Milk - Cost of production O.S.

UNIVERSITY OF MANCHESTER.

FACULTY OF ECONOMIC AND SOCIAL STUDIES

DEPARTMENT OF AGRICULTURAL ECONOMICS

MILK PRODUCTION SYSTEMS, PROBLEMS, PROSPECTS

A SURVEY OF 81 HERDS IN THE NORTH WEST PROVINCE 1972–73

ROSEMARY WALKER

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MILK PRODUCTION

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A SURVEY OF 81 HERDS IN THE NORTH WEST PROVINCE

1972/3

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Milk Production: Systems, Problems, Prospects

a survey of 81 herds in the north-west province, 1972-73 by Rosemary Walker

Summary

This report is already a condensed version and any summary can only pick out, in oversimplified form, a few of the many items which could lead on to endless discussion - some quite controversial.

Profits - per gallon, per cow, per acre - are higher in the larger herds (p.3 and p.11).

The association of profits per cow and profits per forage acre is charted on pp.8 and 9; 70% of the more densely stocked farms were of less than 100 acres (also note Table, p.6).

The range of profit in any herd size group is remarkable (see p.12 and app.table p.37).

Larger herds are possible as a result of introducing labour economising equipment; but growth is limited at any time by the availability of managerial skill (p.3).

Herds were growing faster in the north-west, than nationally, between 1968 and 1972 as they recovered from the foot and mouth outbreak (p.10).

Growth tends to increase the proportion of young cows in a herd, although no two herds present exactly the same combination of circumstances (p.11).

The stock of dairy cows per acre of crops and grass in the north-west is virtually double the national average - and treble in Cheshire (p.4). Recent years show intensification (p.27).

Although there is a tendency for higher yields in larger herds, the great benefit is in cost saving on labour and feed (pp.16 and 17 and app.table p.38).

Size of herd and system of milking are closely allied; employees fell from 60% to 37% of the dairy labour force (1961-62 to 1972-73) whilst herds increased from 31 to 48 cows (p.14).

There is thus a marked increase in the scale of the family farm BUSINESS (p.15).

But, whilst equipment increases labour productivity, have dairy farmers exchanged physical drudgery for financial anxiety? (p.12).

Receipts are now more influenced by compositional quality payments than by seasonal emphasis of production: feeding is important (pp. 20-21).

However, Channel Island herds are at a disadvantage in a market catering primarily for milk consumed liquid and where beef calf prices are booming (pp.18-19).

The practice of producing young cows for sale for milk production (some Lancashire farms) was shown to be costly, in terms of milk production profitability, in 1972-73 (pp.22-26).

1972-73 was an exceptionally good year, with higher yields and higher prices for milk and calves (p.28).

In the following year the costs of feed rose and during late 1973 and into 1974 calf prices fell very sharply (pp.29-30).

The prospects for milk producers are affected by influences from overseas, by government, by natural and biological hazards, and by industrial politics as well as by beef and cereal prices. Some influences may be three years working out, whilst the milk producer has daily decisions to make. "... he may well long for a reduction in the uncertainty which seems to beset him. It is possible to reduce, but not eliminate, uncertainty." The cost would be a reduction of individual freedom of action (p.32).

There is an appendix of accounting definitions and an appendix of nine detailed tables about the herds in the survey.

TWG/JEV. 29.8.74

FOREWORD

This brief report summarises some of the findings relating to farms in the North-West Province which emerged from the National Investigation into the Economics of Milk Production during the 1972-73 year. None of the work would have been possible without the valuable co-operation of the 81 farmers concerned; we are most grateful to each one of them.

Field work was carried out by Miss R. Walker and Mr. J. Blundell. The subsequent analysis and writing have been carried through by Miss Walker.

W. J. Thomas
Professor of Agricultural Economics
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CHAPTER ONE

INTRODUCTION

A. The Sample

There have been systematic national costings of milk production almost since the inception of the Milk Marketing Board but the three most recent surveys carried out in 1965-66, 1968-69 and 1972-73 have been based on random samples chosen in order to reflect the national cow population, according to the herd size groups of which it is composed. The distribution of the samples required for the whole of England and Wales and for the North West Province are set out in Table 1, together with the proportions which were in fact completed for each herd size group.

Table 1: Sample Distribution by Herd Size: National Investigation into the Economics of Milk Production, 1972-73

National and Regional Samples	National and Regional Distribution of Herds by Size (No. of Cows)										Total Sample Number of herds
	6-9.9	10-19.9	20-29.9	30-39.9	40-49.9	50-59.9	60-69.9	70-99.9	100-199.9	200+	
	%	%	%	%	%	%	%	%	%	%	
ENGLAND AND WALES											
Required	2	13.6	18.0	12.8	10.4	10.6	6.8	14.0	9.0	2.8	500
Completed	2.6	13.2	19.0	13.9	11.6	9.7	8.3	13.4	6.4	1.9	470
NORTH WEST*											
Required	1.1	10.2	17.0	13.7	11.4	12.5	7.9	16.0	9.1	1.1	88
Completed	3.7	5.0	14.8	23.4	18.5	6.2	7.4	17.3	3.7	-	81

*Cheshire, Lancashire, Shropshire, Staffordshire.

Because co-operation is voluntary and because the average size of herds has been increasing over recent decades, it is surprising how well the national sample agrees with the required distribution. There is somewhat less agreement in the North West - as might be expected in any smaller sample. The purpose of

this report, however, is to record the economic conditions of milk production in the North West Province during the survey period and to draw some tentative conclusions as to possible future developments. The report will, therefore, make use of the figures obtained but will supplement these by subjective impressions and judgement derived from visiting and talking with farmers who co-operated in the survey.

The latest regional figures concerning the distribution of cows according to herd size is provided by the Milk Marketing Board's 1970 census. Table 2 compares this distribution with the distribution of cows in the herds of co-operating farmers in the North West. It will be observed that there is under-representation for the herds of less than 30 cows and generally some over-representation of the larger herds with the notable exception of herds of 50 to 60 cows. Whilst these discrepancies are to be attributed partly to the continuing trend towards larger herds, it is also to be admitted that they are partly the result of a failure to obtain co-operation in exactly the proportions which were stipulated in the plan for the survey. This means that figures based upon the regional results must be treated with some caution and be subject to interpretation in the light of other information obtained by the survey workers.

Table 2: Distribution of Dairy Herds and Dairy Cows by Herd Size, North West Province, 1972-73.

Herd Size Group (No. of Cows)	Dairy Herds		Dairy Cows	
	Required Sample	Survey Sample	M.M.B. Census 1970	Survey Sample
	%	%	%	%
Less than 20.0	11.3	8.7	10.6	2.4
20 - 29.9	17.0	14.8	14.5	7.6
30 - 39.9	13.7	23.4	14.5	16.8
40 - 49.9	11.4	18.5	13.8	17.1
50 - 59.9	12.5	6.2	13.6	7.0
60 - 69.9	7.9	7.4	10.0	9.8
70 - 99.9	16.0	17.3	13.2	29.6
100+	10.2	3.7	9.8	9.7
TOTAL	100.0	100.0	100.0	100.0

The 1972-73 survey indicates that profits per cow, per gallon, and per acre increase considerably with increasing herd size. By far the greater part of the capital expenditure of milk producers over the past three decades has been on buildings, machinery, and other equipment which enabled farmers to handle more cows during an era in which expansion was virtually a necessary condition of economic survival. Projection of the trends of the past ten to fifteen years implies an increasing proportion of the national herd managed in businesses of 100 or more cows. By 1972 these accounted for 19 per cent of the cows in England and Wales. The development of facilities geared to the needs of large units is therefore scarcely surprising. The innovations which increase the scale of technically feasible operations tend to require different management skills from those of simpler days but technical skills are not a substitute for management and at any moment the number of herds of 100 or more cows which are being managed successfully is limited by the availability of people with the necessary skills of management.

How far the fact that systematic record keeping becomes increasingly important with increasing intensity and size of herd encouraged or discouraged co-operation in a survey which also requires systematic record keeping, it is impossible to say. The disappointingly unsatisfactory profit performance of some co-operators indicates however that any bias was not wholly towards the more successful farmers.

B. The Province

The North West Province covers nine per cent of the crops and grass and six per cent of the rough grazing (excluding commons) of England and Wales. What chiefly distinguishes the province from the rest of England and Wales are the larger proportion of grassland, the smaller proportion of tillage, and the higher stocking rate of cattle per acre of crops and grass than in England and Wales as a whole. (These points are summarised in Table 3). There is some indication that the acreage of barley has been increasing at the expense of wheat in the North West and that this is almost certainly to be associated with increasing levels of barley feeding. Until recently cattle numbers have been increasing at the expense of sheep in the three southern counties of the

province; Lancashire is something of an exception with its higher proportion of rough grazing which can often be used more profitably by sheep - both on account of their lower capital requirement and their suitability for such land.

Table 3: Land Use and Dairy Cow Stocking rates 1973, The North West and England and Wales

	Cheshire	Shropshire	Staffordshire	Lancashire	North West	England and Wales
Crops & Grass (000 Acres)	426.1	678.0	485.4	570.1	2159.6	24,357
Rough Grazing (000 Acres)	29.6	24.4	17.5	117.4	188.9	3,057
Per 100 Acres Crops & Grass:						
Grassland	78.5	64.8	70.9	76.4	71.9	56.6
Cereals	17.6	28.2	23.2	17.1	22.1	33.7
Tillage	21.5	35.2	29.1	23.6	28.1	43.4
Dairy Cows	36.2	16.5	25.0	24.0	24.2	12.2
Breeding Ewes	9.8	41.6	13.1	40.2	28.5	39.2

Within the scale of the national survey undertaken it was not possible to take into account county distribution within each province and therefore the provincial results are not to be relied upon as providing a satisfactory reflection of county conditions. This does not alter the fact that differing characteristics between the counties will inevitably be reflected in the provincial results.

C. The Variations in Objectives and Results

As its official title indicates, the milk costs survey is designed to isolate the economics of milk production. This is straightforward and reasonable in relation to a typical dairy farm where milk production is by far the major enterprise, if not indeed the only activity, carried out on the farm. Where there are other farming activities a partial study can tell only part of the story. Thus, although the survey looks at results and measures performance in relation to profit margins per cow, per gallon, or per forage acre, the

maximisation of one of these particular figures is not necessarily the objective of all farmers who are milk producers and perhaps milk producers on a substantial scale.

Sixty per cent of the farmers in the 1972-73 survey (owning 65 per cent of the cows) were dairy specialists in the sense that three-quarters or more of their output (measured in standard man-days) was milk. So two out of every five co-operators were NOT dairy specialists and their objectives would include a balancing of the interests and profitability of their various enterprises.

