



# Farm Business Survey

2007/2008

## Dairy Farming in England



Philip Robertson and Paul Wilson



**Farm Business Survey  
2007/08**

**Dairy Farming in England**

Philip Robertson and Paul Wilson

Rural Business Research Unit  
The University of Nottingham  
Sutton Bonington Campus  
Loughborough  
Leicestershire  
LE12 5RD

Tel: +44 (0) 115 951 6070  
Fax: + 44 (0) 115 951 6089  
Email: [philip.robertson@nottingham.ac.uk](mailto:philip.robertson@nottingham.ac.uk)

April 2009

## **Foreword**

This report is one of a series being produced based on the results of the Farm Business Survey (FBS) for England. The annual Farm Business Survey is the most comprehensive and independent survey of farm incomes and provides a definitive data source on the economic and physical performance of farm businesses in England. It is conducted by a Consortium comprising the Universities of Cambridge, Newcastle upon Tyne, Nottingham and Reading, and Askham Bryan, Duchy and Imperial Colleges. The Consortium is lead by the University of Nottingham and its members work in partnership, using uniform and standard practices in reporting on their findings to ensure consistent data quality, accuracy and validity. The Survey is financed by Defra and the Consortium values greatly the input of their staff.

These detailed reports for various farm types and enterprises are in addition to the comprehensive Farm Business Survey Reports for Government Office Regions published at [www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk). The Consortium is seeking by these additional reports to ensure that timely and relevant information is available to farmers, consultants, advisers and other organisations and individuals interested in farming and land management. The analysis and publication of these reports uses data from farm businesses across England, with an individual member of the Consortium undertaking the research analysis. In line with the ethos of the Consortium, these reports present results in such a way as to ensure a significant element of continuity and consistency from one report to the other, whilst also ensuring that each report captures the contemporary issues of relevance to the sector of agriculture in England to which it relates.

We believe these new reports will make a valuable and useful contribution to the farming industry and we commend them to you.

**Prof. Martin Seabrook**

(Chief Executive of the Consortium)

## Foreword to the Third Series

Agricultural history in the UK records many regulations, policies and plans designed to enable agriculture and horticulture to meet the contemporary challenges of the day. The Marketing Acts of the 1930s, the UK's entry to the Common Agricultural Policy, Milk Quotas, Set-Aside, Cross-Compliance; the list is extensive. Common across all these examples, and inherent in their inception, is the variability and uncertainty faced by the industry. The last 18 months have witnessed renewed unpredictability in the incomes of UK farmers and growers. In the 21<sup>st</sup> Century the emphasis on freeing up markets leads farmers and growers to be increasingly reliant upon business planning and decision making in the face of uncertainty. With such uncertainty, the need for independent data to aid farmers, growers and their advisors is paramount and one which *Rural Business Research* continues to provide based upon comprehensive analysis of independent data from the Farm Business Survey for England. The third series of these influential reports highlights the changing economic landscape faced by farmers and growers during the 2007/08 financial year and place in context the profitability and vulnerability of different sectors of the industry. Complementing these reports are *Rural Business Research's* free-to-use on-line services, providing comprehensive Farm Business Survey Reports for Government Office Regions and farm business benchmarking at [www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk).

*Rural Business Research's* aim, in providing these reports and data services, is to facilitate individuals and organisations working in agriculture, horticulture, land management and rural development, through the provision of independent data, research and analysis. As part of our wider engagement we are keen to hear the views of readers and users of our reports and data-services; supporting our dedicated outreach web-site [www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk) is our email alert network which promptly highlights our new publications and outputs to interested parties. If you would like your details to be added to our email alert network or wish to comment on our reports, please email [paul.wilson@nottingham.ac.uk](mailto:paul.wilson@nottingham.ac.uk).

As we provide the third series of these influential reports, *Rural Business Research* looks forward to continuing its role as *the* independent organisation responsible for providing analysis and insight to the industry over the coming decade. *Rural Business Research* has recently successfully tendered for the Contract to undertake the Farm Business Survey in England for 2009/10 and beyond; a central aspect of our continued work and analysis of the Farm Business Survey is to further enhance the outreach and knowledge transfer activities we undertake, making even greater use of the data, and engaging with a wider range of practitioners and policy makers working in food production and land use in the UK.

**Dr Paul Wilson**

Chief Executive Elect, Rural Business Research

Spring 2009

## **Acknowledgements**

Rural Business Research thanks sincerely all the farmers who have voluntarily provided records and information on which the annual Farm Business Survey, and this report, is based.

The basic information on which this report is based was collected on behalf of, and largely financed by, the Department for Environment, Food and Rural Affairs and is Crown Copyright.

## Table of Contents

<b>Foreword .....</b>	<b>iii</b>
<b>Foreword to the Third Series.....</b>	<b>iv</b>
<b>Acknowledgements .....</b>	<b>v</b>
<b>List of Tables.....</b>	<b>vii</b>
<b>List of Figures .....</b>	<b>vii</b>
<b>Summary .....</b>	<b>viii</b>
<b>Chapter 1: The Dairying Sector .....</b>	<b>1</b>
1.1: Introduction.....	1
1.2: Farmgate Milk Prices .....	1
1.3: Input Prices .....	2
1.4: Annual Milk Production .....	2
1.5: UK Dairy Herd and Average Milk Yield .....	3
1.6: Producer Numbers (England & Wales).....	3
1.7: Milk Deliveries and Quota .....	4
1.8: The Supply Chain: Prices and Margins.....	5
1.9: Structure of Report.....	6
<b>Chapter 2: Data and Methodology .....</b>	<b>7</b>
2.1: Data.....	7
2.2: Methodology.....	8
<b>Chapter 3: Results .....</b>	<b>10</b>
3.1: All farms .....	10
3.2: Comparison of Lowland and Less Favoured Area (LFA) farms.....	10
3.3: Lowland: Influence of Farm Size.....	12
3.4: Lowland: Influence of Region.....	12
3.5: Lowland: Comparison by Profitability Quartiles .....	12
3.6: LFA: Influence of Farm Size.....	16
3.7: LFA: Influence of Region.....	16
3.8: LFA: Comparison by Profitability Quartiles .....	19
3.9: Further Analysis: Lowland and LFA by Region and Farm Size .....	19
3.10: Dairy Enterprise Results: Gross Margin for All, Lowland, and LFA Farms.....	21
3.11: Dairy Enterprise Results: Influence of Herd Size on Lowland Herds.....	22
3.12: Dairy Enterprise Results: Influence of Region on Lowland Herds.....	23
3.13: Dairy Enterprise Results: Lowland Herds by Performance Groups.....	24
3.14: Dairy Enterprise Results: Influence of Herd Size on LFA Herds .....	25
3.15: Dairy Enterprise Results: Influence of Region on LFA Herds.....	26
3.16: Dairy Enterprise Results: LFA Herds by Performance Groups.....	27
3.17: Further Analysis: Dairy Enterprise Results for Lowland by Region and Herd Size ...	27
<b>Chapter 4: Discussion and Conclusion .....</b>	<b>28</b>
4.1: Introduction.....	28
4.2: Lowland Dairying.....	28
4.3: Less Favoured Area Dairying.....	29
4.4: Comparison with Previous Research .....	30
4.5: Conclusion.....	31
<b>References .....</b>	<b>32</b>
<b>Appendix 1: Results by Region and Farm Size .....</b>	<b>34</b>
<b>Appendix 2: Reports in Series .....</b>	<b>39</b>

## List of Tables

Table 2.1: Observations by Category: Farm-Level Data .....	7
Table 2.2: Observations by Category: Enterprise-Level Data.....	8
Table 3.1: Outputs, Inputs and Margins for All Farms, Lowland and LFA.....	11
Table 3.2: Outputs, Inputs and Margins: Lowland by Farm Size .....	13
Table 3.3: Outputs, Inputs and Margins: Lowland by EU Super Region.....	14
Table 3.4: Outputs, Inputs and Margins: Lowland by Profitability Quartiles.....	15
Table 3.5: Outputs, Inputs and Margins: LFA by Farm Size.....	17
Table 3.6: Outputs, Inputs and Margins: LFA by EU Super Region.....	18
Table 3.7: Outputs, Inputs and Margins: LFA by Profitability Quartiles.....	20
Table 3.8: Gross Margin Results for All Farms, Lowland and LFA.....	21
Table 3.9: Gross Margin Results: Lowland by Herd Size.....	22
Table 3.10: Gross Margin Results: Lowland by EU Super Region.....	23
Table 3.11: Gross Margin Results: Lowland by Performance Quartiles.....	24
Table 3.12: Gross Margin Results: LFA by Herd Size.....	25
Table 3.13: Gross Margin Results: LFA by EU Super Region.....	26
Table 3.14: Gross Margin Results: LFA by Performance Groups .....	27

## List of Figures

Figure 1.1: Farmgate Milk Prices (UK) .....	1
Figure 1.2: Milk and Input Prices (UK).....	2
Figure 1.3: Annual Milk Production (UK) .....	2
Figure 1.4: UK Herd Size and Average Milk Yield .....	3
Figure 1.5: Number of Milk Producers (England & Wales).....	4
Figure 1.6: Annual Milk Deliveries and National Milk Quota (UK).....	4
Figure 1.7: Milk Price: Producer, Wholesaler and Retailer (UK).....	5
Figure 2.1: The EU Super Regions of England and Wales.....	9

## Summary

- Dairy farming in England during 2007/08 enjoyed a higher average milk price than has been witnessed in recent years. It also had to meet the challenges of adverse weather conditions affecting grass and forage production, increased input costs, in particular for feed, fertiliser, fuel and veterinary products. dairy farms
- Published sources show that the average farmgate price of milk during 2007/08 peaked in November 2007 at 27.3 pence per litre (ppl), up from the previous November's price of 19.0ppl; from November 2007 to March 2008 prices fell by approximately 2.0ppl
- 2007/08 witnessed a 30-year low in the production of milk in the UK, down substantially on the previous year's low production level
- 24,000 cows were lost to the national herd between 2006/07 and 2007/08, with published sources noting a reduction in average yield exacerbating the reduced production from falling cow numbers; 640 producers left the sector in 2007/08, leaving less than 12,000 producers remaining in dairy farming in England and Wales.
- In 2006/07 the shortfall of total milk deliveries undershot total national quota by approximately 410 million litres; in 2007/08 this shortfall increased to 745 million litres
- Supply chain analysis indicates that the marketing margin for processors has ranged from 14ppl to 17ppl over the period 1995 to 2007; the marketing margin for retailers over this period has shown a steady increase from 1ppl to 16ppl
- Farm Business Survey data from 2007/08 shows that the average Farm Business Income (FBI) from dairying was £472/ha, up 47% on the previous year and worth approximately £55,000 based upon average farm size
- Reinforcing the findings of previous reports, lowland farms, with higher input-output systems, achieved an average FBI of £499/ha (up £160/ha on 2006/07) whilst LFA farms accrued £363/ha (up £108/ha on 2006/07)
- Management and Investment Income (MII), in dairying farming averaged £186/ha in 2007/08, in comparison to -£2/ha and £46/ha in each of the two previous years respectively
- Per hectare results indicate that smaller lowland farms are typically more specialised dairy farms than larger farms, achieving the greatest milk output, total farm output and FBI per hectare of the three size groups considered; however, in the main due to the high value of farmer and spouse labour, these farms return an average MII of -£115/ha
- Regional analysis of lowland dairy farming indicates that the North and West operate broadly similar dairy farming systems, but the East derives only 66% of total farm output from milk output with "other" output contributing proportionally more to total farm output than in the North or West; this is indicative of the value of other enterprises in the East region
- Profitability analysis, on the basis of FBI per hectare, shows that the upper quartile achieved an average FBI of £105,000 per farm in comparison to less than £8,000 for the lower quartile; the upper quartile farms represent higher input-output systems per hectare and derive 76% of their total farm output from milk, compared with milk output contributing 67% of total farm output for the lower quartile
- Larger LFA farms, in the greater than 120 hectare size group, operate a less intensive input-output system when examined on a per hectare basis than the two smaller farm size groups in the LFA; however, given the larger farm area the average FBI per farm is greatest on the larger LFA farms, equal to £59,000 per farm compared with £45,000 and £22,000 for the two smaller farm size groups
- Regional analysis for LFA farms shows Northern farms are typically larger and generate a lower proportion of total farm output from milk sales in comparison to the West; however average MII per hectare is similar, accruing £77/ha and £70/ha respectively

- The upper quartile (measured by FBI per hectare) of LFA dairy farms shows that they have a smaller average area than the lower quartile, from which they achieve substantially greater output per hectare, and despite incurring substantially greater costs, they return an average FBI of £891/ha in comparison to £46/ha for the lower quartile
- Enterprise-level analysis shows that the average milk price for farmers in the sample increased by 4.3ppl in 2007/08, with lowland farms averaging 22.7ppl and LFA farms 21.8ppl; average yields from the sample were static (7109 litres in 2007/08 *cf.* 7112 litres in 2006/07) resulting in the price increase alone generating an extra £306/cow in milk sales
- Gross Margins for all farms, lowland and LFA farms stood at £851/cow, £867/cow and £763/cow in 2007/08 respectively, in comparison to respective returns of £696/cow, £708/cow and £637/cow in 2006/07
- Enterprise-level analysis for lowland production by size groups indicates the structural change occurring in the sector, with a decline in the number of smaller units and an increase in the number of dairy units with larger herds
- A clear trend between average herd size and average milk yield, milk output and gross margin per cow is shown in both 2006/07 and 2007/08; the intensity of production, as demonstrated by concentrate costs per cow, increases as average herd size increases
- Regional analysis of lowland herds demonstrates that when examined on a per cow basis, dairy units in the East are typically more intensive in their production; taken together with the farm-level analysis, this reinforces the observation of a reliance on other enterprises on Eastern farms alongside their intensive dairy units
- Performance analysis, measured by gross margin per cow, shows that the upper quartile of lowland herds achieved substantially greater milk yields (7889 litres *cf.* 5637 litres for the lower quartile), a higher price (24.5ppl *cf.* 21.8ppl), used more concentrates per cow (£423/cow *cf.* £359/cow) and generated a greater gross margin (£1186/cow *cf.* £535/cow)
- LFA enterprise herd-size analysis also demonstrates that larger herds achieved greater yields, higher milk price, used more concentrates and generated a greater gross margin; however data restrictions mean it is not possible to present results for average LFA herd sizes of greater than 130 cows
- LFA herds in the North achieved greater yields, milk output, and a higher milk price than the West, but the higher cost structure of the North in comparison to the West led to similar gross margin results across the two regions of £741/cow and £722/cow respectively
- Gross Margin performance quartile analysis on LFA dairy units shows that average cow numbers have increased in each quartile, and that despite a fall in average yields for the upper quartile from 2006/07, the substantial yield differential and higher milk price are the main drivers leading to a gross margin for the upper quartile being £600/cow greater than the lower quartile
- The three reports in this series (Robertson and Wilson 2007; 2008, plus this current study) indicate that the more profitable producers operate larger herds, with relatively high-input – high-output systems; other research reinforces these findings and highlights the variation in efficiency that exists in the dairy sector
- The results of this report indicate that dairy farming enjoyed a return to profitability in 2007/08, but examining the returns to management and investment income over the 2005/06 to 2007/08 period indicates that the MII return on tenant's capital and management input is in the order of 5% per annum; with many producers facing investment decisions requiring large capital inputs to remain competitive and environmentally compliant, further re-structuring in the industry looks set to occur.

