram milksolids higher than the season prior, reflecting increased farm working expenses (+9 cents/kg MS), higher tax payments (+5 cents/kg MS) and slightly higher drawings (+2 cents/kg MS). Interest and rent payments remained steady at \$1.35 per kilogram milksolids, while cash revenue from dairy livestock and other dairy cash income decreased 7 cents.

While the break-even milk price increased 5.0 per cent in 2016-17, it was still at relatively low levels compared with 2012-13 to 2014-15, indicating farmers striving to remain more efficient, with a much lower level of farm working expenses and drawings.

Liquidity is having the ability to meet financial payments. 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 and in 2016-17 these two costs totalled \$5.08 per kilogram milksolids.

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

	2012-13	2013-14	2014-15	2015-16	2016-17
Farm working expenses	4.13	4.33	4.07	3.64	3.73
plus interest and rent	1.39	1.29	1.36	1.36	1.35
plus tax	0.25	0.38	0.21	0.05	0.10
plus drawings	0.65	0.77	0.69	0.49	0.51
Total cash expenses	6.42	6.77	6.33	5.53	5.70
less livestock & other dairy cash income	0.44	0.42	0.56	0.60	0.53
Break-even milk price	5.98	6.35	5.77	4.93	5.17

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.

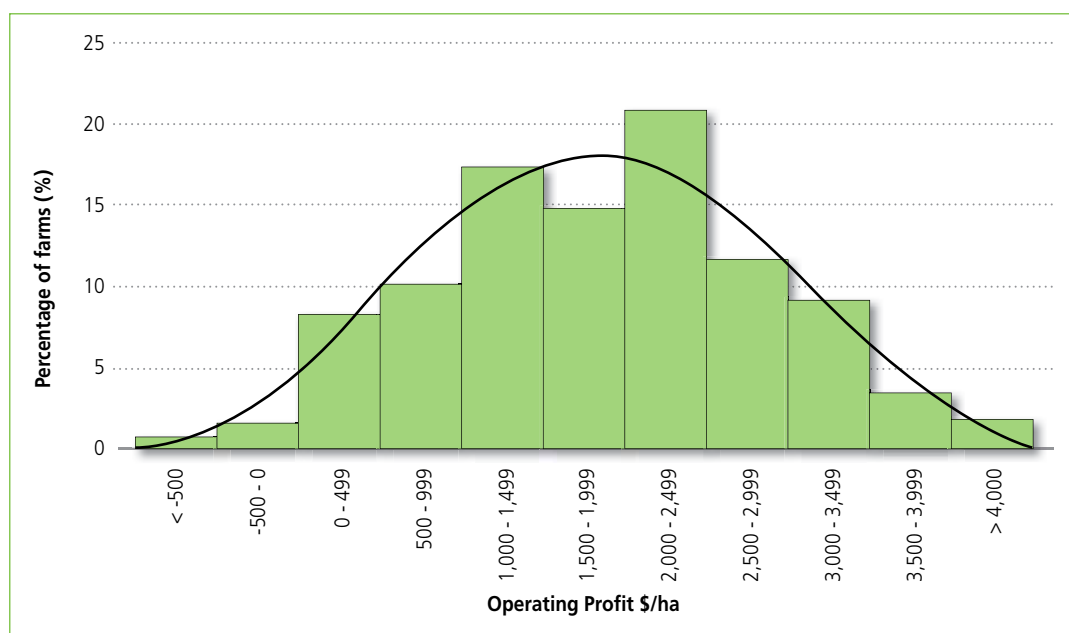
Table 5.3: Change in Profit since 2012-13

	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16 to 2016-17 change
Operating profit per hectare	\$1,830	\$3,295	\$1,537	-\$9	\$1,937	\$1,946
Business profit per all effective hectares	\$785	\$1,981	\$478	-\$734	\$887	\$1,621
Operating return on dairy assets	4.2%	7.2%	3.0%	-0.1%	3.9%	
Inflation adjusted dairy operating profit per effective hectare	1,844	3,196	1,539	-9	1,937	\$1,946
Inflation adjusted business profit per all effective hectares	791	1,921	479	-737	887	\$1,624

Operating profit per hectare of \$1,937 in 2016-17 was the second highest level of profit in the last five years, and well above the small loss recorded in 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 \$1,621 to \$887 per hectare.

Operating profit per hectare was normally distributed around the mean with a standard deviation of \$1,039 per hectare reflecting a wide range between farms. Ninety-three per cent of farmers had operating profits between \$0 and \$3,500 per hectare, while five per cent of farmers had operating profits of over \$3,500 per hectare. More than half (53.2%) of these farms recorded operating profits between \$1,000 and \$2,500 per hectare. Only two per cent of farms recorded negative operating profits in 2016-17 (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 2016-17 has the following components:

\$1,937 (operating profit/ha) = 1,085 (kg MS/ha) x (\$6.39 GFR/kg MS - \$4.60 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 \$3,184 compared with \$554 for the bottom quartile group. Each quartile group produced more milksolids per hectare compared with the quartile lower. Top quartile farmers produced fifty 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 increases from the top quartile group through to the bottom quartile group from \$4.05 through to \$5.56 per kilogram milksolids.

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	149	139	141	160
Cows	366	373	395	500
Stocking rate	2.5	2.7	2.8	3.1
Cows per FTE	131	141	145	158
Milksolids per cow	344	363	379	420
Milksolids per hectare	871	994	1,058	1,312
Gross farm revenue \$/kg MS	6.23	6.50	6.61	6.55
Operating expenses \$/kg MS	5.56	4.90	4.45	4.05
Operating profit \$/kg MS	0.67	1.60	2.17	2.49
Operating profit \$/ha	554	1,493	2,220	3,184
Operating return on dairy assets %	1.7%	3.8%	5.0%	6.2%

There was approximately 1.2 percentage points difference between each of the highest three quartiles of operating return on dairy assets and 2.1 percentage points between the bottom two quartiles. The top quartile averaged 6.2 per cent, compared to the bottom quartile of 1.7 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 40 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 175 and 275 kilograms per hectare 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 higher (+16 cents/kg MS) in 2016-17 in comparison to the average farm revenue. This is the same as the average difference across the last five years. Operating expenses were 55 cents per kilogram milksolids lower at \$4.05, compared to \$4.60 for the overall New Zealand average. Over the last five years the difference in operating expenses per kilogram milksolids between the average of top quartile group and the New Zealand average ranges between -\$0.55 and -\$0.74. Overall, operating expenses averaged 64 cents lower than New Zealand over the past five seasons.

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 30 cents to \$3.30 per kilogram milksolids in 2016-17 (refer to Table 5.5). This was a larger change than the overall New Zealand average, although farm working expenses for the top quartile remain well below the NZ average (-\$0.43/kg MS).

Feed costs (made, purchased, cropped) in the top quartile group have averaged 74 cents over the past five years compared with 87 cents for the average New Zealand Owner-operator. The top quartile group had lower fertiliser expenditure, 37 cents in 2016-17 compared with the national average of 46 cents while achieving higher production levels. Wages (-\$0.07/kg MS) and repairs and maintenance (-\$0.05/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 \$3,184 for the upper quartile was 64 per cent higher than the average farm operating profit of \$1,937 in 2016-17. The top quartile had a five-year average of \$3,098 operating profit per hectare, compared to \$1,718 for the average New Zealand farm, this is an additional \$1,380 per hectare per year on average.

Returns on dairy assets are consistently higher for the top quartile farms averaging 6.7 per cent compared to the New Zealand average of 3.6 per cent over the last five seasons.

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

	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:					
Number of herds	54	75	74	70	79
Effective hectares	144.5	154.2	126.3	137.9	160.1
Peak cows milked	462	489	391	405	500
Stocking rate (cows/ha)	3.2	3.2	3.1	2.9	3.1
Kg milksolids sold	185,598	205,132	161,577	159,057	212,378
Milksolids sold per hectare	1,284	1,330	1,279	1,115	1,312
Milksolids sold per cow	402	419	413	386	420
PAYOUT RECEIVED: \$/kg MS sold	6.35	7.78	5.91	4.07	5.96
DAIRY CASH INCOME: \$/kg MS					
Milk sales (net of dairy levies)	6.35	7.78	5.91	4.07	5.96
Net livestock sales (sales - purchases)	0.43	0.36	0.57	0.61	0.47
Other dairy cash income	0.06	0.03	0.05	0.05	0.02
Net dairy cash income	6.84	8.17	6.53	4.73	6.45
CASH FARM WORKING EXPENSES: \$/kg MS					
Wages	0.64	0.56	0.49	0.47	0.51
Animal health	0.22	0.22	0.21	0.17	0.20
Breeding & herd improvement	0.11	0.12	0.14	0.13	0.13
Farm dairy	0.07	0.06	0.06	0.05	0.05
Electricity	0.10	0.11	0.11	0.11	0.10
Net feed made, purchased, cropped	0.74	0.90	0.78	0.58	0.69
Stock grazing	0.34	0.46	0.33	0.34	0.33
Support block lease	0.11	0.06	0.07	0.04	0.06
Fertiliser (incl Nitrogen)	0.52	0.50	0.39	0.33	0.37
Irrigation	0.08	0.06	0.06	0.02	0.07
Regrassing	0.05	0.06	0.06	0.04	0.05
Weed & pest	0.02	0.03	0.03	0.02	0.03
Vehicles & fuel	0.16	0.17	0.15	0.16	0.16
Repairs & maintenance	0.25	0.34	0.25	0.18	0.24
Freight & general	0.04	0.05	0.05	0.04	0.03
Administration	0.11	0.10	0.09	0.11	0.10
Insurance	0.05	0.05	0.06	0.06	0.06
ACC	0.02	0.02	0.02	0.02	0.02
Rates	0.09	0.09	0.10	0.13	0.10
Farm working expenses	3.72	3.96	3.45	3.00	3.30
Cash operating surplus	3.12	4.21	3.08	1.73	3.15
ADJUSTMENTS: \$/kg MS					
Value of change in dairy livestock	0.05	0.19	0.03	0.01	0.09
less Labour adjustment	0.21	0.29	0.33	0.43	0.36
plus Feed inventory adjustment	0.01	0.07	0.02	0.05	0.04
less Owned support block adjustment	0.10	0.10	0.09	0.04	0.08
less Depreciation	0.36	0.33	0.36	0.31	0.36
Net Adjustments	-0.61	-0.46	-0.73	-0.73	-0.67
OPERATING CASH & NON-CASH: \$/kg MS					
Dairy gross farm revenue	6.90	8.35	6.56	4.74	6.55
Dairy operating expenses	4.39	4.60	4.20	3.74	4.05
Dairy operating profit per kg MS	2.50	3.75	2.35	1.00	2.50
Dairy operating profit per effective ha	3,216	4,998	3,018	1,073	3,184
Operating return on dairy assets %	7.8%	11.7%	6.0%	1.7%	6.2%

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 2016-17 the relationship shows an R squared value of 33 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)

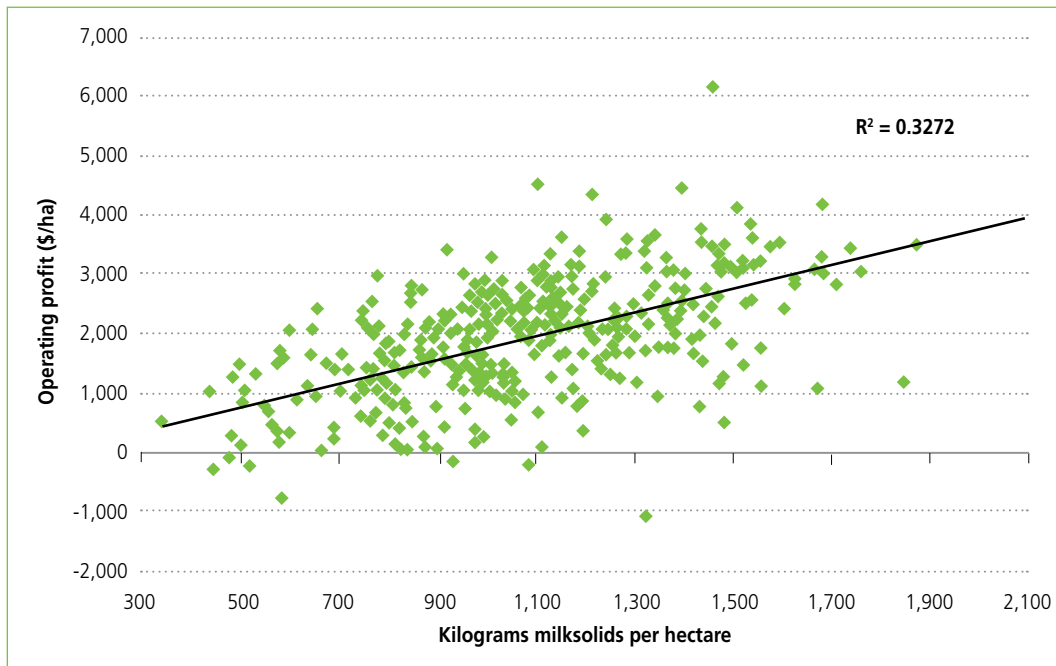
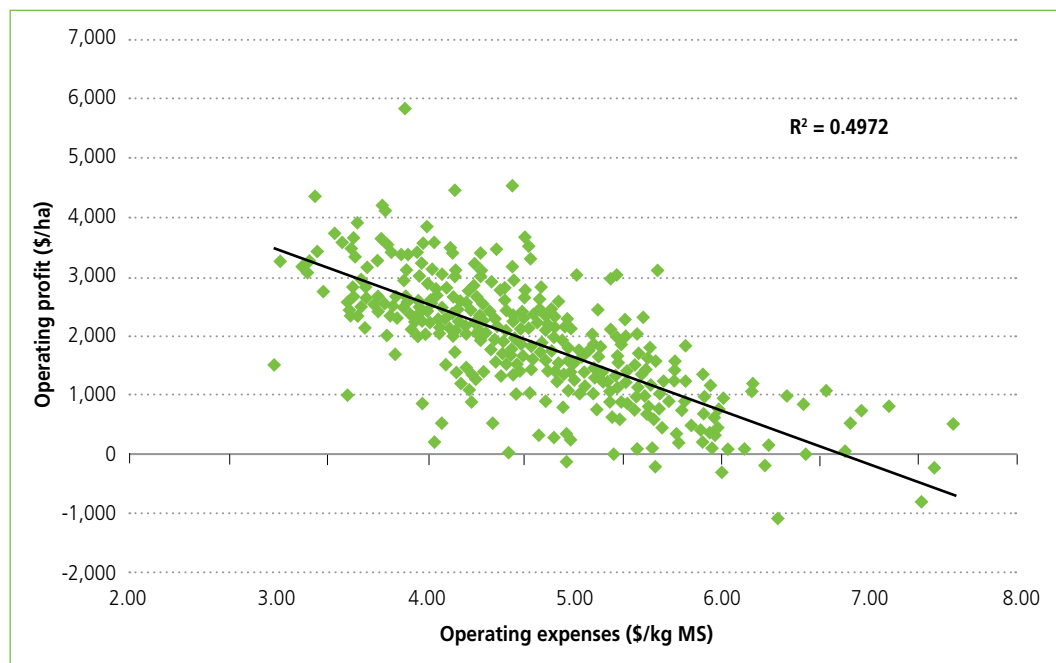


Figure 5.8 shows there is a good relationship between operating profit per hectare and the average cost of production (operating expenses/kg MS) amongst farms. This correlation is not as strong as it has been for the last two years where low milk prices persisted. However, operating expenses per kilogram 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.