Each producer represents a unique combination of circumstances and resources controlled, and the ends which he wishes these resources to serve. If the resources available are not abnormal and the farmer's technical performance - yield in relation to feed and acres used, herd health and fertility - is good and his commercial sense reasonably well developed, his profit is likely to be above average whether measured per cow or per acre.

The association between profit margin per cow and per forage acre is shown in two charts at the end of this chapter. The charts classify the herds by number of cows and by farm acreage respectively; they also show the profitability in steps of £2.50 - smaller intervals not seeming to indicate significant differences. Whilst profits per cow and per acre march in broad agreement, there are exceptions and herds with £82 per cow profit may vary from £45 to £95 profit per forage acre or herds with £60 profit per forage acre may range from £47 to £92 profit per cow. Locally available cheap feed (e.g. brewers grains) and varying intensity of land use may account for some of the variations.

Stock carried per acre will reflect both the use which is made of the potential of the land, on the one hand, and the degree of supplementary feeding, on the other hand. A diagonal line on Charts I and II indicates for each level of profit per cow the corresponding profit per forage acre, if the stocking rate had been equal to the average for the survey sample. Thus, herds to the south-east of the line were more densely stocked than the average: 30 of 43 such herds were on farms of less than 100 acres. This reflects the fact that it is usually easier to acquire more cows (and adjust feed supplies and equipment accordingly) than it is to acquire more land in the effort to enlarge the dairy enterprise. Apart from the fact that farmers may have other objectives

than profit maximisation, there are several reasons why the maximisation of profit in milk production alone may not be an adequate measure either of the farmer's objective or of his efficiency. For example, on a mixed farm with several crop and livestock activities their inter-relationship may be such that overall profit is greater under the farmer's system of operation than if he sought maximised profits on milk production alone. Similarly, there are milk producers who are engaged in the provision of replacement stock - either as down calving heifers or as young cows - whose total activity may be highly profitable but whose milk production activity taken on its own may not achieve the highest level of profit. Furthermore, maximum profit will be obtained on those farms which have the optimum combination of modern capital investment, management, and labour. An individual farmer at any particular time has to operate within the restrictions imposed by the resources which are available to him at that time.

To give an actual illustration of how different responses to different circumstances may both lead to above average profits, two herds of over 80 cows are compared in Table 4.

Table 4: Alternative Dairying Systems for High Profits Per Cow, 1972-73

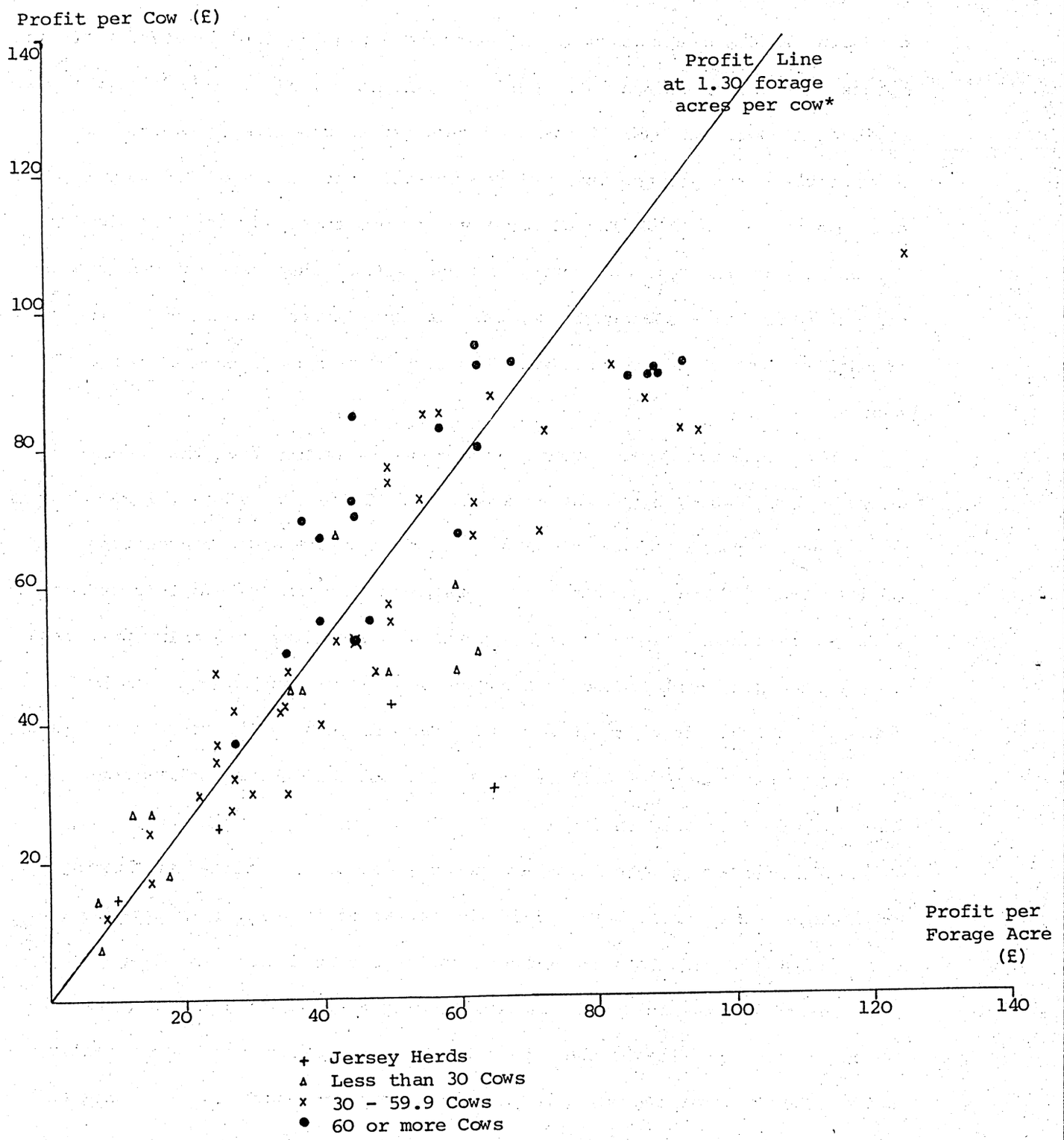
	'A' Intensive Grassland	'B' Mixed Arable
Profit per cow	£89.3	£92.1
Profit per forage acre	£85.0	£63.7
Acres per farm	146	306
Average number of cows	95.3	81.3
Average gallons per cow	985	930
Percentage of Milk produced in May	10.3	7.5
" " " April-September	51.7	51.3
Forage acre per cow	1.05	1.48
Compounds per cow (cwts)	18.3	-
Homegrown cereal per cow (cwts)	-	17.0
Total Concentrates per cow (cwts)	21.3	25.4
Concentrates per gallon (lbs):-		
April-September	1.10	2.58
October-March	3.86	3.58
Annual average	2.54	3.06
Average cost per ton concentrates	£38.8	£32.3
Units of Nitrogen per acre grazing	350	110

Herds 'A' and 'B' may be regarded as representing intensive grassland and mixed arable dairying respectively. Herd 'A' had a slightly lower profit per cow, largely attributable to a greater turnover of cows and a heavier herd depreciation charge, with a lower income from calves. Against this, by good grassland management, herd 'A' achieved a considerably greater profit per forage acre than did herd 'B'. Herd 'B' benefitted, under 1972-73 conditions, by feeding a home mix but if the land required to grow the 17 cwt. of home grown cereals fed per cow was included it would show a use of 0.93 acres per cow more than herd 'A'. The alternative systems employed were successfully appropriate to the relevant farms. To what extent they were interchangeable may be argued but - subject to capital availability and other conditions for intensification - the producer with the larger farm has a greater margin for choice.

The situation may be broadly summarised by saying that the sample includes examples of herds having average yields per cow of over 1,000 gallons with a stocking rate of about one forage acre per cow and a concentrate cost of less than £60 per cow. At the prices prevailing in 1972-73 this represents a target performance for either a specialist dairy farm or a dairy unit of a much larger multi-enterprise farm business. How far such levels can be achieved on other farms depends on many factors such as the response of land to fertilizers, the availability of capital and the labour implications of intensifying the dairy enterprise.

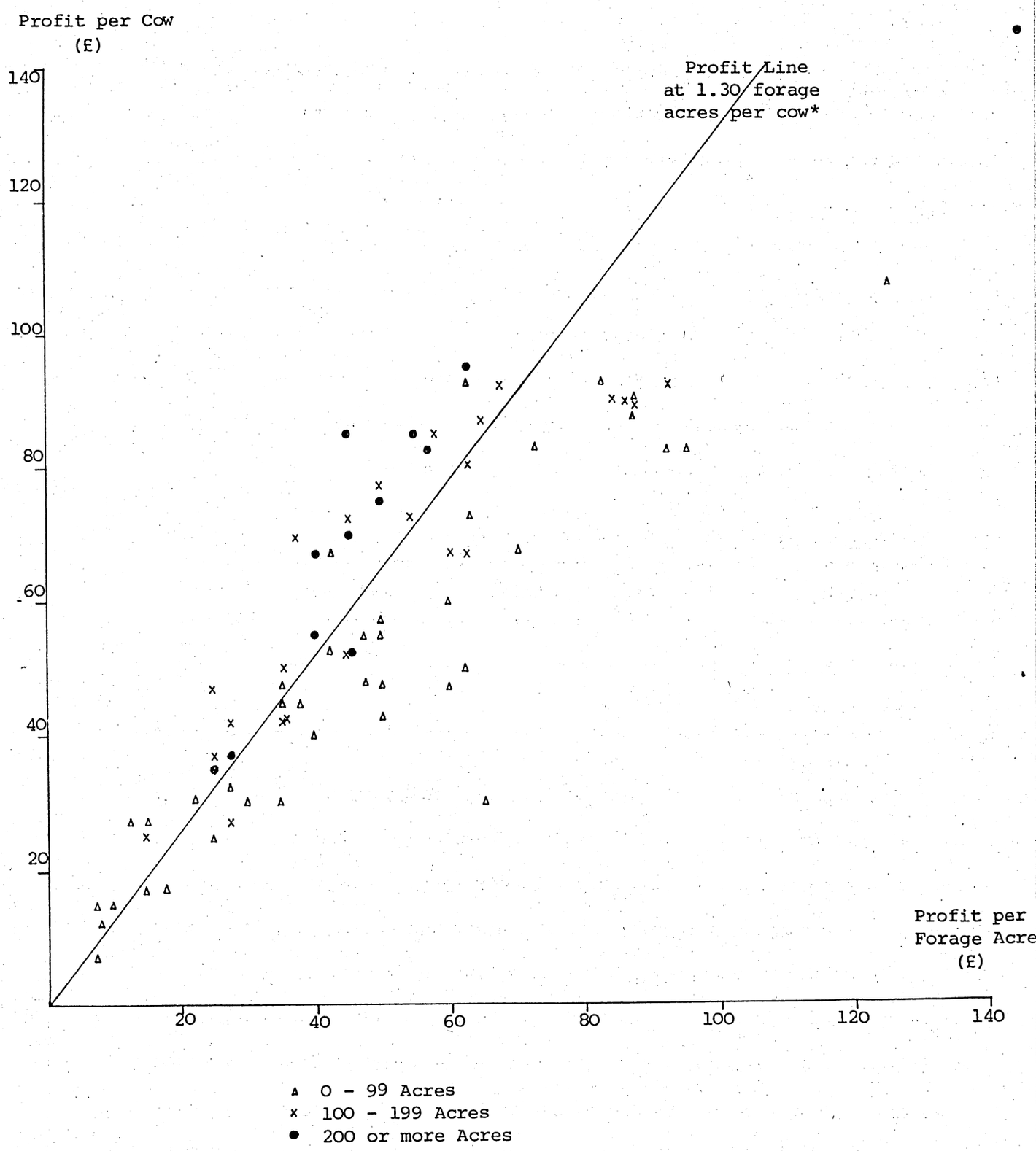
Differences in objectives are to be expected from different farming conditions and in part they explain the variation in results achieved. The long recognised relationship between profits and herd size has already been referred to and is discussed in the following section. Large herds are generally more profitable than small herds, but profits vary significantly between herds of similar size because producers with much the same size of herd may well be pursuing different objectives.