## Chapter 1: The Dairying Sector

### 1.1: Introduction

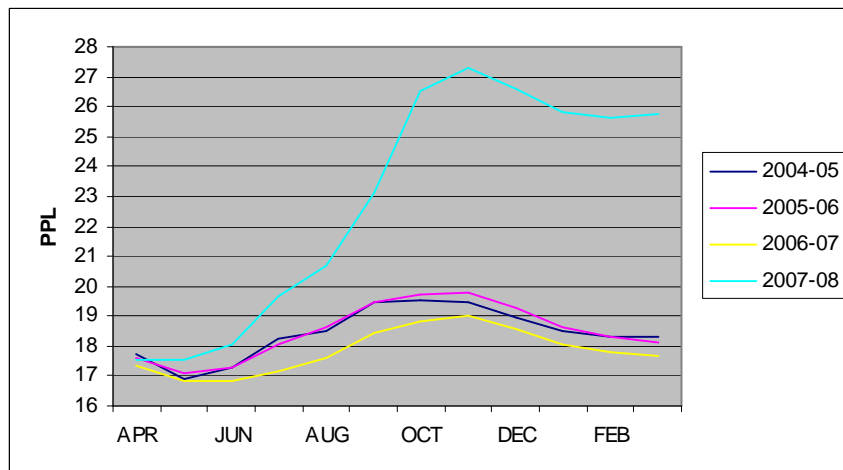
The 2007/08 dairy farming year began with a small degree of optimism that stemmed from the first signs that farmgate milk prices were about to breakout of the established 17 to 19 pence per litre (ppl) price band of recent years and also the fact that dairy commodity prices were on an upward trend. However, this optimism was offset somewhat by substantial increases in key input costs that saw the average cost of producing a litre of milk rise to 21 ppl. The end of the year saw corresponding milk prices that were approximately 8 ppl above those of the three previous years. Despite this upturn in the price of farmgate milk, annual milk production in 2007/08 was at a 30 year low and the national herd size continued to decline (Farmers Weekly; various (1)). Drawing upon information from a range of published sources together with analysis of data from the Farm Business Survey 2007/08, *Dairy Farming in England*, provides a contemporary analysis of the performance of dairy farms, and dairy production, in England for the 2007/08 financial year. The purpose of this introductory section of the report is to set out the market environment and key factors affecting the sector during this financial year. Specifically, this section of the report gives an overview of the UK dairying sector, focusing on:

- farmgate milk prices
- input prices
- annual milk production
- milk deliveries and national quota
- UK dairy herd and average milk yield
- producer numbers
- the supply chain: prices and margins

### 1.2: Farmgate Milk Prices

Figure 1.1 shows the average producer ex-farmgate milk price (including seasonality; net of delivery charges). The 2007/08 milk year saw the continuation of supermarket initiatives that provided dedicated suppliers with premium prices for farmgate milk that were 3.0 to 4.0 ppl above the market average. Furthermore, dwindling UK milk supplies and increased prices for dairy commodities provided further impetus to the milk price that continued until November 2007. The peak price for 2007/08 was 27.3 ppl (Nov. 2007) compared to the previous year's peak of 19.0 ppl (Nov. 2006). From November 2007 until March 2008, prices fell by approximately 2.0 ppl, a fall that followed the seasonality payments trend but also accompanied concerns that commodity prices were beginning to fall back with negative consequences for the farmgate milk price.

**Figure 1.1: Farmgate Milk Prices (UK)**

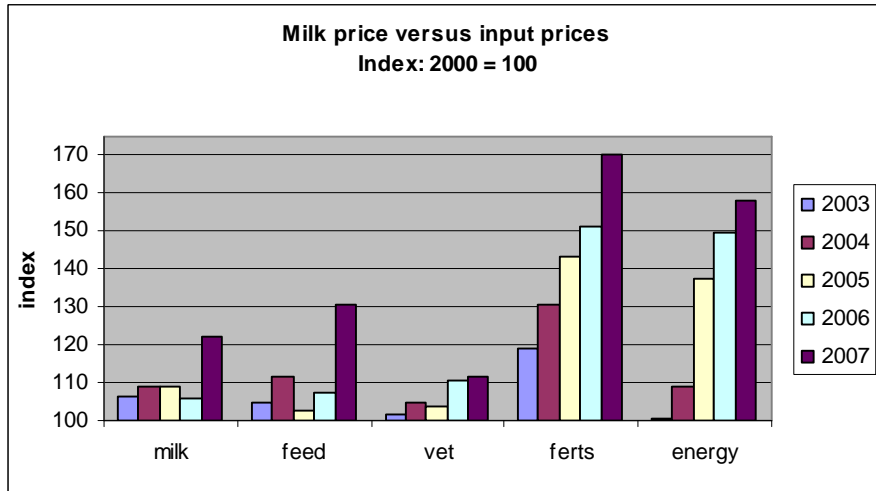


Source: Defra (2009a), Milk Price Surveys

### 1.3: Input Prices

Figure 1.2 shows the trends in the farmgate milk price and the prices of some key dairying inputs from 2003 to 2007, using the year 2000 as the base year (index = 100). In comparison with 2000, the milk price in 2007 was +22%, feed prices were +30% and veterinary services were +12%. In 2007, fertiliser and energy prices continued their recent upward trends to reach prices that were 70% higher (fertilisers) and 58% higher (energy) than in 2000. A comparison between 2006 and 2007 prices reveals that although dairy farmers received +15.5% more for their milk, key input costs such as feeds, fertilisers and energy also increased by +21.5%, +12.3% and +5.6% respectively.

**Figure 1.2: Milk and Input Prices (UK)**

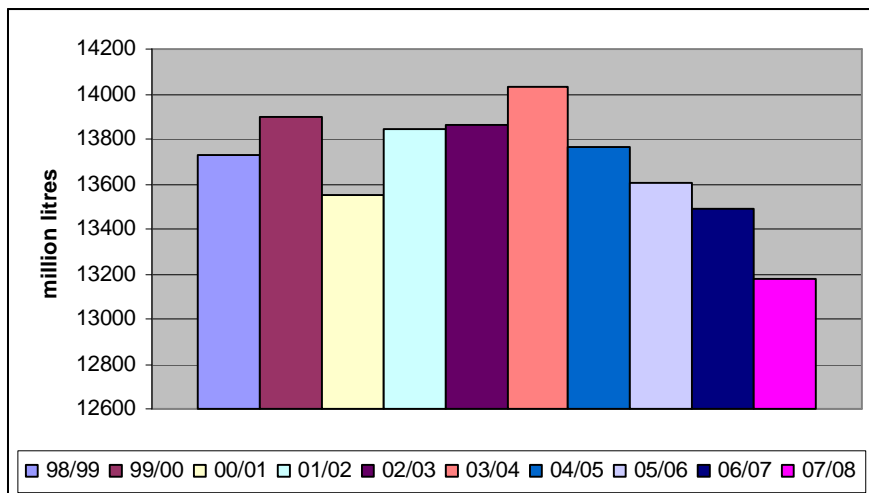


Source: Defra (2009b); Agriculture in the UK 2007

### 1.4: Annual Milk Production

Figure 1.3 shows annual milk production in the UK (defined as wholesale deliveries) for the years 1998/99 to 2007/08. In 2007/08, milk production fell to a 30-year low, finishing at 13187 million litres which is 6.4% below the recent high point in production of 14030 million litres, achieved in 2003/04. As can be observed in the following sections, a smaller national herd size and a fall in the average yield per cow, contributed significantly to the reduction in UK milk production.

**Figure 1.3: Annual Milk Production (UK)**

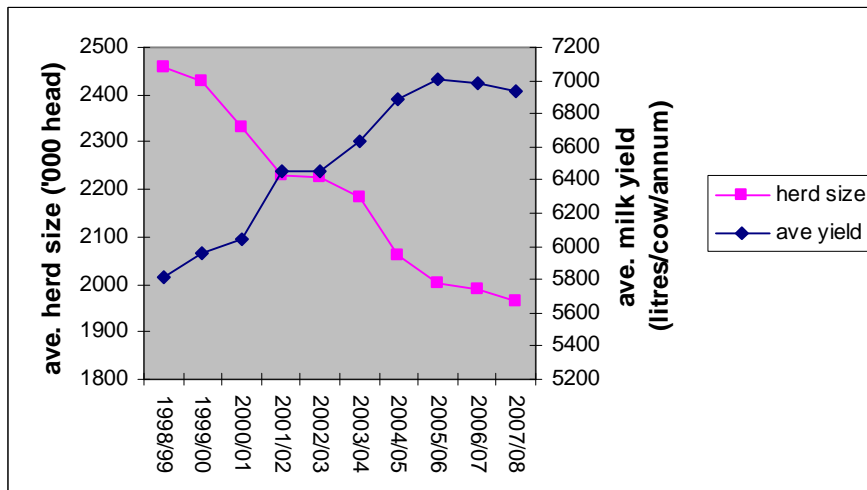


Source: MDC Datum (2009c)

### 1.5: UK Dairy Herd and Average Milk Yield

Figure 1.4 illustrates the ten year trend in two key factors that led to the continued fall in UK milk production shown in Figure 1.3. Firstly, the 2007/08 year continued the downward trend in the UK dairy herd size that has occurred in each of the last ten years. Between 2006/07 and 2007/08, 24000 cows were lost to the national herd, double the reduction that occurred in the previous year. Taking the period between 1998/99 and 2007/08, the national herd decreased by 493000 cows (-20%). The decline in the total number of cows in 2007/08 was exacerbated by the high price of cull cows and the large number of cows culled due to bovine Tuberculosis. Also, as milk producers continue to go out of production (Figure 1.5), not all cows are sold back into the national herd with approximately 20% being culled due to a combination of age, poor health and poor productivity. Secondly, the correlation between falling national milk output and a reducing national herd size has always been strong, but counter-balancing these factors and so reducing the scale of the fall in milk production has been an upward trend in the average milk yield per cow. However, the fall in the average milk yield per cow that occurred in 2006/07, was repeated in 2007/08 which saw the average yield fall to 6933 litres per cow. Various factors contributed to the drop in average yield, the main ones being poor grazing and forage quality due to the high rainfall in the spring and summer (2007) and the increased cost of feed that reduced the incentive to produce marginal litres.

**Figure 1.4: UK Herd Size and Average Milk Yield**

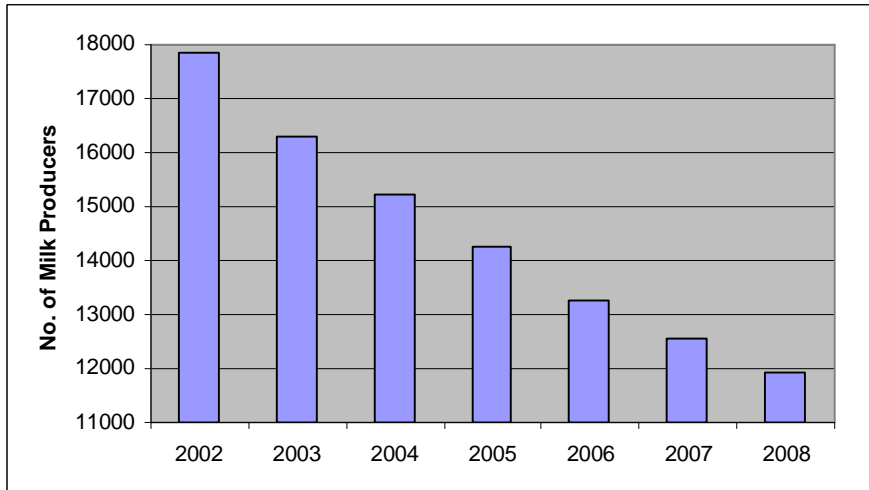


Source: MDC Datum (2009d)

### 1.6: Producer Numbers (England & Wales)

Figure 1.5 illustrates the seven year trend in the number of milk producers in England and Wales with 2008 continuing the downward slide in producer numbers over this period. Compared to 2002, there were 5938 fewer milk producers in 2008, representing a decrease of 33%. Between 2006/07 and 2007/08, 640 milk producers (5.1%) withdrew from the industry; a reduction that was consistent with that of recent years when, from 2002 until 2007 numbers fell by 8.7%, 6.7%, 6.4%, 6.9% and 5.4% in each year respectively.

**Figure 1.5: Number of Milk Producers (England & Wales)**

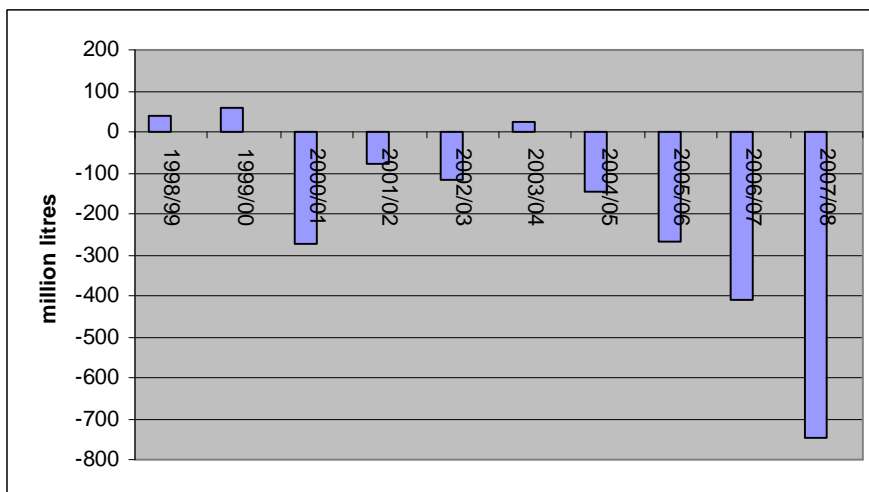


Source: MDC Datum (2009e)

### 1.7: Milk Deliveries and Quota

Figure 1.6 shows that in 2007/08 the shortfall of total milk deliveries (butterfat adjusted) undershot total national quota by approximately 745 million litres. This means that in seven of the last eight years, milk deliveries have been below quota, with 2007/08 recording the largest deficit for over a decade with 5.3% of available quota not being utilised. Fewer cows and lower average yields were the main contributors to the deficit, although it should be remembered that, as in 2006/07, the national quota was increased by 71 million litres (0.5%). Further increases in the national quota as part of the CAP Health Check 'soft landing' approach towards the removal of milk quotas in 2015 may mean that in this present era of production quotas, deliveries will never again exceed the national quota in any one year.