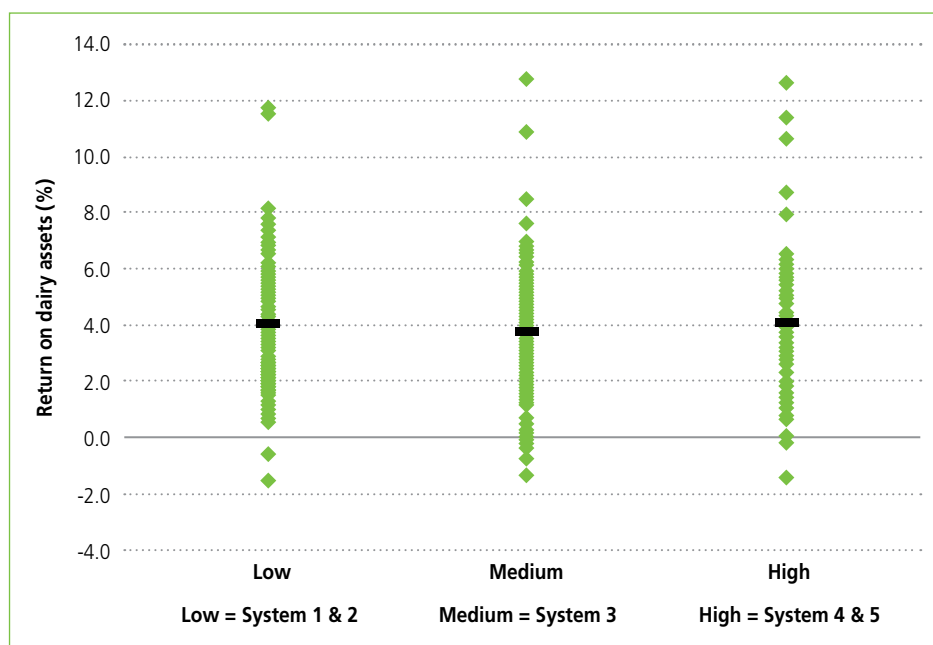
Table 5.6: Correlations between Production, Profit and Operating Expenses

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Payout received \$/kg MS	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
Milksolids kg MS/ha	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Dairy operating expenses \$/kg MS	4.92	4.84	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60
Dairy operating profit \$/ha	2,794	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937
R ² - dairy operating profit \$/ha & kg MS/ha	65.2%	27.7%	53.3%	54.3%	35.5%	40.0%	45.7%	17.3%	0.2%	32.7%
R ² - dairy operating profit \$/ha & operating expenses \$/kg MS	53.9%	68.6%	61.8%	53.6%	53.0%	54.1%	46.7%	59.4%	60.4%	49.7%

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 3.9 per cent in 2016-17, the highest level since 2013-14 and slightly above the five-year average of 3.6 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 similar for all system groups in 2016-17 (Figure 5.9). The range within each system group is also very similar across the three system groups, with operating return on dairy assets ranging between -2.0 per cent to 13.0 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

	2012-13	2013-14	2014-15	2015-16	2016-17
Dairy operating profit	258,049	470,808	223,630	- 1,291	286,227
+ Labour adjustment	55,162	59,309	59,021	56,341	61,154
+ Owned support block adjustment	14,601	15,338	14,889	14,126	14,359
+ Non-dairy operating profit	1,288	1,724	- 673	- 318	3,331
+ Net off-farm income	12,360	9,858	12,098	9,208	19,643
- Rent	22,812	23,366	22,250	20,047	19,582
- Interest	174,136	171,597	195,984	197,277	197,343
Business profit before tax	144,512	362,074	90,731	- 139,258	167,789
Business profit before tax per all effective hectares	785	1,981	478	- 734	887

The average dairy farm in 2016-17 made a business profit before tax of \$167,789, in stark contrast to the large loss made in the previous season. This business profit is equivalent to \$887 per all effective hectares (effective dairy + effective dairy support block + effective non-dairy). The dairy operating profit increased by \$287,518 on the previous season, while net off-farm income more than doubled (+\$10,435) and non-dairy operating profit increased (+\$3,649). Total rent payments decreased slightly by \$465, while interest payments were largely unchanged.

Total effective hectares remained relatively static, decreasing by 0.6 hectares from the season prior. The average Owner-operator had 147.8 effective dairy hectares, 36.8 effective support block hectares and 4.5 non-dairy effective hectares available for farming operations.

5.5: Dairy Assets

Total dairy assets increased 8.1 per cent (+\$594,135) to \$7.9 million in the year to 31 May 2017. Land and buildings accounted for 75.0 per cent of opening total dairy assets. Land and buildings increased in value (+6.1%), more than offsetting the small decline last season. Livestock values increased 27.4 per cent throughout the season, regaining the declines from 2015-16. Current assets lifted significantly (+40.9%), and investments increased (+4.0%), while plant, machinery, and vehicles eased (-2.1%) in value.

Land and buildings for Owner-operators valued at \$5.9 million at close was equivalent to \$36.50 per kilogram milksolids for the current season.

The number of dairy farms sold of 217 in 2016-17 was up 25 farms (+13.0%), following a low level of sales the previous season. 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.

In 2016-17 dairy land prices increased 3.5 per cent to average \$37,835 per hectare. Land prices per kilogram milksolids increased marginally to \$39.98 (+1.7%).

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

	2012-13	2013-14	2014-15	2015-16	2016-17
Farms sold	197	312	244	192	217
Average \$ sale price/kg MS	\$ 35.61	\$ 42.19	\$ 44.78	\$ 39.33	\$ 39.98
Average \$ sale price/ha	33,557	36,369	39,577	36,557	37,835
Average \$ sale price/ha (real 2016-17 dollars)	34,984	37,312	40,435	37,194	37,835

Livestock values per farm increased 27.4 per cent in 2016-17, reflecting an increase in stock prices in response to milk price recovery (Section 4.2). Livestock accounted for 10.3 per cent of the total closing dairy asset value, one percentage point higher than the proportion of 2015-16 assets.

Investments, which are largely dairy company shares, accounted for a further 10.4 per cent (\$823,402) of the total \$7.9 million dairy asset value. Investments increased 4.0 per cent throughout the 2016-17 season.

5.6: Liabilities and Debt Servicing

Interest is the cost of borrowing cash, while rent is the cost of borrowing assets. Interest and rent totalled \$1.35 per kilogram milksolids showing virtually no change from the previous two seasons. Borrowing costs represented 21.2 per cent of gross farm revenue (Table 5.9). Therefore, for every dollar of gross income earned, 21.2 cents is required to pay interest and rent, a similar level to 2014-15 when milk prices received were comparable to 2016-17.

Table 5.9: Debt Servicing Ratios

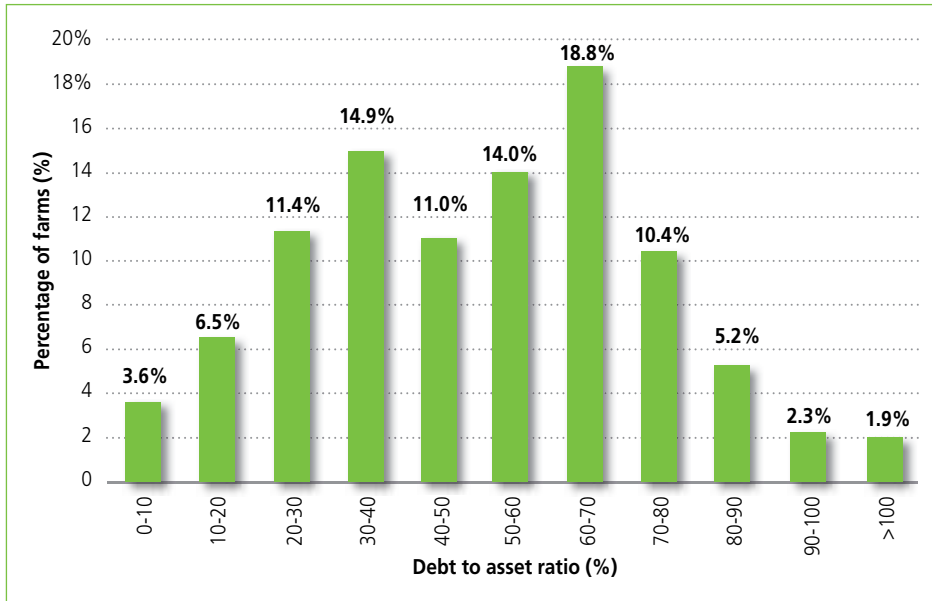
	2012-13	2013-14	2014-15	2015-16	2016-17
Interest & rent \$/kg MS	1.39	1.28	1.36	1.36	1.35
Interest & rent % GFR	20.3%	15.5%	21.5%	30.5%	21.2%
Term liabilities \$/kg MS	20.82	20.14	21.26	22.49	25.00

The debt to asset ratio eased from 50.3 per cent at the close of 2015-16 to 49.4 per cent in 2016-17 because of the large increase in asset values, mainly livestock and land and buildings. Debt to asset values had been around 40 per cent between 2010-11 and 2013-14. The ratio increased substantially in 2013-14 and to a record high in 2014-15 associated with increasing liabilities and a decline in asset values in 2014-15.

Term liabilities have more than doubled over the last 10 years from \$2.2 million per farm in 2007-08 to \$4.0 million in 2016-17, although the average farm size has also increased over this period. Term liabilities increased 1.9 per cent from open to close of the 2016-17 season.

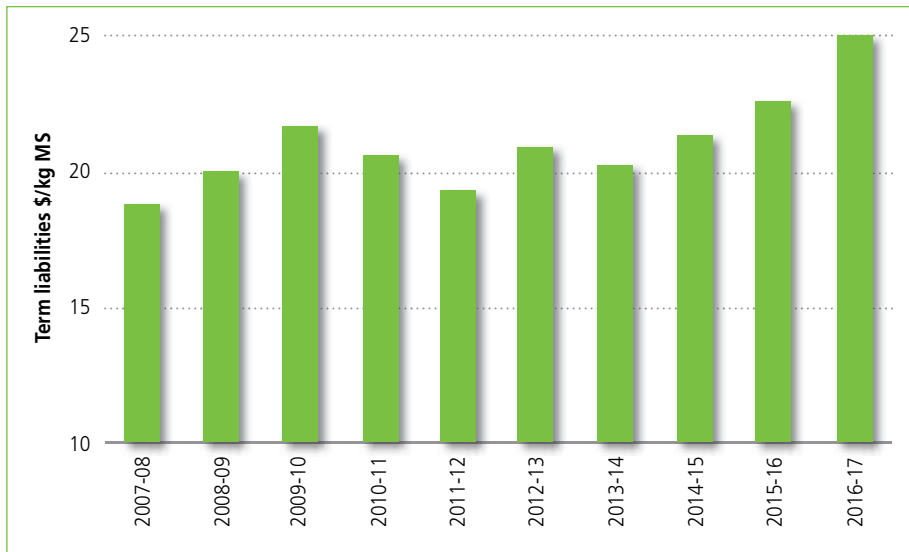
Figure 5.10 shows the debt to asset distribution in 2016-17, with an average of 49.4 per cent. Thirty-six per cent of farms have debt to asset ratios below 40 per cent. Twenty percent of the farms had debt to asset ratios over 70 per cent, with approximately four per cent sitting in the high risk area of over 90 per cent debt.

Figure 5.10: Debt to Asset Distribution: 2016-17



Over the last 10 years, the average farm has increased its milksolids production by 40 per cent, while term liabilities have nearly doubled to \$4.01 million per farm. Therefore, term liabilities have increased considerably faster than milk production for the average farm, 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 45 cents per kilogram milksolids per year over the past decade. However, this rate has doubled in the last five years, refer to Figure 5.11. The term liabilities of \$25.00 per kilogram milksolids in 2016-17 is thought to be a bit higher than the true national average level. A higher proportion of highly indebted farms in the Waikato, Bay of Plenty and Taranaki Economic Survey samples have pushed this average up.

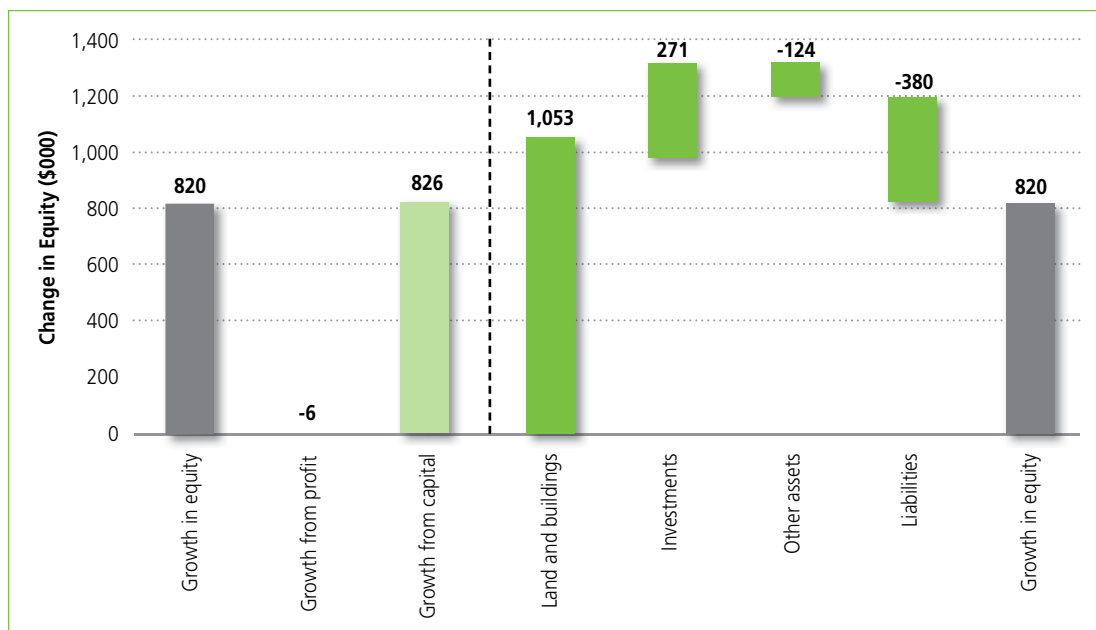
5.7: Equity

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 2016-17 season, dairy farm businesses had an average equity of \$3.52 million or 47 per cent of total fixed assets. This increased to \$4.06 million at the end of the season or 51 per cent of total closing fixed asset values.

The increase in equity of \$540,892 (+15.4%) in 2016-17 was driven by higher asset values and to a lesser degree improved profitability. The equity value of the average dairy farm business increased \$820,000 between 2012 and 2017 (Figure 5.12). Over the past five years, growth has been driven by increases in the value of land and buildings (+\$1,053,000) and investments (+\$271,000), with livestock and other assets declining (-\$124,000).

Liabilities have increased \$380,000 over the past five years. Thirty-two per cent of the increase in asset values has been capitalised into increased borrowings.

Figure 5.12: Components of Equity Change (\$000) 2012 to 2017

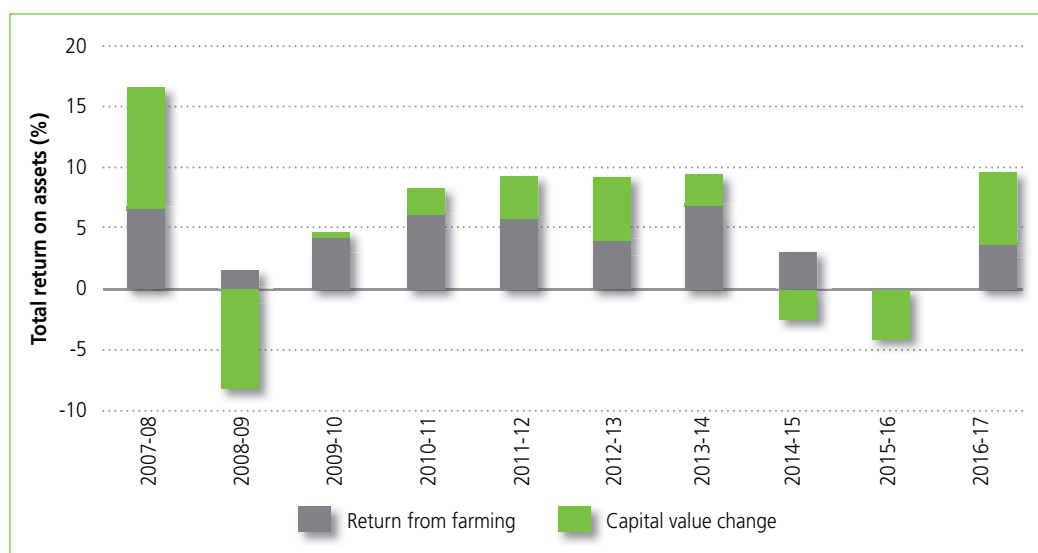


5.8: Returns

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 2016-17 was 9.6 per cent, the highest level since 2007-08 although only slightly higher than the returns in 2011-12, 2012-13 and 2013-14. This level of returns was considerably higher than the five and ten-year averages (4.9% and 5.7% respectively). The 2016-17 total return on assets comprised 3.9 per cent net return from farming operations with 5.7 per cent net return from capital.

For the past decade the total return on assets has ranged between -6.6 per cent and 16.5 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 2016-17 the total return on equity was 15.3 per cent compared to a 9.6 per cent total return on assets, and was the highest return on equity in 10 years. The previous two seasons realised negative returns on equity.

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 5.6 per cent which is above the six-month term deposit rate average of 4.2 per cent with New Zealand banks over the same period.

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 2016-17 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 287 cows, 53 cows below the North Island average (340). Lower North Island had the largest herd size in the North Island (396), followed by the Bay of Plenty (372). Average herd sizes in the South Island were considerably larger (+79%) than in the North Island. In the South Island, Marlborough-Canterbury had the largest herd size with 737 cows, 127 cows above the South Island average of 610 cows, while the average herd size in Otago-Southland was 574 cows.

There is a range of stocking rates nationwide with Northland (2.2 cows/ha) and West Coast-Tasman (2.4 cows/ha) having the lowest stocking rates. Marlborough-Canterbury had the highest stocking rate at 3.3 cows per hectare.

Northland recorded the lowest average milksolids production per cow of all the regions (321 kg MS), while Taranaki had the highest average per cow production in the North Island (381 kg MS). Marlborough-Canterbury recorded the highest production per cow of 435 kilograms milksolids, 13 kilograms above the South Island average.