CHART I : Profit Per Cow and Per Forage Acre, by Herd Size Groups, for 74 Profitable Herds (in steps of £2.50).



* The average stocking rate for the sample was 1.30 forage acres per cow. Herds above the line use more than average land for their profit per cow.

CHART II : Profit Per Cow and Per Forage Acre, by Farm Size Groups, for 74 Profitable Herds (in steps of £2.50).



* See footnote to Chart I.

CHAPTER TWO

SURVEY RESULTS WITH SPECIAL REFERENCE TO HERD SIZE

Over the past 30 years there has been a persistent increase in the average size of dairy herds. This is part of the concentration and specialisation which has been going on in agriculture generally as the chosen route to maintenance or improvement of profitability.

Whilst the same trends are to be observed in the North West, the position does not parallel exactly that in the rest of the country. This may possibly be attributed to the persisting effects of the foot and mouth epidemic of 1968 which struck the province, and particularly Cheshire, very severely. The figures in Table 5 summarise the situation and suggest that the final stages of recovery from the foot and mouth epidemic were still operating in 1973.

Table 5: Percentage Change in Dairy Cow Numbers

Period	England and Wales	North West Province
1965 to 1970	+ 2½	- 3½
1970 to 1973	+ 6	+10½

Included in the 81 survey records were four relating to Channel Island herds, all in fact Jersey herds. These have been removed when considering results according to herd size, because the Jersey herds are quite distinctive in the costs and returns structure from the other herds which consist almost wholly of Friesian or predominantly Friesian type cows.* The results by herd size are summarised in Table 6. Details of the costs and returns are to be found in the tabular appendix, together with an additional table of management factors relating to the same groups of herds.

In defining the size of herd the average has been taken of the number of cows for each of the twelve months between April 1972 and March 1973. Almost three-quarters of the herds recorded an increase in size during the year, but

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* Ayrshire, or predominantly Ayrshire type, cows were the only others represented in the survey on a herd basis: five herds could be so described.

Table 6: Summary Returns, Costs and Margins per Cow; 1972-73

Herds	Number	Returns from Milk and Calves	Costs	Profit Margin
		£	£	£
Under 20 cows	6	187.9	178.8	9.1
20 - 29.9 cows	12	195.4	167.3	28.1
30 - 39.9 cows	17	234.7	181.1	53.6
40 - 59.9 cows	20	219.0	160.4	58.6
60 - 79.9 cows	13	226.3	153.0	73.3
80 or more cows	9	232.7	145.6	87.1
Jersey cows	4	169.8	138.9	30.9
All Herds	81	221.2	158.1	63.1

the rate of growth was such that few of them moved from one size category to another although two herds increased by almost a fifth during the twelve month period. The greatest increase occurred in those herds which had eighty or more cows. By March 31st 1973, these herds had increased from an average of 94.3 cows to 102.9, an increase of some nine per cent.

Any herd which is increasing rapidly is likely to show a different performance from a herd with stable numbers. For example, the introduction of heifers is likely to reduce average yield per cow. Moreover, when the survey begins in the Spring an increasing herd will show a relatively small area of grazing and a relatively large area of conserved grass in relation to its average herd size. It appears possible, on the national level, that the lower average yield per cow in herds of over 200 cows is attributable to the more rapid increase in the size of those herds, in other words the introduction of a relatively high proportion of newly calved heifers.

Change is constantly taking place in any industry which is not moribund and the same is true of dairy farming. One can never exactly compare like with like: farm altitude, soil type, farm size, and financial resources are a few of the things which differ between the farms. If one adds to these, different rates of change in herd size, it becomes clear that no two farms are exactly alike. Nevertheless, herd size probably provides a more satisfactory basis for comparison of dairy farms than any other readily available measure. For all

its limitations, a classification on the basis of cow numbers approximates to a division by scale of operation and this is a practical basis in the short run. Appendix Table 1 shows that profits per cow increase with increasing herd size but the profit range shown in the bottom line of the Table indicates that the highest profit in each size group was above the average profit in the size group immediately above it.

In the short run, it is generally easier to add more cows than to find additional land - although this is clearly not an automatic formula for improving the profit per cow. Intensity of stocking has now been widely pushed to a level which only a decade ago would have been generally regarded as unattainable.

Looking at the group averages there is an increase in farm size for each increase in herd size; but there is considerable variation in farm size at all levels of herd size. Herd and farm size are less closely related than a decade or so ago. In the middle ranges one may find small intensive herds, herds run by part-time farmers, and herds which form part of a large mixed enterprise. These form a diverse group. The larger herds, however, indicate an increase in scale of operations. If one allows for differences in yield per cow, the most striking differences between the herd size groups are in labour costs and in feed costs.

A. Labour

At the present time it is perhaps tactless to refer to the association of high labour productivity and high prosperity. By comparison with his father or grandfather the milk producer of the present day may well consider that introduction of the capital which has made high labour productivity possible has had the effect of replacing physical drudgery with financial anxiety. But temporal distance lends enchantment and, if the effort once required to handle 25 cows can now take care of 100, this must represent in many ways a highly acceptable change.

An increase in cow numbers may increase labour productivity without involving additional expenditure. A very large assortment of layouts and milking equipment are now available and there will be an optimum throughput of cows associated with each combination. During a period of change, the actual cow numbers may rarely correspond to the optimum. The double shippon with

tyings for 30 cows and a three unit bucket machine is unlikely to require more than 25 per cent more labour hours if cows are increased from 20 to 30. Of the 18 herds of less than 30 cows all but two were still being housed and milked in a shippon using a bucket machine in March 1973.

In contrast, only three of the herds of sixty or more cows were milked and housed in a shippon by the end of the survey. More than half the herds of between 30 and 60 cows still used this type of accommodation for housing and milking but in 26 of the 37 the convenience of a pipeline had replaced the chores of carting milk and washing buckets.

The initiative for the installation of a bulk tank normally comes from the Milk Marketing Board. A bulk tank is an obvious stimulus for the installation of a milking pipeline. The average bulk tank premium was highest in the 30 to 39.9 cow herds followed by the 40 to 59.9 cows herds and this is an indication that during the years immediately preceding the survey and during the survey year the changeover to bulk collection had been a particular influence for herds of 30 - 60 cows. Pipeline and bulk tank installation had produced a significant fall in direct labour hours required per cow as shown by the figures in Table 7.

Table 7: Effect of Pipeline and Bulk Tank on Labour Required per Cow, 1972-73

Milking Method	30-39.9 Cow Herds	40-59.9 Cow Herds
Bucket milking	85 hours	72 hours
Pipeline and Bulk Tank	63 hours	60 hours

The broad picture which the labour records, in conjunction with the details of housing and milking methods, present is that most of the herds of less than 30 cows were tied up in shippons and milked by two- or three-bucket units. Labour hours per cow ranged from 56 to 140 and averaged 84. When cow numbers have passed thirty, spending on some means of reducing the labour requirement becomes attractive, particularly since many of the herds of 30-60 cows are milked by the farmer with perhaps some assistance - often in ancillary tasks - from his wife or other relatives. Within this size range, a pipeline installed in the shippon is frequently as far as the process had gone by March 1973. The effect

is concentrated on the milking and dairy operations. The labour required for mucking out and feeding remains the same. Nevertheless, the change results in an average saving of some twenty hours per cow: a reduction from just over eighty to approximately sixty hours.

At sixty cows, most of the double shippons erected some time ago are full to capacity and the handling of fodder and muck becomes burdensome. Since pipelines cannot readily be extended to odd places where cows may be tied up, the next step is to alter the buildings to provide for loose housing, self fed silage and a milking parlour. This achieves a further reduction of some twenty labour hours per cow and the nine herds of sixty or more cows which were housed in cubicles or yards and milked in a herringbone parlour averaged 38 hours per cow.

With so few examples of herds of more than 100 cows the sample cannot provide evidence of the trend in labour productivity as herds approach the 200 level. Equipment has recently appeared on the market to enable one or two men to put up to 200 cows through the milking process during the time that specialists in ergonomics believe a man is capable of staying on the job. Such evidence as there is, from this and previous surveys, suggests that specialised equipment to stretch the milking capacity of the labour force is not the only solution. The alternative is to split the herd and employ two separate milking teams. At present little information is available to enable a comparison of the economies of the two approaches to be made. As herds of 100 or more come to account for an increasing proportion of the total dairy cow population an examination of the alternatives will become a matter of increasing urgency.

An increase in the proportion of cows in herds larger than 100 cows will increase the relative importance of hired labour. (No one with the capital commitment which an enterprise of that size implies can afford to devote the greater part of his time to routine operations). Up to the present, however, hired labour has been declining absolutely and relatively. In the 1961-62 survey, with an average herd size of 31 cows, hired labour accounted for sixty per cent of total direct labour on the cows. In 1972-73, with survey herds averaging 48 cows, only 37 per cent of the direct work on milk production was carried out by hired labour.