**Figure 1.6: Annual Deliveries and National Milk Quota (UK)**

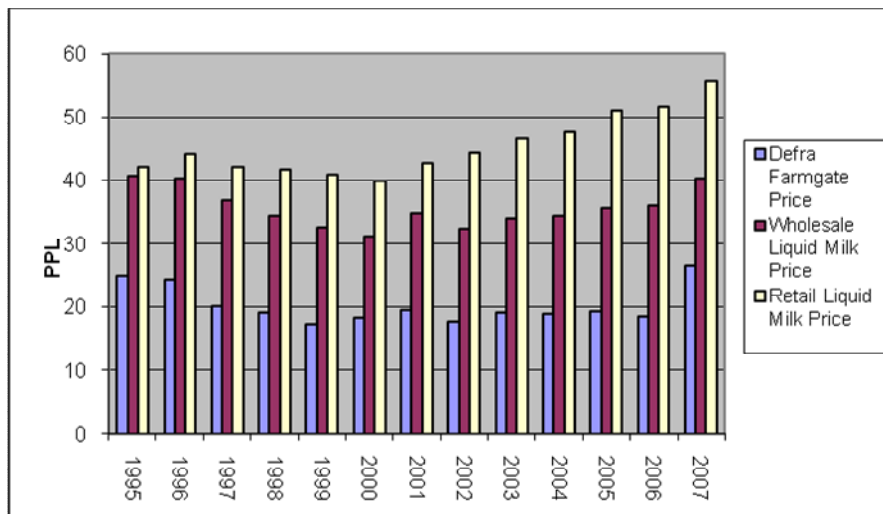


Source: MDC Datum (2009f)

## 1.8: The Supply Chain: Prices and Margins

The increased price of farmgate milk that was witnessed in the latter half of the 2007/08 milk year arose from three key factors. Firstly, the world price of dairy commodities took an upturn after which the price of raw milk followed. It should be noted that world commodity prices began to rise many months before milk producers saw an increase in the price of farmgate milk and dairy farmers regard this time-lag as a lost opportunity to increase their incomes. Secondly, recognition by retailers that production costs throughout the milk sector had increased markedly led them to increase the price of milk to consumers; a price increase which then filtered down to benefit processors and producers. Thirdly, as the UK milk supply fell due to adverse weather conditions, lower average cow yields and a declining national herd size, milk processors raised their prices for farmgate milk in an attempt to bolster confidence amongst dairy farmers and so slow down the exodus of producers from the industry. The analysis of data from the Farm Business Survey 2007/08 that follows this chapter reveals that despite some significant increases in key input costs, the increased price of farmgate milk translated into an increase in dairy farm incomes. The following examines the relationship between the prices of farmgate, wholesale and retail milk and the marketing margins of the wholesale and retail sectors. It should be noted that for the purposes of this report, wholesale and retail marketing margins are simply the differences between the purchase and sale prices of milk that are pertinent to each part of the supply chain.

**Figure 1.7: Milk Price: Producer, Wholesaler and Retailer**



Source: MDC Datum (2009g)

Figure 1.7 illustrates the average prices received by milk producers, processors (wholesale price) and retailers for the years 1995 to 2007, and from which can be deduced the marketing margins for processors and retailers. It can be seen that the price trends for farmgate and wholesale milk largely follow one another to the extent that a fairly constant processor's marketing margin of between 14ppl and 17ppl is maintained throughout the period. To reiterate, this margin is the price paid by the retailers to the processors, less the price paid by the processors to producers. The processor's marketing margin therefore has to cover all running costs and the cost of investment made by the processor. The trend for marketing margins for liquid milk achieved by retailers for this period shows a steady increase from 1ppl in 1995 to 16ppl in 2007. This increase in margin has been achieved by increasing the price charged to consumers by more than the increase in price paid to processors. Therefore, it is clear that if processors continue to work towards achieving their historical margins and retailers wish to maintain their current margins, then farmgate prices will only increase if the retail price to consumers rises or processors and retailers realise efficiency gains in their processing and retailing activities respectively. However, with UK liquid milk and yoghurt consumption falling in 2007 and cheese and butter consumption remaining at constant levels (Defra, 2009c) there may be some consumer resistance to price increases.

## **1.9: Structure of Report**

The above sections have provided the market environment in which dairy farmers have been operating during the 2007/08 financial year and set these in the context of the changing economic environment over recent years. Additionally the previous sections have placed the price of milk within the context of the downward supply chain, noting how the marketing margin in milk delivery to consumer has changed over time. The remaining chapters of this report are as follows: Chapter 2 details the data source and data analysis undertaken; Chapter 3 provides the results of the data analysis; Chapter 4 discusses the results of the analysis in context of previous research and identifies the main performance drivers in Dairy Farming in England.

## Chapter 2: Data and Methodology

### 2.1: Data

The data used in this report are derived from the Farm Business Survey Returns for England for 2007/08 for those farms classed as Dairy Farms<sup>1</sup> and relate to the outputs, inputs and returns to each farm, together with total farm area and farm size data. For a sub-set of these results data is available at the enterprise level to produce output, variable input and Gross Margin (GM) data (total dairy output minus variable costs) together with cow numbers and physical yield (litres per cow). Table 2.1 below details the number of observations for the per hectare farm results, in each category by farm type (Lowland and Less Favoured Area (LFA)), by EU super region (North, East, West; see figure 2.1), by farm size categories, by lower and upper performance quartiles. Table 2.2 details the number of observations for the enterprise level results, in each category by farm type (Lowland and LFA), by EU super region (North, East, West), by herd size categories, by lower and upper performance quartiles.

**Table 2.1: Observations by Category: Farm-Level Data 2007/08**

Category		Lowland	LFA
Number of farms		229	67
EU Super Region	North	59	39
	East	55	Ins. data
	West	115	16
Farm Size	<60 hectares	41	19
	60-120 hectares	91	20
	>120 hectares	97	28
Performance Quartile	Lower quartile	57	17
(by FBI)	Upper quartile	57	17

FBI = Farm Business Income: Ins. data = Insufficient data available (<15 observations)

<sup>1</sup> Holdings on which dairy cows account for more than two thirds of the total Standard Gross Margin for the farm. A holding is classified as a Less Favoured Area (LFA) holding if 50 percent or more of its total area is in the LFA and a lowland holding if less than 50 per cent of its total area is in the LFA. See [http://statistics.defra.gov.uk/esg/asd/fbs/reference/farm\\_classification.pdf](http://statistics.defra.gov.uk/esg/asd/fbs/reference/farm_classification.pdf)

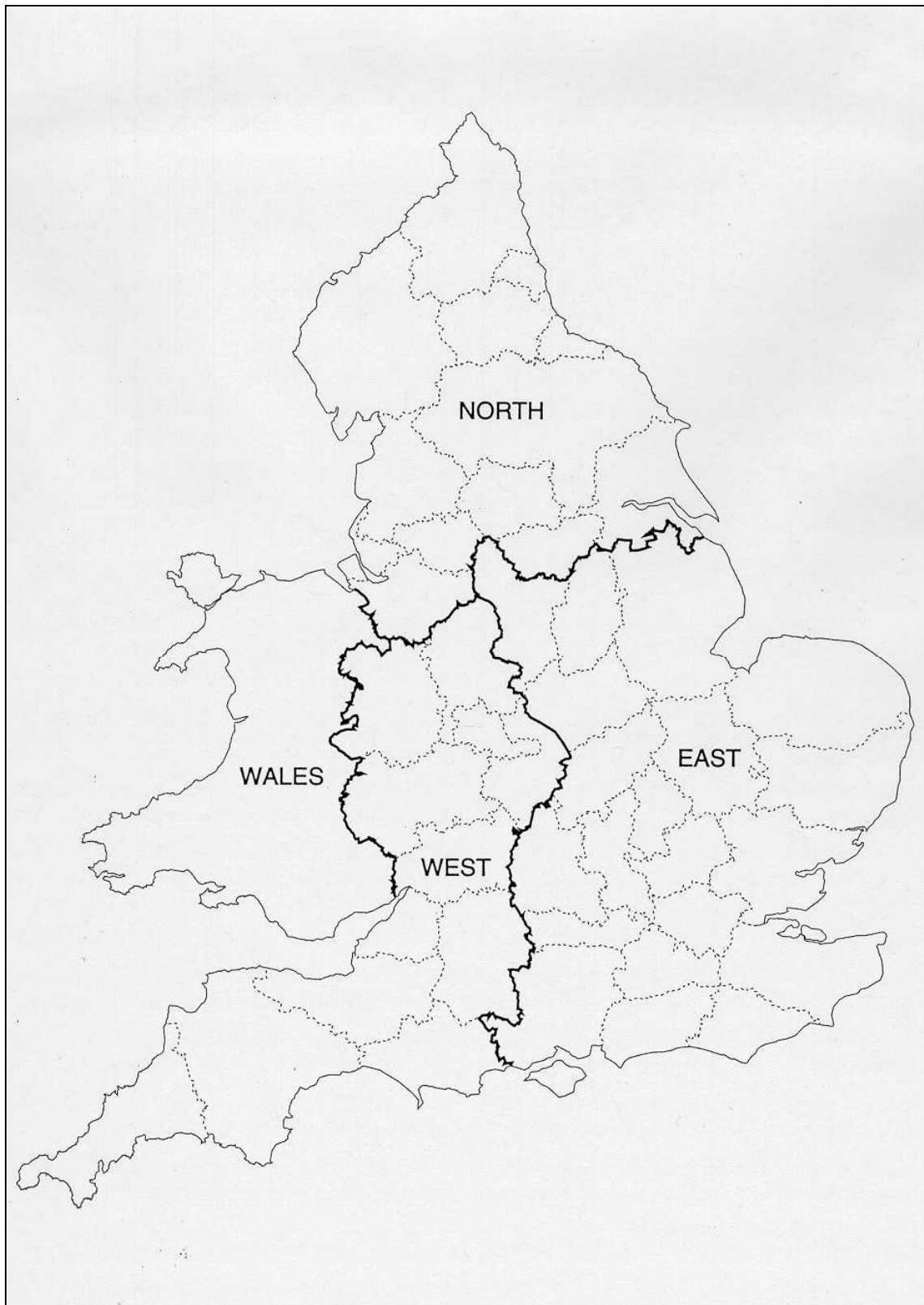
**Table 2.2: Observations by Category: Enterprise-Level Data 2007/08**

Category		Lowland	LFA
Number of farms		213	62
EU Super Region	North	55	37
	East	54	Ins. data
	West	104	15
Farm Size	<80 cows	54	29
	80-130 cows	76	21
	>130 cows	83	Ins. data
Performance Quartile	Lower quartile	53	15
(by Gross Margin)	Upper quartile	53	15

Ins. data = Insufficient data available (<15 observations).

## 2.2: Methodology

The farm and enterprise level data were weighted using the Farm Business Survey weights and the subsequent results presented on a per hectare (farm level analysis) or per cow (gross margin analysis) basis. The descriptive results with the mean (average) for each category being reported as detailed in Chapter 3.



**Figure 2.1: The EU Super Regions of England and Wales**

## Chapter 3: Results

### 3.1: All farms

Table 3.1 presents the results of the outputs, inputs, and margins from dairy farms in England on a per hectare (ha) basis for 2006/07 and 2007/08. The table details the results for all farms, together with results for lowland and less favoured area (LFA) farms being considered separately. Examining the results for all farms, the most striking feature is that Farm Business Income (FBI) for 2007/08 is £472/ha, equal to approximately 20% of total farm output, and at the average farm size, provides an average FBI of just over £55,000 per farm. The value of farmer and spouse labour in 2007/08 at £214/ha is slightly lower than for the previous year; Management and Investment Income (MII), which represents an economic return after accounting for the value of labour and owned land is £186/ha, contrasting with -£2/ha in 2006/07 and £46/ha in 2005/06 (Robertson and Wilson, 2007). Hence, in MII terms, on average, dairy farms in England returned an average of just under £22,000 in 2007/08; a substantial improvement on 2006/07. Examining the breakdown of returns and costs for 2007/08, milk sales of £1669/ha, showed a 34% increase on the previous year and account for just over 70% of total farm output; the respective data for 2006/07 is £1248/ha or 65% of total farm output. Total variable costs of £920/ha in 2007/08 represents a 27% increase on the previous year, with the combination of home-grown and purchased concentrates showing a 34% increase and accounting for 67% of the increase in total variable costs. The increase in concentrate costs represents the third year running that the dairy sector has faced increased concentrate costs. Fixed costs in 2007/08 were also higher than for 2006/07; an 8% increase in total fixed costs flowed from increases in most costs (percentage increases for labour (12%), contract (22%), machinery depreciation (15%), other machinery costs (16%)). Labour, including farmer and spouse labour, accounted for £475/ha or 20% of total farm output in 2007/08 compared with £454/ha, or 24% of total farm output, in 2006/07.

### 3.2: Comparison of Lowland and Less Favoured Area (LFA) farms

Table 3.1 also provides the performance of lowland versus LFA dairy farms. In both financial years presented, it is instructive to note that the size structure of the average performance of these two groups does not differ. However the input-output characteristics of the two groups differ markedly. For 2007/08 lowland dairy farms returned, on average, a total farm output some £840/ha greater than the LFA group. Milk sales in the lowland group account for 71% of total farm output, whilst milk sales account for 68% of total farm output on LFA farms. The lower input-output characteristics of the LFA group (on a per hectare basis) are expected and follow the pattern for 2006/07 and for 2005/06 (Robertson and Wilson, 2007). Whilst the lowland group achieved an £840 greater output per hectare, total variable and fixed costs were, respectively, £306/ha and £377/ha higher than for the LFA group. Nonetheless, the lowland group achieved an FBI of £499/ha in comparison to £363/ha for the LFA group, and in MII terms, the respective returns are £213/ha and £77/ha. For lowland farms, the average FBI returns represent a £159/ha improvement on 2006/07, whilst for LFA farms the improvement in FBI is £108/ha. More pertinent to LFA farms, is the difference in MII return, which shows that for 2007/08, the average MII per LFA dairy farm was just over £9,000, contrasting with the MII loss of £5,700 in 2006/07. The costs, returns and profitability averages of the 2007/08 data arguably demonstrate more clearly the difference between lowland and LFA production than in previous years. However, the pattern of higher input-output per hectare on the lowland farms when compared to the LFA farms is largely consistent with the results of 2006/07 and 2005/06 Robertson and Wilson (*ibid*); the increases in milk and concentrate prices noted earlier in this report account, in the main, for the apparent widening of the gap between these two production areas.