Cows per full time equivalent (FTE) were higher in the South Island (161) than the North Island (136). Bay of Plenty had the highest number of cows per FTE in the North Island (143), but lower than both Marlborough-Canterbury and Otago-Southland which had 164.

Farms in most regions recorded average milk payouts between \$5.74 and \$6.01 per kilogram milksolids, with the exception of West Coast-Tasman where payments from Westland Milk Products were approximately one dollar less than other dairy companies.

Regional average farm working expenses (FWE) per kilogram milksolids were fairly uniform with six regions ranging between \$3.64 to \$3.84. Taranaki recorded the lowest FWE per kilogram milksolids (\$3.34), while Bay of Plenty had the highest FWE per kilogram milksolids of \$4.03.

Figure 5.14 shows the regional gross farm revenue, operating expenses, and operating profit levels on a per hectare basis in 2016-17. Marlborough-Canterbury (\$2,608), Taranaki (\$2,189) and Otago-Southland (\$2,093) regions all recorded profits over \$2,000 per hectare, while West Coast-Tasman recorded the smallest operating profit at \$739 per hectare. Operating profit per hectare for Waikato at \$1,896 was the regional average over the last 10 years.

Operating expenses were lower in the North Island (\$4,638) compared to the South Island (\$5,541) on a per hectare basis. Northland recorded the lowest expenses per hectare of \$3,595, while Marlborough-Canterbury had the highest at \$6,421, nearly three thousand dollars more than Northland. However, due to the much higher gross farm revenue for Marlborough-Canterbury farms, they were the most profitable region on a per hectare basis.

Most regions recorded average operating profits between \$1,200 and \$2,200 per hectare, with the exception of West Coast-Tasman (\$739) and Marlborough-Canterbury (\$2,608).

Figure 5.14: Regional GFR, Operating Expenses and Operating Profit per ha, 2016-17

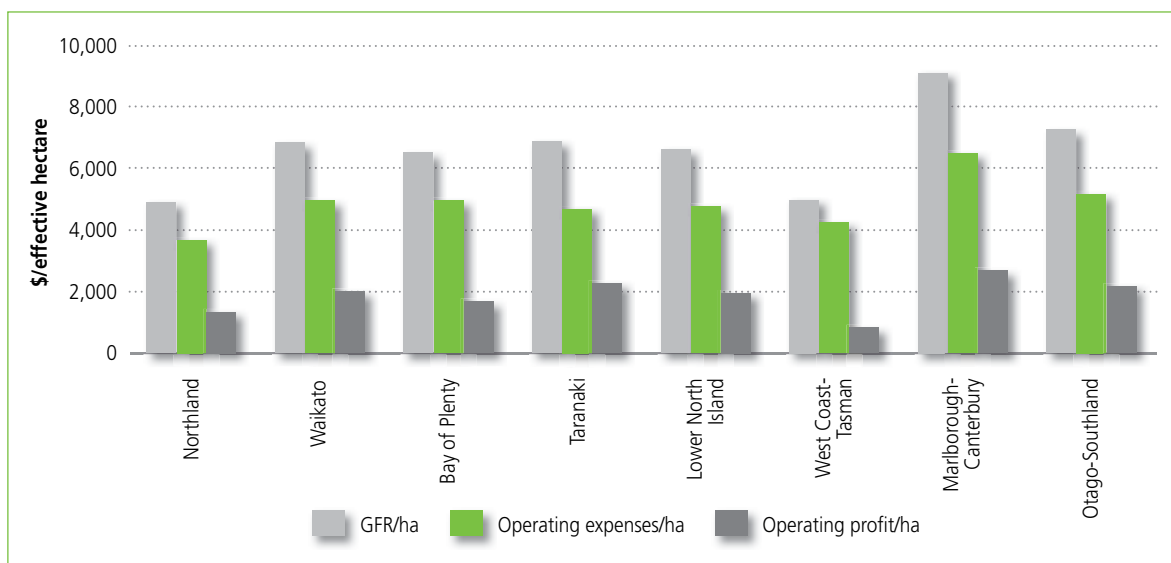


Table 5.10: Regional Owner-operators Profitability

	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	43	69	31	52	38	<20	36	29	233	83	316
Effective hectares	133.8	124.8	135.2	102.4	145.3	169.0	222.2	209.5	125.2	207.8	147.8
Peak cows milked	300	350	372	287	396	406	737	574	340	610	414
Stocking rate (cows/ha)	2.2	2.8	2.8	2.8	2.7	2.4	3.3	2.7	2.7	2.9	2.8
Kg milksolids sold	96,412	129,780	130,833	109,354	144,207	154,047	320,950	239,479	123,683	257,328	160,302
Milksolids sold per hectare	721	1,040	968	1,068	992	912	1,444	1,143	988	1,238	1,085
Milksolids sold per cow	321	371	352	381	364	379	435	417	364	422	385
PAYOUT RECEIVED: \$/kg MS sold	5.90	5.88	6.01	5.86	5.85	4.93	5.74	5.78	5.89	5.68	5.79
DAIRY CASH INCOME \$:											
Milk sales (net of dairy levies)	5.90	5.88	6.01	5.86	5.85	4.93	5.74	5.78	5.89	5.68	5.79
Net livestock sales (sales - purchases)	0.69	0.49	0.71	0.40	0.55	0.48	0.49	0.42	0.53	0.46	0.50
Other dairy cash income	0.05	0.05	0.06	0.05	0.04	0.02	0.01	0.03	0.05	0.02	0.04
Net dairy cash income	6.64	6.42	6.78	6.30	6.44	5.43	6.23	6.23	6.46	6.15	6.33
CASH FARM WORKING EXPENSES:											
Wages	0.60	0.54	0.66	0.41	0.67	0.56	0.64	0.57	0.56	0.61	0.58
Animal health	0.23	0.24	0.24	0.21	0.21	0.17	0.20	0.21	0.23	0.20	0.22
Breeding & herd improvement	0.17	0.14	0.15	0.15	0.14	0.14	0.13	0.12	0.14	0.13	0.14
Farm dairy	0.09	0.07	0.05	0.07	0.06	0.05	0.05	0.05	0.07	0.05	0.06
Electricity	0.14	0.13	0.13	0.12	0.13	0.10	0.09	0.10	0.13	0.10	0.11
Net feed made, purchased, cropped	0.73	0.89	0.84	0.77	0.80	0.72	0.63	0.62	0.84	0.64	0.75
Stock grazing	0.14	0.23	0.18	0.22	0.21	0.22	0.56	0.65	0.21	0.56	0.36
Support block lease	0.09	0.07	0.09	0.02	0.09	0.07	0.09	0.08	0.07	0.09	0.08
Fertiliser (incl Nitrogen)	0.50	0.46	0.49	0.40	0.41	0.66	0.42	0.50	0.45	0.47	0.46
Irrigation	0.01	0.00	0.01	0.00	0.02	0.02	0.23	0.00	0.00	0.11	0.05
Regrassing	0.08	0.06	0.08	0.03	0.08	0.09	0.06	0.05	0.06	0.06	0.06
Weed & pest	0.03	0.03	0.04	0.04	0.04	0.06	0.02	0.04	0.04	0.04	0.04
Vehicles & fuel	0.26	0.20	0.24	0.19	0.19	0.18	0.12	0.17	0.21	0.15	0.18
Repairs & maintenance	0.35	0.34	0.35	0.31	0.31	0.25	0.22	0.26	0.33	0.24	0.29
Freight & general	0.05	0.05	0.06	0.05	0.05	0.08	0.04	0.05	0.05	0.05	0.05
Administration	0.12	0.11	0.14	0.14	0.14	0.10	0.10	0.10	0.12	0.10	0.11
Insurance	0.09	0.07	0.08	0.08	0.08	0.08	0.06	0.06	0.08	0.06	0.07
ACC	0.04	0.02	0.03	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.02
Rates	0.14	0.13	0.18	0.13	0.14	0.07	0.05	0.07	0.14	0.06	0.10
Farm working expenses	3.84	3.79	4.03	3.34	3.78	3.64	3.74	3.72	3.74	3.72	3.73
Cash operating surplus	2.80	2.63	2.75	2.96	2.66	1.79	2.49	2.51	2.72	2.43	2.59
ADJUSTMENTS:											
Value of change in dairy livestock	0.06	0.09	-0.10	0.07	0.17	-0.01	0.02	0.09	0.07	0.04	0.06
less Labour adjustment	0.62	0.46	0.44	0.57	0.41	0.39	0.21	0.25	0.48	0.24	0.38
plus Feed inventory adjustment	0.00	0.01	-0.02	0.04	0.03	0.01	0.04	0.01	0.01	0.02	0.02
less Owned support block adjustment	0.16	0.05	0.11	0.07	0.13	0.13	0.09	0.10	0.08	0.10	0.09
less Depreciation	0.36	0.40	0.43	0.39	0.42	0.46	0.45	0.41	0.40	0.43	0.41
Net Adjustments	-1.09	-0.80	-1.10	-0.91	-0.76	-0.98	-0.69	-0.68	-0.88	-0.71	-0.81
OPERATING CASH & NON-CASH:											
Gross Farm Revenue /kg MS	6.70	6.51	6.68	6.38	6.61	5.42	6.25	6.31	6.54	6.20	6.39
Operating Expenses /kg MS	4.99	4.69	5.03	4.33	4.71	4.61	4.45	4.48	4.69	4.47	4.60
Operating Profit /kg MS	1.71	1.82	1.66	2.05	1.90	0.81	1.81	1.83	1.84	1.72	1.79
Gross Farm Revenue /ha	4,830	6,768	6,468	6,809	6,559	4,943	9,029	7,217	6,459	7,672	6,928
Operating Expenses /ha	3,595	4,872	4,863	4,620	4,675	4,204	6,421	5,124	4,638	5,541	4,991
Operating Profit /ha	1,235	1,896	1,605	2,189	1,884	739	2,608	2,093	1,821	2,131	1,937

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 %	4.4%	3.4%	3.4%	3.6%	4.3%	2.5%	4.5%	4.5%	3.6%	4.3%	3.9%
Total return on assets %	15.5%	10.4%	6.8%	15.2%	9.9%	4.6%	8.2%	6.0%	11.2%	7.0%	9.6%
Total return on equity %	27.8%	17.2%	10.2%	26.4%	14.0%	4.6%	12.6%	7.7%	18.4%	9.9%	15.3%
Wealth Creation:											
Growth in equity %	25.7%	17.5%	11.1%	25.8%	14.0%	8.0%	12.0%	8.1%	18.4%	10.1%	15.4%
Debt:											
Closing term liabilities / kg MS	\$22.51	\$27.90	\$25.41	\$28.79	\$22.69	\$20.41	\$22.62	\$24.27	\$26.51	\$23.08	\$25.00
Debt to asset %	46.7%	48.2%	46.9%	46.3%	44.4%	54.1%	51.6%	56.1%	47.1%	53.7%	49.4%

National operating return on dairy assets ranged from 2.5 per cent to 4.5 per cent across the regions. West Coast-Tasman (2.5%) was the lowest due to lower milk prices and profits, while Marlborough-Canterbury, Otago-Southland, Northland and Lower North Island had the highest returns, all between 4.3 and 4.5 per cent.

The national total return on assets (including change in asset values) was 9.6 per cent, with the North Island (11.2%) higher than the South Island (+7.0%). Northland (+15.5%), Taranaki (+15.2%) and Waikato (+10.4%) all recorded double digit return on assets.

Return on equity is the return on owner's funds, including capital changes after interest is paid. All regions experienced positive returns on equity following last season's negative returns. The lowest return on equity was recorded for West Coast-Tasman (4.6%) and the highest was for Northland (+27.8%) and Taranaki (+26.4%).

Average term debt per kilogram milksolids increased nationally in 2016-17 and was higher in the North Island (\$26.51) compared to the South Island (\$23.08). There was some variation between regions with Taranaki (\$28.79) and Waikato (\$27.90) at the highest end while West Coast-Tasman was the lowest (\$20.41). These high regional levels of borrowing reflect a high proportion of farms (17% in Taranaki and 13% in Waikato) with over \$40 term liabilities per kilogram milksolids.

Debt to asset levels were lower in the North Island (47.1%) than the South Island (53.7%) with all regions ranging between 44 per cent and 56 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.

Analysis of these performance indicators shows:

- 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.
- Dairy cash income per kilogram milksolids was the highest for low input systems at \$6.44 due to livestock sales being greater than the other two systems on a per kilogram milksolids basis.
- Farm working expenses and operating expenses per kilogram milksolids were considerably lower for the low input system, compared to the other two systems. The high input system had average costs of approximately 10 cents per kilogram milksolids higher than the medium input system.
- Cash operating surplus per kilogram milksolids was the highest for low systems (\$2.97) and decreased through to high systems (\$2.44). Once again the difference between the high and medium inputs systems was around 10 cents per kilogram milksolids for cash operating surplus.
- Operating profit per kilogram milksolids was the highest for low systems (\$2.01) and lowest for the medium system (\$1.67), reflecting the variation in expenditure, and lower gross farm revenue per kilogram milksolids for medium systems.
- Operating profit per hectare was highest for high systems (\$2,116), while the profits were similar for medium (\$1,816) and low systems (\$1,771). This was due to a combination of the variation across systems of dairy profit margins and milksolids production per hectare.
- The operating return on dairy assets was similar for low (4.1%) and high input (4.2%) systems and just slightly lower for the medium system (3.7%).
- The debt to asset ratio was similar for medium (50.9%) and high (49.2%) input systems and a little lower (46.0%) for low input systems.
- Closing term liabilities per kilogram milksolids were lowest for high systems (\$23.43) and highest for medium systems (\$25.38).
- All farm system types had positive growth in equity percentages, the opposite from last season. Growth in equity for low input systems increased by 18.6 per cent, medium input systems increased by 14.4 per cent and high input systems increased by 15.2 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	98	136	82	316
Effective area (ha)	127.8	151.7	163.1	147.8
Peak cows milked	322	427	481	414
Stocking rate (cows/ha)	2.5	2.8	2.9	2.8
Kg milksolids sold	112,538	164,943	196,750	160,302
Milksolids sold per hectare	881	1,088	1,206	1,085
Milksolids sold per cow	349	387	409	387
FTEs	2.4	2.8	3.3	2.9
Cows/FTE	134	152	146	144
Milksolids sold per FTE	46,891	58,908	59,621	55,265
DAIRY CASH INCOME: \$/kg MS				
Milk sales (net of dairy levies)	5.79	5.73	5.85	5.79
Net livestock sales (sales - purchases)	0.61	0.52	0.43	0.50
Other dairy cash income	0.04	0.03	0.04	0.04
Net dairy cash income	6.44	6.28	6.32	6.33
CASH FARM WORKING EXPENSES: \$/kg MS				
Wages	0.55	0.57	0.62	0.58
Animal health & breeding	0.37	0.34	0.36	0.31
Supplementary feed	0.54	0.71	0.92	0.74
Grazing & support block lease	0.32	0.46	0.46	0.49
Fertiliser, irrigation, regrassing, W&P	0.59	0.64	0.59	0.55
Maintenance & running	0.75	0.70	0.64	0.60
Overheads	0.35	0.33	0.29	0.30
Farm working expenses	3.47	3.75	3.88	3.57
Cash operating surplus	2.97	2.53	2.44	2.76
NON CASH ADJUSTMENTS: \$/kg MS				
Value of change in dairy livestock	0.03	0.00	0.15	0.92
Labour adjustment	0.56	0.37	0.30	0.35
Depreciation	0.35	0.42	0.45	1.39
Other adjustments	0.09	0.07	0.08	0.06
Dairy gross farm revenue	6.48	6.28	6.48	6.39
Dairy operating expenses	4.47	4.61	4.72	4.60
Dairy operating profit	2.01	1.67	1.75	1.79
PROFITABILITY:				
Gross farm revenue /ha	5,705	6,830	7,810	6,928
Operating expenses /ha	3,934	5,014	5,694	4,991
Operating profit /ha	1,771	1,816	2,116	1,937
Operating profit margin %	31.0%	26.6%	27.1%	28.0%
RETURNS:				
Operating return on dairy assets %	4.1%	3.7%	4.2%	3.9%
Total return on assets %	11.5%	9.2%	9.3%	9.6%
Total return on equity %	18.6%	15.0%	14.5%	15.3%
WEALTH CREATION:				
Growth in equity %	18.6%	14.4%	15.2%	15.4%
DEBT:				
Closing term liabilities /kg MS	\$ 24.80	\$ 25.38	\$ 23.43	\$ 25.00
Debt to asset %	46.0%	50.9%	49.2%	49.4%

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

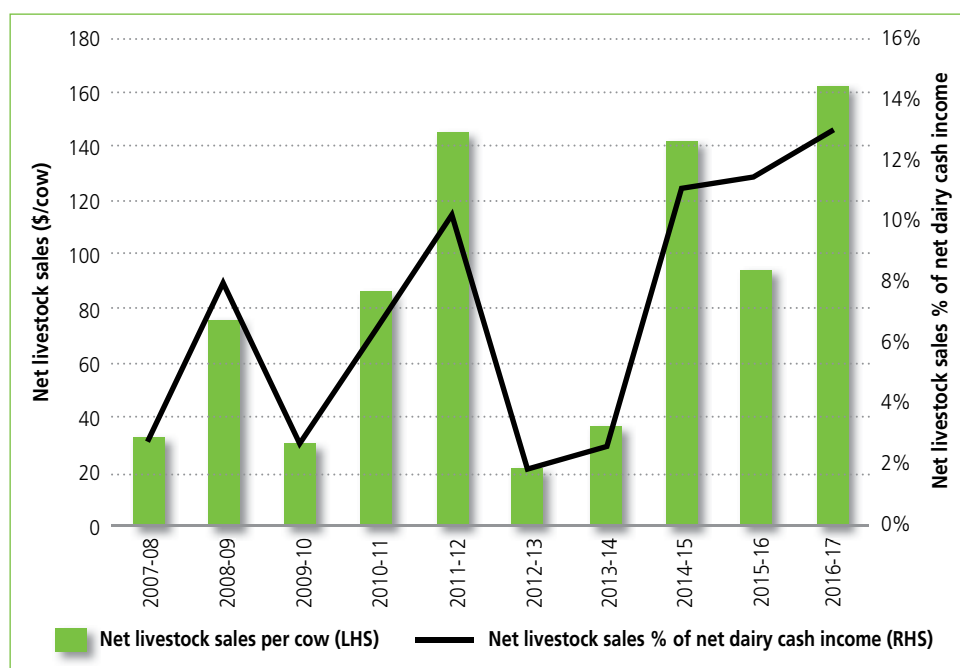
The price received for milk increased from \$1.88 to \$2.82 per kilogram milksolids in 2016-17, an increase of 94 cents (+49.7%) from the previous season. This was a welcome relief from the very low milk prices experienced in 2015-16, although still lower than the decade average of \$3.07. The milk price received of \$2.82 in 2016-17 was similar to the milk price received in 2014-15 (\$2.88).