Family labour was more important in the Jersey herds than in the smallest

size group of other breeds and the same is true of Jersey (though not of Guernsey) herds in the national sample. It is tempting to conclude from this that the profit to be obtained from this breed is not enough to sustain a significant regular weekly wage bill. A more accurate interpretation is that non-economic preference accounts for more Jersey herds than would survive if profitability were the sole criterion for choice of breed.

Herds of 20-29.9 cows used a slightly higher proportion of family labour than the herds of less than 20 cows, otherwise there is a consistent decline in the ratio of family to hired labour with increasing herd size. It is only in the largest size group that hired labour predominates and in very few herds (four) was the owner of the herd completely free of any routine work on the cows.

The largest herd for which the direct labour on the cows was carried out entirely by the farmer and his wife was a herd of 75 cows. As yet this is not a very common situation: of 23 herds (including one Channel Island herd) of 60 or more cows, four were handled entirely by hired labour, three entirely by family labour, and the remainder by family labour with some regular hired assistance. But the trends in herd size and stocking rate over the years, in conjunction with only a very small increase in the average size of dairy farms, point to an increase in the scale of family farming. Seventy cows housed in cubicles, fed on self-feed silage and milked through a herringbone parlour represent a direct labour requirement no greater than thiry cows housed in a shippon and milked with two- or three-bucket units. "Hours per cow" are mainly determined by the time put in by those who do 90 per cent of the work. The extent to which long hours with large numbers are acceptable almost certainly depends upon the availability of some fairly flexible supply of "back-up" labour. One expects that a man could more readily accept the routine work for more cows if his family lived in the same area than if he were newly moved to a strange district.

B. Feed Costs

Whilst it was possible to discuss the direct labour requirement of milk production realistically in relation to herd size and the appropriate form of milking equipment, any discussion of feed costs is a more complex matter. The

methods of providing food requirements for dairy cows vary noticeably between large and small herds, particularly in relation to bulk feed. This difference is affected, however, by farm acreage and overall scale of farm operations as well as by herd size. Again, whereas labour hours per cow may be a useful figure of efficiency, there is no such simple figure for feeding. Different feeding systems are appropriate to differing farm circumstances and, in the short run, skill in feeding is to be judged by cost in relation to the value of final output.

Yields per cow, however, are important and on average they were more than 100 gallons per cow higher in herds of 60 or more cows than in herds of under 30 cows. Thus, for much the same total cost for feed and grazing the larger herds produced additional milk worth an extra £20 to £30 per cow. There was, however, no consistent increase in average yields per cow from one size group to another. Herds of 30 to 39.9 cows ("medium sizes" herds) had yields which almost equalled those of the largest size group, but their higher feed costs probably reflected the difference of scale of farm operation.

Success in milk production is achieved when a high yield is obtained with low average concentrate, fertilizer, and land use. High yields in themselves indicate fairly high husbandry standards but, under the feed cost and milk price conditions of the period following the survey, many producers found that high yields alone do not guarantee profits.

Concentrates per gallon cost the medium size herds 50 per cent more than the largest herds. They fed over one third more at a ten per cent higher cost per ton. The larger herds spent more on fertiliser and had considerably higher costs for home grown bulk feeds. Only one of the medium sized herds fed silage and only one of the largest herds did not.

However, the average farm size on which the herds of 80 or more cows were kept was nearly four times that for the medium sized herds. The initial cost of tractors, cultivating equipment, manure spreaders and forage handling machinery averaged £2123 per farm for the medium sized herds and £5356 - or 2½ times as much - for the large herds. Tractors accounted for a substantial proportion of the total in both groups: 43.7 per cent in the case of the medium sized herds and 50.2 per cent for the large herds. Tractor and machinery investment per cow was £61.2 for the smaller herds and £52.4 for the large herds. For tractors

alone the investment per cow was much the same at £26.8 and £26.3 respectively. But on the small farms the dairy herd has to carry a greater share of the tractor costs than on large farms where tractors are used for other activities. The average cereal acreage, for example, was seven acres for the medium sized herds and 69 acres for the large herds.

If producers with under 40 cows were to copy the grass practices of the farmers with 80 or more cows they would need to have comparable tractor power and equipment and a labour force to handle them, for grassland management is largely a matter of timeliness. Hiring or sharing may meet the labour problem but the common peak period and ever-present risk of breakdown make it difficult to achieve the ideally timely handling which would produce first class fodder. Thus it is quite credible that the smaller farms may have excess tractor capacity and yet insufficient power to meet peak demands for silage making. At all events silage making is, in general, not popular on small farms and it is not difficult to understand why.

Although the feeding of homegrown cereals has increased generally there is a contrast between the practice of medium and large herds in this respect. Homegrown cereals are most effectively incorporated in the dairy ration when they are fed in conjunction with silage of sufficiently good protein content to enable barley, silage and minerals to provide for maintenance and the first one or two gallons of milk. Herds of 80 or more cows were fed little more than half the quantity of purchased concentrates fed to herds of 30 to 39.9 cows.

Homegrown grain, charged at market prices, provided a cheaper source of high energy feed during the survey period than most purchased concentrates. The average cost per ton of concentrates for the largest herds was £36.1 compared with £40.2 for the medium sized herds. In the year following the survey home mixing may have lost its advantage particularly as the steepest price increases were for protein balancer.

The method of valuing homegrown cereal at market price regardless of the cost of production is logical when examining a single farm enterprise. It is less suitable as a measure of relative efficiency between large and small herds on large and small farms, for it is likely that the cost per ton of producing the average seven acres of cereals grown on farms with 30-40 cows is appreciably higher than that of the average 69 acres which were grown on farms with herds

of more than 80 cows. Irrespective of herd or farm size, there is a difference between the situation in which cereals are grown primarily because the farmer believes he can grow corn for less than he can purchase the substitute, and the farm business which is large enough to carry both a cereal acreage and a dairy herd of above average size. In the latter case it is unlikely that costs of production will exceed market price. For a predominantly dairy farm situated in an arable area it is quite conceivable that corn and straw could be purchased from a neighbour at less cost than that of growing them on the farm. It is really a question of whether using the land for growing corn, or some other crop, or to graze more cows, or to rear replacements will produce the highest gross margin.

C. Returns Per Gallon

Jersey herds do not form a large part of either the national herd or the provincial survey sample. Nevertheless some consideration of them may illustrate problems encountered in attempting to compare one herd with another.

The yield to be expected from a Jersey herd is about 70 per cent of that from a Friesian herd of the same number of cows. Its maintenance requirements are approximately in the same ratio. On average, Jersey cows produce about 26 per cent more butter fat per gallon than Friesian cows but require one fifth more energy and protein per gallon than the Friesian cow. On these grounds, if milk were being produced primarily for butter production, Jersey cows would be in a relatively competitive position. In the United Kingdom, however, milk is primarily produced for liquid consumption with the safety reserve going for manufacture. This alters the comparison in two serious respects. Firstly the Jersey cows produce milk containing approximately 14 per cent total solids compared with about 12½ per cent on average for other cows. The level of Channel Island premium has remained at 5p per gallon since the 1969-70 contract. The full premium operates from October to March and is less from April to September at 4.17p. During this period the full premium is payable only on the basic gallonage, that is the average monthly production for the four months of October to January. During the summer of the survey period the Jersey herds received for milk in excess of the basic gallonage (i.e. 15 per cent of total annual production) only the compositional quality price - or 2.8 pence per gallon

above the price paid for milk of class 8 (12.4 - 12.5 per cent total solids). Secondly, there are serious stock factors. If a Jersey herd is to produce the same quantity of milk as a Friesian herd then more cows are needed which implies more housing and more labour, if not proportionately more. Also Channel Island herd owners are perhaps the only dairy producers who have not shared in the boom in calf prices during recent years.

These comparisons can be set out roughly in round cash terms. Assuming that three Jersey cows can be maintained on the same area as two Friesians and that all milk is produced from concentrates at £70 per ton, the position would be as follows: two Friesian cows producing 1,900 gallons of milk would require 68 cwts. of concentrates costing some £237. Three Jersey cows producing the same quantity of milk would require just over 4 tons of concentrates costing some £285. Therefore, to produce the same margin per acre over feed the Jersey milk would need to receive 2.5p more per gallon. In addition, the Friesian cows might be expected to produce calves selling for £40 per year whilst the three Jersey cows would do well to produce calves selling for £15. To cover this difference an additional 1.3p per gallon would be needed.

As things stand at present, therefore, to produce the same margin per acre Jersey herd owners need to receive almost 4p per gallon more for their milk than other producers. This takes no account of the additional costs (labour, accommodation, sundries) of keeping more stock on the same area of land. For every £50 of expenditure per extra cow an additional 2.6p per gallon would be required to meet those expenses. It would seem, therefore, that when a Jersey herd is sufficiently well managed to take full account of the higher possible stocking rate, at least an extra 6p per gallon round the year would be required above the standard payment for milk in order to give the herd equal profit margin per acre. It seems unlikely that a largely sedentary and slightly hypochondriac urban population will expand demand for Channel Island milk sufficiently to produce a premium on this scale.

Turning to the other herds one may observe a very slight but irregular tendency for returns to increase with increasing herd size. Whilst the differences between group averages are not large they make a significant difference to individual herds. There are three distinct influences:

(a) the seasonal price differential,

(b) payment for compositional quality, and

(c) incentive payments or, more rarely, penalties.

(a) There are many ways in which individual herds produce a flow of milk which is not evenly distributed over the months of the year. The benefits of any particular system to a farmer's profits have always depended upon how well it was suited to his own peculiar circumstances. The incentive to produce in the winter, so far as milk price is concerned, has however, been reduced over the past decade quite considerably; for example, the percentage difference between the February and June price of milk has been almost halved during that period. Moreover, during the 1972-73 year there was a difference of only 1.15p per gallon in the annual average price received for milk from herds producing just over 63 per cent of their annual production between April and September and herds producing under 40 per cent during the same months. It is, however, the profit margin which is important. Thus a 'summer' production concentrated during the grass flush period of May and June may prove much better than a 'summer' emphasis in August and September when there must be greater dependence upon concentrate feeding. Some herds of 60 or more cows managed to combine high production during these cheapest months with a high percentage of autumn and early winter calvers. This has probably been the most practicable way of adjusting to the declining winter price incentive and may largely explain why the change in the seasonal price scale has not resulted in any great change in the overall seasonal balance of production.

