Dairying Ors.

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE

DAIRY FARMING IN THE WEST OF SCOTLAND

PAST, PRESENT AND FUTURE . . . . .

Preliminary Report based on 12 years' Financial Results, 1956-1968

by

ROBERT W. T. HUNT

ECONOMICS DEPARTMENT
178 BOTHWELL STREET
GLASGOW C.2

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College Economist and Staff

West of Scotland Agricultural College,
178 Bothwell Street,
GLASGOW, C.2.

Head of Department,
J. CLARK.

CONTENTS

FOREWORD

The Economics Department of this College, under the leadership of Mr. J. A. Gilchrist (now retired), has studied the economic trends in farming in the West of Scotland for many years. In his final year with the College he initiated an investigation into the trends in profitability of farming in the College area which was the starting point of this report.

This pioneering work and the loyal co-operation of farmers in the area - not only those whose results were used in this report but the many who in various ways contributed to the knowledge of this Department - is gratefully acknowledged. While Robert Hunt undertook the task of compiling this report, he has been assisted by the co-operation of many members of the Economics Department.

It is hoped that this is the first of a series of reports which will examine the trends in farming types in the South West of Scotland. For this reason this Department would welcome suggestions and comments from all readers and, in particular, from farmers in the area. It is hoped that they will, in this way, become aware that the sometimes onerous task of providing information is an important role in making available data which can be used as a basis for a better understanding of the problems of the industry, both present and future.

J. Clark
Head of Department

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Many colleagues in the Economics Department and others outside, who helped in ways too numerous to mention.

INTRODUCTION

This report studies a group of farms whose acreages remained substantially the same over a period of 12 years and whose financial records are available to the College. The identical nature of the sample over the years makes it difficult to incorporate the results of a large number of farms. Thus, the choice of dairy farming as the subject for study is partly because of the economic importance of dairying in the West, but also because similar identical samples of other farming types, would be much smaller.

The results of this relatively small sample cannot claim to represent the complete dairy industry in the College area, but they should give a good indication of some of the trends. The story of the varying fortunes of this group of dairy farms will doubtless bear out the personal experience of many farmers in the area.

After reaching a very low ebb in the early sixties, the subsequent improvement in profitability, achieved by higher milk prices and greater efficiency, is some consolation and reward for effort. However, it is still felt by many, to be by no means the end of the struggle to maintain a satisfactory level of profits.

The particular items emphasised in this report are changes in levels of net profit, tenant's capital and capital investment. The story of the various trends, is considered against the general background of prices and other factors which have a major influence on the changing situation over the years. A brief look is also taken at the problems and prospects for the future.

The study has been deliberately limited in its objectives, as it is hoped in this way to draw attention to a few of the salient points of interest. Some of the conclusions must be tentative and this preliminary look at past events has suggested that certain aspects could be looked at in greater depth and that others not discussed, could be examined. It is hoped to do this in future studies.

SECTION 1

1. A LOOK AT TRENDS IN PROFITABILITY

Although the weather affects individual farm profits from year to year, other factors can be more important when considering a group of farms scattered geographically over a wide area. For example, the price received for farm products, the level of subsidies and the cost of paid labour and other inputs, all have their effect on farm incomes. Probably the most important single influence is the price of milk, although to keep pace with the general inflationary trend of rising prices, increased cow numbers and higher milk yields, have played a part in attempting to keep up with the non-farming Jones's.

A study of Tables 1 and 2 shows that the low profit years from 1960/61 to 1963/64 coincide with realised milk prices ranging from 1d. to $2\frac{1}{4}$d. below the 3 shilling mark. This compares with a 1967/68 realised price of $3/3\frac{1}{2}$d. Over the period 1960/61 to 1967/68 there was an increase of $5\frac{3}{4}$d. per gallon.

For an 800 gallon herd, this difference of $5\frac{3}{4}$d. per gallon amounts to about £19 per cow per year.

Or at the same level of yield:

For a small	30	cow herd	£570
For a medium	50	" "	£950
For a larger	75	" "	£1425

TABLE I - PROFITABILITY

PROFITABILITY OF THE SAME SAMPLE OF DAIRY FARMS OVER 12 YEARS

Net Profit and Surplus for three size groups

Per farm and per cent of Tenants' Capital

Year	23 Small Farms UP TO 125 ACRES Average Size 72 Acres				24 Medium-sized farms 126 TO 200 ACRES Average Size 156 Acres				16 Larger farms OVER 200 ACRES Average Size 282 Acres			
	Net Profit per farm	Surplus per farm	Profit as % of Tenant's Capital	Surplus as % of Tenant's Capital	Net Profit per farm	Surplus per farm	Profit as % of Tenant's Capital	Surplus as % of Tenant's Capital	Net Profit per farm	Surplus per farm	Profit as % of Tenant's Capital	Surplus as % of Tenant's Capital
	£	£	%	%	£	£	%	%	£	£	%	%
1956/57	851	328	20.4	7.9	1094	584	17.2	9.2	2162	1730	22.5	18.0
1957/58	730	168	17.5	4.0	1267	718	19.9	11.3	2292	1837	22.8	18.3
1958/59	830	170	19.6	4.0	1411	822	21.6	12.6	2550	2027	25.1	20.0
1959/60	1053	389	23.9	8.8	1320	709	19.3	10.4	2497	1964	22.1	17.3
1960/61	893	136	19.4	2.9	1356	661	19.0	9.2	2085	1448	17.3	12.0
1961/62	786	(-) 8	16.3	(-) 0.2	1112	395	15.2	5.4	2015	1374	16.0	10.9
1962/63	719	(-) 102	14.6	(-) 2.1	748	(-) 31	10.3	(-) 0.4	1600	905	12.4	7.0
1963/64	491	(-) 338	9.9	(-) 6.8	718	(-) 49	9.8	(-) 0.7	1324	634	10.0	4.8
1964/65	972	119	19.2	2.3	1422	571	19.1	7.7	2238	1518	16.2	11.0
1965/66	903	(-) 5	17.6	(-) 0.1	1113	183	14.7	2.4	2161	1333	15.2	9.4
1966/67	754	(-) 204	13.4	(-) 3.6	1234	206	14.4	2.4	2184	1249	13.5	7.7
1967/68	862	(-) 116	14.9	(-) 2.0	1697	664	19.6	7.7	3055	2111	17.7	12.3

TABLE 2

PRODUCERS MILK PRICES (1)

Scottish Milk Marketing Board

Year	Price	Year	Price
1956/57	2s. 11¾d.	1962/63	2s. 9¾d.
1957/58	2s. 11¼d.	1963/64	2s. 11 d.
1958/59	2s. 11½d.	1964/65	3s. 1¼d.
1959/60	2s. 11¼d.	1965/66	3s. 2d.
1960/61	2s. 9¾d.	1966/67	3s. 3¼d.
1961/62	2s. 9¾d.	1967/68	3s. 3½d.

To some extent the various boosts given to beef production, through increased prices and subsidies, have helped incomes of dairy farmers. The favourable trend in beef prices has helped to raise the selling prices of both calves and cast cows and although prices of dairy heifer and cow replacements are also affected, any group of dairy farmers may be both buyers and sellers of dairy replacements. The national trend in dairy cow numbers has been gradually downward, 363,900 in 1956 to 328,300 in 1967 - a fall of nearly 10%, although the most recent figures suggest a levelling off or even an increase in numbers. This is perhaps to be expected as farmers may be taking a more optimistic view of the future. Beef cows on the other hand, have shown a marked increase in numbers over the same period, 193,600 in 1956 to 359,700 in 1967 or an 87% increase.

The number of registered milk producers also show a marked decline - 8564 in 1956 to 6233 in 1967 - a 27% fall.

TABLE 3

Trend in Beef Cow Numbers, Dairy Cow Numbers and Registered Milk Producers (Scotland) (2)

	Beef Cow Numbers	Dairy Cow Numbers	Registered Milk Producers
1956	193,600	363,900	8,564
1967.	359,700	328,300	6,233

When looking at the trends in profitability in Table 1 the question of appropriate yardsticks arise.

It is always difficult to compare farming incomes, whether comparisons are between farms of a different size or with those of non-farming members of the community. Small farmers depend to a much greater extent on their own and family labour, than larger farmers.

Any farmer undertaking a fair amount of manual work will usually be looking for a wage, as a reward for this work and in order to enable comparisons between farms, the figure of Surplus is used. This represents Net profit, less a deduction of the value of the manual work done by the farmer and his wife.

(1) Annual average net price ex farm after deducting transport and other charges and including all quality and other premiums - to the nearest ¼d.
Source - The Three Milk Marketing Boards in Scotland 1968, Key Milk Figures.

(2) Source - S.M.M.B. and D.A.F.S.

Although an individual may be more interested in Net Profit, if we want to compare technical performance of a group of farmers, the use of Surplus is a more appropriate yardstick.

For the small family farmer, the emphasis may be on net profit and also on cash income or the difference between cash paid out and cash received. Taxable income is based on net profit (if in fact the farmer manages to pay tax), and the profit, although not the cash available, will be affected by depreciation and valuation changes. For this reason, the cash available to meet living expenses and to enable any personal savings or capital investment is also a key figure for any farmer whether large or small. This aspect is discussed later in the report.