Income from milk sales increased 48.9 per cent to \$405,691, alongside net livestock sales of \$60,598 and other dairy income of \$2,419. This increased net dairy cash income to \$468,708 which was 50.5 per cent higher than 2015-16.

Net livestock sales have become a more prominent source of income for Sharemilkers over the last three seasons, comprising 12.9 per cent of net dairy cash income for 2016-17. This is the highest revenue from livestock sales per cow and as a proportion of net dairy cash income to date. Figure 6.1 shows the trend for the past decade.

Milk production per herd decreased slightly for Sharemilkers (-0.6%). This was partly due to reduced cow numbers, from 379 in 2015-16 to 372 in 2016-17.

Figure 6.1: Sharemilkers Net Livestock Income



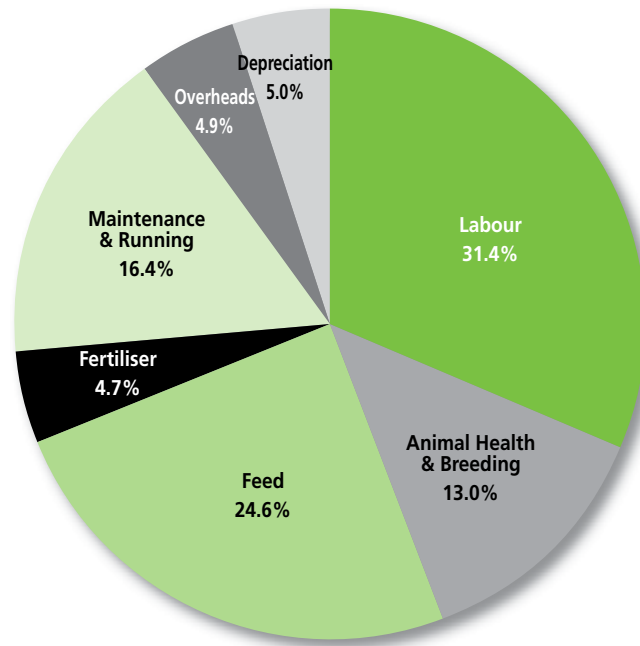
6.2: Expenditure

Farm working expenses (FWE) held steady from the previous season's low, averaging \$301,168 per sharemilking business or \$2.10 per kilogram milksolids. Expenditure was held relatively constant across both seasons due to restrictive cashflow during the year. Despite higher revenue in 2016-17, Sharemilkers continued to operate efficiently by controlling expenditure.

After adjustments for resources used but not paid for in the cash account (e.g. unpaid family labour), operating expenses per kilogram milksolids were \$2.74 per kilogram milksolids, below the decade average of \$2.87. Increased areas of expenditure were limited to animal health, feed, vehicles and fuel and repairs and maintenance which had been pared back during the period of low milk prices in 2014-15 and 2015-16.

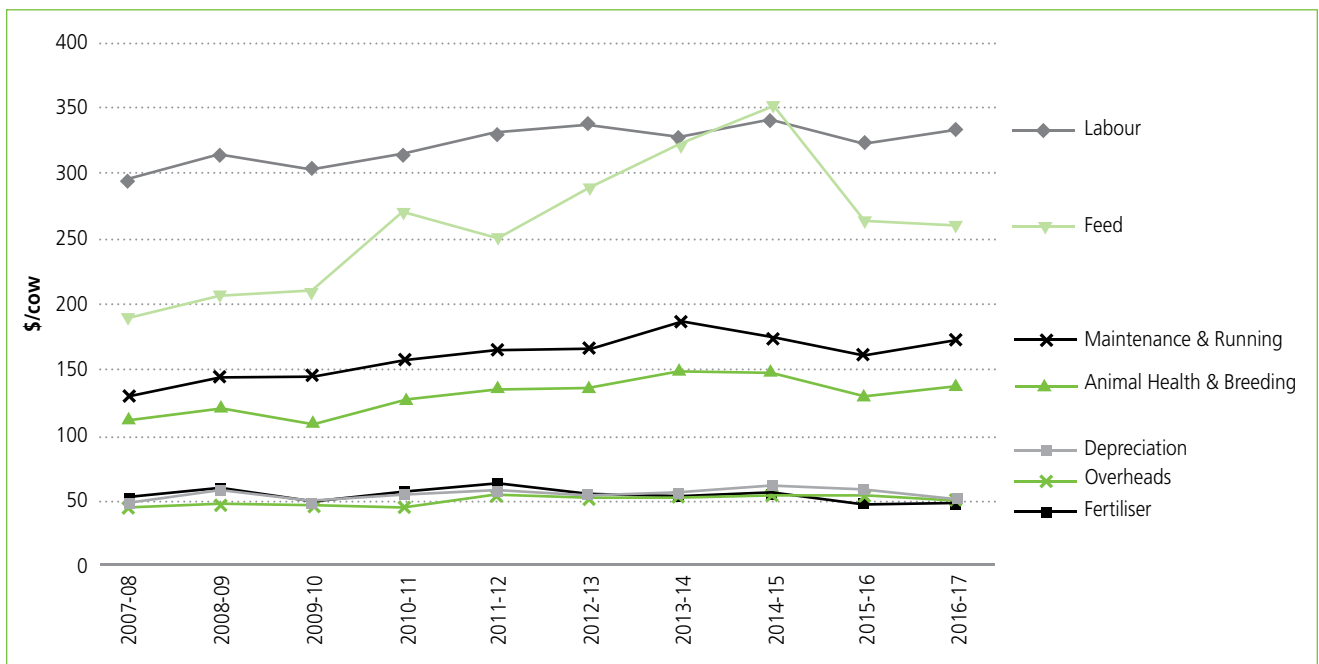
Labour expenses, depreciation and overheads are typically less variable to changes in milk price than other expense categories. The components of dairy operating expenditure are shown in Figure 6.2.

Figure 6.2: Dairy Operating Expenditure: 2016-17



On a per cow basis, most expense categories for Sharemilkers increased moderately in 2016-17. In particular, animal health and breeding expenses increased from \$129 to \$138 per cow, a similar level to 2012-13. Feed expenses per cow continued the decline seen in 2015-16, decreasing a further \$5 per cow to \$260, as shown in Figure 6.3. Over the last decade fertiliser, depreciation and overheads have remained reasonably constant per cow. However, labour, feed, maintenance and running, and animal health and breeding have increased.

Figure 6.3: Sharemilkers Expenses per Cow



6.3: Profitability

Dairy operating profit per kilogram milksolids in 2016-17 was \$0.64 for the average 50:50 Sharemilker, below the decade average of \$0.77. Profitability was significantly improved from 2015-16 due to higher milk prices improving gross farm revenue substantially, coupled with Sharemilkers maintaining low costs in 2016-17. Both operating profit per effective hectare and per cow increased by similar magnitudes.

Figure 6.4 shows changes in Sharemilkers operating profit, operating expenses and gross farm revenue per hectare over the last decade. The ten-year average for operating profit per hectare was \$776, with the 2016-17 season slightly below this level at \$696 per hectare. Gross farm revenue per hectare (\$3,679) and operating expenses per hectare (\$2,983) were similar to the ten-year averages.

Figure 6.4: GFR, Operating Expenses and Operating Profit (\$ per ha)

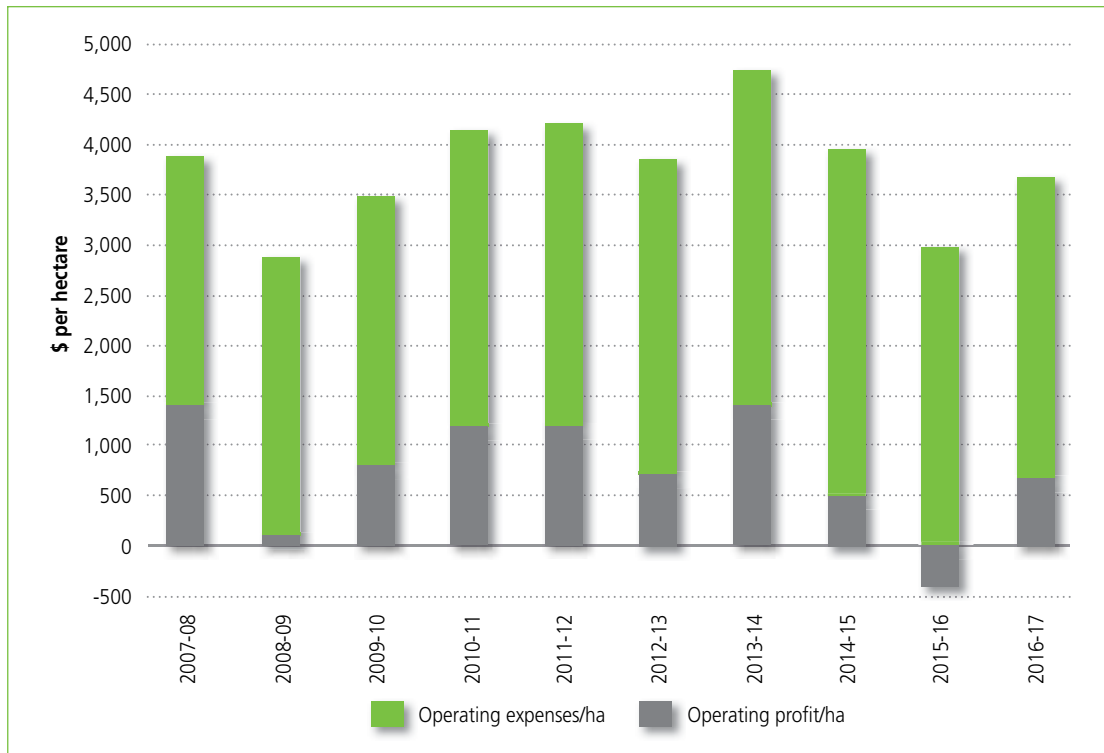


Figure 6.5 shows the distribution of 2016-17 operating profit per hectare. It is normally distributed around the mean of \$696 per hectare with a standard deviation of \$543 per hectare. Ninety-three per cent of Sharemilkers had positive operating profit, leaving 7 per cent of Sharemilkers below \$0 per hectare. Twenty-six per cent of Sharemilkers achieved operating profits of over \$1,000 per hectare.

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

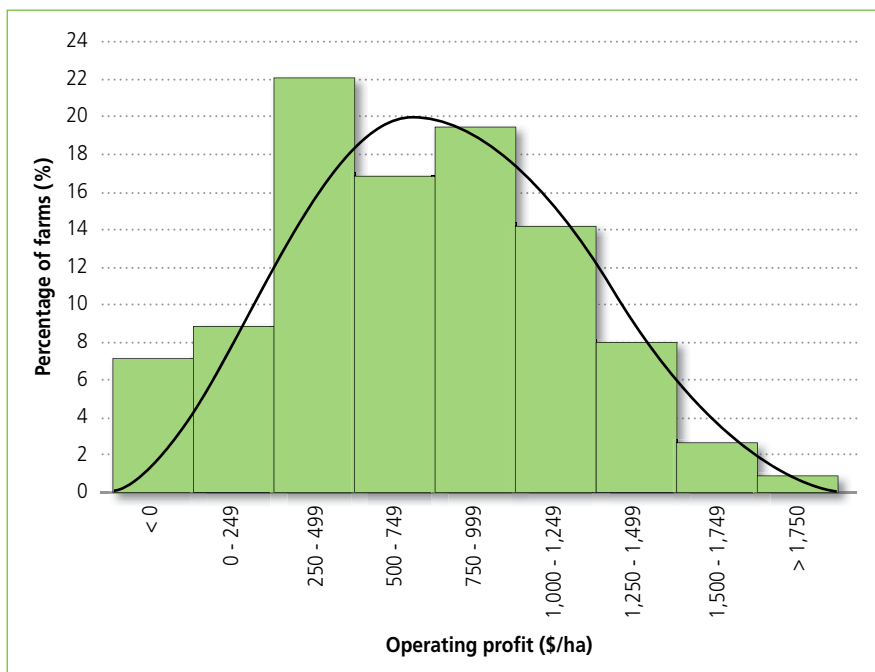


Table 6.1 compares the top quartile of 50:50 Sharemilkers and the average 50:50 Sharemilker for production, gross farm revenue, operating expenses and operating profit. For the top 25 per cent of Sharemilkers, operating profit was \$575 higher per hectare and 50 cents higher per kilogram milksolids than for the average Sharemilker. This difference is due to lower operating expenses (-\$0.18/kg MS) and higher gross farm revenue (+\$0.31/kg MS).

Table 6.1: 2016-17 Operating Profit Components

	2016-17 Average	2016-17 Top 25%*	Difference	% difference
Milksolids sold per hectare	1,089	1,154	65	6%
Dairy gross farm revenue/kg MS	\$ 3.38	\$ 3.69	\$ 0.31	9%
Dairy operating expenses/kg MS	\$ 2.74	\$ 2.56	-\$ 0.18	-7%
Dairy operating profit/kg MS	\$ 0.64	\$ 1.14	\$ 0.50	78%
Dairy operating profit/ha	\$ 696	\$ 1,271	\$ 575	83%

*Ranked on operating profit per hectare

The average operating return on dairy assets in 2016-17 was 12.7 per cent, which was on a par with the decade average of 12.5 per cent. Operating return on dairy assets is more variable for Sharemilkers than Owner-operators due to the year-to-year variations in both operating profit and the value of livestock, which makes up the majority of Sharemilkers capital.

Overall, profitability for the average Sharemilkers business as measured by business profit before tax was \$133,976 per farm. As the adjustment for unpaid labour is not accounted for in business profit, this figure is higher than operating profit per farm (\$91,877).

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 2016-17 were mostly from farm operations, with a small amount of introduced funds and other sources. Term debt was reduced as Sharemilkers repaid principal (\$17,644) on loans by the close of the season.

Of the funds applied, 42 per cent was spent on drawings, 27 per cent was spent on capital transactions and 25 per cent was spent on interest payments. Tax payments were relatively low, requiring 5 per cent of funds at \$6,220 per herd.

Table 6.2: 2016-17 Flow of Funds (\$ per farm)

	2015-16	2016-17
Change in Current Assets	- 16,221	22,455
- Change in Current Liabilities	23,954	- 9,244
Change in Working Capital	- 40,175	31,699
Source of Funds		
Cash Operating Surplus	11,433	167,540
+ non-dairy cash income	2,243	1,798
+ off-farm income	4,546	2,281
+ introduced funds	26,601	12,583
+ income equalisation	5,707	1,412
+ increase in term debt	37,011	- 17,644
= Total source of funds	87,541	167,970
Application of Funds		
rent	1,407	1,047
+ interest	37,949	34,629
+ tax	5,492	6,220
+ capital transactions	26,407	36,654
+ drawings	56,461	57,721
= Total application of funds	127,716	136,271
Source less Application of funds	- 40,175	31,699

The average 50:50 Sharemilkers cash operating surplus was \$167,540 or \$1.17 per kilogram milksolids, this was above the decade average of \$154,192.