**Table 3.1: Outputs, Inputs and Margins for All Farms, Lowland and LFA**

	All Farms		All Lowland		All LFA	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	292	296	226	229	66	67
Area (Ha)	104.60	116.79	104.72	116.64	104.19	117.39
	<i>£/ha</i>		<i>£/ha</i>		<i>£/ha</i>	
<b>Output</b>						
Milk	1248	1669	1354	1796	884	1157
Calf	53	61	56	64	44	50
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	0	0	0	0	0	1
Herd Replacement	-90	-150	-96	-161	-69	-107
<b>Total Dairy Output</b>	<b>1212</b>	<b>1579</b>	<b>1314</b>	<b>1699</b>	<b>859</b>	<b>1102</b>
Other Livestock	255	344	262	354	232	304
Other	442	443	480	482	311	288
<b>Total Farm Output</b>	<b>1909</b>	<b>2366</b>	<b>2056</b>	<b>2534</b>	<b>1402</b>	<b>1694</b>
<b>Variable Costs</b>						
Home-grown Concentrates	29	53	33	60	16	27
Purchased Concentrates	356	462	375	485	287	368
Coarse Fodder	29	36	32	38	20	27
Other Livestock Concentrates	8	13	10	15	2	6
Vet and Medicine	59	70	64	74	43	56
Other Livestock Costs	134	161	143	172	101	117
Seed	17	19	21	23	4	5
Fertiliser	63	71	67	75	51	55
Crop Protection	16	20	20	23	3	6
Other Crop Costs	14	15	15	17	10	8
<b>Total Variable Costs</b>	<b>726</b>	<b>920</b>	<b>780</b>	<b>982</b>	<b>538</b>	<b>676</b>
<b>Fixed Costs</b>						
Labour	233	261	252	280	168	186
Contract	88	107	100	119	50	59
Machinery Depreciation	108	124	116	133	82	90
Other Machinery	114	132	121	137	91	108
Miscellaneous	188	202	200	214	147	153
Rent and Rental Equivalent	233	220	249	238	179	149
<b>Total Fixed Costs</b>	<b>965</b>	<b>1046</b>	<b>1036</b>	<b>1121</b>	<b>718</b>	<b>744</b>
<b>Net Farm Income</b>	<b>219</b>	<b>400</b>	<b>240</b>	<b>431</b>	<b>147</b>	<b>274</b>
Farmer / Spouse Labour	221	214	225	218	204	197
<b>Management &amp; Investment Income</b>	<b>-2</b>	<b>186</b>	<b>14</b>	<b>213</b>	<b>-58</b>	<b>77</b>
<b>Farm Business Income (FBI)</b>	<b>321</b>	<b>472</b>	<b>340</b>	<b>499</b>	<b>255</b>	<b>363</b>

### 3.3: Lowland: Influence of Farm Size

Table 3.2 details the results of analysis by size groups for lowland dairy farms. It is instructive to note that the number of farms in the different size groups has changed between 2006/07 and 2007/08. Specifically, there has been a reduction in the number of farms in the less than 60 hectares and the 60 to 120 hectare size groups. By contrast the number of farms in the greater than 120 hectare group has increased from 82 to 97. Examining the input-output relationships in Table 3.1, the degree of specialisation of smaller farms, noted in both 2006/07 and 2005/06 (Robertson and Wilson, 2007) remains in 2007/08. The less than 60 hectares group achieved the greatest total farm output per hectare, with milk output at £2135 accounting for 74% of total farm output. The less than 60 hectares group also records the greatest total variable costs (£1184/ha) and the greatest total fixed costs (£1195/ha). However, whilst this size group is more specialised with respect to milk production, examining performance by MII shows that the less than 60 hectares group achieved a negative MII (minus £115/ha), whilst the two larger size groups achieved positive MII returns. In respect to FBI the pattern reverses, with the less than 60 hectares group achieving the greatest per hectare FBI performance, albeit that given the average farm sizes across the three groups, farm-level FBI is lowest for the less than 60 hectares size grouping. The most contrasting result is the value of farmer and spouse labour across the three size groupings, with respective contributions of £638/ha, £301/ha and £122/ha for the less than 60 hectares, 60 to 120 hectares and greater than 120 hectare groups. This finding is expected given the greater per hectare value of farmer and spouse labour found on smaller farms, and reinforces previous findings in 2006/07 and 2005/06 (Robertson and Wilson, *ibid*).

### 3.4: Lowland: Influence of Region

The outputs, inputs and margins for lowland dairy farms across the three EU super regions are supplied in Table 3.3. Differences in the average regional performance can be noted from the larger average farm size in the East, and smallest in the North. The North and West indicate a greater degree of specialisation in dairy than for the East, with the North and West respectively deriving 73% and 72% of total farm output from milk output, whilst the East derives only 66% of their total farm output from milk sales. Total variable costs are similar between the North and West, whilst total fixed costs are greatest in the West, yet similar between the North and East. For 2006/07 the North records the greatest FBI, whilst in 2007/08 the West records an FBI of £565/ha in contrast to the North (£487/ha) and the East (£398/ha). MII returns have seen a substantial improvement across each region in 2007/08 in contrast to the small returns of 2006/07.

### 3.5: Lowland: Comparison by Profitability Quartiles

Table 3.4 details performance by profitability quartiles, with FBI/ha taken as the performance indicator. The upper quartile is characterised by having a smaller farm size (96.43ha) than the lower quartile (120.98ha), achieving a substantially greater total farm output (£3352/ha) than the lower quartile (£2098/ha), higher total variable and fixed costs per hectare and achieving an average FBI of £1094/ha, in contrast to the £64/ha for the lower quartile. At the average farm sizes noted in Table 3.4, these FBI data translate to an average farm-level FBI of £105,500 for the upper quartile and £7,700 for the lower quartile. Underpinning this difference in performance is the milk output of the two groups; upper quartile £2556/ha, lower quartile £1416/ha. With respect to milk output, the upper quartile has achieved a 40% increase in milk output between 2006/07 to 2007/08, whilst the respective increase for the lower quartile is 34.5%; the main driver for this increase being the increased milk price for 2007/08 as noted above and detailed further in the gross margin analysis. Both upper and lower quartiles have incurred concentrate cost increases of 35%, which, to a large extent explains the 27% and 29% increase in total variable costs for the lower and upper quartiles respectively. In terms of MII, despite the increased milk output, the lower quartile still did not achieve a positive MII, whilst the upper quartile retained £619/ha MII, worth £59,690 at the average farm size. In 2006/07, FBI varied by £931/ha between the two groups; for 2007/08 FBI differed by £1030/ha.

**Table 3.2: Outputs, Inputs and Margins: Lowland by Farm Size**

<b>LOWLAND</b>	< 60 ha		60 – 120 ha		> 120 ha	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	50	41	94	91	82	97
Area (Ha)	42.66	42.72	85.75	85.75	202.20	195.32
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	1512	2135	1348	1918	1318	1694
Calf	80	92	62	82	47	52
Lease Quota (net)	-2	-1	0	0	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-108	-200	-97	-186	-91	-144
<b>Total Dairy Output</b>	<b>1482</b>	<b>2026</b>	<b>1312</b>	<b>1813</b>	<b>1274</b>	<b>1601</b>
Other Livestock	311	440	273	390	243	325
Other	486	436	470	430	484	512
<b>Total Farm Output</b>	<b>2279</b>	<b>2902</b>	<b>2056</b>	<b>2633</b>	<b>2001</b>	<b>2438</b>
<b>Variable Costs</b>						
Home-grown						
Concentrates	28	36	31	35	34	74
Purchased						
Concentrates	447	638	366	517	364	450
Coarse Fodder	40	38	34	39	30	37
Other Livestock						
Concentrates	9	15	8	18	11	13
Vet and Medicine	71	96	59	72	65	71
Other Livestock Costs	163	225	151	179	134	162
Seed	11	12	21	21	24	25
Fertiliser	81	90	64	76	65	73
Crop Protection	7	10	13	15	27	29
Other Crop Costs	16	23	16	18	14	16
<b>Total Variable Costs</b>	<b>873</b>	<b>1184</b>	<b>762</b>	<b>990</b>	<b>767</b>	<b>950</b>
<b>Fixed Costs</b>						
Labour	175	190	229	276	284	294
Contract	97	122	102	127	99	115
Machinery						
Depreciation	155	184	120	130	104	127
Other Machinery	136	160	111	129	123	138
Miscellaneous	251	283	213	237	179	193
Rent and Rental						
Equivalent	271	255	259	251	237	230
<b>Total Fixed Costs</b>	<b>1084</b>	<b>1195</b>	<b>1033</b>	<b>1151</b>	<b>1026</b>	<b>1097</b>
<b>Net Farm Income</b>	<b>321</b>	<b>523</b>	<b>261</b>	<b>492</b>	<b>208</b>	<b>390</b>
Farmer / Spouse						
Labour	557	638	279	301	114	122
<b>Management &amp; Investment Income</b>	<b>-236</b>	<b>-115</b>	<b>-18</b>	<b>192</b>	<b>94</b>	<b>268</b>
<b>Farm Business Income (FBI)</b>	<b>390</b>	<b>586</b>	<b>345</b>	<b>579</b>	<b>325</b>	<b>449</b>

**Table 3.3: Outputs, Inputs and Margins: Lowland by EU Super Region**

LOWLAND	North		East		West	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	63	59	58	55	105	115
Area (Ha)	88.23	98.48	149.45	148.38	91.104	112.48
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	1358	1845	1120	1521	1561	1939
Calf	63	66	41	49	65	72
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-111	-183	-63	-87	-115	-195
<b>Total Dairy Output</b>	<b>1310</b>	<b>1728</b>	<b>1098</b>	<b>1482</b>	<b>1511</b>	<b>1816</b>
Other Livestock	276	322	177	264	329	424
Other	497	484	509	548	442	440
<b>Total Farm Output</b>	<b>2083</b>	<b>2533</b>	<b>1785</b>	<b>2294</b>	<b>2281</b>	<b>2680</b>
<b>Variable Costs</b>						
Home-grown Concentrates	30	62	27	52	40	63
Purchased Concentrates	397	519	312	428	419	503
Coarse Fodder	41	52	21	43	37	28
Other Livestock Concentrates	1	1	3	4	22	28
Vet and Medicine	73	85	51	63	69	74
Other Livestock Costs	141	178	116	157	168	179
Seed	16	18	24	23	22	26
Fertiliser	75	86	50	60	77	78
Crop Protection	15	17	26	27	18	24
Other Crop Costs	14	19	15	17	15	16
<b>Total Variable Costs</b>	<b>803</b>	<b>1038</b>	<b>644</b>	<b>872</b>	<b>888</b>	<b>1020</b>
<b>Fixed Costs</b>						
Labour	236	250	247	288	266	290
Contract	94	99	96	117	106	131
Machinery Depreciation	120	146	101	112	126	138
Other Machinery	119	128	110	138	132	142
Miscellaneous	203	219	190	212	206	212
Rent and Rental Equivalent	273	226	208	211	270	261
<b>Total Fixed Costs</b>	<b>1045</b>	<b>1069</b>	<b>950</b>	<b>1078</b>	<b>1107</b>	<b>1174</b>
<b>Net Farm Income</b>	<b>236</b>	<b>426</b>	<b>191</b>	<b>344</b>	<b>286</b>	<b>487</b>
Farmer / Spouse Labour	223	212	165	182	281	242
<b>Management &amp; Investment Income</b>	<b>13</b>	<b>214</b>	<b>25</b>	<b>162</b>	<b>6</b>	<b>244</b>
<b>Farm Business Income (FBI)</b>	<b>403</b>	<b>487</b>	<b>256</b>	<b>398</b>	<b>375</b>	<b>565</b>

**Table 3.4: Outputs, Inputs and Margins: Lowland by Profitability Quartiles**

<b>LOWLAND</b>	Lower quartile		Upper quartile	
	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>
Number of farms	57	57	57	57
Area (Ha)	114.01	120.98	93.17	96.43
	£/ha		£/ha	
<b>Output</b>				
Milk	1053	1416	1828	2556
Calf	46	55	74	95
Lease Quota (net)	0	-1	0	0
Other Dairy	0	0	0	0
Herd Replacement	-87	-160	-122	-191
<b>Total Dairy Output</b>	<b>1011</b>	<b>1309</b>	<b>1781</b>	<b>2460</b>
Other Livestock	222	329	336	422
Other	416	460	545	470
<b>Total Farm Output</b>	<b>1649</b>	<b>2098</b>	<b>2662</b>	<b>3352</b>
<b>Variable Costs</b>				
Home-grown Concentrates	24	46	41	47
Purchased Concentrates	335	438	463	634
Coarse Fodder	30	32	46	42
Other Livestock Concentrates	11	23	16	26
Vet and Medicine	64	69	68	98
Other Livestock Costs	137	165	160	204
Seed	20	25	25	22
Fertiliser	59	69	74	88
Crop Protection	19	21	19	23
Other Crop Costs	18	22	17	20
<b>Total Variable Costs</b>	<b>719</b>	<b>911</b>	<b>931</b>	<b>1203</b>
<b>Fixed Costs</b>				
Labour	241	238	295	338
Contract	94	121	92	122
Machinery Depreciation	109	144	141	151
Other Machinery	110	130	146	148
Miscellaneous	199	218	194	231
Rent and Rental Equivalent	232	223	293	271
<b>Total Fixed Costs</b>	<b>987</b>	<b>1074</b>	<b>1161</b>	<b>1262</b>
<b>Net Farm Income</b>	<b>-57</b>	<b>113</b>	<b>570</b>	<b>887</b>
Farmer / Spouse Labour	209	208	255	268
<b>Management &amp; Investment Income</b>	<b>-266</b>	<b>-95</b>	<b>315</b>	<b>619</b>
<b>Farm Business Income (FBI)</b>	<b>-54</b>	<b>64</b>	<b>877</b>	<b>1094</b>

### 3.6: LFA: Influence of Farm Size

Table 3.5 builds upon the outline results presented for LFA dairy farms in Table 3.1 by considering farm size influences on LFA dairy farming. As seen for 2006/07, the larger average size group of greater than 120 hectares, once again represents a substantially lower input-output system per hectare than the two smaller size groups in 2007/08. The greater than 120 hectares size group achieved a total farm output of £1449/ha, of which 64% was derived from milk sales; this contrasts with respective returns of £2168/ha (77% from milk sales) and £2305/ha (72% from milk sales) for the 60 to 120 hectare size group and the less than 60 hectares size group. Variable costs have increased substantially from 2006/07 to 2007/08, driven mainly from increased concentrate costs. Differences in total fixed costs exist both across years and across the size groupings. The less than 60 hectare size group has recorded marginally lower total fixed costs in 2007/08, whilst the 60 to 120 hectare group and the greater than 120 hectare group have incurred total fixed costs increases of 7% and 12% respectively. Part of the explanation for the marginally lower total fixed costs for the less than 60 hectare size group is the reduction in labour costs (£186/ha in 2007/08 *cf.* £214/ha in 2006/07), yet this is more than offset by the increase in the value of farmer and spouse labour for this group (£509/ha in 2007/08 *cf.* £431/ha in 2006/07). MII returns for the less than 60 hectare size group remain unchanged despite an increase in milk output, whilst MII has increased by £270/ha and £103/ha for the 60 to 120 hectare and the greater than 120 hectare groups respectively. Examining FBI returns across the three groups, at the average farm sizes noted in Table 3.5, average FBI returns are approximately £22,000, £45,000, and £59,000 across the less than 60 hectares, 60 to 120 hectares and greater than 120 hectare groups respectively.