Looking at the dairy farm trends in Table 1 we can see that the small farmer has fared the worst of all. The net profit in 1967/68 is just about the same as that achieved in 1956/57. If we compare this with the trend in industrial earnings, average wages of manual workers have increased from £14 per week to £22 over the same period, and as a measure of what this income will buy in cash, the index of retail prices has risen from 100 in 1956 to 148 in 1968. This means that the small dairy farmer with his net profit of £851 in 1956/57 would need a profit in 1967/68 of £1,259 in order to enjoy the same standard of living. If he were to keep up with the trend in manual workers earnings the figure would need to be £1,335. The actual performance of the group of small dairy farms was in fact a net profit of only £862 in 1967/68.

On the medium sized dairy farms, there is a slightly better profit record over the years, although the two low-profit years 1962/63 and 1963/64 stand out. Taking Net profit as the yardstick the 1956/57 figure of £1,094 would require an equivalent of £1,619 to produce the same purchasing power in 1967/68. Thus, using this measure, the net profit of £1,697 managed to more than maintain parity with the general rise in prices, although if surplus was used as the measure, then the picture would be considerably less attractive. Surplus only increased from £584 to £664, an increase of 14%, as against a 48% rise in retail prices.

The trend for the larger group of farms - Over 200 acres is similar, with the sharp drop in profits and surplus in 1962/63 and 1963/64. It is significant that the larger farms managed to produce a Surplus in each of the last 12 years. Over the twelve year period net profit increased by 47% and surplus by 22% in comparison with the 48% rise in retail prices.

Looking at the figures for the medium and larger farms, the improvement in results shown in 1967/68 over the previous year is substantial, but the same recovery in profits was not enjoyed by the small farms.

Although figures are quoted for net profit and surplus as a per cent of tenant's capital, it would be wrong to read too much into these figures, as valuations may be estimated on the conservative side so that any percentage returns may overstate the true position. Thus, when looking at this particular series of figures, it is the trend rather than the absolute figures that must be emphasised. Broadly, the trend in percentage returns follow the pattern of profit and surplus, but for the larger farms a more rapid increase in tenants' capital accounts for the lower percentages in the later years.

No specific analysis has been made of the trend in milk yield on this identical sample of farms, but one would expect that it would agree broadly with the national figures shown in Table 4 below. At an average price of 3/- per gallon the 87 extra gallons would be worth about £13 per cow - a substantial contribution to increased efficiency.

TABLE 4

ESTIMATED MILK YIELDS (1)

Average gallons per cow per year (year to March)

Scottish Milk Marketing Board

Year	Gallons	Year	Gallons
1956/57	722	1962/63	757
1957/58	733	1963/64	750
1958/59	714	1964/65	772
1959/60	744	1965/66	776
1960/61	759	1966/67	771
1961/62	761	1967/68	809

Thus, the story of profitability is one of mixed fortunes, with the group of small farms losing considerable ground in terms of income and living standards. The downward trend in producers milk prices over the first half of the 12 year period has been followed by a similar period of improved milk prices, although the industry as a whole has had to absorb some proportionately greater increases in costs, and a decline in the purchasing power of money. Dairy farmers are obviously not alone in this last problem, but whereas producers milk prices have risen over 12 years from 2s. 11¾d. to 3s. 3½d. or approximately 10½% the price of labour has increased over the same period from just over £10 per week to just under £18 per week - an actual increase of 75% (2). One major input which has not followed the general upward trend and which is a major input on dairy farms, is the price of dairy cake which has shown only a small price increase of less than 4% (3).

In spite of the decline in the number of milk producers and the falling off in cow numbers now arrested for the time being, there are hopeful signs to set against these rather depressing trends. For the individuals who remain in the industry, there is scope to increase yields and efficiency, although there will no doubt be many problems. One of these - the problem of building up cow numbers and tenants' assets, is discussed in the section which follows.

(1) Source the Three Milk Marketing Boards in Scotland 1968, Key Milk Figures and earlier issues.

(2) Source: Scottish Agricultural Economics - Figures based on Total Earnings of Dairy Stockmen.

(3) Source: B.O.C.M. private communication
(Based on prices of 3½ lb. and 4 lb. type Cakes).