(b) Compositional quality payments are based upon analysis of quality over the preceding twelve months with recalculation at six monthly intervals introducing changes in May and November. Differences in quality payments received therefore reflect the past rather than the year of survey for the herds concerned. The compositional quality itself depends upon breed, age, and feeding. The effects of age and of the presence of some Ayrshire cattle appear to be conflicting on the average compositional quality in different herd size groups. It is therefore likely that the differences are to be attributed mainly to the quality of feeding and management.

It is certainly to be observed that payment for compositional quality now accounts for a greater variation in the price received than does difference

in the seasonal distribution of milk sales. Excluding the Jersey herds the range in average annual payments in the sample was from a deduction of 0.12p to a payment of 1.53 pence per gallon. This would mean on a yield of 900 gallons a difference of £14.8 per cow per annum. One-fifth of the sample herds fell below class 6 compositional quality and obtained additions of less than 0.34p per gallon, just under one quarter were class 9 and above and obtained payment of 0.85 or more pence per gallon for compositional quality.

The most important single factor in compositional quality is probably the quality of winter forage and for this the larger herds, as has already been mentioned, had a distinct advantage. Whilst no two herds are directly comparable it may not be without interest to quote figures for two Friesian herds of comparable yield but of different size.

Table 8: Herd Size, Forage, and Related Differences: Two Herds 1972-73

Feature		Herd of 30-39.9 Cows	Herd of over 80 Cows
Average yield per cow (galls.)		1149	1148
Forage Acres per cow		0.97	0.99
Grazing Cost per cow	£	14.30	15.10
Forage Cost per cow	£	10.20	22.40
Concentrate Cost per cow	£	82.60	51.30
Concentrate Cost per ton	£	42.20	33.10
Value of Milk Sales at basic price per cow	£	218.31	222.14
Compositional Quality payments per cow	£	1.35	13.52
April-September production as per cent of year		57.70	50.60
Margin of Milk Sales over cost of concentrates and fertiliser per forage acre	£	145.9	179.8

(c) Incentive payments of course relate to payments for installation of bulk tank or payments towards the cost of brucellosis eradication. These payments depend upon the time at which the farmer decided to make the change and have little to do with the immediate costs of milk production as concerns quality or current managerial efficiency.

CHAPTER THREE

REPLACEMENT POLICIES

The average replacement cost for a group of herds calculated for a single year may be a fair representation of this element of costs but, for an individual herd, neither the rate of turnover nor the calculated depreciation charge will necessarily show whether this particular herd could improve profits by changing the replacement policy. For few herds either remain of exactly the same size from one year to another or have the same incidence of disease or need for disposal each year. Systems resulting in exceptionally high or low depreciation charges will, of course produce figures which reveal the extreme situation. A high depreciation charge may in fact be justified by a system designed to maintain, above all else, the maximum number of cows in milk per acre. Similarly a small self-contained herd, carefully tended, and fed to only moderate yields may have an average herd life of seven or eight lactations and exceptionally low depreciation.

Most herds, however, lie somewhere in between these extremes, and the survey year may find the owners either at the end or the beginning of a phase of expansion. Even in a year when the general trend is towards expansion of cow numbers there will be some who find reason for cutting down. Changes in numbers form much of the explanation for purchases of cows. Producers who rear no followers are in a minority. Although the survey year was one in which the overall trend was for expansion, more than half the herds recorded no purchases during the year but this alone is not evidence that the owner aims to rear all his replacements or even that all the heifers calving during the year were home bred.

In other words replacement policy is an important long term consideration related to the target for herd size but not necessarily revealed in the cattle transactions recorded during the survey year.

Little conclusive is likely to emerge from a simple classification of herds according to whether the replacements were wholly or only partially heifer transfers. Nevertheless there was, within the sample, clear evidence of contrasting policies and it does not seem necessary to discard all information

merely because the categories are blurred at the edges.

The June census for 1973 indicates that geographical situation is one of the significant influences upon replacement policy.

Table 9: Ratio of Replacement Stock to Dairy Cows : June 1973

Replacements		Cheshire	Salop	Staffs	Lancashire	England & Wales
In-calf dairy heifers	%	12.7	18.2	15.2	22.1	18.8
2nd & 3rd line replacements	%	17.4	21.8	21.6	28.3	26.2

Of the 23 Lancashire herds in the sample only 3 recorded any purchases of replacements and half of all the cows sold for further milk production were from Lancashire herds*. In March 1973 nearly half the cows in the Lancashire herds were on their first or second lactation compared with 40 per cent for the sample as a whole.

A fairly high degree of self sufficiency with regard to replacements, associated with the sale of young cows for further milk production is clearly a feature of milk production in Lancashire. Cheshire, in particular, is a county with an above average dependence on replacements reared outside the county. A number of long established auction markets for dairy cows is a feature of the province as a whole. It can be assumed that the historic basis for these features was specialisation to mutual advantage:- Pennine Lancashire affording a relatively higher return as rearing land, whilst milking cows proved more profitable than followers for farmers on the traditional dairy farms elsewhere in the province. It is common knowledge that many of the practices followed by farmers at the present day derive from the economic situation of a bygone era,since particular skills and interests do not wither away when the farmer moves to a farm presenting a different economic situation or when economic conditions change with the passage of time.†

It proved possible to identify a number of Lancashire herds in the sample

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* A further 17 per cent results from systematic culling from fairly large Cheshire herds.

† A willingness to shed the influence of tradition where economic circumstances demand it is, of course, among the attributes of the exceptionally successful.

for which the lactation age of cows at the end of the survey, in conjunction with the analysis of replacements and disposals, indicated the survival of the influence of tradition. Since this factor of the sample only came to light after completion of the survey, a systematic comparison of the economic performance of herds subject to this influence with that of producers in other part of the province who, to some extent, might be considered as their customers was not possible. That is to say the groups compared were formed on the basis of deduction from the survey records as to the policies followed and not by selection of specific herds satisfying detailed descriptions.

There were 17 Lancashire herds for which all replacements were heifers calving down during the survey period and most of which recorded some sales of cows for further milk production. These herds varied in size from 20 to just under 60 cows. Such a wide size range inevitably involves the question of how far the performance varied with herd size. When compared with other herds within the size ranges 20.0-29.9, 30.0-39.9 and 40.0-59.9, the small group of 5 herds of under 30 cows achieved significantly better results than other herds within this size range but for the remaining 12 herds the advantage was indisputedly in favour of the other herds. The most illuminating comparison was that of 5 herds of 30.0-39.9 cows with 9 other herds in this size range.

Table 10: Five self-contained Lancashire Herds and Nine other Herds compared: 1972-73 Survey

Herd Characteristic	Five Lancashire Herds	Nine other Herds
Average Herd Size (cows)	34.0	34.1
Average Farm Size (acres)	84.0	70.0
Pipeline-bulk tanks (%)	40.0	66.7
Labour per cow (£)	52.3	38.4
Purchased herd replacements (%)	0	73
Cows sold for milk production (%)	48.8	4.2
Calvings July-Sept. (%)	55.8	17.4
April-Sept. milk (%)	46.6	53.5
Cows over 2 lactations (March 73) (%)	43.2	64.4
Average yield per cow (galls)	866	1018
Average concentrates per cow (£)	67.1	69.4
Average milk return (p./gall)	20.95	20.59
Average profit per cow (£)	36.4	60.7
Average profit per forage acre (£)	25.6	49.9

It was earlier pointed out, in the chapter relating performance to herd size, that the average yield for all herds within the 30.0-39.9 size range was not far short of the average for the largest size group but that this yield was achieved only at the cost of appreciably more labour and concentrates. The same is true of the nine other herds isolated in the above comparison but the average performance of these herds suggests that, at all events at the level of concentrate prices prevailing at the time of the survey, they were able to overcome the limitations of farm size to a greater extent than is indicated by the average for all herds in this size range. Sales of cows from the five Lancashire herds appeared to be associated with an extraordinarily high proportion of late summer calvings and a concentrate cost almost as high as that of the nine other herds for a yield lower by 150 gallons.

The nine herds averaged a profit per forage acre nearly double that of the Lancashire herds. Obviously if one group of producers is able to purchase the greater part of the replacement requirements others must be willing to rear heifers or cows for sale and we would expect prices of replacement stock to adjust so as to set limits to the difference in profitability between these two groups. Since all but one of the Lancashire herds was situated at less than 500 feet it is unlikely that much of the difference in performance can be ascribed to land quality.

There are two points which might be considered in interpreting these results. Firstly rearing young cows for sale is strictly a separate enterprise from milk production for which the profitability of a single year's operations may be a formal calculation determined by the values used at the opening and closing of the year's accounts. Calculation of herd depreciation on an essentially milk producing farm is not entirely free from complications of valuation, particularly if the change in herd size over the year is appreciable, but if the change in herd size is less than ten per cent it is realistic and legitimate to choose methods of valuation which allow the greater part of the charge to be determined by the difference between incoming and outgoing values. In the case of a herd where rearing for sale is important it is possible that the year chosen for the survey could be one during which the value of assets were growing and there happened to be little to show in the form of realised

sales. In order to fit this type of record into the milk cost scheme the average value per cow at the closing valuation needs to be increased. The result will be a negative cost or herd appreciation. It is conceivable that the estimates arrived at may be low in relation to the subsequent sale value of the cows. If this were so the final profit of the rearing herds would be underestimated.

Secondly, and perhaps of greater relevance to current conditions: In the days when the traditional trade in dairy cows originally developed, purchased feedingstuffs were very cheap. The additional cost not only of preparing cows for sale but of generosity in maintaining the bloom on all the herd was small in relation to the profits from the trade. To maintain cows in 'condition' is a source of satisfaction in itself but over the years it has become an increasingly expensive hobby and it is more than likely that, as fewer remain in a position to afford it, the herd which supplies a regular contingent of young cows for the more specialised intensive dairy unit will become increasingly rare and perhaps be replaced by arrangements for contract rearing.

CHAPTER FOUR

A BACKWARD AND A FORWARD LOOK

A. Retrospect

Table 11 sets out for the national and the regional sample some of the main physical data. By and large the national and regional changes are in the same direction but to some extent the specialists of the North West are being overtaken by the rest of the country as intensification becomes generally necessary. Thus, yields are similar, there is less difference in the forage acres per cow, and the labour hours per cow between the North West and the rest of the country in 1972-73 than there was in 1965-66. The picture which Table 11 portrays is generally one of growing intensification.