### 3.7: LFA: Influence of Region

Table 3.6 presents the LFA dairy farm results by EU super region. Insufficient observations exist for the East region to present results. Across both the North and the West, the average farm size has increased from 2006/07 to 2007/08, with the increase in farm size in the North group approximating 16 hectares. As observed for 2006/07, the North is characterised by a lower input-output system than the West, following the pattern noted for analysis by farm size groups where larger farms typically operate a lower input-output system per hectare. The North region has a lower concentrate use and substantially lower total variable costs than the West, and the resultant total farm output is £1478/ha and £1939/ha respectively. Total fixed costs are unchanged between 2006/07 and 2007/08 in the North region, whilst the West region has incurred an increase of £28/ha in total fixed costs between these two years; this change in total fixed costs contrasts with the pattern for lowland farms as noted in Table 3.2. Despite the differences in cost structure and input-output relationships, the MII returns across these two regions are very similar when examined on a per hectare basis. At FBI level, the average per hectare returns are £304 and £540 for the North and West respectively, generating average farm-level FBI returns of £41,000 for the North and £48,000 for the West.

**Table 3.5: Outputs, Inputs and Margins: LFA by Farm Size**

LFA	< 60 ha		60 – 120 ha		> 120 ha	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	20	19	21	20	25	28
Area (Ha)	46.03	44.65	81.43	80.02	223.03	209.09
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	1319	1657	1142	1672	639	923
Calf	72	101	57	71	30	35
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	0	0	0	7	0	0
Herd Replacement	-114	-174	-86	-132	-47	-88
<b>Total Dairy Output</b>	<b>1277</b>	<b>1584</b>	<b>1113</b>	<b>1618</b>	<b>623</b>	<b>870</b>
Other Livestock	295	385	224	310	214	286
Other	470	336	255	241	278	292
<b>Total Farm Output</b>	<b>2043</b>	<b>2305</b>	<b>1592</b>	<b>2168</b>	<b>1115</b>	<b>1449</b>
<b>Variable Costs</b>						
Home-grown Concentrates	16	26	17	22	16	29
Purchased Concentrates	417	510	371	527	212	298
Coarse Fodder	26	38	21	33	17	23
Other Livestock Concentrates	1	0	0	0	3	8
Vet and Medicine	54	67	53	65	36	52
Other Livestock Costs	149	197	108	131	82	98
Seed	3	5	4	4	4	6
Fertiliser	77	82	60	71	39	46
Crop Protection	3	5	3	5	4	6
Other Crop Costs	6	10	10	11	11	7
<b>Total Variable Costs</b>	<b>753</b>	<b>940</b>	<b>647</b>	<b>870</b>	<b>424</b>	<b>572</b>
<b>Fixed Costs</b>						
Labour	214	186	126	163	168	193
Contract	58	81	63	73	43	50
Machinery Depreciation	111	135	99	118	66	73
Other Machinery	125	149	86	98	82	103
Miscellaneous	242	259	180	179	103	126
Rent and Rental Equivalent	270	205	198	173	141	131
<b>Total Fixed Costs</b>	<b>1020</b>	<b>1016</b>	<b>752</b>	<b>804</b>	<b>603</b>	<b>676</b>
<b>Net Farm Income</b>	<b>270</b>	<b>349</b>	<b>192</b>	<b>494</b>	<b>87</b>	<b>200</b>
Farmer / Spouse Labour	431	509	303	335	90	100
<b>Management &amp; Investment Income</b>	<b>-161</b>	<b>-160</b>	<b>-111</b>	<b>159</b>	<b>-3</b>	<b>100</b>
<b>Farm Business Income (FBI)</b>	<b>435</b>	<b>499</b>	<b>284</b>	<b>566</b>	<b>182</b>	<b>283</b>

**Table 3.6: Outputs, Inputs and Margins: LFA by EU Super Region**

LFA	North		East		West	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	38	39	<i>Insufficient data</i>		17	16
Area (Ha)	119.03	135.29			82.83	88.90
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	806	943			971	1395
Calf	40	40			57	74
Lease Quota (net)	0	0			0	0
Other Dairy	0	1			0	0
Herd Replacement	-76	-89			-56	-154
<b>Total Dairy Output</b>	<b>771</b>	<b>895</b>			<b>971</b>	<b>1315</b>
Other Livestock	249	299			174	324
Other	310	285			321	301
<b>Total Farm Output</b>	<b>1329</b>	<b>1478</b>			<b>1466</b>	<b>1939</b>
<b>Variable Costs</b>						
Home-grown Concentrates	17	22			19	43
Purchased Concentrates	260	318			296	390
Coarse Fodder	18	22			23	37
Other Livestock Concentrates	3	9			1	0
Vet and Medicine	47	53			36	50
Other Livestock Costs	96	102			106	126
Seed	4	5			3	6
Fertiliser	51	46			46	64
Crop Protection	4	5			2	5
Other Crop Costs	13	9			6	7
<b>Total Variable Costs</b>	<b>514</b>	<b>591</b>			<b>539</b>	<b>727</b>
<b>Fixed Costs</b>						
Labour	141	162			227	206
Contract	52	51			39	78
Machinery Depreciation	82	89			80	101
Other Machinery	95	104			80	89
Miscellaneous	122	131			191	176
Rent and Rental Equivalent	167	124			190	184
<b>Total Fixed Costs</b>	<b>659</b>	<b>660</b>			<b>807</b>	<b>835</b>
<b>Net Farm Income</b>	<b>156</b>	<b>227</b>			<b>120</b>	<b>377</b>
Farmer / Spouse Labour	162	150			278	307
<b>Management &amp; Investment Income</b>	<b>-6</b>	<b>77</b>			<b>-158</b>	<b>70</b>
<b>Farm Business Income (FBI)</b>	<b>236</b>	<b>304</b>			<b>318</b>	<b>540</b>

### **3.8: LFA: Comparison by Profitability Quartiles**

The analysis of profitability quartiles for LFA farms is presented in Table 3.7. Measured by FBI performance, Table 3.7 shows that there has been an increase in milk output for both groups between 2006/07 and 2007/08: lower quartile, increase of £153/ha; upper quartile, increase of £391/ha. The difference in total farm output between these two groups is a key performance indicator. In 2006/07 the difference between total farm output for the two groups was £1338/ha, whilst in 2007/08 this difference was £1499/ha. Concentrate costs increased for both groups, with the lower quartile incurring a 35% increase on 2006/07, whilst the respective increase for the upper quartile was 33%, albeit from a higher base level. A characteristic noted in both 2006/07 and 2007/08 is that the upper quartiles (as determined by FBI per hectare) have a smaller average farm area than the lower quartiles. The lower quartile incurred an increase of £28/ha for fixed costs between the two years, whilst fixed costs for the upper quartile remain unchanged. Despite the improved conditions for dairy farming in 2007/08, the lower quartile LFA farms still did not achieve a positive MII return, whilst the upper quartile achieved a positive MII of £339/ha or £27,800 per farm. In terms of FBI, the lower quartile farms achieved a very modest increase of £18/ha over the 2006/07 result, whilst the upper quartile achieved an FBI return of £891/ha in 2007/08, approximately £73,000 at the average farm size in this group. As was noted by Robertson and Wilson (2007; 2008), the most profitable LFA dairy farms are relatively small with more intensive production than least profitable LFA dairy farms. Combining the observations in Tables 3.5 and 3.6 suggests that the more profitable LFA farms are most likely to be located in the West rather than the North.

### **3.9: Further Analysis: Lowland and LFA by Region and Farm Size**

The above sections have provided analysis for lowland and LFA dairy farms by region, size groupings and profitability quartiles. It is possible to present the data for lowland farms through further analysis that examines the data by farm size groupings for each EU super region. The results of this analysis are presented in Tables A1 to A3 in the appendix, albeit that where the number of farms by any one group is less than 15, these data have been withheld to ensure that confidentiality of the data is not compromised. It was not possible to provide meaningful results for LFA on this basis of analysis due to sample size restrictions.

**Table 3.7: Outputs, Inputs and Margins: LFA by Profitability Quartiles**

LFA	Lower quartile		Upper quartile	
	06/07	07/08	06/07	07/08
Number of farms	17	17	17	17
Area (Ha)	174.93	186.96	69.66	82.10
	£/ha		£/ha	
<b>Output</b>				
Milk	385	538	1511	1902
Calf	21	23	84	91
Lease Quota (net)	0	0	0	1
Other Dairy	0	1	0	0
Herd Replacement	-35	-43	-108	-169
<b>Total Dairy Output</b>	<b>371</b>	<b>520</b>	<b>1486</b>	<b>1824</b>
Other Livestock	181	231	249	343
Other	280	274	435	357
<b>Total Farm Output</b>	<b>832</b>	<b>1025</b>	<b>2170</b>	<b>2524</b>
<b>Variable Costs</b>				
Home-grown Concentrates	6	9	33	62
Purchased Concentrates	181	243	395	506
Coarse Fodder	16	17	28	29
Other Livestock Concentrates	0	16	1	0
Vet and Medicine	28	37	58	64
Other Livestock Costs	66	73	153	134
Seed	1	2	6	6
Fertiliser	27	30	84	98
Crop Protection	1	4	5	7
Other Crop Costs	13	5	7	8
<b>Total Variable Costs</b>	<b>339</b>	<b>436</b>	<b>770</b>	<b>915</b>
<b>Fixed Costs</b>				
Labour	125	133	242	223
Contract	16	28	69	90
Machinery Depreciation	67	69	107	128
Other Machinery	95	113	116	100
Miscellaneous	98	105	206	202
Rent and Rental Equivalent	119	99	216	213
<b>Total Fixed Costs</b>	<b>519</b>	<b>547</b>	<b>956</b>	<b>956</b>
<b>Net Farm Income</b>	<b>-26</b>	<b>42</b>	<b>444</b>	<b>653</b>
Farmer / Spouse Labour	128	110	276	314
<b>Management &amp; Investment Income</b>	<b>-155</b>	<b>-68</b>	<b>168</b>	<b>339</b>
<b>Farm Business Income (FBI)</b>	<b>28</b>	<b>46</b>	<b>647</b>	<b>891</b>

### 3.10: Dairy Enterprise Results: Gross Margin for All, Lowland, and LFA Farms

The following sections present results that relate solely to the dairy enterprise rather than the farm-level analysis detailed above. Results herein are thus presented at enterprise level reporting to Gross Margin (GM) returns (total dairy output minus total variable costs). The results for all farms and for lowland and LFA dairy enterprises are detailed in Table 3.8. Examining the “all farms” results there has been an increase in the average number of cows from 2006/07 to 2007/08, from 101 to 122 cows respectively. This echoes the results of the per farm results whereby average farm size in dairy production has increased. Average yields are virtually identical between the two years presented. The most striking change from 2006/07 to 2007/08 is the value of milk output, which has increased by £306/cow; given the static yield between the two years, this difference flows from the respective average milk prices of 18.3 pence per litre (ppl) and 22.6ppl for 2006/07 and 2007/08. The cost of replacements to the herd has increased substantially on the back of the increased milk price. Between the two years, concentrate costs have increased by £82/cow and this has been the driving factor in the total variable cost increase of £106/cow. In 2006/07, the average GM equalled 9.78ppl, whilst for 2007/08 the respective figure is 11.97ppl; 35% of the increased milk value has been required to cover the increase in total variable costs. Nonetheless, on the basis of the average number of cows in 2007/08, the increase in GM is worth just under £19,000. Examining the differences between lowland and LFA production, the pattern noted in previous reports (Roberson and Wilson, 2007; 2008) is reinforced with lowland production achieving a greater yield per cow from a larger average herd. The difference in milk price between the lowland and LFA production noted for 2006/07 (18.3ppl and 17.9ppl respectively) has widened in 2007/08 where the respective milk prices are 22.7ppl and 21.8ppl. On average, total variable costs in lowland production have increased by £104/cow, whilst in LFA production the increase is £112/cow; respective increases in GM's are £159/cow and £127/cow. At the average herd sizes, in 2007/08, total GM on lowland production was approximately £111,000 and for LFA production, £74,000.

**Table 3.8: Gross Margin Results for All Farms, Lowland and LFA**

	All Farms		All Lowland		All LFA	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	270	275	210	213	60	62
Average number cows	101.2	122.0	106.9	128.0	80.8	97.2
Average yield (litres)	7112	7109	7198	7173	6704	6763
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1299	1605	1320	1629	1201	1476
Calf	57	58	56	57	61	62
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	0	0	0	0	0	2
Herd Replacement	-94	-140	-94	-141	-93	-133
<b>Total Dairy Output</b>	<b>1262</b>	<b>1523</b>	<b>1282</b>	<b>1545</b>	<b>1168</b>	<b>1406</b>
<b>Variable Costs</b>						
Concentrates	324	406	328	408	309	397
Coarse Fodder	23	25	24	26	19	24
Vet and Medicine	50	57	51	58	45	55
Other Livestock Costs	110	122	111	124	108	113
Forage Costs	58	62	60	64	49	53
<b>Total Variable Costs</b>	<b>566</b>	<b>672</b>	<b>574</b>	<b>678</b>	<b>531</b>	<b>643</b>
<b>Total Gross Margin</b>	<b>696</b>	<b>851</b>	<b>708</b>	<b>867</b>	<b>637</b>	<b>764</b>

### 3.11: Dairy Enterprise Results: Influence of Herd Size on Lowland Herds

Table 3.9 considers the GM results for lowland herds across three size categories. Note the structural change in the data between the two years presented, that shows that the number of herds in the less than 80 cows group has reduced from 73 in 2006/07 to 54 in 2007/08; by contrast there has been an increase in the number of herds that are in the 80 to 130 cows and greater than 130 cows groups. Within the two smaller herd size groupings, the average number of cows has increased, while the increase in the number of herds in the greater than 130 cows group has been accompanied by a reduction in the average number of cows. Total GM per cow increases with herd size. It is instructive to note that the pattern of average yields follows this same trend; yield increases with herd size. Milk output also follows this trend as the average milk price is similar across the three groups presented: less than 80 cows (22.6ppl); 80 to 130 cows (22.8ppl); greater than 130 cows (22.7ppl). Whilst GM per cow increases with herd size, GM per litre follows a reverse trend of: less than 80 cows (12.49ppl); 80 to 130 cows (12.07ppl); greater than 130 cows (12.04ppl). This pattern flows from the lower yields associated with lower concentrate usage and cost, but also associated with lower milk output per cow. The difference in GM between the less than 80 cows group and the greater than 130 cows groups is £152/cow in 2007/08, whilst for 2006/07 the difference was £200/cow, suggesting a narrowing of the gap in performance across herd size groupings. In part this is reinforced by the slight increased yield in the less than 80 cows group, whilst the greater than 130 cows group has experienced a reduction in average milk yield of approximately 300 litres / cow; this latter aspect almost certainly follows from the increase in the number of farms in this group and the lower average number of cows per herd that has resulted.