TABLE 5 - GROWTH IN TENANT'S CAPITAL

DAIRY COW NUMBERS, TENANT'S CAPITAL, NET TRADING INCOME AND CAPITAL EXPENDITURE OVER 12 YEARS

For the same sample of farms for three size groups

Year	23 Small Farms UP TO 125 ACRES Average Size 72 Acres				24 Medium-Sized Farms 126 TO 200 ACRES Average Size 156 Acres				16 Larger Farms OVER 200 ACRES Average Size 282 Acres			
	No. of Dairy Cows	Tenant's Capital (Av.Val)	Net Trading Income*	Capital Expenditure	No. of Dairy Cows	Tenant's Capital (Av.Val)	Net Trading Income*	Capital Expenditure	No. of Dairy Cows	Tenant's Capital (Av.Val)	Net Trading Income*	Capital Expenditure
	£	£	£	£	£	£	£	£	£	£	£	£
1956/57	26	4167	1099	396	43	6345	1439	289	63	9615	2656	970
1957/58	27	4173	1034	260	43	6368	1607	443	65	10061	2740	791
1958/59	26	4228	1102	450	43	6531	1681	527	66	10159	2929	1005
1959/60	27	4406	1224	370	44	6830	1526	541	66	11321	2981	1411
1960/61	28	4613	1127	484	46	7152	1675	668	68	12076	2852	1394
1961/62	29	4824	1005	423	47	7310	1639	589	69	12627	2841	1351
1962/63	30	4908	1011	327	46	7253	1301	430	71	12925	2367	892
1963/64	30	4942	898	405	46	7295	1190	527	72	13271	2214	1121
1964/65	30	5066	1266	536	47	7428	1743	528	72	13835	2752	1368
1965/66	31	5132	1146	328	48	7552	1535	610	73	14211	2812	1303
1966/67	31	5639	1062	492	49	8547	1499	501	73	16186	2945	1229
1967/68	32	5792	1262	411	49	8656	2232	760	76	17226	3697	1276

*Net Trading Income = Trading Revenue less Trading Expenditure.

SECTION 2

A LOOK AT GROWTH IN TENANTS' CAPITAL

Table 5 on the opposite page shows the trend in Tenants' Capital, Net Trading Income and Capital Expenditure over the twelve years 1956/57 to 1967/68. The terms used are defined in the Appendix on page 16. but it is pointed out that Tenants' Capital does not include items that would be regarded as Landlords' fixtures. Also, there is a tendency for valuations to err on the low side and in the year 1966/67 a major revaluation took place which increased the figures in this study by between 10 to 15%. This means that although the tenants' capital for the last two years may be more realistic, part of the indicated growth in tenants' capital is due to the revaluations. Nonetheless, the increase in cow numbers gives an indication of the general trend and the fact that the over 200 acre farms increased their Tenants Capital from £9,615 to £17,226 i.e. by 79% is still a significant figure when compared with the much smaller increases on the medium sized and smaller farms:-

Medium Sized Farms - Increased Tenants' Capital from £6,345 to £8,656 or 39%.

Smaller Farms - Increased Tenants' Capital from £4,167 to £5,792 or 36%.

The fact that cow numbers increased in all the farm size groups suggests that increased tenants' capital would be linked with increased cow numbers. However, when the figures for Tenants' Capital are expressed on a per cow basis the pattern on the larger farms shows a marked increase in tenants' capital per cow.

TABLE 6

TENANTS' CAPITAL PER COW

(1956/57 and 1967/68 Compared)

Year	Small Farms Up to 125 acres £ per cow	Medium Sized Farms 126-200 acres £ per cow	Larger Farms Over 200 acres £ per cow
1956/57	160	147	152
1967/68	181	177	226
Percent increase over 12 years	13%	15%	49%

It would seem that for the larger farms, investment has been in equipment and structures rather than in build up of cow numbers alone. The tenants' capital per cow in 1967/68 at £226 on the larger farms, shows an increase of 49% over the 1956/57 figures, compared with increases of only 15% and 13% respectively, for the medium and small sized groups.

However, there could be enterprises on the larger farms other than dairying, such as cereal growing, which would account for the higher figure for tenants' capital per cow.

Returning to the figures shown in Tables 5 and 7, Net Trading Income is the difference between Trading Revenue and Trading Expenditure. To the extent that it excludes depreciation as a non-cash expense, it is an approximation of net cash income, although because of the inclusion of debtors and creditors it could differ from the actual cash position according to the timing of actual receipts and payments.