Table 11: Selected Features of North West and National Samples 1965-66, 1968-69 and 1972-73

	1965-66		1968-69		1972-73	
	North West	Eng. and Wales	North West	Eng. and Wales	North West	Eng. and Wales
Forage Acres per Cow	1.46	1.79	1.40	1.59	1.30	1.42
Yield per Cow (galls)	826	809	878	829	914	905
Purchased Concentrate/Cow (cwt)	19.7	19.1	21.8	20.3	22.5	23.0
Home Grown Concentrate/Cow(cwt)	3.6	3.7	4.0	3.9	5.1	4.5
Purchased Concentrate: lbs per gallon	2.67	2.64	2.78	2.74	2.75	2.84
Home Grown Concentrate:lbs per gallon	0.49	0.52	0.51	0.53	0.62	0.56
Total Concentrate:lbs per gallon	3.16	3.16	3.29	3.27	3.37	3.40
Labour Hours/Cow	76	88	65	73	57	60
April-Sept Production as per cent Annual	52.6	53.1	54.7	54.0	51.1	54.0

The returns and costs of milk production in North West England are set out in Table 12 for the last three milk cost surveys. The middle survey (1968-69) covered a difficult year in that the survey began almost immediately after the foot and mouth epidemic was over. It is perhaps not surprising, therefore,

that costs during that year rose rather more rapidly than returns and the monetary margin per cow was slightly less in 1968-69 than it had been three years earlier. Allowing for the slightly greater intensity of stocking, the monetary return per forage acre was almost identical. However, with a thirteen per cent increase in retail prices the farmers' real income from milk production had fallen effectively by some 11½ per cent over the three years. By contrast 1972-73 proved to be an exceptionally good year. Allowing for a further slight increase in intensity of stocking, the £63 monetary margin per cow was equivalent to an increase over 1968-69 of 135 per cent in the monetary income per forage acre. This compared with an increase of 31 per cent in the retail price index. The co-operators in the survey therefore earned an income from milk production in real terms twice as large in 1972-73 as in 1968-69.

Table 12: Costs and Returns in North West sample Dairy Herds: £ per cow

	1965/6	1968/9	1972/3
RETURNS			
Milk	131.7	144.4	188.8
Calves	8.7	10.3	32.4
Total	140.4	154.7	221.2
COSTS			
Purchased Concentrates	32.0	35.6	46.3
Home Grown Concentrates	3.9	4.2	6.9
Total Concentrates	35.9	39.8	53.2
Purchased Bulk	2.9	1.9	2.5
Home Grown Bulk	11.0	11.5	12.4
Grazing	9.0	12.9	14.7
Total Food	58.8	66.1	82.8
Labour	22.7	23.7	32.6
Herd Depreciation	8.0	9.6	9.0
Miscellaneous	10.1	15.1	19.4
Overheads	10.4	11.3	14.3
Total Costs	110.0	125.8	158.1
Margin	30.4	28.9	63.1

It will not have escaped notice that whilst two-thirds of this improvement could be attributed to higher milk prices for better yields, one-third was attributable purely to higher values for calves. The increased contribution

of calves must however be related to the fact that there are now many fewer sales of bobby calves and that most calves are sold considerably older now than they were a decade ago. Moreover, the cost of bringing these calves to the point of sale is not included in the milk cost survey data.

B. After the Survey

Milk producers, in the year after the survey, experienced a sharp reversal of fortune. To a large extent, the direct effect of higher feed prices on milk production was compensated by the backpayment early in 1974 of 5.15 pence per gallon on the November to February gallonage, but rising feed costs also hit cattle feeders and they found themselves unable to pay the same price for calves in the winter of 1973-74 as they had in the winter of 1972-73. By June 1974 calves were selling for anything from £20 to £30 per head less than corresponding calves a year earlier.

Over a fairly long period the prices of fat cattle, stores, and calves have tended to move more or less in sympathy which each other. It may well be that feeders take a very short view, or no view at all, of the future and if they are selling fat cattle at high prices they are prepared to pay high prices for replacement calves or stores and, vice versa, if fat cattle are sold at low prices they are only prepared to pay low prices for replacement calves. In the violent changes of price during the winter of 1973-74 this correspondence may at times have appeared to get out of phase but there is no real reason to suppose that there is any permanent change in the relationship. The figures in Table 13 for average calf prices show how extreme the changes have been during the past two years.

C. Prospect

Every economic survey of farm production is a reminder of the diversity of conditions under which producers operate. This is particularly true of milk producers. It is therefore difficult to make any general statement which is not untrue for at least as many farms as for farms of which it is true. Statements regarding the future are fraught with even more dangers. Farmers in Britain have for over 30 years been highly dependent upon political decisions made by the government of the day. Government policy is often of necessity devised to

Table 13: Examples of Calf Price Fluctuations: June 1972, 1973, 1974

Class of Calf	Week Ending		
	28 June 1972	27 June 1973	26 June 1974
	£	£	£
Bull Calves			
Friesian			
1st quality	49.16	59.30	22.20
2nd quality	40.02	50.77	13.71
Hereford & Friesian			
1st quality	53.91	70.55	38.38
2nd quality	42.90	55.29	22.98
Heifer Calves			
Friesian			
1st quality	50.52	56.98	20.76
2nd quality	40.02	45.18	12.47
Hereford & Friesian			
1st quality	48.51	58.53	24.74
2nd quality	39.00	47.62	14.37

meet short term situations and these situations are often created by external circumstances over which the government has no control. All this is naturally very confusing to the individual producer.

It is clear that, with the levels of prices prevailing in the Spring of 1974 for milk, calves and purchased feed, milk production in money terms promises to be less profitable in the immediate future than it was during the 1972-73 survey year. On top of that, inflation has been running at the highest rate that Britain has experienced in living memory. Therefore milk producers' real income - if there are no changes in these conditions - could be expected to take a serious drop during the 1974-75 year. Furthermore, producers had already responded to high feed prices in the autumn of 1973 by economising on concentrate feed so that milk production had fallen by four per cent compared with a year earlier although there appeared to be no fall in cow numbers according to the December census. By the spring of 1974 total milk production

was six per cent lower than a year earlier. Part of this would be due to some decline in cow numbers combined with the fall in yields. Since the drop in yields in the autumn is likely to be due to lower feeding rates to freshly calved cows, it can be expected that milk production will be lower throughout the remainder of the lactation. This in turn will magnify the decline in milk producers' incomes.

The number of milk producers in the United Kingdom has been declining consistently since the end of the war and by March 1974 the number of registered producers in England and Wales was less than half the number recorded in 1955. Milk production increasingly needs the energy of a fairly active man. Two-thirds of producers in 1972-73 were under 55 years of age, whilst most of the remainder were milking herds of less than 40 cows. The Common Market, of which Britain is now a member, has a policy for avoiding a dairy surplus by subsidising the transfer of dairy producers into beef production. Whilst it is doubtful whether this scheme will have a major effect upon the British dairy industry, particularly in view of the fact that it is now being realised that the demand for beef is not unresponsive to higher prices, the scheme must prove attractive to some farmers approaching the end of their career. Its attraction is that it reduces the demand for labour and so makes life less arduous for the farmer, and therefore makes it easier for him to organise his farm operations, whilst remaining on his existing farm.

Looking beyond the immediate future, whether or not to continue in milk production must be a matter of weighing up the reduced net income against a less arduous life (or a reduced wage bill). A great deal of milk production, however, takes place on the family farm and,where there is a son to take up the demanding work, dairying is likely to continue. After all, an improvement in the outlook for beef improves the prospective return for the milk producers' calves. Beef is unlikely to offer sufficiently good prospects in the long run to encourage the young and active to convert an established dairy herd. In reality prospects for dairy farmers in the year 1974-75 are probably better than they seemed early in the year since the forecast crop yields around the world are reported to be improving. This and the uncertainty of economic prospects has resulted in a reduction in the price of imported protein. Some small benefit on this count has already reached the farmer in lower prices for

concentrated feed. But further concentrate price movements are obscured by nervous volatility in the feed markets. Whatever happens to concentrate prices, it will no doubt continue to be important to improve as far as possible the utilisation of grassland and forage crops.

The dairy herds in Britain supply a high proportion of our beef, either as cull cows, or as prime beef - the offspring of the dairy cow and a beef bull. This situation holds because the predominant Friesian breed produces a satisfactory beef or beef crossed animal. Although calf prices may not quickly return to the level of 1972-73, they benefit from the increased grants payable under the calf subsidy scheme and are likely to continue to make a substantial contribution to the total profit of the milk producer, particularly in the medium sized herds.

The influences on the milk producer are many and come from overseas, from government policy, from disease, from the politics of the industry. They come moreover from the inter-relationship between cereal production, milk production and beef production. They spread over a considerable period of time. From the conception of a calf to its sale as prime beef may be anything from 2 to 3½ years. There is, therefore, a continuum of influences - from feed supply to government policy on calf subsidies - which, brought into effect at any moment, may influence the fortunes of the milk producer over a period of up to three years or more. During all that time the milk producer has to be making decisions about the size of his herd, investment in buildings and equipment and he may well long for a reduction in the uncertainty which seems to beset him. It is possible to reduce, but not to eliminate, uncertainty. The cost of reducing uncertainty, however, would be to reduce the individual's freedom of action and opportunity to benefit from advantageous circumstances when they arise.

APPENDIX ONE

ACCOUNTING METHODS AND DEFINITIONS

Two figures of margins or profit are used as measures of the success of a dairy enterprise. These are the gross margin, which is the difference between the output of the dairy enterprise and the direct cost involved in producing that output. The second is net margin, commonly referred to as profit, this is the gross margin less a share of those farm costs which would be incurred whether the particular enterprise was undertaken or not. The terms output and costs are further defined below.

For ease of comparison the figures of output, cost and margin are quoted in terms of averages per cow, per forage acre or per gallon. It is natural on an individual farm to arrive at the average per cow by taking the total costs, total returns or the cost of some individual item such as concentrated feed, and divide by the average number of total cows on the farm during the period in question. Averages for groups and provincial totals are arrived at the same way. It would be possible to take the results per cow for each farm, add together and divide by the number of farms to arrive at a group or provincial average per cow. This method has not been followed and the effect of using overall averages is, in fact, to give greater weight to the larger herds and where averages per gallon are quoted the importance of high yielding herds tends to be given greater emphasis.