**Table 3.9: Gross Margin Results: Lowland by Herd Size**

<b>LOWLAND</b>	< 80 cows		80 – 130 cows		> 130 cows	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	73	54	68	76	69	83
Average number cows	52.9	56.1	100.5	103.1	227.4	218.4
Average yield (litres)	5974	6063	7103	6909	7843	7557
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1086	1368	1292	1575	1448	1716
Calf	59	63	57	65	53	53
Lease Quota (net)	-1	-1	0	0	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-88	-102	-82	-140	-102	-151
<b>Total Dairy Output</b>	<b>1056</b>	<b>1328</b>	<b>1267</b>	<b>1499</b>	<b>1399</b>	<b>1618</b>
<b>Variable Costs</b>						
Concentrates	267	333	325	399	358	429
Coarse Fodder	10	15	29	25	29	28
Vet and Medicine	40	48	52	54	56	62
Other Livestock Costs	107	117	111	127	112	124
Forage Costs	52	58	61	61	63	66
<b>Total Variable Costs</b>	<b>476</b>	<b>571</b>	<b>579</b>	<b>665</b>	<b>619</b>	<b>709</b>
<b>Total Gross Margin</b>	<b>580</b>	<b>757</b>	<b>688</b>	<b>834</b>	<b>780</b>	<b>909</b>

### 3.12: Dairy Enterprise Results: Influence of Region on Lowland Herds

The average results by EU super region for lowland herds are presented in Table 3.10. The pattern of average milk yields in 2006/07 and 2007/08 is similar. The East region achieved the greatest average yield, followed respectively by the West and North regions. Whilst the East region had the greatest average herd size in 2006/07, for 2007/08 the average herd size in the East and West are broadly similar. The milk output in the East region (£1709/cow) flows almost exclusively from the higher average yield, with the milk price in the East and West regions averaging just under 23ppl, which contrasts with the average price in the North region of 22.1ppl. Increases in concentrate costs have occurred across each region leading to increased total variable costs. Gross Margins for North, East and West in 2007/08 were £781/cow, £931/cow and £881/cow respectively, equating to increases over the previous year of £157/cow, £121/cow and £178/cow respectively.

**Table 3.10: Gross Margin Results: Lowland by EU Super Region**

LOWLAND	North		East		West	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	61	55	51	54	98	104
Average number cows	95.8	119.0	116.9	130.5	109.4	132.0
Average yield (litres)	6873	7011	7650	7490	7147	7101
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1227	1551	1445	1709	1307	1631
Calf	57	54	57	56	54	60
Lease Quota (net)	0	0	-1	0	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-101	-150	-81	-95	-96	-160
<b>Total Dairy Output</b>	<b>1183</b>	<b>1455</b>	<b>1420</b>	<b>1671</b>	<b>1265</b>	<b>1530</b>
<b>Variable Costs</b>						
Concentrates	315	409	355	434	320	394
Coarse Fodder	28	31	20	35	24	18
Vet and Medicine	56	63	50	60	49	54
Other Livestock Costs	101	111	122	147	110	119
Forage Costs	60	61	62	64	59	65
<b>Total Variable Costs</b>	<b>560</b>	<b>674</b>	<b>609</b>	<b>740</b>	<b>562</b>	<b>649</b>
<b>Total Gross Margin</b>	<b>624</b>	<b>781</b>	<b>810</b>	<b>931</b>	<b>703</b>	<b>881</b>

### 3.13: Dairy Enterprise Results: Lowland Herds by Performance Groups

Table 3.11 details results across performance quartiles, as measured by GMs, for lowland herds. There are several key characteristics that distinguish the upper quartile from the lower quartile, and these follow the patterns identified in the above sections. The average herd size of the upper quartile is 156 cows in 2007/08, which contrasts with an average herd size of 91 for the lower quartile; note however that the average herd size of the lower quartile is substantially greater than in 2006/07. Milk yield is the most striking difference between the two performance quartiles and this yield differential of 2252 litres/cow largely explains the differential in milk output achieved between the two groups. However, milk price is also of crucial importance – whilst the upper quartile achieved a milk price of 24.5pppl in 2007/08, the lower quartile achieved only 21.8pppl. These key factors demonstrate that both milk yield and milk quality / milk marketing contracts, and hence price achieved, are important performance drivers in milk production. Note that in both 2006/07 and 2007/08, and reinforced by previous studies (Robertson and Wilson, 2007), the upper quartile incurred lower replacement costs per cow than the lower quartile. Concentrate costs differ between the two groups, however, concentrate costs per litre equate to 6.4pppl for the lower quartile and 5.4pppl for the upper quartile, indicating a substantial difference in the conversion of concentrates to milk; whilst other variable costs are generally greater for the upper quartile, the increased milk output substantially compensates for this, leaving £1186/cow GM for the upper quartile and £535/cow for the lower quartile. Gross Margin results presented per litre equal 9.49pp for the lower quartile and 15.05pppl for the upper quartile. Table 3.11 and previous reports, Robertson and Wilson (2007; 2008), identify these characteristics as being consistent across recent years and clearly distinguish the high GM performers as high-input, high-output systems, with large herds, achieving a higher price derived from a better quality product and / or enhanced marketing of the product.

**Table 3.11: Gross Margin Results: Lowland by Performance Quartiles**

<b>LOWLAND</b>	Lower quartile		Upper quartile	
	06/07	07/08	06/07	07/08
Number of farms	53	53	53	53
Average number cows	64.3	90.7	144.4	156.2
Average yield (litres)	5672	5637	8009	7889
	£/cow		£/cow	
<b>Output</b>				
Milk	942	1227	1594	1934
Calf	53	48	59	59
Lease Quota (net)	-1	-1	0	0
Other Dairy	0	0	0	0
Herd Replacement	-98	-150	-75	-109
<b>Total Dairy Output</b>	<b>895</b>	<b>1123</b>	<b>1578</b>	<b>1884</b>
<b>Variable Costs</b>				
Concentrates	281	359	351	423
Coarse Fodder	16	17	19	27
Vet and Medicine	40	45	50	58
Other Livestock Costs	104	111	119	129
Forage Costs	60	56	50	61
<b>Total Variable Costs</b>	<b>501</b>	<b>588</b>	<b>590</b>	<b>698</b>
<b>Total Gross Margin</b>	<b>394</b>	<b>535</b>	<b>988</b>	<b>1186</b>

### 3.14: Dairy Enterprise Results: Influence of Herd Size on LFA Herds

Gross Margin results by herd size for LFA farms are presented in Table 3.12. Due to sample size restrictions the data for the herd size group of greater than 130 cows has been withheld to maintain confidentiality. The average number of cows in the herd size groupings for LFA herds is broadly similar between the two years presented, and whilst average yields have increased slightly for the less than 80 cows group, the average yield for the 80 to 130 cows group has reduced by approximately 150 litres per cow between 2006/07 and 2007/08. In line with the data presented in Table 3.8, milk output has increased, with average milk prices of 21ppl and 22ppl for the less than 80 cows group and 80 to 130 cows group respectively. Note that this contrasts with the average milk prices across the size groups for lowland production in section 3.11, where the average milk prices ranges from 22.6ppl to 22.8ppl. Concentrate costs have increased from 2006/07 to 2007/08 and represent a cost of 5.6ppl and 6.5ppl for the less than 80 cows and the 80 to 130 cows groups respectively. The increase in GM between the two years presented is broadly similar, but remains lower than the GM for the comparable herd size groupings for lowland production as noted in Table 3.9.

**Table 3.12: Gross Margin Results: LFA by Herd Size**

LFA	< 80 cows		80 – 130 cows		> 130 cows	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	32	29	19	21	<i>Ins. data</i>	<i>Ins. data</i>
Average number cows	58.4	57.8	99.0	98.3		
Average yield (litres)	6134	6196	7118	6965		
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1072	1308	1279	1534		
Calf	71	69	54	65		
Lease Quota (net)	0	0	0	0		
Other Dairy	0	5	0	0		
Herd Replacement	-89	-120	-110	-131		
<b>Total Dairy Output</b>	<b>1055</b>	<b>1262</b>	<b>1224</b>	<b>1468</b>		
<b>Variable Costs</b>						
Concentrates	280	350	352	456		
Coarse Fodder	18	21	20	25		
Vet and Medicine	42	45	45	61		
Other Livestock Costs	99	109	118	107		
Forage Costs	42	40	55	54		
<b>Total Variable Costs</b>	<b>480</b>	<b>566</b>	<b>589</b>	<b>702</b>		
<b>Total Gross Margin</b>	<b>575</b>	<b>697</b>	<b>634</b>	<b>767</b>		

### 3.15: Dairy Enterprise Results: Influence of Region on LFA Herds

Gross Margin results for LFA farms by EU super region are presented in Table 3.13. The East LFA region contains insufficient observations to present average results in both 2006/07 and 2007/08. The North region has witnessed a decline in the average yield for LFA dairy herds, while the reverse has occurred in the West. Nonetheless, the average yield in the LFA dairy herds in the North remains greater than for the West. Herd replacement costs are greater in the West than in the North, contrasting with the finding for 2006/07. Milk output has increased by £234/cow and £261/cow for the North and West respectively, and with increases in concentrate costs of £84/cow and £63/cow respectively, GMs have increased in both regions. The GM for the North, at £741/cow is slightly greater than the GM for the West of £722; in 2006/07 the GM results for the two regions were virtually identical.

**Table 3.13: Gross Margin Results: LFA by EU Super Region**

LFA	North		East		West	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	36	37	<i>Ins. data</i>	<i>Ins. data</i>	16	15
Average number cows	79.6	89.6			77.1	96.0
Average yield (litres)	6901	6726			6028	6293
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1238	1472			1076	1337
Calf	63	62			64	70
Lease Quota (net)	0	0			0	0
Other Dairy	0	0			0	0
Herd Replacement	-115	-134			-63	-145
<b>Total Dairy Output</b>	<b>1186</b>	<b>1399</b>			<b>1077</b>	<b>1263</b>
<b>Variable Costs</b>						
Concentrates	324	408			273	336
Coarse Fodder	19	22			21	25
Vet and Medicine	54	60			33	37
Other Livestock Costs	114	115			98	94
Forage Costs	58	53			34	49
<b>Total Variable Costs</b>	<b>569</b>	<b>658</b>			<b>459</b>	<b>540</b>
<b>Total Gross Margin</b>	<b>618</b>	<b>741</b>			<b>619</b>	<b>722</b>

### 3.16: Dairy Enterprise Results: LFA Herds by Performance Groups

The analysis by performance quartiles, measured by gross margins, for lowland herds in Section 3.13, identified the main performance drivers as being yield and milk price alongside larger herd size. Table 3.14 provides the results for LFA herds by upper and lower performance quartiles, and the pattern noted for lowland herds is repeated for LFA herds. The upper quartile is characterised by larger herds (by approximately 60 cows), a greater milk yield (7963 litres for the upper quartile *cf.* 5158 litres for the lower quartile) and, with the large difference noted in milk output, differences in milk price are worth 2.8ppl, with the upper quartile achieving 23.1ppl against the 20.3ppl for the lower quartile. The variation in average milk output between the two groups is approximately £800/cow; whilst the upper quartile incurred total variable costs that are approximately £200/cow greater than the lower quartile, this led to a difference in GM performance between the two groups of approximately £600/cow. It is interesting to note that the replacement costs for the upper quartile are lower than for the lower quartile group; this pattern has been identified in previous reports (Robertson and Wilson, 2007; 2008) and follows the same pattern as the results for the lowland performance groups.

**Table 3.14: Gross Margin Results: LFA by Performance Groups**

LFA	Lower quartile		Upper quartile	
	06/07	07/08	06/07	07/08
Number of farms	15	15	15	15
Average number cows	64.2	84.1	102.2	144.2
Average yield (litres)	5599	5158	8237	7963
	£/cow		£/cow	
<b>Output</b>				
Milk	940	1048	1410	1840
Calf	66	57	55	60
Lease Quota (net)	0	0	2	0
Other Dairy	0	0	0	0
Herd Replacement	-122	-138	-75	-127
<b>Total Dairy Output</b>	<b>884</b>	<b>968</b>	<b>1392</b>	<b>1777</b>
<b>Variable Costs</b>				
Concentrates	302	359	392	475
Coarse Fodder	21	34	20	31
Vet and Medicine	46	44	67	71
Other Livestock Costs	112	86	146	134
Forage Costs	50	42	48	60
<b>Total Variable Costs</b>	<b>532</b>	<b>566</b>	<b>673</b>	<b>770</b>
<b>Total Gross Margin</b>	<b>353</b>	<b>402</b>	<b>863</b>	<b>1007</b>

### 3.17: Further Analysis: Dairy Enterprise Results for Lowland by Region and Herd Size

Further analyses of the enterprise GM results (for lowland production) are presented in the appendix in Tables A4 to A6. Where the number of data observations permit (15 or above), the results are provided by EU super region by herd size. Unfortunately it was not possible to provide meaningful results for LFA production by region and herd size.

## Chapter 4: Discussion and Conclusion

### 4.1: Introduction

Chapter 3 has provided enterprise and gross margin results for dairy farming in England, detailing returns for both 2006/07 and 2007/08. In doing so, the previous chapter has focused upon particular results by region, farm size or herd size and performance quartile. Chapter 4 draws together the main findings identified in the above chapter and sets these in the context of previous research.

### 4.2: Lowland Dairying

Lowland dairying in England achieved an average Farm Business Income (FBI) of £499/ha in 2007/08 in comparison with £340/ha for 2006/07. Returns to Management and Investment Income (MII) indicate a similar improvement between the two years, with an MII return of £213/ha for 2007/08 in comparison to an MII of £14/ha in the previous year. Examining the data with respect to farm size groups shows a reduction in the number of farms in the less than 60 hectare and 60 to 120 hectare groups, whilst the number of farms in the greater than 120 hectare group has increased. This suggests a structural change in the dairy industry, as the average size of dairy farms that remain in the industry continues to increase. As noted for 2006/07 and in previous reports (Robertson and Wilson, 2007), the smaller dairy farms tend to be more dairy specialised and intensive in their production. Despite the improved milk price of 4.4 pence per litre (ppl) on lowland farms, on average, farms in the less than 60 hectare group recorded a negative MII return, due in the main to the value of farmer and spouse labour on these smaller dairy farms; however FBI returns on these farms average the highest of the size groups. Regional analysis of lowland production once again showed that on average dairy farms are larger in the East, whilst those in the West once again recorded the greatest milk output per hectare. The variable cost analysis at regional level indicates that the production systems on farms in the North and West are broadly comparable, however, for 2007/08 the greater milk output achieved in the West leads to the greatest average FBI and MII returns being found in this region. Note that for 2006/07 the North achieved the greatest FBI per hectare. Analysis by profitability quartiles shows the wide variation in average performance between the upper and lower quartiles. With an average FBI return more than £1000/ha greater than the lower quartile, the upper quartile is clearly characterised as a high input-output system; total farm output is approximately £1250/ha greater than for the lower quartile (mainly due to the £1150/ha greater milk output), while variable and fixed costs are only £300/ha and £200/ha greater respectively. The upper quartile are, on average, smaller farms than the lower quartile (note that this analysis is at per hectare level), and consequently they record a higher value of farmer and spouse labour per hectare. The input output characteristics demonstrate that achieving high milk output is the key profit driver.