TABLE 7

CAPITAL EXPENDITURE ON EQUIPMENT & VEHICLES, ON STRUCTURES, AND AS A PERCENTAGE OF NET TRADING INCOME

Year	23 Small Farms UP TO 125 ACRES Average Size 72 Acres				24 Medium-Sized Farms 126 TO 200 ACRES Average Size 156 Acres				16 Larger Farms OVER 200 ACRES Average Size 282 Acres			
	Capital Expenditure Equipment & Vehicles	Capital Exp. Structures	Capital Exp. TOTAL	Capital Exp. as % of Net Trad.Inc.	Capital Expenditure Equipment & Vehicles	Capital Exp. Structures	Capital Exp. TOTAL	Capital Exp. as % of Net Trad.Inc.	Capital Expenditure Equipment & Vehicles	Capital Exp. Structures	Capital Exp. TOTAL	Capital Exp. as % of Net Trad.Inc.
	£	£	£	%	£	£	£	%	£	£	£	%
1956/57	281	115	396	36.0	207	82	289	20.1	659	311	970	36.5
1957/58	204	56	260	25.1	401	42	443	27.6	704	87	791	28.9
1958/59	243	207	450	40.8	437	90	527	31.4	702	303	1005	34.3
1959/60	320	50	370	30.2	422	119	541	35.5	982	429	1411	47.3
1960/61	278	206	484	42.9	505	163	668	39.9	979	415	1394	48.9
1961/62	263	160	423	42.1	468	121	589	35.9	725	626	1351	47.6
1962/63	243	84	327	32.3	292	138	430	31.1	677	215	892	37.7
1963/64	387	18	405	45.1	481	46	527	44.3	850	271	1121	50.6
1964/65	323	213	536	42.3	481	47	528	30.3	997	371	1368	49.7
1965/66	316	12	328	28.6	546	64	610	39.7	1108	195	1303	46.3
1966/67	314	178	492	46.3	439	62	501	33.4	748	481	1229	41.7
1967/68	288	123	411	32.6	332	428	760	34.1	676	600	1276	34.5
TOTALS	3460	1422	4882	-	5011	1402	6413	-	9807	4304	14111	-
AVERAGE PER ANNUM	288	119	407	37.3%	418	117	535	33.6%	817	359	1176	42.0%

In view of the low level of Net Trading Income available on the small and medium sized farms, the percentage re-invested in equipment and structures is remarkably high, amounting to 37.3% and 34.1% of Trading Income. However, in absolute terms, this does not amount to a very large sum, especially for investment in structures. On the larger farms over 200 acres the picture is more favourable, with not only a greater Net Trading Income available, but also a greater proportion (42%) actually spent on capital items.

A look at the interest payments made, suggests that borrowing is playing an increasing role in financing capital expenditure and that this role is more significant on the larger farms, both in terms of the larger amounts involved and the rising trend over the period.

TABLE 8

Interest Payments (Average per Farm)

Year	Small Farms Up to 125 acres £ per farm	Medium Sized Farms 126-200 acres £ per farm	Larger Farms Over 200 acres £ per farm
1956/57	29.8	15.8	53.3
1957/58	28.2	17.4	50.1
1958/59	25.7	24.9	12.4
1959/60	16.1	22.7	27.1
1960/61	21.7	27.6	42.3
1961/62	26.0	29.1	107.3
1962/63	25.3	34.9	130.3
1963/64	31.8	46.8	124.1
1964/65	39.6	60.0	135.3
1965/66	36.4	65.8	167.1
1966/67	48.5	54.0	191.9
1967/68	52.3	52.5	210.8
3 Year Average 1956/59	27.9	19.4	38.6
3 Year Average 1965/68	45.5	57.4	189.9
Percent increase 1965/68 over 1956/59	64%	196%	390%

The amounts of interest paid reflect not only increased amounts or borrowing but also higher rates of interest. During the 12 year period, the Bank Rate has been as low as 4% and currently stands at 8%. It should also be remembered that interest payments are only one aspect of indebtedness and that a full picture of all aspects would only be obtained by detailed study of the structure of all assets and liabilities in the Balance Sheets over the years.

However, as the farms do represent an identical sample and the definition of interest remained unchanged, the trend as shown in Table 8 does at least indicate as one would expect, that dependence on borrowing is increasing and that the larger farms, being perhaps more creditworthy are able to, or find it necessary to, increase their borrowing substantially. Comparing the three earlier years 1956/59 with three later years 1965/68 the interest payments for the three groups - small, medium and large - increased by 64%, 196% and 390% respectively. Because of the arbitrary distinction between short and long term borrowing for tenants' as opposed to landlords' capital, the figures for interest payments should be considered as broad indicators of the trends rather than as a statement of fact. It would seem that borrowing has increased and that the larger dairy farms were able to and did in fact borrow more money.

SECTION 3

A LOOK AT FUTURE PROSPECTS

The declining trends in cow numbers and numbers of milk producers have been mentioned, but in looking ahead, the trends in liquid milk sales and consumption per head can give an indication of future prospects. With possible entry into the Common Market and other changes in the pattern of world trade in dairy produce, the future is by no means predictable. Even at a more local level, technological developments and possible new dairy products, can all play a part in moulding the industry of the future. In spite of all the factors and possibilities on the horizon, the liquid milk market is still likely to provide the cornerstone on which any future progress must be built and the trends shown in Table 9 are one of the less encouraging features likely to influence the future of milk producers.