In 2016-17, discretionary cash of \$127,442 per farm was above the decade average of \$93,500 and reversed the cash poor situation in 2015-16 where discretionary cash was negative (-\$31,172). Typically, these funds are required to reduce debt, used for 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 \$2.35 in milk payments to break-even in 2016-17. This is lower than a 20-year average break-even milk price of \$2.45 in nominal terms, and is similar to the level of break-even milk price in 2006-07 (\$2.30).

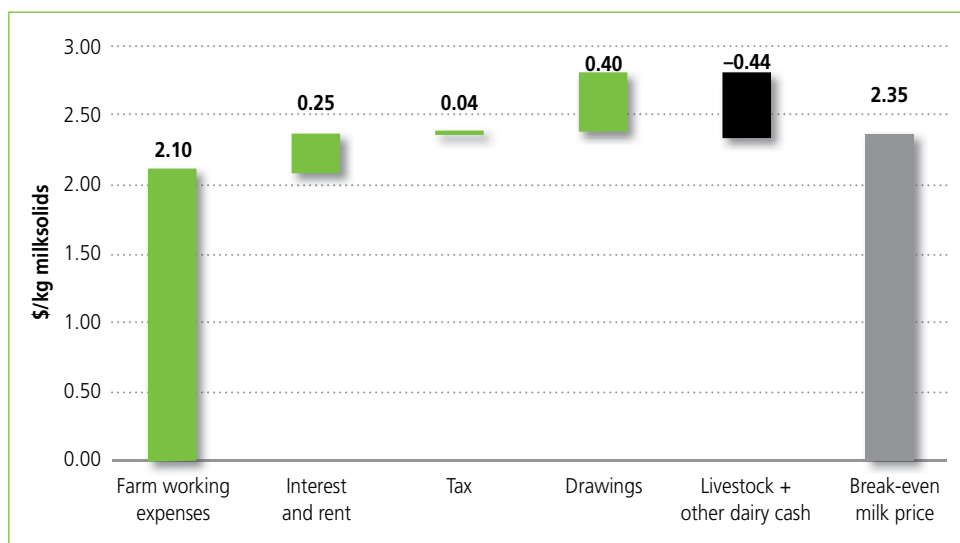
Table 6.3: Break-even Milk Price (\$ per kg MS)

	2012-13	2013-14	2014-15	2015-16	2016-17
Farm working expenses	2.35	2.42	2.34	2.08	2.10
Interest and rent	0.27	0.27	0.24	0.27	0.25
Tax	0.19	0.21	0.17	0.04	0.04
Drawings	0.52	0.53	0.55	0.39	0.40
Total cash expenses	3.33	3.43	3.30	2.78	2.79
less Livestock & other dairy cash income	0.08	0.12	0.38	0.27	0.44
Break-even milk price	3.25	3.31	2.93	2.51	2.35

Prior to 2007-08, break-even milk prices were lower than in recent years due to a low cost structure with farm working expenses. In 2016-17 the primary reason break-even milk price was low compared to recent seasons, was the impact of higher livestock income. For the past decade, livestock and other dairy income averaged 25 cents per kilogram milksolids and in 2016-17 this increased to 44 cents.

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 increased in value by \$203,704 during the 2016-17 season, closing at \$0.97 million per farm. Livestock accounted for 75.6 per cent of total closing dairy assets following a 29.0 per cent lift in value throughout the season. Plant, machinery and vehicles and land and buildings both increased in value from open to close of the season.

6.6: Liabilities and Debt Servicing

For the 2016-17 season, term liabilities declined from \$4.17 at open to \$4.05 per kilogram milk solids at close as farmers repaid debt. Interest and rent expenditure at 25 cents per kilogram milk solids 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 11.5 per cent to 7.3 per cent, refer to Table 6.4.

Table 6.4: Debt Servicing Ratios

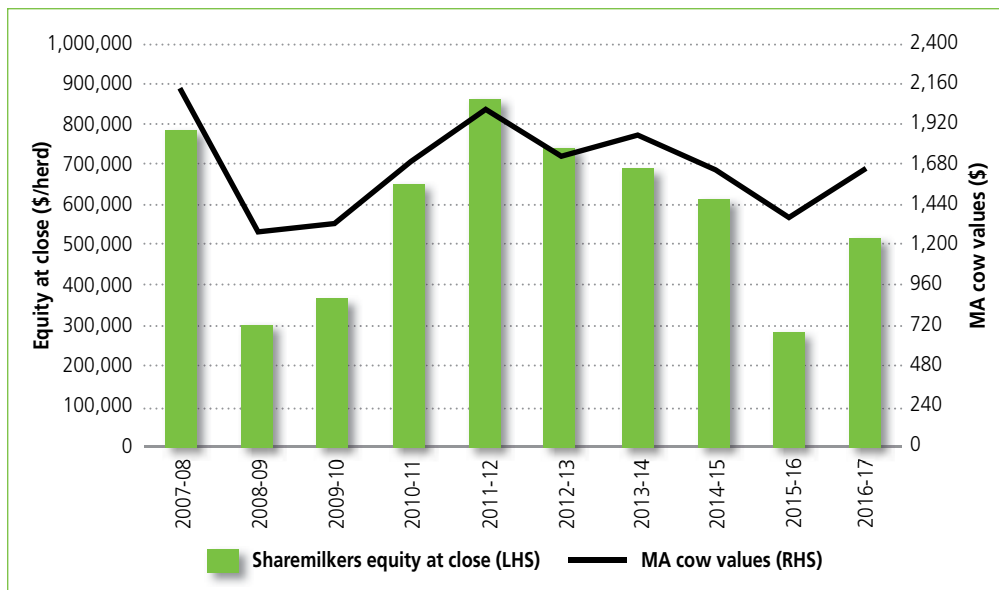
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Interest & rent \$/kg MS	0.35	0.44	0.38	0.35	0.26	0.27	0.27	0.24	0.27	0.25
Interest & rent % GFR	8.0%	15.0%	10.9%	8.2%	6.5%	7.0%	6.2%	7.1%	11.5%	7.3%
Closing term liabilities \$/kg MS	4.96	4.80	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05

6.7: Equity

At 1 June 2016, Sharemilkers had an average equity of \$274,261 in their dairy farm business, or 35.7 per cent of total dairy assets. Total assets increased (+22.0%) throughout the 2016-17 season while total liabilities decreased (-3.9%), resulting in an upturn in equity by 87.1 per cent to \$513,110 at 1 June 2017.

Figure 6.7 shows Sharemilkers equity has fluctuated considerably over the last decade due to large changes in cow values.

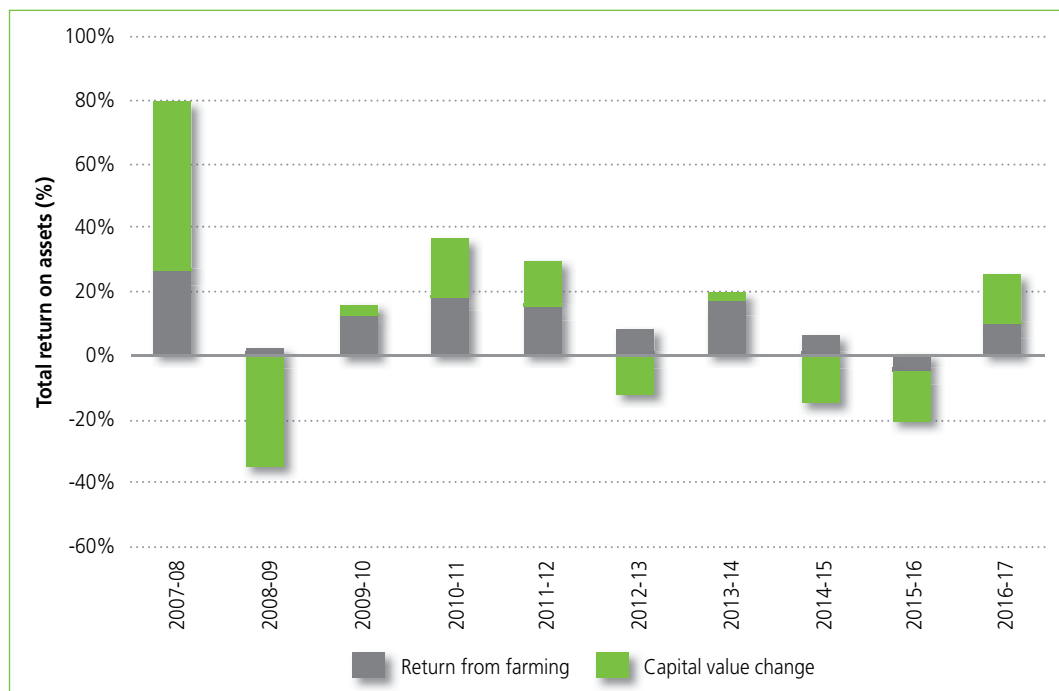
Figure 6.7: Sharemilkers Equity and Cow Values



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 2016-17 was 25.1 per cent, as shown in Figure 6.8. Sharemilker returns are more volatile than Owner-operators due to livestock being their most significant asset class and livestock values fluctuating with greater magnitude than land prices. Total return on assets in 2016-17 was well above the decade average of 13.6 per cent.

Figure 6.8: Sharemilkers Total Return on Assets



Total returns on Sharemilkers equity averaged 72.0 per cent in 2016-17. This was more than twice the decade average of 30.5 per cent.

6.9: Regional Analysis

Tables 6.5 and 6.6 shows 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 248 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 (+\$711, +\$513, and +\$198 respectively).
- On average, farm working expenses per kilogram milksolids were higher for South Island farms compared with North Island farms (+\$0.11). Otago-Southland farm working expenses were higher than the New Zealand average at \$2.17 compared to \$2.10.
- Operating expenses per kilogram milksolids were lower in the South Island (-\$0.21) compared with the North Island, and the highest operating expenses per kilogram milksolids were in the Waikato at \$2.85.
- Taranaki operating profit per kilogram milksolids of 81 cents was the highest nationally, 17 cents higher than the New Zealand average.

Table 6.5: Regional Sharemilkers Profitability

	Waikato	Taranaki	Otago-Southland	North Island	South Island	New Zealand
PHYSICAL CHARACTERISTICS:						
Number of herds	34	<20	<20	81	32	113
Effective hectares (ha)	111.7	92.5	197.1	113.3	188.0	132.0
Peak cows milked	321	262	554	310	558	372
Stocking rate (cows/ha)	2.9	2.8	2.8	2.7	3.0	2.8
Kg milksolids sold	117,210	100,573	238,892	112,190	237,974	143,685
Milksolids sold per hectare	1,049	1,087	1,212	990	1,266	1,089
Milksolids sold per cow	365	384	431	362	426	386
Cows per FTE	153	138	163	148	174	155
Milksolids produced per FTE	55,814	52,933	70,262	53,424	74,367	59,869
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	2.12	1.92	2.17	2.05	2.16	2.10
Cash operating surplus	1.18	1.46	1.09	1.29	1.00	1.17
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	3.37	3.53	3.41	3.46	3.27	3.38
Operating expenses /kg MS	2.85	2.72	2.66	2.83	2.62	2.74
Operating profit /kg MS	0.51	0.81	0.75	0.63	0.65	0.64
Gross farm revenue /ha	3,530	3,835	4,126	3,426	4,137	3,679
Operating expenses /ha	2,991	2,955	3,219	2,803	3,316	2,983
Operating profit /ha	539	881	908	623	821	696

Operating return on dairy assets was 2.7 percentage points higher in the South Island compared to the North Island. Otago-Southland had the highest operating return of the benchmarked groups with 15.8 per cent, reflecting higher operating profit in 2016-17.

Return on assets and return on equity were also higher for South Island Sharemilkers than the North Island. Taranaki however, had significantly higher return on equity, 89.8 per cent, than the North Island (59.6%) and New Zealand average (72.0%).

South Island Sharemilkers had a higher closing debt to asset ratio of 58.3 per cent compared with 50.7 per cent for North Island farms. Waikato farms had the lowest debt to asset ratio at 43.7 per cent.

Term liabilities per kilogram milksolids in Taranaki was higher than other regions at \$5.52, exacerbated by declining milksolids production in 2015-16 and 2016-17.

Growth in equity percentage was positive across both islands, with the South Island showing a larger increase (+136.4%) than the North Island average of 69.4 per cent.

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 %	10.1%	13.6%	15.8%	11.6%	14.3%	12.7%
Total return on assets %	24.6%	25.6%	26.8%	23.6%	27.5%	25.1%
Total return on equity %	50.0%	89.8%	87.8%	59.6%	106.0%	72.0%
Wealth Creation:						
Growth in equity %	59.1%	89.5%	118.8%	69.4%	136.4%	87.1%
Debt:						
Closing term liabilities / kg MS	3.12	5.52	4.19	4.12	3.94	4.05
Debt to asset %	43.7%	56.5%	53.3%	50.7%	58.3%	53.6%

Section 7: Time Series Tables – Owner-operators

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	846,191	632,202	795,575	979,430	990,172	899,388	1,164,274	923,621	628,192	928,944
Net livestock sales (sales - purchases)	45,745	42,134	40,072	51,283	52,637	55,381	57,832	83,804	90,596	79,495
Other dairy cash income	5,113	5,119	6,137	6,341	6,063	7,151	6,338	6,466	5,819	5,633
Net dairy cash income	897,049	679,455	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072
CASH FARM WORKING EXPENSES:										
Wages	63,632	69,967	78,139	80,413	88,015	91,013	90,565	97,790	103,689	92,630
Animal health	26,168	25,587	26,104	31,352	31,621	32,944	35,800	36,553	30,906	34,577
Breeding & herd improvement	12,966	15,002	14,253	17,601	17,850	20,267	20,485	23,746	19,702	21,986
Farm dairy	7,544	7,423	7,524	8,184	9,781	10,225	10,068	9,693	7,902	9,636
Electricity	10,536	11,438	13,240	13,754	14,489	16,028	17,342	17,636	17,646	18,352
Net feed made, purchased, cropped	98,897	94,681	83,985	114,290	117,928	124,172	156,489	152,147	118,281	120,103
Stock grazing	29,973	42,290	40,917	48,080	55,505	52,914	53,919	64,319	64,317	58,368
Support block lease	6,855	6,071	9,618	8,881	12,361	12,543	11,519	11,992	12,385	12,322
Fertiliser (incl Nitrogen)	70,711	77,521	70,422	79,692	87,658	81,705	86,711	75,738	66,595	73,964
Irrigation	4,099	5,009	5,105	5,658	4,326	5,807	4,527	9,367	7,987	8,527
Regrassing	7,982	8,269	7,446	8,861	6,696	8,709	10,423	9,776	7,751	9,913
Weed & pest	3,851	3,770	3,928	4,874	5,074	4,714	6,387	5,502	5,561	5,631
Vehicles & fuel	21,335	22,870	23,035	25,686	29,014	30,026	32,423	28,918	26,704	29,220
Repairs & maintenance	45,958	38,527	32,798	46,688	51,664	43,114	62,561	52,240	35,753	46,630
Freight & general	7,689	6,232	5,922	6,739	7,612	7,630	9,030	8,700	8,666	7,755
Administration	14,407	14,904	14,259	15,671	17,080	17,765	17,697	17,680	18,974	17,895
Insurance	5,022	5,303	6,147	7,159	8,042	9,084	9,718	10,773	10,252	10,947
ACC	3,847	3,551	4,002	4,289	5,712	3,937	4,321	4,134	3,690	3,445
Rates	9,370	9,786	11,946	12,597	13,790	14,147	15,873	15,915	16,089	16,761
Farm working expenses	450,842	468,201	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662
Cash operating surplus	446,207	211,254	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410
ADJUSTMENTS:										
Value of change in dairy livestock	16,946	2,511	327	9,883	20,201	11,428	24,912	2,632	-13,067	9,835
less Labour adjustment	54,496	57,610	52,969	51,797	54,748	55,162	59,309	59,021	56,341	61,154
plus Feed inventory adjustment	698	6,892	-744	3,313	4,782	-2,534	5,340	-210	3,453	2,790
less Owned support block adjustment	11,647	13,178	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359
less Depreciation	48,150	54,779	56,300	58,898	52,172	56,258	57,383	66,154	62,967	66,295
Net Adjustments	-96,649	-116,164	-120,321	-108,561	-95,491	-117,127	-101,778	-137,642	-143,048	-129,183
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	913,995	681,966	842,111	1,046,937	1,069,073	973,348	1,253,356	1,016,523	711,540	1,023,907
Dairy operating expenses	564,437	586,876	579,438	658,913	699,910	715,299	782,548	792,893	712,831	737,680
Dairy operating profit	349,558	95,090	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227
Dairy operating profit per ha	2,794	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937