Gross margin results permit analysis at the enterprise level, and for the "all farms" group (lowland and LFA) average yields have been static between 2006/07 and 2007/08. However, the improved milk price of 22.6ppl (*cf.* 18.3ppl in 2006/07) has led to milk output increasing by just over £300/cow. This pattern is broadly followed for the lowland farms (as they dominate the "all farms" category). The milk price increase has been accompanied by an increase in concentrate costs, and in total, variable costs have eroded half of the increased milk value in 2007/08, leaving the GM for lowland herds approximately £160/cow up on the previous year. The results by lowland herd size demonstrate similar increases in milk output and costs across the groups, and whilst the difference in average yield across the three herd size groups still exists, it is slightly less marked than in 2006/07; nevertheless, a strong positive trend exists between average herd size and average milk yield in lowland dairy production. Regional analysis once again demonstrates that average yield is greatest in the East, which, taken together with the per hectare analysis noted above indicates that dairy enterprises in the East have a higher input-output basis than in the North and West, but that the value of output per hectare from their non-dairy enterprises is less intensive, in value terms, that those found in the North and West. Analysis by GM performance quartiles shows that yield is positively related to herd size, with the upper quartile now averaging in excess of 150 cows

per herd in comparison to 90 cows per herd in the lower quartile. Large yield differences between the two groups are also linked to differences in milk price achieved, indicating the upper performance quartile achieved 24.5ppl in comparison to 21.8ppl for the lower quartile; higher yields and better prices led to a substantial difference in milk output value per cow. Whilst the upper quartile incurred greater concentrate costs (by £60/cw) and greater variable costs in total, these increased costs were more than compensated by the increased milk value achieved, with the upper quartile achieving an average total GM of just under £1200/cow.

### 4.3: Less Favoured Area Dairying

The above analysis of lowland dairy farming indicated that MII improved by approximately £200/ha from 2006/07 to 2007/08. For LFA dairy farms, whilst the improved milk price led to an enhanced milk output value, the less intensive production systems found in the LFAs led to an improvement of just over £130/ha MII between the two years; crucially this led to a positive MII in 2007/08 from the negative return of 2006/07. Given the very similar average size structure of lowland and LFA dairy farms, LFA farms recorded a lower average FBI and MII per farm than for lowland production. Farm size group analysis shows that despite the improved milk price in 2007/08, the less than 60 hectare size group recorded, on average, no improvement in MII performance. For the less than 60 hectare size group, the reduction in labour costs between 2006/07 and 2007/08 was substantially out-stripped by the increase in the value of farmer and spouse labour. The main finding from the LFA farm size analysis is that the greater than 120 hectare group have a substantially lower input-output system per hectare, but with an average farm size exceeding 200 hectares, this size group recorded the greatest average total FBI of £59,000. The regional analysis comparing the North and West LFA dairy farms shows that the less-intensive larger LFA farms are more likely to be found in the North, where the larger average farm size is associated with a lower input-output system than typically found in the West. However whilst FBI returns per hectare are substantially different (North £304/ha, West £540/ha), the respective average FBI per farm is £41,000, and £48,000 due to the difference in the average farm size in each region. Profitability quartile analysis for LFA dairy farms reinforces the difference (when measured on a per hectare basis) between the larger LFA dairy farms and the smaller farms. The upper quartile is characterised as having a smaller farm area than the lower quartile, but a substantially greater input-output production system, achieving £1500/ha greater total farm output than the lower quartile, with the majority of this being derived from the value of milk output. In terms of MII returns, the lower quartile once again did not achieve a positive MII, whilst for the average farm size in the upper quartile, the MII was worth approximately £28,000 in 2007/08. At FBI level, the upper quartile achieved an average of £73,000 per farm in 2007/08, set against the more modest £8,600 for the lower quartile.

Gross Margins in LFA dairy production averaged £764/cow in 2007/08, representing a £127/cow increase on the previous year. With virtually static yields, the increased value in milk output was almost exclusively derived from the increase in milk price (3.9ppl increase *cf.* 4.4 ppl increase for lowland production), with the bulk of the £112/cow increase in total variable costs due to increased concentrate costs. The analysis by herd size follows a similar pattern than for 2006/07 - average yield increases with average herd size – a finding noted above for lowland production. The 80 to 130 LFA cow group achieved an average milk price of 22ppl, compared with the 21ppl for the less than 80 cow herd size group. Gross Margin increased for both of these groups when compared with 2006/07. It is instructive to note that the herd size analysis shows that the 80 to 130 cow group incurred concentrate costs of 6.5ppl, in comparison to the 5.6ppl for the less than 80 cow group. Whilst analysis at farm level shows that LFA farms in the North have a less intensive input-output production system than the West, when considered in respect to the dairy enterprise alone, the reverse trend is shown with the North incurring greater concentrate costs per cow and achieving a greater yield, value of milk output, and a marginally greater GM. This indicates that while larger LFA dairy farms are more likely to be located in the North, they are achieving a greater output per cow from greater concentrate and forage costs. Performance quartile analysis reinforces the analysis at lowland level. The upper quartile (measured by GM) of LFA dairy enterprises have a larger average herd size and achieved a substantially greater average

yield than those in the lower quartile. This more intensive input-output production system returns a GM of approximately £1000/cow for the upper quartile and £400/cow for the lower quartile. This substantial difference is due in the main to the greater value of milk output (by £800/cow), which as noted for lowland producers is due to both greater yield and a higher average milk price. These patterns are consistent across years and production system and suggest that, at GM enterprise level, the most successful producers are technically more efficient and additionally achieve a better quality of milk product and / or have negotiated an enhanced marketing contract for their milk.

#### 4.4: Comparison with Previous Research

This third *Dairy Farming in England* report continues to demonstrate the wide variation in performance in the dairy sector. Drawing upon independent data and analysis from the Defra-funded Farm Business Survey (FBS), there are consistent trends flowing from the three reports. The validity of these results is drawn from the high proportion of farmers that remain in the FBS from year to year, hence, the results that are presented represent change in the industry first and foremost and not different results that may flow from different data sources or samples with a large turnover of participants. *Dairy Farming in England 2007/08* has first and foremost noted the improved financial performance for dairy farming when compared with both 2006/07 (Robertson and Wilson, 2008) and 2005/06 (Robertson and Wilson, 2007). The improved performance in 2007/08 is due to the 23% improvement in the value of milk output per cow. This improved milk output is due exclusively to an increased milk price, as average yields from the FBS sample have remained static between the two years. The increased output price has not been wholly retained by dairy farmers; concentrate costs in particular have increased by 25% per cow; 35% of the increase in milk output has been required to cover the increased total variable costs. On average, at Farm Business Income (FBI) level, the average dairy farm achieved £55,000 in 2007/08, up from £33,500 on the previous year. Examining the economic return by Management and Investment Income (MII), the respective results for 2005/06, 2006/07, 2007/8 are £46/ha, -£2/ha and £186/ha. On this basis 2007/08 represented a return to profitability in the dairy sector, worth just under £22,000 per farm. However, when set against the context of the previous returns and losses over three years, and in relation to the tenant's capital involved in dairy production (Farm Business Survey GOR Reports, 2009), the average return of management and investment income on a tenant's capital is in the order of 5% per annum, to cover both managerial input and provide a return on capital invested. The dairy industry is undergoing structural change as noted in this report; those remaining in the sector are being faced with potentially large capital requirements in order to fulfil environmental regulations. The above brief analysis of return on capital underlines the modest profit that is available on the average dairy farm and that could be re-invested to equip a dairy unit for modern day dairy production. However this report and the two previous reports in this series highlight the wide technical and economic variation that exists in the industry. There is a clear trend that average yields increase with average herd size. The upper quartile of dairy enterprises by gross margin analysis are clearly shown to have greater yields derived from higher input-output systems, and these enterprises also achieve higher output prices for their milk. This high input-output system is reinforced from the per hectare farm-level analysis; on a per hectare basis, the most profitable quartile have greater variable and fixed costs but achieve substantially greater farm output, in large part flowing from greater milk output. The evidence presented in this series of *Dairy Farming in England* is that the structure of the industry is changing. Previous reports, together with this current publication, note the average area for dairy farms as approximately 90 hectares, 105 hectares and 117 hectare for 2005/06, 2006/07 (Robertson and Wilson, 2007; 2008) and 2007/08 respectively. In the space of three years, a 30% increase in the average area of dairy farms serves to reinforce the pace of structural change that is occurring in the sector.

That the higher performing farms, from a financial perspective are linked to a more intensive input-output system is a well observed facet of agricultural economic analysis. In dairy production this finding has been noted by Colman *et al.* (2004) and Franks *et al.* (2002) and reinforced by the two previous reports in this series (Robertson and Wilson, 2007; 2008). This report has highlighted the variation in performance that exists in the industry and despite

the apparent structural change being observed, the variation in performance remains large. The link between economic and technical performance, and the variation that remains in the industry is reinforced by Hadley's (2006) analysis of technical efficiency and technical change over 1982 to 2002. Hadley estimates average efficiency to be 89.7% in the England and Wales dairy sector, which compares favourably across the sectors (only poultry achieves a higher average level of efficiency), but the efficiency range for dairy production of 58.4% to 97.2% serves to highlight variation in the industry (albeit that most agricultural sectors have efficiency ranges wider than this, again poultry excepted). It is not possible to undertake similar analysis to Hadley's within this report, however, the analysis presented herein shows that a wide variation in performance exists in the dairy sector in 2007/08. The pattern of structural change observed in this report is likely to continue, with the more efficient producers looking to expand whilst others will realise the opportunity to exit the industry rather than make the large investment needed to remain both competitive and environmentally compliant.

#### 4.5: Conclusion

Chapter 1 of this report provided an insight into the structure of the dairy industry and the market environment in which producers operate. In summary, whilst milk price increases were observed over 2007, weather difficulties contributed to lower national average yields. Producer numbers continued to decline and the UK once again failed to meet national quota, with a 30-year low in terms of overall production. Costs increases were also observed, notably for feed, fertiliser, fuel and veterinary products. Marketing margin analysis showed the changing nature of the milk market over recent years and the increase in the marketing margin at retail level over recent years.

Data from the 2007/08 Farm Business Survey, in comparison to 2006/07, shows that profitability in the dairy sector has increased on the back of a 23% rise in the price of milk in the face of static yields. FBI in 2007/08 stood at £472/ha, or £55,000 for the average farm, whilst MI averaged £186/ha or £22,000 per farm. The most profitable producers are operating higher input-output systems and have larger herds. The pace of structural change as indicated by the average dairy farm size is striking; in the space of three years the average size has increased by 30%. The previous 18 to 24 months have witnessed renewed variability in the market for agricultural products, with variation in concentrates, fertiliser and fuel prices being beyond the ranges of most expectations only two years previously. Once again, the UK has not met its quota nationally, and whilst the increased milk output observed over the previous 24 months has been welcomed by the industry, there is now downward movement on the price of milk once again. Reflecting upon this, the 2006/07 report commented:

*"Whilst the profitability of the sector therefore looks set to improve, increased costs, particularly in relation to concentrate feed, fertiliser and fuel, are likely to erode a substantial element of any increased milk price. Nonetheless, for those producers remaining in dairying, 2007/08 looks set to return a more fulfilling economic return than achieved in 2006/07."* Robertson and Wilson (2008), p. 29

At the time of writing in spring of 2009, and looking back over 2008/09, it is likely that the profitability of the dairy sector will have been maintained and improved over the financial year 2008/09 due to the higher milk price over this period. However, cost increases will negate a substantial element of this milk price increase over the 2008/09 financial year. Looking forward, the downward pressure on milk price is likely to result in continuing structural change in the dairy sector with a smaller number of producers increasingly producing a larger proportion of the output.

## References

- Colman, D., Farrar, J. and Zhuang, Y. (2004). *Economics of Milk Production: England and Wales 2002/03*, Special Studies in Agricultural Economics, The University of Manchester. ISBN 1 871542 44 8
- Defra (2009a). Milk Price Surveys  
<http://statistics.defra.gov.uk/esg/datasets/milkpri.xls> (as at 12/02/2009)
- Defra (2009b). Agriculture in the UK 2007  
<https://statistics.defra.gov.uk/esg/publications/auk/2007/05%20AUK%202007%20Chapter%2004.pdf> (as at 03/03/2009)
- Defra (2009c). Family Food - Report on the Expenditure and Food Survey  
<https://statistics.defra.gov.uk/esg/publications/efs/default.asp> (as at 03/03/2009)
- Farm Business Survey GOR Reports (2009)  
[www.farmbusinesssurvey.co.uk](http://www.farmbusinesssurvey.co.uk) Select 2007/08, England, Dairy, Table 11 Balance Sheet, Per Farm
- Farmers Weekly (*various (1)*): (11/05/2007). Reed Business Information Ltd; Surrey.
- Franks, J.R., Cain, P.J. and Farrar, J. (2002). Economic Efficiency in Milk Production: Scale and Non-Scale Effects, *Farm Management*, **11(4)**, 243-268
- Hadley, D. (2006). Patterns in Technical Efficiency and Technical Change at the Farm-Level in England and Wales, 1982-2002, *Journal of Agricultural Economics*, **57 (1)**, 81-100.
- MDC Datum (2009a)  
<http://www.mdcdatum.org.uk/backdata/AnnualProduction&Quota.xls> (as at 03/03/2009)
- MDC Datum (2009b)  
<http://www.mdcdatum.org.uk/Milk%20Supply/averagemilkyields.html> (as at 03/03/2009)
- MDC Datum (2009c)  
<http://www.mdcdatum.org.uk/backdata/ProducerNumbers.xls> (as at 03/03/2009)
- MDC Datum (2009d)  
<http://www.mdcdatum.org.uk/backdata/AnnualProduction&Quota.xls> (as at 03/03/2009)
- MDC Datum (2009e)  
<http://www.mdcdatum.org.uk/MilkPrices/mm-liquid.html> (as at 03/03/2009)
- Robertson and Wilson (2007). *Dairy Farming in England 2005/06*.  
[www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk)
- Robertson and Wilson (2008). *Dairy Farming in England 2006/07*.  
[www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk)

## Glossary

**Output: Other Livestock** is comprised of sales of non-dairy livestock and livestock products adjusted for valuation changes plus the value of produce used on the farm and consumed in the farmhouse or by the workers, less livestock purchases. Miscellaneous livestock receipts are also included.