TABLE 9

LIQUID MILK SALES S.M.M.B. and
LIQUID MILK CONSUMPTION SCOTLAND (1)

(Years to March)

Year	Liquid Milk Sales (S.M.M.B. Area) Million Gallons	Liquid Milk Consumption (Scotland) Pints per head per Week
1956/57	116.8	4.40
1957/58	115.5	4.31
1958/59	116.0	4.33
1959/60	117.6	4.35
1960/61	117.7	4.36
1961/62	119.0	4.38
1962/63	119.3	4.38
1963/64	120.2	4.38
1964/65	120.4	4.39
1965/66	119.6	4.35
1966/67	118.6	4.31
1967/68	118.8	4.29

After an upward trend from 1957/58 to 1964/65, there has been if anything, a slight decline in total liquid sales in the S.M.M.B. area and a small fall in milk consumption per head over the whole of Scotland.

In spite of these trends, increased yields per cow, have enabled the reduced national herd to increase total milk sales off farms by approximately 10% over the twelve year period.

TABLE 10

TOTAL MILK SALES OFF FARMS (2)
(Scotland)

Year to March	Million Gallons	Year to March	Million Gallons
1956/57	224.6	1962/63	243.1
1957/58	229.6	1963/64	236.3
1958/59	220.6	1964/65	238.9
1959/60	229.8	1965/66	239.7
1960/61	239.9	1966/67	234.3
1961/62	245.4	1967/68	246.0

(1) Source: Key Milk Figures - The Three Milk Marketing Boards in Scotland 1968.

(2) Source: S.M.M.B.

Table 11 compares the guaranteed prices of milk with the prices actually received by producers including all premiums and after deduction of transport and other charges. The two figures differ because the guaranteed price is payable to the board in respect of the Standard Quantity of milk only. There are also further Board marketing and administration expenses to be met before arriving at actual producers prices. Thus, as production exceeds the standard quantity, the balance in excess realises a much lower price. The extent of the scaling down of guaranteed prices depends both on the amount of production and the actual Standard Quantity which in turn is based on trends of liquid milk sales.

TABLE 11

COMPARISON OF GUARANTEED MILK PRICES AND (1) Realised Prices (nearest farthing)

Year	Guaranteed Price	Realised Price	Difference
	s. d.	s. d.	d.
1956/57	3 $2\frac{1}{2}$	2 $11\frac{3}{4}$	(-) $2\frac{3}{4}$
1957/58	3 $2\frac{3}{4}$	2 $11\frac{1}{4}$	(-) $3\frac{1}{2}$
1958/59	3 $1\frac{3}{4}$	2 $11\frac{3}{4}$	(-) 2
1959/60	3 $1\frac{3}{4}$	2 $11\frac{1}{4}$	(-) $2\frac{1}{2}$
1960/61	3 $1\frac{1}{2}$	2 $9\frac{3}{4}$	(-) $3\frac{3}{4}$
1961/62	3 $2\frac{1}{4}$	2 $9\frac{3}{4}$	(-) $4\frac{1}{2}$
1962/63	3 2	2 $9\frac{3}{4}$	(-) $4\frac{1}{4}$
1963/64	3 $2\frac{1}{2}$	2 11	(-) $3\frac{1}{2}$
1964/65	3 5	3 $1\frac{1}{4}$	(-) $3\frac{3}{4}$
1965/66	3 6	3 2	(-) 4
1966/67	3 $6\frac{1}{2}$	3 $2\frac{1}{4}$	(-) $3\frac{1}{4}$
1967/68	3 $7\frac{3}{4}$	3 $3\frac{1}{2}$	(-) $4\frac{1}{4}$

Thus, the guaranteed price must be considered in relation to the rules governing its operation and particularly the effect of production in excess of the Standard Quantity. The gap between guaranteed prices and realised prices can considerably reduce the effective amount of any review award. For example, the increase in the guaranteed price of $1\frac{1}{4}$d. (1.31d.) between 1966/67&1967/68 resulted in an increase in the realised price increase of $\frac{1}{4}$d. (0.26d.)

It would appear then, that short of a revolution in milk marketing methods and a reversal of current trends in liquid milk sales, the farmer must look to those aspects of his management which come directly under his own control - in short increased efficiency.

For the individual farmer there could be opportunities other than milk production which would relieve the pressure on milk supplies and avoid the need for investment in fixed equipment which increasing dairy cow numbers usually involves.

The more intensive systems of beef production offer one possibility and are capable of achieving gross margins of £40 per acre or more. On the other hand, the standards required are high, calling for high stocking rates, good grassland management and perhaps more important, capital tied up in animals and buildings.

Sheep are currently out of fashion as a contributor to farm profits but given high stocking rates in the summer, they can make good use of available winter grazing without the attendant problems of poaching by outwintered cattle. The ewe flock can often fit into a pattern of labour use on dairy farms and given a prolific type of ewe, can generate a useful cash return on the capital outlay.