Owner-operators

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	2,432	1,761	2,110	2,557	2,520	2,265	2,896	2,204	1,503	2,244
Net livestock sales (sales - purchases)	131	117	106	134	134	139	144	200	217	192
Other dairy cash income	15	14	16	17	15	18	16	15	14	14
Net dairy cash income	2,578	1,893	2,233	2,708	2,669	2,423	3,056	2,420	1,734	2,449
CASH FARM WORKING EXPENSES:										
Wages	183	195	207	210	224	229	225	233	248	224
Animal health	75	71	69	82	80	83	89	87	74	84
Breeding & herd improvement	37	42	38	46	45	51	51	57	47	53
Farm dairy	22	21	20	21	25	26	25	23	19	23
Electricity	30	32	35	36	37	40	43	42	42	44
Net feed made, purchased, cropped	284	264	223	298	300	313	389	363	283	290
Stock grazing	86	118	109	126	141	133	134	154	154	141
Support block lease	20	17	26	23	31	32	29	29	30	30
Fertiliser (incl Nitrogen)	203	216	187	208	223	206	216	181	159	179
Irrigation	12	14	14	15	11	15	11	22	19	21
Regrassing	23	23	20	23	17	22	26	23	19	24
Weed & pest	11	11	10	13	13	12	16	13	13	14
Vehicles & fuel	61	64	61	67	74	76	81	69	64	71
Repairs & maintenance	132	107	87	122	131	109	156	125	86	113
Freight & general	22	17	16	18	19	19	22	21	21	19
Administration	41	42	38	41	43	45	44	42	45	43
Insurance	14	15	16	19	20	23	24	26	25	26
ACC	11	10	11	11	15	10	11	10	9	8
Rates	27	27	32	33	35	36	39	38	38	40
Farm working expenses	1,296	1,304	1,217	1,411	1,487	1,478	1,631	1,558	1,394	1,446
Cash operating surplus	1,282	588	1,016	1,297	1,182	945	1,424	862	339	1,003
ADJUSTMENTS:										
Value of change in dairy livestock	49	7	1	26	51	29	62	6	-31	24
less Labour adjustment	157	160	141	135	139	139	148	141	135	148
plus Feed inventory adjustment	2	19	-2	9	12	-6	13	-1	8	7
less Owned support block adjustment	33	37	28	29	34	37	38	36	34	35
less Depreciation	138	153	149	154	133	142	143	158	151	160
Net Adjustments	-278	-324	-319	-283	-243	-295	-253	-329	-342	-312
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	2,626	1,900	2,234	2,734	2,720	2,452	3,118	2,426	1,702	2,473
Dairy operating expenses	1,622	1,635	1,537	1,720	1,781	1,802	1,947	1,892	1,705	1,782
Dairy operating profit per cow	1,004	265	697	1,013	939	650	1,171	534	-3	691

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	6,764	4,901	5,928	7,092	7,037	6,379	8,147	6,348	4,242	6,285
Net livestock sales (sales - purchases)	366	327	299	371	374	393	405	576	612	538
Other dairy cash income	41	40	46	46	43	51	44	44	39	38
Net dairy cash income	7,171	5,267	6,273	7,509	7,455	6,822	8,597	6,968	4,893	6,861
CASH FARM WORKING EXPENSES:										
Wages	509	542	582	582	626	645	634	672	700	627
Animal health	209	198	195	227	225	234	251	251	209	234
Breeding & herd improvement	104	116	106	127	127	144	143	163	133	149
Farm dairy	60	58	56	59	70	73	70	67	53	65
Electricity	84	89	99	100	103	114	121	121	119	124
Net feed made, purchased, cropped	791	734	626	828	838	881	1,095	1,046	799	813
Stock grazing	240	328	305	348	394	375	377	442	434	395
Support block lease	55	47	72	64	88	89	81	82	84	83
Fertiliser (incl Nitrogen)	565	601	525	577	623	579	607	521	450	500
Irrigation	33	39	38	41	31	41	32	64	54	58
Regrassing	64	64	55	64	48	62	73	67	52	67
Weed & pest	31	29	29	35	36	33	45	38	38	38
Vehicles & fuel	171	177	172	186	206	213	227	199	180	198
Repairs & maintenance	367	299	244	338	367	306	438	359	241	315
Freight & general	61	48	44	49	54	54	63	60	59	52
Administration	115	116	106	113	121	126	124	122	128	121
Insurance	40	41	46	52	57	64	68	74	69	74
ACC	31	28	30	31	41	28	30	28	25	23
Rates	75	76	89	91	98	100	111	109	109	113
Farm working expenses	3,604	3,629	3,419	3,914	4,152	4,161	4,590	4,485	3,936	4,050
Cash operating surplus	3,567	1,638	2,854	3,596	3,302	2,661	4,007	2,483	957	2,811
ADJUSTMENTS:										
Value of change in dairy livestock	135	19	2	72	144	81	174	18	-88	67
less Labour adjustment	436	447	395	375	389	391	415	406	380	414
plus Feed inventory adjustment	6	53	-6	24	34	-18	37	-1	23	19
less Owned support block adjustment	93	102	79	80	96	104	107	102	95	97
less Depreciation	385	425	420	426	371	399	402	455	425	449
Net Adjustments	-773	-900	-897	-786	-679	-831	-712	-946	-966	-874
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	7,306	5,287	6,275	7,581	7,598	6,903	8,771	6,986	4,804	6,928
Dairy operating expenses	4,512	4,549	4,318	4,771	4,974	5,073	5,476	5,449	4,813	4,991
Dairy operating profit per ha	2,794	737	1,957	2,810	2,624	1,830	3,295	1,537	-9	1,937

Owner-operators

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
Net livestock sales (sales - purchases)	0.40	0.35	0.31	0.39	0.36	0.39	0.38	0.52	0.57	0.50
Other dairy cash income	0.04	0.04	0.05	0.05	0.04	0.05	0.04	0.04	0.04	0.04
Net dairy cash income	7.81	5.60	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33
CASH FARM WORKING EXPENSES:										
Wages	0.55	0.58	0.61	0.60	0.59	0.64	0.60	0.61	0.65	0.58
Animal health	0.23	0.21	0.20	0.24	0.21	0.23	0.24	0.23	0.19	0.22
Breeding & herd improvement	0.11	0.12	0.11	0.13	0.12	0.14	0.14	0.15	0.12	0.14
Farm dairy	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.06	0.05	0.06
Electricity	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11
Net feed made, purchased, cropped	0.86	0.78	0.65	0.86	0.80	0.87	1.03	0.95	0.74	0.75
Stock grazing	0.26	0.35	0.32	0.36	0.38	0.37	0.36	0.40	0.40	0.36
Support block lease	0.06	0.05	0.07	0.07	0.08	0.09	0.08	0.07	0.08	0.08
Fertiliser (incl Nitrogen)	0.62	0.64	0.55	0.60	0.59	0.58	0.57	0.47	0.42	0.46
Irrigation	0.04	0.04	0.04	0.04	0.03	0.04	0.03	0.06	0.05	0.05
Regrassing	0.07	0.07	0.06	0.07	0.05	0.06	0.07	0.06	0.05	0.06
Weed & pest	0.03	0.03	0.03	0.04	0.03	0.03	0.04	0.03	0.03	0.04
Vehicles & fuel	0.19	0.19	0.18	0.19	0.20	0.21	0.21	0.18	0.17	0.18
Repairs & maintenance	0.40	0.32	0.25	0.35	0.35	0.30	0.41	0.33	0.22	0.29
Freight & general	0.07	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05
Administration	0.13	0.12	0.11	0.12	0.12	0.13	0.12	0.11	0.12	0.11
Insurance	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.06	0.07
ACC	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.02	0.02
Rates	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.10
Farm working expenses	3.93	3.86	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73
Cash operating surplus	3.89	1.74	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59
ADJUSTMENTS:										
Value of change in dairy livestock	0.15	0.02	0.00	0.07	0.14	0.08	0.16	0.02	-0.08	0.06
less Labour adjustment	0.47	0.47	0.41	0.39	0.37	0.39	0.39	0.37	0.35	0.38
plus Feed inventory adjustment	0.01	0.06	-0.01	0.02	0.03	-0.02	0.04	0.00	0.02	0.02
less Owned support block adjustment	0.10	0.11	0.08	0.08	0.09	0.10	0.10	0.09	0.09	0.09
less Depreciation	0.42	0.45	0.44	0.44	0.35	0.40	0.38	0.41	0.39	0.41
Net Adjustments	-0.84	-0.96	-0.93	-0.82	-0.65	-0.82	-0.67	-0.86	-0.89	-0.81
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	7.96	5.62	6.53	7.87	7.23	6.85	8.28	6.34	4.44	6.39
Dairy operating expenses	4.92	4.84	4.49	4.95	4.73	5.03	5.17	4.94	4.45	4.60
Dairy operating profit per kg MS	3.04	0.78	2.04	2.92	2.49	1.82	3.11	1.39	-0.01	1.79

Owner-operators

Table 7.5: Cashflow

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
Net dairy cash income	897,049	679,455	841,784	1,037,054	1,048,872	961,920	1,228,444	1,013,891	724,607	1,014,072
Farm working expenses	450,842	468,201	458,790	540,469	584,218	586,744	655,858	652,619	582,850	598,662
Cash operating surplus	446,207	211,254	382,994	496,585	464,654	375,176	572,586	361,272	141,757	415,410
DISCRETIONARY CASH										
less Rent (excl support block)	8,511	14,567	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582
less Interest	152,137	192,746	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343
less Tax	53,469	22,126	14,442	36,388	46,816	35,383	58,155	34,078	7,939	16,773
plus Net Non-dairy cash income	508	1,862	1,518	2,446	790	1,125	2,355	486	904	3,371
Discretionary Cash	232,598	-16,323	155,713	257,896	224,736	143,970	321,823	109,446	-82,602	185,083
OTHER CASH INCOME										
plus Net off-farm income	21,471	14,220	12,695	12,323	11,018	12,427	9,991	12,078	9,238	19,811
plus Introduced funds	-21,560	9,231	37,142	6,240	-2,871	40,918	-44,275	28,307	77,696	-24,004
plus Income equalisation	-7,470	1,528	3,556	-274	-2,004	1,178	-4,756	-9,579	16,765	1,307
Cash available for living and growth	225,039	8,656	209,106	276,185	230,879	198,493	282,783	140,252	21,097	182,197
OTHER CASH EXPENDITURE										
less Net capital transactions	336,811	258,664	117,688	136,393	164,026	185,532	143,703	201,119	76,697	109,749
less Net debt	-251,159	-276,681	-57,011	2991	22,153	-123,346	-10,790	-93,026	-111,777	-75,867
less Net drawings	78,946	80,167	84,261	97,099	83,781	92,872	116,224	110,437	78,151	82,043
Cash Surplus/Deficit	60,441	-53,494	64,168	39,702	-39,081	43,435	33,646	-78,278	-21,974	66,272
CASHFLOW PER KG MILKSOLIDS SOLD:										
Net dairy cash income	7.81	5.60	6.52	7.80	7.09	6.77	8.11	6.32	4.52	6.33
Farm working expenses	3.93	3.86	3.56	4.06	3.95	4.13	4.33	4.07	3.64	3.73
Cash operating surplus	3.89	1.74	2.97	3.73	3.14	2.64	3.78	2.25	0.88	2.59
DISCRETIONARY CASH										
less Rent (excl support block)	0.07	0.12	0.15	0.15	0.13	0.16	0.15	0.14	0.13	0.12
less Interest	1.33	1.59	1.52	1.39	1.18	1.23	1.13	1.22	1.23	1.23
less Tax	0.47	0.18	0.11	0.27	0.32	0.25	0.38	0.21	0.05	0.10
plus Net non-dairy cash income	0.00	0.02	0.01	0.02	0.01	0.01	0.02	0.00	0.01	0.02
Discretionary Cash	2.03	-0.13	1.21	1.94	1.52	1.01	2.12	0.68	-0.52	1.15
OTHER CASH INCOME										
plus Net off-farm income	0.19	0.12	0.10	0.09	0.07	0.09	0.07	0.08	0.06	0.12
plus Introduced funds	-0.19	0.08	0.29	0.05	-0.02	0.29	-0.29	0.18	0.48	-0.15
plus Income equalisation	-0.07	0.01	0.03	0.00	-0.01	0.01	-0.03	-0.06	0.10	0.01
Cash available for living and growth	1.96	0.07	1.62	2.08	1.56	1.40	1.87	0.87	0.13	1.14
OTHER CASH EXPENDITURE										
less Net capital transactions	2.93	2.13	0.91	1.03	1.11	1.31	0.95	1.25	0.48	0.68
less Net debt	-2.19	-2.28	-0.44	0.02	0.15	-0.87	-0.07	-0.58	-0.70	-0.47
less Net drawings	0.69	0.66	0.65	0.73	0.57	0.65	0.77	0.69	0.49	0.51
Cash surplus/deficit	0.53	-0.44	0.50	0.30	-0.26	0.31	0.22	-0.49	-0.14	0.41

Owner-operators

Table 7.6: Capital Structure and Wealth Creation

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
DAIRY ASSETS at OPEN										
Land & buildings	3,640,301	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
Plant, machinery and vehicles	160,642	171,122	212,797	185,881	213,589	193,255	224,385	233,302	258,077	254,722
Livestock	515,595	910,766	571,893	607,371	821,346	1,013,686	873,333	967,406	812,241	640,378
Investments (excl non-dairy)	767,981	760,461	657,001	658,358	616,654	628,020	899,384	892,639	688,384	791,795
Current assets	95,051	189,358	120,852	235,731	221,577	168,694	221,155	285,915	176,424	138,254
Total dairy assets at open	5,179,570	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
plus Non-dairy assets	176,842	177,620	207,001	227,726	243,626	226,186	225,437	207,058	258,166	267,387
Total assets	5,356,412	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
LIABILITIES at OPEN										
Term liabilities	1,899,032	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
Current liabilities	125,624	184,908	183,275	101,438	167,634	174,851	154,442	182,128	197,175	160,682
Total liabilities	2,024,656	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
Owners equity at open	3,331,756	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
DAIRY ASSETS at CLOSE										
Land & buildings	3,994,816	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
Plant, machinery and vehicles	187,817	186,400	204,911	189,607	227,328	196,594	252,083	233,593	243,360	249,436
Livestock	903,085	547,490	612,361	807,201	1,017,760	874,419	939,582	804,897	651,096	815,984
Investments (excl non-dairy)	758,396	639,133	618,712	676,231	649,996	967,958	817,865	751,874	810,143	823,402
Current assets	173,053	126,309	152,996	294,029	188,455	186,427	279,218	186,858	151,773	194,747
Total dairy assets at close	6,017,167	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
plus Non-dairy assets	287,149	224,204	221,772	256,722	271,339	260,335	236,874	224,823	258,766	280,232
Total assets	6,304,316	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
LIABILITIES at CLOSE										
Term liabilities	2,150,191	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
Current liabilities	143,885	171,743	151,251	120,034	173,593	149,149	178,859	161,349	194,497	150,902
Total liabilities	2,294,076	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
Owners equity at close	4,010,240	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
Growth in equity	678,484	-569,522	137,758	315,735	374,383	432,753	361,038	-143,500	-371,686	540,892
Growth in equity from profit	143,027	-129,380	26,052	123,991	123,506	16,257	187,695	-53,784	-225,348	68,973
Growth in equity from capital	535,457	-440,142	111,706	191,744	250,877	416,496	173,343	-89,716	-146,338	471,919
Growth in equity %	20.4%	-14.1%	4.5%	9.0%	11.2%	13.0%	9.7%	-3.5%	-9.3%	15.4%
Closing debt to asset %	34.6%	41.5%	46.5%	40.0%	43.3%	43.7%	41.9%	45.8%	50.3%	49.4%
Closing term liabilities per kg MS	18.73	19.91	21.65	20.44	19.24	20.82	20.14	21.26	22.49	25.00