**Output: Other** is the sales of crops adjusted for valuation changes, plus the value of produce used on the farm (other than forage crops and straw) and produce consumed in the farmhouse or by the workers. Income from land let and buildings let, hirework, non-allocated grants e.g. for environmental schemes, profit on resale of purchased agricultural produce and other miscellaneous farm income including the change in valuation of cultivations is also included.

**Other livestock costs** include livestock haulage, marketing charges, AI charges, straw and woodshavings for bedding and dairy sundries.

**Other crop costs** include silage bags, twine, all marketing costs including crop haulage, purchase of standing crops, soil analysis and potato sacks.

**Labour** is comprised of the gross cost of regular paid employees including an allowance for perquisites together with unpaid family labour (other than the farmer and spouse) manual labour.

**Machinery depreciation** is calculated using the current cost accounting method whereby each item of equipment is revalued by an index prior to the depreciation calculation.

**Rent and Rental Equivalent** consist of gross rent, imputed rent on the net cost of the tenant's own improvements, drainage rates and for owner-occupied land a rental value based on what a tenant would be paying for similar land with an equal length of occupancy.

**Miscellaneous costs** include water charges, vehicle tax, insurance, professional fees, bank commission, telephone charges, subscriptions, office expenses and pest control, general repairs.

**Net Farm Income (NFI)** is total output less total inputs as defined above. It represents the reward to the farmer and spouse for their own manual labour, management and a return on tenant's capital.

**Farmer's and spouse's manual labour** is the estimated value of their manual labour.

**Management and Investment Income (MII)** is Net Farm Income less the allowance made for the farmer's and spouse's manual labour. It represents the reward for management and a return on tenant's capital. MII therefore represents the return to management after all costs have been deducted, including the imputed cost of all unpaid manual labour and a notional rent on owner occupied land and buildings.

**Farm Business Income (FBI)** represents the return to all unpaid labour (farmers, spouses and others with an entrepreneurial interest in the farm business) and to all their capital invested in the farm business including land and farm buildings. It is defined as Total Farm Output (TFO) minus cost (C): where TFO is defined as the sum of output from: crop enterprises, adjustment for disposal of previous crops, livestock enterprises, separable non-agricultural diversification, single farm payment, agri-environmental payments, other grants and subsidies, miscellaneous receipts; C is defined as variable costs plus fixed costs. *[For 2006/07 the definition of FBI included the profit / loss on sale of assets as part of the total farm output]*

**Total Gross Margin**, presented for the dairy enterprise results, is total dairy output minus total variable costs.

## Appendix 1: Results by Region and Farm Size

Table A.1: Outputs, Inputs and Margins: Lowland (North) by Farm Size

LOWLAND (North)	< 60 ha		60 – 120 ha		> 120 ha	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	21	17	24	23	18	19
Area (Ha)	43.44	47.03	89.84	86.58	174.23	169.07
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	1317	1808	1244	1930	1466	1802
Calf	70	81	62	78	61	53
Lease Quota (net)	-1	0	0	-1	0	0
Other Dairy	0	0	1	0	0	0
Herd Replacement	-125	-161	-99	-210	-114	-172
<b>Total Dairy Output</b>	<b>1261</b>	<b>1728</b>	<b>1208</b>	<b>1798</b>	<b>1413</b>	<b>1683</b>
Other Livestock	306	387	259	294	275	320
Other	694	617	468	441	424	470
<b>Total Farm Output</b>	<b>2261</b>	<b>2732</b>	<b>1935</b>	<b>2533</b>	<b>2111</b>	<b>2473</b>
<b>Variable Costs</b>						
Home-grown Concentrates	36	46	36	44	22	79
Purchased Concentrates	409	537	352	552	427	493
Coarse Fodder	27	41	36	26	53	71
Other Livestock Concentrates	3	8	0	1	0	0
Vet and Medicine	58	81	64	79	87	90
Other Livestock Costs	135	200	132	174	152	173
Seed	6	10	16	17	21	21
Fertiliser	78	94	76	88	72	83
Crop Protection	6	9	12	15	21	21
Other Crop Costs	15	25	13	13	14	22
<b>Total Variable Costs</b>	<b>771</b>	<b>1052</b>	<b>737</b>	<b>1008</b>	<b>869</b>	<b>1053</b>
<b>Fixed Costs</b>						
Labour	195	255	204	252	281	248
Contract	107	131	74	86	103	99
Machinery Depreciation	195	215	98	131	101	135
Other Machinery	141	150	91	121	129	125
Miscellaneous	250	284	200	228	182	194
Rent and Rental Equivalent	282	219	278	254	264	210
<b>Total Fixed Costs</b>	<b>1169</b>	<b>1253</b>	<b>946</b>	<b>1072</b>	<b>1060</b>	<b>1011</b>
<b>Net Farm Income</b>	<b>321</b>	<b>427</b>	<b>251</b>	<b>453</b>	<b>183</b>	<b>409</b>
Farmer / Spouse Labour	464	454	216	251	110	115
<b>Management &amp; Investment Income</b>	<b>-143</b>	<b>-27</b>	<b>35</b>	<b>201</b>	<b>72</b>	<b>295</b>
<b>Farm Business Income (FBI)</b>	<b>404</b>	<b>497</b>	<b>369</b>	<b>564</b>	<b>430</b>	<b>435</b>

**Table A.2: Outputs, Inputs and Margins: Lowland (East) by Farm Size 07/08**

<b>LOWLAND (East)</b>	< 60 ha		60 – 120 ha		> 120 ha	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	<i>Ins data</i>	<i>Ins data</i>	19	17	34	32
Area (Ha)			83.88	82.83	225.45	219.77
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk			1285	1997	1037	1346
Calf			61	76	32	40
Lease Quota (net)			0	0	0	0
Other Dairy			0	0	0	0
Herd Replacement			-92	-109	-56	-76
<b>Total Dairy Output</b>			<b>1254</b>	<b>1964</b>	<b>1012</b>	<b>1310</b>
Other Livestock			166	282	175	249
Other			487	582	533	551
<b>Total Farm Output</b>			<b>1908</b>	<b>2828</b>	<b>1720</b>	<b>2109</b>
<b>Variable Costs</b>						
Home-grown						
Concentrates			22	27	29	58
Purchased						
Concentrates			348	573	288	362
Coarse Fodder			26	63	17	35
Other Livestock						
Concentrates			1	2	4	4
Vet and Medicine			53	71	48	56
Other Livestock Costs			156	211	103	137
Seed			24	22	24	23
Fertiliser			44	60	50	60
Crop Protection			11	15	32	30
Other Crop Costs			22	36	12	12
<b>Total Variable Costs</b>			<b>709</b>	<b>1083</b>	<b>607</b>	<b>779</b>
<b>Fixed Costs</b>						
Labour			183	330	260	277
Contract			104	141	92	109
Machinery						
Depreciation			95	122	102	108
Other Machinery			110	152	108	133
Miscellaneous			261	283	171	189
Rent and Rental						
Equivalent			217	219	206	205
<b>Total Fixed Costs</b>			<b>970</b>	<b>1247</b>	<b>938</b>	<b>1022</b>
<b>Net Farm Income</b>			<b>229</b>	<b>498</b>	<b>175</b>	<b>308</b>
Farmer / Spouse						
Labour			297	347	107	109
<b>Management &amp; Investment Income</b>			<b>-68</b>	<b>151</b>	<b>68</b>	<b>199</b>
<b>Farm Business Income (FBI)</b>			<b>240</b>	<b>579</b>	<b>244</b>	<b>359</b>

**Table A.3: Outputs, Inputs and Margins: Lowland (West) by Farm Size 07/08**

<b>LOWLAND (East)</b>	< 60 ha		60 – 120 ha		> 120 ha	
	06/07	07/08	06/07	07/08	06/07	07/08
Number of farms	24	18	51	51	30	46
Area (Ha)	40.51	39.87	84.52	86.38	191.72	191.38
	£/ha		£/ha		£/ha	
<b>Output</b>						
Milk	1620	2291	1434	1885	1652	1924
Calf	83	99	61	85	62	60
Lease Quota (net)	0	0	0	0	0	-1
Other Dairy	0	0	0	0	0	0
Herd Replacement	-113	-235	-99	-200	-130	-186
<b>Total Dairy Output</b>	<b>1590</b>	<b>2155</b>	<b>1396</b>	<b>1770</b>	<b>1584</b>	<b>1797</b>
Other Livestock	327	480	331	474	327	389
Other	373	284	464	372	447	499
<b>Total Farm Output</b>	<b>2291</b>	<b>2919</b>	<b>2191</b>	<b>2616</b>	<b>2358</b>	<b>2685</b>
<b>Variable Costs</b>						
Home-grown Concentrates	26	28	33	33	50	85
Purchased Concentrates	457	620	381	481	439	501
Coarse Fodder	47	20	36	37	34	23
Other Livestock Concentrates	17	28	15	31	30	26
Vet and Medicine	79	88	58	69	75	75
Other Livestock Costs	191	234	159	170	168	177
Seed	13	14	22	23	26	28
Fertiliser	86	94	66	75	83	78
Crop Protection	8	10	15	14	25	32
Other Crop Costs	16	21	15	14	16	16
<b>Total Variable Costs</b>	<b>942</b>	<b>1156</b>	<b>801</b>	<b>949</b>	<b>946</b>	<b>1042</b>
<b>Fixed Costs</b>						
Labour	122	95	263	269	322	328
Contract	82	105	115	143	108	127
Machinery Depreciation	130	165	143	132	108	138
Other Machinery	133	172	122	126	141	148
Miscellaneous	269	269	197	226	191	196
Rent and Rental Equivalent	281	277	268	260	268	259
<b>Total Fixed Costs</b>	<b>1017</b>	<b>1082</b>	<b>1109</b>	<b>1157</b>	<b>1138</b>	<b>1196</b>
<b>Net Farm Income</b>	<b>332</b>	<b>681</b>	<b>281</b>	<b>510</b>	<b>275</b>	<b>447</b>
Farmer / Spouse Labour	644	759	305	310	127	136
<b>Management &amp; Investment Income</b>	<b>-312</b>	<b>-78</b>	<b>-24</b>	<b>201</b>	<b>148</b>	<b>311</b>
<b>Farm Business Income (FBI)</b>	<b>340</b>	<b>759</b>	<b>381</b>	<b>587</b>	<b>382</b>	<b>528</b>

**Table A.4: Gross Margin Results: Lowland (North) by Herd Size**

<b>LOWLAND (North)</b>	< 80 cows		80 – 130 cows		> 130 cows	
	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>
Number of farms	26	18	19	20	16	17
Average number cows	51.2	55.9	98.7	103.1	221.9	220.3
Average yield (litres)	5665	5615	7118	6887	7769	7544
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	990	1221	1215	1510	1392	1684
Calf	60	60	55	57	56	50
Lease Quota (net)	0	0	-1	-1	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-87	-92	-97	-147	-112	-170
<b>Total Dairy Output</b>	<b>964</b>	<b>1189</b>	<b>1172</b>	<b>1419</b>	<b>1337</b>	<b>1563</b>
<b>Variable Costs</b>						
Concentrates	252	286	325	421	351	443
Coarse Fodder	14	9	20	21	42	44
Vet and Medicine	41	44	44	55	73	73
Other Livestock Costs	93	94	105	112	103	116
Forage Costs	54	55	57	66	67	60
<b>Total Variable Costs</b>	<b>454</b>	<b>486</b>	<b>551</b>	<b>674</b>	<b>636</b>	<b>737</b>
<b>Total Gross Margin</b>	<b>509</b>	<b>703</b>	<b>620</b>	<b>745</b>	<b>702</b>	<b>826</b>

**Table A.5: Gross Margin Results: Lowland (East) by Herd Size**

<b>LOWLAND (East)</b>	< 80 cows		80 – 130 cows		> 130 cows	
	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>
Number of farms	<i>Ins data</i>	<i>Ins data</i>	20	25	19	20
Average number cows			103.4	106.6	208.4	208.9
Average yield (litres)			7449	7004	8210	8066
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk			1378	1596	1556	1816
Calf			63	66	53	51
Lease Quota (net)			0	0	0	0
Other Dairy			0	0	0	0
Herd Replacement			-80	-106	-76	-106
<b>Total Dairy Output</b>			<b>1361</b>	<b>1556</b>	<b>1534</b>	<b>1761</b>
<b>Variable Costs</b>						
Concentrates			349	403	386	452
Coarse Fodder			27	40	21	32
Vet and Medicine			56	49	49	65
Other Livestock Costs			135	153	118	140
Forage Costs			66	50	62	73
<b>Total Variable Costs</b>			<b>632</b>	<b>694</b>	<b>636</b>	<b>761</b>
<b>Total Gross Margin</b>			<b>729</b>	<b>862</b>	<b>898</b>	<b>1000</b>

**Table A.6: Gross Margin Results: Lowland (West) by Herd Size**

<b>LOWLAND (Westt)</b>	< 80 cows		80 – 130 cows		> 130 cows	
	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>	<i>06/07</i>	<i>07/08</i>
Number of farms	35	27	29	31	34	46
Average number cows	52.6	55.2	99.8	100.3	242.5	221.7
Average yield (litres)	6040	6311	7109	6842	7684	7356
	£/cow		£/cow		£/cow	
<b>Output</b>						
Milk	1097	1400	1280	1605	1418	1689
Calf	58	69	55	70	52	55
Lease Quota (net)	0	0	0	0	0	0
Other Dairy	0	0	0	0	0	0
Herd Replacement	-85	-146	-75	-166	-111	-161
<b>Total Dairy Output</b>	<b>1070</b>	<b>1322</b>	<b>1261</b>	<b>1508</b>	<b>1358</b>	<b>1583</b>
<b>Variable Costs</b>						
Concentrates	274	324	309	378	346	414
Coarse Fodder	9	12	37	15	26	20
Vet and Medicine	38	41	54	58	52	56
Other Livestock Costs	114	117	97	116	114	120
Forage Costs	48	57	61	66	62	66
<b>Total Variable Costs</b>	<b>484</b>	<b>551</b>	<b>558</b>	<b>633</b>	<b>601</b>	<b>676</b>
<b>Total Gross Margin</b>	<b>587</b>	<b>771</b>	<b>703</b>	<b>875</b>	<b>758</b>	<b>906</b>

## **Appendix 2: Reports in Series**

Reports in this series:

**Crop Production in England 2007/08**

**Dairying Farming in England 2007/08**

**Hill Farming in England 2007/08**

**Horticulture Production in England 2007/08 (Horticultural Business Data)**

**Lowland Grazing Livestock Production in England 2007/08**

**Pig Production in England 2007/08**

**Poultry Production in England 2007/08**

Details available at [www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk)

RBR at Nottingham  
Rural Business Research Unit  
University of Nottingham  
Sutton Bonington Campus  
Loughborough  
LE12 5RD

Phone 0115 951 6070  
Fax 0115 951 6089  
[www.ruralbusinessresearch.co.uk](http://www.ruralbusinessresearch.co.uk)