(1) Source: S.M.M.B.

This is not the place to go into the possible alternatives to dairying, but they do exist and given the right type of approach, the returns can be good in terms of return on capital outlay involved, although the experience of some who have given up milk production suggests that the regular milk cheque is one of the best ways of making sure that the bills are paid.

This could well be the time to take a long hard look at alternatives to dairying, but for the many who find no really satisfactory alternative, the only answer is to get bigger or better, or probably both. Getting bigger involves capital investment but becoming a better milk producer is a challenge that most farmers will accept however high or low they rate themselves on the efficiency scale. A brief analysis has been made of the financial results of the most recently available sample of Dairy farms. It suggests the extent of possible scope for improvement and points to some of the factors involved. Obviously the standard of performance on dairy farms is improving all the time, but the range in performance between the middle of the road producers and those at the top of the league table, does at least indicate where the scope for improvement lies. Section 4 of this report makes a few broad comparisons between the performance of the most profitable dairy farms and those achieving about average performance.

SECTION 4

A LOOK AT SOME FACTORS AFFECTING PROFITS ON DAIRY FARMS 1967/68

Drawing conclusions from a limited group of farms, in this case 10 from each size group representing the top and middle level of performance on dairy farms, has its limitations. Similarly, the findings about factors affecting profits from a sample of whole farm figures cannot expect to be as searching as a detailed study of dairy enterprises chosen with particular aims in mind. It was not possible to do anything more than take a brief subjective look at the likely effect of soil type and climate, although these factors can have a decided influence on results. In both the middle profit and high profit groups, there were farms situated in the less favourable areas. This merely underlines the fact that although adverse environmental conditions make it more difficult to achieve high profits, good management can overcome these disadvantages. Nonetheless, accepting the limitations and the need for detailed study, there are certain important points which emerge from the figures shown in Table 12.

In the small and medium size groups Net Profit on the Top 5 farms was at least twice that of the Middle 5 farms and almost three times as great on the Over 200 acre farms.

When surplus, as opposed to Net Profit, is considered, the gap between the top group and the middle group is much wider, amounting to £1214, £1960 and £3345 respectively for the small, medium and large groups of farms.

It was not possible in this limited study to look at stocking rates because of the effect of enterprises other than milk production, such as sheep, cereal production etc. However, on the small and medium sized farms it would appear that the more successful farms had higher stocking rates.

One would expect the more profitable farms to build up a higher level of tenants' capital. The top farms in each size group did in fact have a greater investment in tenants' capital than the middle farms. It could be argued that this is both a cause and a result of success, in that a sound and high level of investment is a means of ensuring that the level of performance is maintained and improved. Comparing the top farms and the middle farms, the difference in tenants' capital was more marked on the larger group of farms, with the top farms having 40% more tenants' capital. In the medium and small size groups of farms, the more profitable farms had 22% and 17% greater tenants' capital respectively.

In all three size groups the more profitable farms used considerably more purchased feed, although on the larger groups of farms the difference was not

TABLE 12

COMPARISON OF TOP 5 FARMS WITH MIDDLE 5 FARMS (1) IN EACH SIZE GROUP FOR 1967/68

SMALL FARMS - Up to 125 Acres

	Top 5	Middle 5
Acres (adjusted)	74 acres	90 acres
Number of Cows	40 cows	36 cows
	Per Farm	Per Farm
	£	£
Net Profit	2319	957
Surplus	1185	(-) 29
Tenants' Capital	7428	6065
Purchased Feed	3410	1860
Fertiliser Total	403	363
Fertiliser per acre	£6.3 per acre	£4.0 per acre
Milk Sales per cow	£154 per cow	£113 per cow

MEDIUM SIZED FARMS - 126-200 Acres

	Top 5	Middle 5
Acres (adjusted)	150 acres	159 acres
Number of Cows	61 cows	41 cows
	Per Farm	Per Farm
	£	£
Net Profit	3415	1460
Surplus	2388	428
Tenants' Capital	10575	9036
Purchased Feed	3750	1984
Fertiliser Total	714	606
Fertiliser per acre	£4.7 per acre	£3.8 per acre
Milk Sales per cow	£153 per cow	£129 per cow

LARGER FARMS - Over 200 Acres

	Top 5	Middle 5
Acres (adjusted)	306 acres	290 acres
Number of Cows	88 cows	83 cows
	Per Farm	Per Farm
	£	£
Net Profit	5031	1842
Surplus	4329	984
Tenants' Capital	22101	15735
Purchased Feed	4738	4088
Fertiliser total	1806	1390
Fertiliser per acre	£5.9 per acre	£4.8 per acre
Milk Sales per cow	£160 per cow	£128 per cow

(1) The top five and middle five in each group are obtained by ranking all farms according to Surplus per acre for the year 1967/68. Thus, the middle five in each case are not the conventional average of the whole sample, but the average of five farms representing those half way down the order of merit as indicated by Surplus per acre. In this way the arithmetic required is reduced without affecting too much the validity of the figures.