Owner-operators

Table 7.7: Returns

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	221	208	223	214	204	217	301	296	279	316
Effective hectares	125.1	129.0	134.2	138.1	140.7	141.0	142.9	145.5	148.1	147.8
Peak cows milked	348	359	377	383	393	397	402	419	418	414
Stocking rate (cows/ha)	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Kg milksolids sold	114,815	121,350	129,049	133,030	147,964	142,089	151,455	160,367	160,270	160,302
Milksolids sold per hectare	918	941	962	963	1,052	1,008	1,060	1,102	1,082	1,085
Milksolids sold per cow	330	338	343	347	376	358	377	383	383	387
PAYOUT RECEIVED: \$/kg MS sold	7.37	5.21	6.16	7.36	6.69	6.33	7.69	5.76	3.92	5.79
RETURN on DAIRY ASSETS %										
Dairy operating profit	349,558	95,090	262,673	388,024	369,163	258,049	470,808	223,630	-1,291	286,227
plus Owned support block adjustment	11,647	13,178	10,635	11,062	13,554	14,601	15,338	14,889	14,126	14,359
less Rent	8,511	14,567	18,834	20,040	19,374	22,812	23,366	22,250	20,047	19,582
Net return from dairy	352,694	93,701	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004
Total dairy assets (less current) at open	5,084,519	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
Operating return on dairy assets %	6.9%	1.6%	4.5%	6.5%	6.2%	4.2%	7.2%	3.0%	-0.1%	3.9%
TOTAL RETURN ON ASSETS %										
Net return from dairy	352,694	93,701	254,474	379,046	363,343	249,838	462,780	216,269	-7,212	281,004
plus Net non-dairy profit	547	689	356	-1,100	-280	1,288	1,724	-673	-318	3,331
plus Change in capital value	516,145	-504,133	12,586	126,766	207,084	315,704	169,567	-175,947	-301,565	430,903
Total return	869,386	-409,743	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238
Total assets (less current) at open	5,261,361	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
Total return on assets %	16.5%	-6.6%	4.6%	8.3%	9.3%	9.2%	9.5%	0.5%	-4.1%	9.6%
TOTAL RETURN ON EQUITY %										
Total return	869,386	-409,743	267,416	504,712	570,147	566,830	634,071	39,649	-309,095	715,238
plus Net off-farm income	19,842	13,659	12,479	12,442	10,810	12,360	9,858	12,098	9,208	19,643
less Interest	152,137	192,746	195,523	184,707	174,518	174,136	171,597	195,984	197,277	197,343
Total return for equity	737,091	-588,830	84,372	332,447	406,439	405,054	472,332	-144,237	-497,164	537,538
Equity at open	3,331,756	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
Total return on equity %	22.1%	-14.6%	2.7%	9.5%	12.2%	12.2%	12.7%	-3.5%	-12.5%	15.3%

Section 8: Time Series Tables – 50:50 Sharemilkers

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	411,185	306,998	395,138	488,379	489,513	441,112	520,870	434,377	272,370	405,691
Net livestock sales (sales - purchases)	11,386	27,137	11,253	33,805	56,522	8,419	13,423	54,333	35,783	60,598
Other dairy cash income	2,806	4,749	2,810	5,149	5,206	2,844	3,407	2,381	3,368	2,419
Net dairy cash income	425,377	338,884	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708
CASH FARM WORKING EXPENSES:										
Wages	37,763	42,695	43,184	48,112	51,719	57,928	51,400	52,915	48,799	51,624
Animal health	25,800	27,364	25,912	31,820	33,464	32,842	34,651	35,418	28,668	31,232
Breeding & herd improvement	13,997	15,886	15,389	17,663	19,251	21,195	20,468	22,026	20,299	20,065
Farm dairy	5,213	5,638	5,918	6,369	6,386	6,077	6,631	6,653	6,629	6,886
Electricity	9,688	10,828	12,549	12,884	13,868	13,765	14,439	15,840	15,435	15,505
Net feed made, purchased, cropped	39,573	43,908	42,078	60,080	62,553	70,461	74,677	77,650	53,410	55,474
Stock grazing	20,714	23,520	28,426	35,791	29,714	30,296	39,026	50,175	42,034	34,075
Support block lease	1,213	3,259	4,698	2,997	2,971	5,199	1,308	1,403	2,206	1,834
Fertiliser (incl Nitrogen)	19,256	21,132	18,837	22,083	24,548	22,666	20,377	21,454	18,608	18,616
Irrigation	460	690	1,098	1,108	655	933	1,778	2,135	3,991	2,462
Regrassing	1,940	1,807	1,578	3,314	3,256	2,388	2,821	2,560	2,502	2,442
Weed & pest	1,126	988	1,326	1,425	1,616	1,534	1,392	1,582	1,383	1,948
Vehicles & fuel	17,096	20,311	20,241	24,795	25,313	26,602	25,153	23,726	20,049	22,926
Repairs & maintenance	8,438	8,731	8,612	9,808	11,617	9,703	12,113	10,305	9,029	10,234
Freight & general	6,230	6,441	6,651	6,571	6,420	8,502	8,892	8,661	6,782	6,600
Administration	10,161	10,427	10,536	11,034	11,656	12,014	12,063	12,413	11,778	11,542
Insurance	2,446	2,707	3,124	3,199	4,093	4,379	4,016	4,255	4,906	4,254
ACC	3,429	3,980	3,703	3,388	5,357	4,169	3,914	3,248	3,054	2,937
Rates	437	646	619	866	1,025	987	623	1,253	526	512
Farm working expenses	224,980	250,958	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168
Cash operating surplus	200,397	87,926	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540
ADJUSTMENTS:										
Value of change in dairy livestock	64,964	19,219	45,716	40,245	27,593	80,132	70,394	32,000	30,838	16,893
less Labour adjustment	66,547	70,048	71,129	74,092	76,757	74,703	68,733	77,508	73,553	72,041
plus Feed inventory adjustment	-645	2,646	261	912	3,819	-441	1,573	176	1,708	-486
less Owned support block adjustment	1,973	3,298	1,597	2,218	1,217	3,315	685	1,245	695	508
less Depreciation	16,769	20,660	19,077	21,960	22,024	23,266	21,798	25,243	23,409	19,521
Net Adjustments	-20,970	-72,141	-45,826	-57,113	-68,586	-21,593	-19,249	-71,820	-65,111	-75,663
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	490,341	358,103	454,917	567,578	578,834	532,507	608,094	523,091	342,359	485,601
Dairy operating expenses	310,914	342,318	346,021	400,665	411,661	433,365	425,385	457,492	396,037	393,724
Dairy operating profit	179,427	15,785	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877
Dairy operating profit per ha	1,424	127	834	1,221	1,222	719	1,427	497	-403	696

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	1,162	858	1,051	1,259	1,262	1,120	1,419	1,134	719	1,091
Net livestock sales (sales - purchases)	32	76	30	87	146	21	37	142	94	163
Other dairy cash income	8	13	7	13	13	7	9	6	9	7
Net dairy cash income	1,202	947	1,088	1,359	1,421	1,148	1,465	1,282	822	1,260
CASH FARM WORKING EXPENSES:										
Wages	107	119	115	124	133	147	140	138	129	139
Animal health	73	76	69	82	86	83	94	92	76	84
Breeding & herd improvement	40	44	41	46	50	54	56	58	54	54
Farm dairy	15	16	16	16	16	15	18	17	17	19
Electricity	27	30	33	33	36	35	39	41	41	42
Net feed made, purchased, cropped	112	123	112	155	161	179	203	203	141	149
Stock grazing	59	66	76	92	77	77	106	131	111	92
Support block lease	3	9	12	8	8	13	4	4	6	5
Fertiliser (incl Nitrogen)	54	59	50	57	63	58	56	56	49	50
Irrigation	1	2	3	3	2	2	5	6	11	7
Regrassing	5	5	4	9	8	6	8	7	7	7
Weed & pest	3	3	4	4	4	4	4	4	4	5
Vehicles & fuel	48	57	54	64	65	68	69	62	53	62
Repairs & maintenance	24	24	23	25	30	25	33	27	24	28
Freight & general	18	18	18	17	17	22	24	23	18	18
Administration	29	29	28	28	30	30	33	32	31	31
Insurance	7	8	8	8	11	11	11	11	13	11
ACC	10	11	10	9	14	11	11	8	8	8
Rates	1	2	2	2	3	3	2	3	1	1
Farm working expenses	636	701	677	782	813	842	915	923	792	810
Cash operating surplus	566	246	411	577	608	306	550	359	30	450
ADJUSTMENTS:										
Value of change in dairy livestock	184	54	122	104	71	203	192	84	81	45
less Labour adjustment	188	196	189	191	198	190	187	202	194	194
plus Feed inventory adjustment	-2	7	1	2	10	-1	4	0	5	-1
less Owned support block adjustment	6	9	4	6	3	8	2	3	2	1
less Depreciation	47	58	51	57	57	59	59	66	62	52
Net Adjustments	-59	-202	-122	-147	-177	-55	-52	-188	-172	-203
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	1,385	1,000	1,210	1,463	1,492	1,352	1,657	1,366	903	1,305
Dairy operating expenses	878	956	920	1,033	1,061	1,100	1,159	1,194	1,045	1,058
Dairy operating profit per cow	507	44	290	430	431	252	498	171	-142	247

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	3,263	2,470	3,026	3,573	3,578	3,199	4,069	3,291	2,043	3,073
Net livestock sales (sales - purchases)	90	218	86	247	413	61	105	412	268	459
Other dairy cash income	22	38	22	38	38	21	27	18	25	18
Net dairy cash income	3,376	2,726	3,133	3,858	4,030	3,280	4,201	3,720	2,337	3,551
CASH FARM WORKING EXPENSES:										
Wages	300	343	331	352	378	420	402	401	366	391
Animal health	205	220	198	233	245	238	271	268	215	237
Breeding & herd improvement	111	128	118	129	141	154	160	167	152	152
Farm dairy	41	45	45	47	47	44	52	50	50	52
Electricity	77	87	96	94	101	100	113	120	116	117
Net feed made, purchased, cropped	314	353	322	440	457	511	583	588	401	420
Stock grazing	164	189	218	262	217	220	305	380	315	258
Support block lease	10	26	36	22	22	38	10	11	17	14
Fertiliser (incl Nitrogen)	153	170	144	162	179	164	159	163	140	141
Irrigation	4	6	8	8	5	7	14	16	30	19
Regrassing	15	15	12	24	24	17	22	19	19	19
Weed & pest	9	8	10	10	12	11	11	12	10	15
Vehicles & fuel	136	163	155	181	185	193	197	180	150	174
Repairs & maintenance	67	70	66	72	85	70	95	78	68	78
Freight & general	49	52	51	48	47	62	69	66	51	50
Administration	81	84	81	81	85	87	94	94	88	87
Insurance	19	22	24	23	30	32	31	32	37	32
ACC	27	32	28	25	39	30	31	25	23	22
Rates	3	5	5	6	7	7	5	9	4	4
Farm working expenses	1,786	2,019	1,949	2,219	2,306	2,405	2,623	2,679	2,251	2,282
Cash operating surplus	1,590	707	1,185	1,639	1,723	876	1,578	1,041	86	1,269
ADJUSTMENTS:										
Value of change in dairy livestock	516	155	350	294	202	581	550	242	231	128
less Labour adjustment	528	564	545	542	561	542	537	587	552	546
plus Feed inventory adjustment	-5	21	2	7	28	-3	12	1	13	-4
less Owned support block adjustment	16	27	12	16	9	24	5	9	5	4
less Depreciation	133	166	146	161	161	169	170	191	176	148
Net Adjustments	-166	-580	-351	-418	-501	-157	-150	-544	-488	-573
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	3,892	2,881	3,483	4,152	4,231	3,862	4,751	3,963	2,568	3,679
Dairy operating expenses	2,468	2,754	2,649	2,931	3,009	3,143	3,323	3,466	2,971	2,983
Dairy operating profit per ha	1,424	127	834	1,221	1,222	719	1,427	497	-403	696

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

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
DAIRY CASH INCOME \$:										
Milk sales (net of dairy levies)	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
Net livestock sales (sales - purchases)	0.10	0.22	0.09	0.25	0.39	0.06	0.10	0.36	0.25	0.42
Other dairy cash income	0.02	0.04	0.02	0.04	0.04	0.02	0.02	0.02	0.02	0.02
Net dairy cash income	3.79	2.79	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26
CASH FARM WORKING EXPENSES:										
Wages	0.34	0.35	0.33	0.36	0.35	0.41	0.37	0.35	0.34	0.36
Animal health	0.23	0.23	0.20	0.24	0.23	0.23	0.25	0.23	0.20	0.22
Breeding & herd improvement	0.12	0.13	0.12	0.13	0.13	0.15	0.15	0.15	0.14	0.14
Farm dairy	0.05	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.05	0.05
Electricity	0.09	0.09	0.10	0.10	0.09	0.10	0.10	0.10	0.11	0.11
Net feed made, purchased, cropped	0.35	0.36	0.32	0.45	0.43	0.50	0.54	0.51	0.37	0.39
Stock grazing	0.18	0.19	0.22	0.27	0.20	0.21	0.28	0.33	0.29	0.24
Support block lease	0.01	0.03	0.04	0.02	0.02	0.04	0.01	0.01	0.02	0.01
Fertiliser (incl Nitrogen)	0.17	0.17	0.15	0.16	0.17	0.16	0.15	0.14	0.13	0.13
Irrigation	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.03	0.02
Regrassing	0.02	0.01	0.01	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	0.15	0.17	0.16	0.18	0.17	0.19	0.18	0.16	0.14	0.16
Repairs & maintenance	0.08	0.07	0.07	0.07	0.08	0.07	0.09	0.07	0.06	0.07
Freight & general	0.06	0.05	0.05	0.05	0.04	0.06	0.06	0.06	0.05	0.05
Administration	0.09	0.09	0.08	0.08	0.08	0.09	0.09	0.08	0.08	0.08
Insurance	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
ACC	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.02	0.02
Rates	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00
Farm working expenses	2.00	2.07	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10
Cash operating surplus	1.78	0.73	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17
ADJUSTMENTS:										
Value of change in dairy livestock	0.58	0.16	0.35	0.30	0.19	0.57	0.51	0.21	0.21	0.12
less Labour adjustment	0.59	0.58	0.55	0.55	0.52	0.53	0.50	0.51	0.51	0.50
plus Feed inventory adjustment	-0.01	0.02	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00
less Owned support block adjustment	0.02	0.03	0.01	0.02	0.01	0.02	0.00	0.01	0.00	0.00
less Depreciation	0.15	0.17	0.15	0.16	0.15	0.16	0.16	0.17	0.16	0.14
Net Adjustments	-0.19	-0.59	-0.35	-0.42	-0.47	-0.15	-0.14	-0.48	-0.45	-0.53
OPERATING CASH & NON-CASH:										
Dairy gross farm revenue	4.36	2.95	3.51	4.22	3.94	3.77	4.39	3.46	2.37	3.38
Dairy operating expenses	2.77	2.82	2.67	2.98	2.81	3.07	3.07	3.03	2.74	2.74
Dairy operating profit per kg MS	1.60	0.13	0.84	1.24	1.14	0.70	1.32	0.43	-0.37	0.64

50:50 Sharemilkers

Table 8.5: Cashflow

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
Net dairy cash income	425,377	338,884	409,201	527,333	551,241	452,375	537,700	491,091	311,521	468,708
Farm working expenses	224,980	250,958	254,479	303,307	315,482	331,640	335,742	353,672	300,088	301,168
Cash operating surplus	200,397	87,926	154,722	224,026	235,759	120,735	201,958	137,419	11,433	167,540
DISCRETIONARY CASH										
less Rent (excl support block)	791	2,031	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047
less Interest	38,399	51,736	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629
less Tax	35,613	17,877	5,085	23,930	31,344	27,351	29,237	25,101	5,492	6,220
plus Net non-dairy cash income	-314	688	1,498	2,645	1,458	139	2,036	2,511	2,243	1,798
Discretionary Cash	125,280	16,970	101,708	156,053	168,000	56,095	136,757	77,870	-31,172	127,442
OTHER CASH INCOME										
plus Net off-farm income	2,334	3,472	6,014	5,508	3,753	4,244	3,989	3,817	4,546	2,281
plus Introduced funds	1,350	6,087	-3,583	8,612	11,331	8,480	13,155	24,197	26,601	12,583
plus Income equalisation	-1,799	8,035	1,535	519	-379	4,325	-2,621	-6,091	5,707	1,412
Cash available for living and growth	127,165	34,564	105,674	170,692	182,705	73,144	151,280	99,793	5,682	143,718
OTHER CASH EXPENDITURE										
less Net capital transactions	215,532	129,125	12,833	27,519	48,945	70,590	60,379	89,030	26,407	36,654
less Net debt	-196,482	-130,212	24,238	58,537	56,442	-40,067	-973	-50,721	37,011	17,644
less Net drawings	64,165	55,161	55,876	67,893	75,857	72,999	72,813	83,335	56,461	57,721
Cash Surplus/Deficit	43,950	-19,510	12,727	16,743	1,461	-30,378	19,061	-21,851	-114,197	31,699
CASHFLOW PER KG MILKSOLIDS SOLD:										
Net dairy cash income	3.79	2.79	3.16	3.92	3.76	3.21	3.88	3.25	2.15	3.26
Farm working expenses	2.00	2.07	1.96	2.25	2.15	2.35	2.42	2.34	2.08	2.10
Cash operating surplus	1.78	0.73	1.19	1.66	1.61	0.86	1.46	0.91	0.08	1.17
DISCRETIONARY CASH										
less Rent (excl support block)	0.01	0.02	0.01	0.02	0.02	0.03	0.02	0.03	0.01	0.01
less Interest	0.34	0.43	0.37	0.33	0.23	0.23	0.25	0.21	0.26	0.24
less Tax	0.32	0.15	0.04	0.18	0.21	0.19	0.21	0.17	0.04	0.04
plus Net non-dairy cash income	0.00	0.01	0.01	0.02	0.01	0.00	0.01	0.02	0.02	0.01
Discretionary Cash	1.11	0.14	0.78	1.16	1.14	0.40	0.99	0.52	-0.22	0.89
OTHER CASH INCOME										
plus Net off-farm income	0.02	0.03	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.02
plus Introduced funds	0.01	0.05	-0.03	0.06	0.08	0.06	0.09	0.16	0.18	0.09
plus Income equalisation	-0.02	0.07	0.01	0.00	0.00	0.03	-0.02	-0.04	0.04	0.01
Cash available for living and growth	1.13	0.29	0.82	1.27	1.25	0.52	1.09	0.66	0.04	1.00
OTHER CASH EXPENDITURE										
less Net capital transactions	1.92	1.06	0.10	0.20	0.33	0.50	0.44	0.59	0.18	0.26
less Net debt	-1.75	-1.07	0.19	0.43	0.38	-0.28	-0.01	-0.34	0.26	0.12
less Net drawings	0.57	0.45	0.43	0.50	0.52	0.52	0.53	0.55	0.39	0.40
Cash surplus/deficit	0.39	-0.16	0.10	0.12	0.01	-0.22	0.14	-0.14	-0.79	0.22