Output consists of (i) the value of all milk produced, including incentive payments. Milk sold wholesale was credited with the price actually paid for the milk each month. Retail sales were credited at 23.32 pence per gallon. Milk consumed in the farm household or by employees was valued at 20 pence per gallon. Milk fed to livestock was credited at the annual average wholesale price. (ii) The value of calves born in the dairy herd taken at four days old. This concept raises certain difficulties in that there is no market value for four day old calves since calves can only be sold when they are strong enough to withstand the journey. Calf sales, therefore, tend to refer to young animals of between a week and a month old and certain unrecorded costs of rearing are likely to have been incurred. Whilst this omission of rearing costs means that

the value of calf output is somewhat exaggerated, we do not believe that it amounts to more than £5 per calf at the maximum.

Costs include the following items:

i. Purchased feeds: These were charged net of any discounts or bonuses.

ii. Home-Grown Cereals: These were charged at estimated national average market prices. The price of the 1971 crop was used for cereals fed from April to September and average prices for the 1972 crops for home-grown cereals fed during October to March. The prices used were as follows:

	1971 Crop £ per ton	1972 Crop £ per ton
Wheat	26.1	33.0
Barley	23.5	29.0
Oats	19.9	25.0
Mixed Corn	21.9	27.0

iii. Grazing and Forage: Were charged at the cost of inputs plus 15 per cent of the direct labour cost as an allowance for overheads; generally 50 pence per acre were charged for hedging and ditching and an allowance was included for ley establishment. Tractors were charged according to horsepower and machinery depreciation was charged at 60 per cent of the tractor costs. Farmyard manure (and slurry) was charged at the estimated cost of spreading.

iv. Direct Labour on Cows: For direct labour on the cows the labour hours required to milk, feed, and otherwise tend the cows, and clean the dairy equipment were charged at the actual cost including the employers' National Insurance and Graduated Pension contributions, plus all perquisites. Family labour was charged at the average cost of hired labour of the equivalent category.

Labour employed on crop production was charged on a similar basis.

v. Herd Depreciation: This is the difference between opening valuation at the beginning of the year,plus cost of purchased cows (or the market value of home reared heifers introduced to the herd), less the sum of receipts for cows leaving the herd and the closing valuation.

vi. Miscellaneous Costs: These numerous items are listed in an Appendix Table.

vii. Share of General Farm Overheads: This is an allocation of those costs such

as the farm car, telephone bill, accountants' and other fees and subscriptions which cannot be attributed directly to a particular enterprise. The basis of allocation was £5 per £100 milk output plus 15 per cent of the direct labour cost.

viii. Inflation and price fluctuations: Accounting in current money terms during a period of inflation produces a figure of profit margins which is partly made up of purely "paper profits". This applies particularly to such a period as the 1972-73 survey when cattle prices rose rapidly. In the following year, the fall in cattle prices would have the opposite effect. Even then, however, continuing inflation would mean that the profit margin had less real purchasing power than the same margin a year earlier. Results should be read with this general caution in mind.

APPENDIX TWO

TABLES

Some small tables were included in the body of the report to illustrate relevant points being made in the text. The tables in this appendix provide considerably greater coverage of the detail available from the survey (though they are by no means exhaustive) for those readers who prefer to take their information as 'neat' as possible and proceed to their own conclusions.

Table A.1: Average Costs and Returns per Cow by Size of Herd for 81 Herds in the North West Province 1972-73

	All Jersey Herds	OTHER HERDS						All Herds
		Less than 20 Cows	20 - 29.9 Cows	30 - 39.9 Cows	40 - 59.9 Cows	60 - 79.9 Cows	80 or More Cows	
Number of Herds	4	6	12	17	20	13	9	81
Average herd size	45.3	13.0	24.7	34.7	47.2	69.9	102.2	48.4
	£	£	£	£	£	£	£	£
RETURNS								
Milk Sales	159.2	152.4	162.1	192.7	179.8	189.7	195.6	184.7
Milk to house, employees, calves	3.3	8.6	5.5	4.4	5.1	4.0	2.2	4.1
TOTAL MILK	162.5	161.0	167.6	197.1	184.9	193.7	197.8	188.8
Value of Calves	7.3	26.9	27.8	37.6	34.1	32.6	34.9	32.4
TOTAL OUTPUT	169.8	187.9	195.4	234.7	219.0	226.3	232.7	221.2
COSTS								
Purchased Concentrates	49.9	46.6	53.4	60.7	49.5	46.1	31.5	46.3
Home Grown Concentrates	0.4	6.1	2.9	5.0	6.3	6.0	12.4	6.9
TOTAL CONCENTRATES	50.3	52.7	56.3	65.7	55.8	52.1	43.9	53.2
Purchased Bulk Feeds	6.5	0.4	5.8	3.9	1.9	1.9	0.8	2.5
Home Grown Forage	5.1	12.9	10.7	9.3	12.0	12.2	16.9	12.4
Grazing	8.8	16.8	10.8	14.5	13.8	16.5	16.4	14.7
TOTAL FOODS AND GRAZING	70.7	82.8	83.6	93.4	83.5	82.7	78.0	82.8
Labour	34.6	59.3	45.6	43.5	34.7	26.4	22.6	32.6
Herd Depreciation	8.3	4.5	9.3	8.0	8.2	10.0	10.0	9.0
Miscellaneous Costs	12.0	15.3	13.6	19.8	19.5	20.3	21.7	19.4
Share of Overheads	13.3	16.9	15.2	16.4	14.5	13.6	13.3	14.3
TOTAL COSTS	138.9	178.8	167.3	181.1	160.4	153.0	145.6	158.1
Profit Margin	30.9	8.4	30.3	53.6	58.6	73.3	87.1	63.1
Range: Lowest	14.1	-51.5	-15.4	-1.9	18.7	50.1	38.2	-51.5
Highest	42.7	44.9	67.7	91.9	107.0	92.7	143.9	143.9

Table A.2: Average Costs and Returns Per Gallon by Size of Herd for 81 Herds in the North West Province 1972-73

	All Jersey Herds	OTHER HERDS						All Herds
		Less than 20 Cows	20 - 29.9 Cows	30 - 39.9 Cows	40 - 59.9 Cows	60 - 79.9 Cows	80 or More Cows	
	p	p	p	p	p	p	p	p
RETURNS								
Milk Sales	24.51	19.80	20.22	20.62	20.59	20.66	20.52	20.70
Milk to house, employees, calves	22.63	20.29	20.07	20.24	20.59	20.39	20.33	20.66
TOTAL MILK	24.47	19.83	20.22	20.61	20.59	20.65	20.52	20.69
Value of Calves	1.10	3.31	3.36	3.85	3.79	3.47	3.61	3.55
TOTAL OUTPUT	25.57	23.14	23.58	24.46	24.38	24.12	24.13	24.24
COSTS								
Purchased Concentrates	7.52	5.74	6.44	6.34	5.51	4.92	3.25	5.07
Home Grown Concentrates	0.06	0.75	0.35	0.52	0.70	0.64	1.28	0.76
TOTAL CONCENTRATES	7.58	6.49	6.79	6.86	6.21	5.56	4.53	5.83
Purchased Bulk Feeds	0.98	0.05	0.70	0.40	0.21	0.20	0.09	0.27
Home Grown Forage	0.77	1.59	1.29	1.00	1.34	1.30	1.75	1.35
Grazing	1.32	2.07	1.29	1.51	1.53	1.76	1.69	1.61
TOTAL FOODS AND GRAZING	10.65	10.20	10.07	9.77	9.29	8.82	8.06	9.06
Labour	5.22	7.31	5.50	4.55	3.86	2.82	2.34	3.56
Herd Depreciation	1.25	0.56	1.12	0.84	0.92	1.07	1.03	1.00
Miscellaneous Costs	1.81	1.88	1.64	2.07	2.17	2.17	2.25	2.12
Share of Overheads	2.01	2.09	1.84	1.71	1.61	1.46	1.37	1.57
TOTAL COSTS	20.94	22.04	20.17	18.94	17.85	16.34	15.05	17.31
Profit Margin	4.63	1.10	3.41	6.52	6.53	7.78	9.08	6.93

Table A.3: Average Costs and Returns per Forage Acre by Size of Herd for 81 Herds in the North West Province 1972-73

	All Jersey Herds	OTHER HERDS						All Herds
		Less than 20 Cows	20 - 29.9 Cows	30 - 39.9 Cows	40 - 59.9 Cows	60 - 79.9 Cows	80 or More Cows	
	£	£	£	£	£	£	£	£
RETURNS								
Milk Sales	188.2	81.7	121.0	145.5	144.4	141.5	147.4	142.3
Milk to house, employees, calves	3.9	4.6	4.1	3.5	4.1	2.9	1.7	3.2
TOTAL MILK	192.1	86.3	125.1	149.0	148.5	144.4	149.1	145.5
Value of Calves	8.6	14.4	20.8	27.8	27.4	24.3	26.2	25.0
TOTAL OUTPUT	200.7	100.7	145.9	176.8	175.9	168.7	175.3	170.5
COSTS								
Purchased Concentrates	59.0	25.0	39.8	45.8	39.8	34.3	23.6	35.6
Home Grown Concentrates	0.4	3.3	2.2	3.7	5.0	4.5	9.3	5.4
TOTAL CONCENTRATES	59.4	28.3	42.0	49.5	44.8	38.8	32.9	41.0
Purchased Bulk Feeds	7.6	0.2	4.3	3.0	1.5	1.4	0.7	1.9
Home Grown Forage	6.1	6.9	8.0	7.0	9.6	9.1	12.7	9.5
Grazing	10.4	9.0	8.0	10.9	11.1	12.3	12.3	11.3
TOTAL FOODS AND GRAZING	83.5	44.4	62.3	70.4	67.0	61.6	58.6	63.7
Labour	40.9	31.8	34.1	32.9	27.9	19.7	17.0	25.1
Herd Depreciation	9.8	2.4	6.9	6.1	6.6	7.5	7.5	6.9
Miscellaneous Costs	14.2	8.2	10.2	15.0	15.6	15.1	16.3	14.9
Share of Overheads	15.7	9.1	11.4	12.4	11.6	10.2	10.0	11.0
TOTAL COSTS	164.1	95.9	124.9	136.8	128.7	114.1	109.4	121.6
Profit Margin	36.6	4.8	21.0	40.0	47.2	54.6	65.9	48.9

Table A.4: Average Labour used directly in Milk Production, by size of herd, for 81 herds in the North West Province, 1972-73.