Table 8.6: Capital Structure and Wealth Creation

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126	124.3	130.6	136.7	136.8	137.9	128	132	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
DAIRY ASSETS at OPEN										
Land & buildings	39,806	80,323	66,517	105,003	28,567	86,836	15,098	30,040	11,402	18,684
Plant, machinery and vehicles	69,097	90,751	93,586	95,481	106,678	117,383	108,099	126,212	125,820	117,301
Livestock	508,957	887,282	540,948	598,372	788,495	948,782	763,980	845,693	691,128	569,288
Investments (excl non-dairy)	5,024	9,071	4,996	13,340	12,004	12,323	9,835	14,950	7,629	15,904
Current assets	32,376	85,650	61,330	82,002	118,029	106,625	82,670	138,435	103,524	46,993
Total dairy assets at open	655,260	1,153,077	767,377	894,198	1,053,773	1,271,949	979,682	1,155,330	939,503	768,170
plus Non-dairy assets	57,239	103,177	162,078	112,936	139,545	111,848	148,952	126,234	152,207	195,254
Total assets	712,499	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
LIABILITIES at OPEN										
Term liabilities	361,173	452,125	608,678	594,089	510,469	473,652	513,263	456,746	552,001	599,319
Current liabilities	54,193	96,134	80,763	77,308	101,391	96,334	97,513	88,015	95,703	89,844
Total liabilities	415,366	548,259	689,441	671,397	611,860	569,986	610,776	544,761	647,704	689,163
Owners equity at open	297,133	707,995	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261
DAIRY ASSETS at CLOSE										
Land & buildings	181,078	101,550	67,558	103,473	28,759	95,068	15,631	45,015	10,361	19,483
Plant, machinery and vehicles	88,540	99,716	95,020	106,965	126,654	129,332	132,115	126,025	121,846	125,203
Livestock	942,049	548,293	624,904	827,120	985,447	887,135	870,676	731,576	594,679	734,331
Investments (excl non-dairy)	16,853	19,455	6,734	14,062	17,438	13,086	11,543	17,568	7,796	23,409
Current assets	102,385	60,051	73,704	105,744	117,026	83,659	115,486	114,664	87,303	69,448
Total dairy assets at close	1,330,905	829,065	867,920	1,157,364	1,275,324	1,208,280	1,145,451	1,034,848	821,985	971,874
plus Non-dairy assets	90,680	139,842	158,786	107,949	136,933	144,476	165,597	172,672	163,079	203,511
Total assets	1,421,585	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
LIABILITIES at CLOSE										
Term liabilities	557,655	582,337	584,440	535,552	454,027	513,719	514,236	507,467	589,012	581,675
Current liabilities	80,252	90,045	80,410	84,307	98,927	103,746	111,268	86,095	119,657	80,600
Total liabilities	637,907	672,382	664,850	619,859	552,954	617,465	625,504	593,562	708,669	662,275
Owners equity at close	783,678	296,525	361,856	645,454	859,303	735,291	685,544	613,958	276,395	513,110
Growth in equity	486,545	-411,470	121,842	309,717	277,845	-78,520	167,686	-122,845	-167,611	238,849
Growth in equity from profit	111,230	-34,586	77,675	112,617	104,473	43,782	118,099	4,979	-73,991	69,859
Growth in equity from capital	375,315	-376,884	44,167	197,100	173,372	-122,302	49,587	-127,824	-93,620	168,990
Growth in equity %	163.7%	-58.1%	50.8%	92.2%	47.8%	-9.6%	32.4%	-16.7%	-37.7%	87.1%
Closing debt to asset %	40.6%	67.4%	62.0%	44.3%	33.7%	42.1%	42.7%	43.8%	69.2%	53.6%
Closing term liabilities per kg MS	4.96	4.80	4.51	3.98	3.09	3.64	3.71	3.36	4.07	4.05

50:50 Sharemilkers

Table 8.7: Returns

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
PHYSICAL CHARACTERISTICS:										
Number of herds	105	120	115	100	96	92	114	111	109	113
Effective hectares	126.0	124.3	130.6	136.7	136.8	137.9	128.0	132.0	133.3	132.0
Peak cows milked	354	358	376	388	388	394	367	383	379	372
Stocking rate (cows/ha)	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9	2.8	2.8
Kg milksolids sold	112,367	121,273	129,589	134,651	146,745	141,062	138,532	151,044	144,587	143,685
Milksolids sold per hectare	892	976	992	985	1,073	1,023	1,082	1,144	1,085	1,089
Milksolids sold per cow	319	339	345	347	378	358	377	394	381	386
PAYOUT RECEIVED: \$/kg MS sold	3.66	2.53	3.05	3.63	3.34	3.13	3.76	2.88	1.88	2.82
RETURN on DAIRY ASSETS %										
Dairy operating profit	179,427	15,785	108,896	166,913	167,173	99,142	182,709	65,599	-53,678	91,877
plus Owned support block adjustment	1,973	3,298	1,597	2,218	1,217	3,315	685	1,245	695	508
less Rent	791	2,031	1,611	2,111	3,450	4,385	3,401	5,154	1,407	1,047
Net return from dairy	180,609	17,052	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338
Total dairy assets (less current) at open	622,884	1,067,427	706,047	812,196	935,744	1,165,324	897,012	1,016,895	835,979	721,177
Operating return on dairy assets %	29.0%	1.6%	15.4%	20.6%	17.6%	8.4%	20.1%	6.1%	-6.5%	12.7%
TOTAL RETURN ON ASSETS %										
Net Return from dairy	180,609	17,052	108,882	167,020	164,940	98,072	179,993	61,690	-54,390	91,338
plus Net non-dairy profit	46	473	896	2,563	684	445	2,052	2,671	2,203	2,387
plus Change in capital value	358,609	-410,064	26,356	166,673	143,404	-158,797	18,825	-171,303	-147,670	135,959
Total return	539,264	-392,539	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684
Total assets (less current) at open	680,123	1,170,604	868,125	925,132	1,075,289	1,277,172	1,045,964	1,143,129	988,186	916,431
Total return on assets %	79.3%	-33.5%	15.7%	36.3%	28.7%	-4.7%	19.2%	-9.4%	-20.2%	25.1%
TOTAL RETURN ON EQUITY %										
Total return	539,264	-392,539	136,134	336,256	309,028	-60,280	200,870	-106,942	-199,857	229,684
plus Net off-farm income	2,233	2,615	5,545	5,342	3,716	4,136	3,968	3,909	4,542	2,300
less Interest	38,399	51,736	47,816	44,577	34,423	33,043	34,599	31,805	37,949	34,629
Total return for equity	503,098	-441,660	93,863	297,021	278,321	-89,187	170,239	-134,838	-233,264	197,355
Equity at open	297,133	707,995	240,014	335,737	581,458	813,811	517,858	736,803	444,006	274,261
Total return on equity %	169.3%	-62.4%	39.1%	88.5%	47.9%	-11.0%	32.9%	-18.3%	-52.5%	72.0%

Section 9: Operating Profit Forecasts – Owner-operators

Table 9.1: Cash Operating Surplus and Operating Profit 2017-18

Date: 4 April 2018

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	148.1			
Peak cows milked	416			
Kg Milksolids sold	159,663	384	1,078	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	1,049,454	2,523	7,086	6.57
Net livestock sales (sales - purchases)	77059	185	520	0.48
Other dairy cash income	5,158	12	35	0.03
Net dairy cash income	1,131,671	2,720	7,642	7.09
CASH FARM WORKING EXPENSES:				
Wages	94,792	228	640	0.59
Animal health	35,060	84	237	0.22
Breeding & herd improvement	22,581	54	152	0.14
Farm dairy	9,807	24	66	0.06
Electricity	19,014	46	128	0.12
Net feed made, purchased, cropped	130,347	313	880	0.82
Stock grazing	59,985	144	405	0.38
Support block lease	12,726	31	86	0.08
Fertiliser (incl nitrogen)	76,862	185	519	0.48
Irrigation	8,610	21	58	0.05
Regrassing	9,745	23	66	0.06
Weed & pest	5,804	14	39	0.04
Vehicles & fuel	31,106	75	210	0.19
Repairs & maintenance	48,673	117	329	0.30
Freight & general	7,928	19	54	0.05
Administration	18,193	44	123	0.11
Insurance	11,213	27	76	0.07
ACC	3,824	9	26	0.02
Rates	17,154	41	116	0.11
Farm Working Expenses	623,425	1,499	4,210	3.90
Cash Operating Surplus	508,246	1,222	3,432	3.18
ADJUSTMENTS:				
Value of change in dairy livestock	6,475	16	44	0.04
less Labour adjustment	60,783	146	410	0.38
plus Feed inventory adjustment	2,486	6	17	0.02
less Owned support block adjustment	14,759	35	100	0.09
less Depreciation	67,452	162	455	0.42
Net Adjustments	-134,033	-322	-905	-0.84
OPERATING CASH & NON-CASH:				
Dairy gross farm revenue	1,138,146	2,736	7,685	7.13
Dairy operating expenses	763,933	1,836	5,158	4.78
Dairy operating profit	374,213	900	2,527	2.34

Source: DairyNZ Economics Group, DairyBase

Owner-operators

Table 9.2: Cash Operating Surplus and Operating Profit 2018-19

Date: 4 April 2018

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	148.1			
Peak cows milked	417			
Kg milksolids sold	161,586	387	1,091	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	1,029,781	2,469	6,951	6.37
Net livestock sales (sales - purchases)	77059	185	520	0.48
Other dairy cash income	5,158	12	35	0.03
Net dairy cash income	1,111,998	2,667	7,506	6.88
CASH FARM WORKING EXPENSES:				
Wages	95,738	230	646	0.59
Animal health	35,383	85	239	0.22
Breeding & herd improvement	22,802	55	154	0.14
Farm dairy	9,861	24	67	0.06
Electricity	19,116	46	129	0.12
Net feed made, purchased, cropped	129,107	310	871	0.80
Stock grazing	61,347	147	414	0.38
Support block lease	12,779	31	86	0.08
Fertiliser (incl nitrogen)	77,528	186	523	0.48
Irrigation	8,610	21	58	0.05
Regrassing	9,727	23	66	0.06
Weed & pest	5,696	14	38	0.04
Vehicles & fuel	31,495	76	213	0.19
Repairs & maintenance	48,998	118	331	0.30
Freight & general	7,979	19	54	0.05
Administration	18,370	44	124	0.11
Insurance	11,294	27	76	0.07
ACC	3,853	9	26	0.02
Rates	17,290	41	117	0.11
Farm working expenses	626,975	1,504	4,232	3.88
Cash operating surplus	485,023	1,163	3,274	3.00
ADJUSTMENTS:				
Value of change in dairy livestock	6,475	16	44	0.04
less Labour adjustment	60,826	146	411	0.38
plus Feed inventory adjustment	2,486	6	17	0.02
less Owned support block adjustment	14,951	36	101	0.09
less Depreciation	68,345	164	461	0.42
Net Adjustments	-135,161	-324	-912	-0.84
OPERATING CASH & NON-CASH:				
Dairy gross farm revenue	1,118,473	2,682	7,550	6.92
Dairy operating expenses	768,610	1,843	5,188	4.76
Dairy operating profit	349,862	839	2,362	2.17

Source: DairyNZ Economics Group, DairyBase

Section 10: Operating Profit Forecasts – 50:50 Sharemilkers

Table 10.1: Cash Operating Surplus and Operating Profit 2017-18

Date: 4 April 2018

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	128.6			
Peak cows milked	361			
Kg milksolids sold	136,117	377	1,058	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	437,856	1,214	3,404	3.22
Net livestock sales (sales - purchases)	55,152	153	429	0.41
Other dairy cash income	2,590	7	20	0.02
Net dairy cash income	495,597	1,374	3,853	3.64
CASH FARM WORKING EXPENSES:				
Wages	49,526	137	385	0.36
Animal health	30,922	86	240	0.23
Breeding & herd improvement	20,076	56	156	0.15
Farm dairy	6,943	19	54	0.05
Electricity	15,897	44	124	0.12
Net feed made, purchased, cropped	61,365	170	477	0.45
Stock grazing	32,062	89	249	0.24
Support block lease	1,915	5	15	0.01
Fertiliser (incl nitrogen)	18,617	52	145	0.14
Irrigation	2,133	6	17	0.02
Regrassing	2,392	7	19	0.02
Weed & pest	1,908	5	15	0.01
Vehicles & fuel	23,604	65	183	0.17
Repairs & maintenance	10,703	30	83	0.08
Freight & general	6,680	19	52	0.05
Administration	11,509	32	89	0.08
Insurance	4,282	12	33	0.03
ACC	3,055	8	24	0.02
Rates	547	2	4	0.00
Farm working expenses	304,137	843	2,364	2.23
Cash operating surplus	191,460	531	1,488	1.41
ADJUSTMENTS:				
Value of change in dairy livestock	18,672	52	145	0.14
less Labour adjustment	71,858	199	559	0.53
plus Feed inventory adjustment	1,000	3	8	0.01
less Owned support block adjustment	514	1	4	0.00
less Depreciation	19,220	53	149	0.14
Net Adjustments	-71,920	-199	-559	-0.53
OPERATING CASH & NON-CASH:				
Dairy gross farm revenue	514,270	1,425	3,998	3.78
Dairy operating expenses	394,729	1,094	3,069	2.90
Dairy operating profit	119,540	331	929	0.88

Source: DairyNZ Economics Group, DairyBase

50:50 Sharemilkers

Table 10.2: Cash Operating Surplus and Operating Profit 2018-19

Date: 4 April 2018

PHYSICAL CHARACTERISTICS:	per farm	per cow	per hectare	
Effective area (ha)	128.6			
Peak cows milked	363			
Kg milksolids sold	139,095	383	1,081	
	\$ per farm	\$ per cow	\$ per effective hectare	\$ per Kg milksolids sold
DAIRY CASH INCOME:				
Milk sales (net of dairy levies)	434,315	1,197	3,376	3.12
Net livestock sales (sales - purchases)	54,955	151	427	0.40
Other dairy cash income	2,610	7	20	0.02
Net dairy cash income	491,880	1,356	3,824	3.54
CASH FARM WORKING EXPENSES:				
Wages	50,024	138	389	0.36
Animal health	31,230	86	243	0.22
Breeding & herd improvement	20,475	56	159	0.15
Farm dairy	7,013	19	55	0.05
Electricity	16,163	45	126	0.12
Net feed made, purchased, cropped	61,780	170	480	0.44
Stock grazing	32,547	90	253	0.23
Support block lease	1,955	5	15	0.01
Fertiliser (incl nitrogen)	18,804	52	146	0.14
Irrigation	2,133	6	17	0.02
Regrassing	2,428	7	19	0.02
Weed & pest	1,934	5	15	0.01
Vehicles & fuel	23,838	66	185	0.17
Repairs & maintenance	10,807	30	84	0.08
Freight & general	6,747	19	52	0.05
Administration	11,621	32	90	0.08
Insurance	4,339	12	34	0.03
ACC	3,113	9	24	0.02
Rates	555	2	4	0.00
Farm working expenses	307,507	848	2,391	2.21
Cash operating surplus	184,373	508	1,433	1.33
ADJUSTMENTS:				
Value of change in dairy livestock	19,743	54	153	0.14
less Labour adjustment	71,990	198	560	0.52
plus Feed inventory adjustment	1,000	3	8	0.01
less Owned support block adjustment	524	1	4	0.00
less Depreciation	19,549	54	152	0.14
Net Adjustments	-71,321	-197	-554	-0.51
OPERATING CASH & NON-CASH:				
Dairy gross farm revenue	511,624	1,410	3,977	3.68
Dairy operating expenses	398,571	1,099	3,099	2.87
Dairy operating profit	113,053	312	879	0.81

Source: DairyNZ Economics Group, DairyBase