Group	Cost per Cow			Hours per Cow	Family Share	
	Hired	Family	Total		Hours	Cost
	£	£			%	%
Jersey Herds	1.6	33.0	34.6	65	95.1	95.3
Less than 20 cows	6.5	52.8	59.3	101	88.8	89.0
20 - 29.9 "	3.2	42.4	45.6	80	91.4	92.9
30 - 39.9 "	5.8	37.7	43.5	69	82.5	86.7
40 - 59.9 "	14.3	20.4	34.7	61	58.0	58.8
60 - 79.9 "	13.6	12.8	26.4	46	50.4	48.4
80 or more "	16.8	5.8	22.6	40	21.7	21.3
All Herds	11.0	21.6	32.6	57	63.0	62.8

Table A.5: Herd Depreciation Accounts by Size of Herd for 81 Herds in the North West Province, 1972-73

		No.	£		No.	£
Jersey Herds	Opening Valuation	176	16470	Closing Valuation	187	17503
	Transfers In	46	4230	Disposals	38	1953
	Purchases	3	263	Depreciation	-	1507 = £8.3 per cow
		225	20963		225	20963
Other Herds (by size group)						
Less than 20 cows	Opening Valuation	76	9430	Closing Valuation	81	10052
	Transfers In	14	1935	Disposals	17	2015
	Purchases	8	1056	Depreciation	-	354 = £4.5 per cow
		98	12421		98	12421
20 - 29.9 cows	Opening Valuation	286	39430	Closing Valuation	302	41646
	Transfers In	44	7400	Disposals	46	5507
	Purchases	18	3071	Depreciation	-	2748 = £9.3 per cow
		348	49901		348	49901
30 - 39.9 cows	Opening Valuation	556	85870	Closing Valuation	594	91680
	Transfers In	89	14968	Disposals	103	13473
	Purchases	52	9042	Depreciation	-	4727 = £8.0 per cow
		697	109880		697	109880
40 - 59.9 cows	Opening Valuation	929	143550	Closing Valuation	978	154000
	Transfers In	187	33443	Disposals	179	22181
	Purchases	41	6941	Depreciation	-	7753 = £8.2 per cow
		1157	183934		1157	183934
60 - 79.9 cows	Opening Valuation	875	135863	Closing Valuation	911	143573
	Transfers In	168	29879	Disposals	173	20433
	Purchases	41	7417	Depreciation	-	9153 =£10.0 per cow
		1084	173159		1084	173159
80 or more cows	Opening Valuation	869	149291	Closing Valuation	936	163706
	Transfers In	129	23223	Disposals	187	23966
	Purchases	125	24288	Depreciation	-	9130 =£10.0 per cow
		1123	196802		1123	196802
All Herds	Opening Valuation	3767	579904	Closing Valuation	3989	622160
	Transfers In	677	115078	Disposals	743	89528
	Purchases	288	52078	Depreciation	-	35372 = £9.0 per cow
		4732	747060		4732	747060

Table A.6: Main Reasons for Disposal of Cows and Prices Received by Size of Herd for 81 Herds in the North West Province, 1972-73

Reason for Disposal	Jersey Herds		OTHER HERDS										All Herds	
			Less than 20 Cows		20.0-29.9 Cows		30.0-39.9 Cows		40.0-59.9 Cows		60.0-79.9 Cows		80.0 or more Cows			
	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £	Ratio %	Av. Price £
Sold for Beef:																
Infertility	29.0	59.5	35.3	149.5	26.2	120.5	36.8	130.0	31.3	132.0	20.8	123.7	30.0	133.4	28.9	126.8
Chronic Mastitis	10.5	45.7	17.6	80.3	8.7	94.8	8.7	101.3	8.4	130.4	16.2	118.5	3.7	128.6	9.4	112.7
Age (8 or more lactations)	44.8	48.6	17.6	101.7	13.0	113.7	3.9	127.0	6.7	100.7	9.2	94.1	3.7	92.7	8.8	88.2
Abortion	-	-	5.9	151.0	4.3	114.0	-	-	3.9	102.6	2.9	120.6	2.7	126.2	2.7	116.5
Other	10.5	49.0	11.8	133.5	19.6	122.5	14.6	137.0	21.3	132.3	27.7	108.2	26.2	141.7	21.9	126.8
Sub-total: Sales for Beef	94.8	51.6	88.2	124.1	71.8	116.6	64.0	127.9	71.6	127.4	76.8	113.2	66.3	133.8	71.7	119.9
Sold for Milk Production	-	-	-	-	15.2	160.3	23.3	182.6	14.5	165.0	14.5	176.2	17.1	193.3	15.5	178.7
Sold for Accident or Disease (including S.Mastitis)	5.2	22.0	5.9	74.0	13.0	70.0	11.7	48.0	10.6	49.0	8.7	41.7	16.1	38.1	11.6	50.2
Transferred Out	-	-	5.9	80.0	-	-	-	-	3.3	103.3	-	-	0.5	80.0	1.2	97.7
Total	100.0	50.8	100.0	118.5	100.0	119.7	100.0	130.8	100.0	123.9	100.0	118.1	100.0	128.2	100.0	120.5

Table A.7: Average Concentrate Feeding and Forage Acreage by Size of Herd for 81 Herds in the North West Province 1972-73

	Channel Island Herds	OTHER HERDS						All Herds
		Less than 20 Cows	20 - 29.9 Cows	30 - 39.9 Cows	40 - 59.9 Cows	60 - 79.9 Cows	80 or More Cows	
Milk Produced Per Cow (galls)	664	812	829	956	898	938	968	914
Purchased Concentrates (Cwts. Per Cow):								
Compounds	22.2	14.3	21.8	22.6	18.7	17.7	9.4	17.2
Grain Balancer	0.3	0.7	0.1	0.9	0.6	0.5	1.8	0.9
Sugar Beet Pulp	0.7	1.7	2.7	3.1	2.1	2.0	1.4	2.0
Other	0.6	4.9	0.7	2.4	2.9	2.6	2.4	2.4
TOTAL PURCHASED	23.8	21.6	25.3	29.0	24.3	22.8	15.0	22.5
Home Grown Cereals	0.3	4.5	2.1	3.6	4.5	4.4	9.3	5.1
TOTAL CONCENTRATES	24.1	26.1	27.4	32.6	28.8	27.2	24.3	27.6
Concentrates per gallon (lb.)	4.05	3.59	3.70	3.83	3.59	3.25	2.81	3.37
Concentrate Cost per gallon (p) (i)	7.60	6.49	6.79	6.84	6.25	5.56	4.53	5.83
Milk Receipts per gallon (p) (ii)	24.53	19.80	20.22	20.64	20.59	20.66	20.44	20.66
Margin over Concentrate per gallon (p) (ii)-(i)	16.93	13.31	13.43	13.80	14.34	15.10	15.91	14.83
Average Farm Size: Acres	57	44	47	74	149	236	277	135
Forage Acres per Cow: Grazing Acres	0.63	1.38	0.94	1.01	0.92	0.96	0.85	0.91
Total Forage Acres	0.85	1.86	1.34	1.32	1.24	1.34	1.33	1.30
Expenditure on Fertilizer per Forage Acre (£)	4.38	3.66	3.40	4.96	5.40	6.64	7.55	5.87
Margin of Milk Sales over cost of concentrates & Fertilizer per Forage Acre (£)	124.4	49.7	75.7	90.1	93.0	95.5	105.9	94.7
Proportion of annual milk produced during April to September (%)	53.3	53.5	54.8	50.9	51.2	50.0	50.2	51.1

Table A.8: System of Housing and Milking by Size of Herd for 81 Herds in the North West Province 1972-73

	All Jersey Herds	Other Herds						All Herds
		Less than 20.0 cows	20.0-29.9 cows	30.0-39.9 cows	40.0-59.9 cows	60.0-79.9 cows	80.0 or more cows	
Housing								
1. Shippon	1	5	11	13	11	3		44
2. Yard	1	1		1	2	3	1	9
3. Cubicles	1		1		5	5	6	18
4. Kennels				1		1		2
5. Mixed	1						2/3	2
Change during 1972-73				1→3 x 2	1→3 x 2	1→4	1→2	6
Place of Milking								
1. Shippon	1	5	10	12	11	3		42
2. Milking Shed (a)			2	1	1			4
3. Herringbone Parlour				1	3	4	5	13
4. Abreast Parlour	2	1		1	4	4	2	14
5. Fixed Bail	1					1		2
6. Mixed							3/4	1
Change during 1972-73				1→2 2→1	1→5	1→3	2→3	5
Method of Milking								
1. Bucket Machine to Churn	1	6	10	8	3			28
2. Bucket Machine to Bulk Tank	1							1
3. Pipeline to Bulk Tank	1		1	6	14	12	8	42
4. Pipeline to Churn	1		1	1	1			4
Change during 1972-73				1→3 x 2	1→3 4→3	1→3	1→3	6

(a) Milking in shed differs from milking in shippon only by reason of shippon stalls being occupied by one cow, whereas in shed milking at least some stalls will be used in turn by two or more cows - i.e. there is batch or relay milking.

Table A.9: Breakdown of the "Miscellaneous Costs" by Size of Herd for 81 Herds in the North West Province 1972-73

	Jersey Herds	OTHER HERDS						All Herds
		Less than 20.0 Cows	20.0-29.9 Cows	30.0-39.9 Cows	40.0-59.9 Cows	60.0-79.9 Cows	80.0 or more	
	£	£	£	£	£	£	£	£
A.I. and Bull	1.3	1.5	1.6	1.6	1.7	1.8	1.6	1.6
Veterinary and Medicines	1.3	2.1	1.7	2.2	2.4	2.4	2.6	2.3
Dairy Stores (1)	1.1	2.0	1.4	2.0	2.2	2.6	2.3	2.2
Dairy Charges (2)	3.4	3.6	3.1	3.6	4.5	3.9	4.1	4.0
Equipment Repairs and Depreciation (3)	2.5	2.7	2.9	5.7	4.7	4.3	4.3	4.4
Rental Value of Dairy Buildings (4)	2.4	3.4	2.9	4.7	4.0	5.3	6.8	4.9
Total Miscellaneous Costs	12.0	15.3	13.6	19.8	19.5	20.3	21.7	19.4

NOTES:

1. Dairy Stores: Filters, detergent, Bulk Tank cleaner, Udder towels etc.

2. Dairy Charges: Electricity, Water, Insurance fees specific to the Dairy Herd (e.g. Foot and Mouth), Brucellosis, Milk recording fees.

3. Equipment Repairs and Depreciation: Milking Machine parts, Bulk Tank Service Fees or repair charges, Depreciation calculated as 20 per cent of written down value. Where appropriate, charges for tractor haulage or cleaning the yard are included here.

4. Rental Value of Dairy Buildings: Buildings erected before 1957 - £2 per 100 cu.ft. or per cow place. Buildings erected since 1957: 17.2 per cent of original net cost.