Note: The thirty farms forming the basis of this table are drawn from a group of 159 Dairy Farms whose results were available for 1967/68. Only a proportion of this number were available for the study of trends shown in earlier tables.

so marked. It does not follow that using more purchased feed will produce a higher profit but the ability to use greater quantities of feed economically is a way of increasing the size of the business and therefore the profit potential.

Greater use of fertiliser was also a characteristic of the more profitable farms. The better farms in the Over 200 acre group spent almost £6 per acre. In the same size group the middle 5 farms used £4.8 of fertiliser - slightly more per acre than the best farms in the 126-200 acre size group. This is perhaps an indication of the fact that the middle 5 farms did in fact make a net profit of £1842 on 290 acres which, although nothing out of the ordinary, could hardly be described as mediocre. The importance of arable cropping will influence the level of fertiliser use, particularly on the larger farms. However, the performance of the more profitable small farms using £6.3 of fertiliser per acre, emphasises the fact that grass is also a crop which will respond to intensive management.

Perhaps the most important factor is shown up in the Milk Sales per cow. The successful farms in each group all exceeded £150 sales per cow with the larger farms significantly higher, with a figure of £160 per cow.

There is obviously more to achieving high milk sales per cow than using more purchased feed and more fertiliser and the sheer technical ability as a stockman is something that is not easily taught or learned. To achieve certain types of improvements in performance one has just to follow the instructions and the improvement will usually follow. For example, if a change in the work routine is made, so that a man can handle 4 milking units instead of three, we can assume that 40 cows will be milked in an hour instead of 30, but when it comes to giving instructions on how to raise milk yields from 800 gallons to 1000 gallons the rules to follow would need to be rather more complicated.

It is perhaps significant that in this aspect of the mystique of cowmanship, or the ability to achieve high milk sales per cow at an economic cost, the gap between the top 5 and the middle 5 is much greater on the small farms than on themedium sized and larger farms. The point is further emphasised when it is realised that the sample of small farms consisted of 62, of which 28 achieved results which were lower in terms of surplus per acre than the middle 5 farms shown in Table 12.

The pressure of market forces may have played its part in narrowing the gap on the medium sized and larger farms, where a greater proportion of the labour force has to be hired, but there would seem to be considerable scope for improving technical performance on the smaller farms.

It is perhaps a fitting conclusion for an economist to suggest that one major problem requiring a solution is a technical one, of how to define and describe the requirements of good dairy farm management. A great deal is known about the subject, but the problem of presenting it to the farming public in a form that can be widely accepted and understood, is a considerable one. Definition, discussion and communication of the best principles of dairy management is an objective of prime importance to all concerned with the welfare of Dairy Farming. Any progress possible in this direction would do much to narrow the gap which exists between good and not so good management.

SUMMARY AND CONCLUSIONS

With the exception of the small, under 125 acre farms, the sample of Dairy farms have shown a recovery in their incomes from the low level of profits achieved in the early 1960's. This has broadly followed the pattern of changes in milk prices, although there are obviously other factors involved. One important reason which has enabled some farmers to maintain earnings in spite of adverse trends, has been the increase in efficiency through increased yields and herd size.

Growth in Tenants' Capital has been slow on all except the larger farms, which have almost doubled their tenants' capital over a twelve year period. The proportion of investment in Tenants' Capital in relation to Net Trading Income was relatively high on all size groups, the averages ranging from 33% to 42%. Analysis of interest paid suggests that the importance of borrowing is increasing, especially on the larger farms, although bank rate has also increased from 4 to 8% during the twelve year period under review.

The downward trend in dairy cow numbers and the decline in the number of registered milk producers, together with the static figures for liquid milk sales and consumption, suggest that producers must look to greater efficiency, rather than increased milk prices, if they are to maintain or improve their profits. However, there are many uncertainties ahead, including possible entry into the Common Market and the whole question of government policy and future trade agreements on Dairy produce. Thus, the only advice that can be offered to producers is to become as efficient as possible and more efficient than the next man, whether he be British, French or Dutch.

A brief analysis of the financial results for a selection of farms from the top and themiddle of the range of profitability, suggests that the gap between the best managers and the average is considerable and is much greater on the smaller farms. Higher profits are associated with greater tenants' capital, higher stocking rate, greater use of purchased feed and fertiliser and most of all with higher technical performance as measured by milk sales per cow.

APPENDIX

Some Definitions and Explanatory Notes

Net Profit

Net Profit is Trading Revenue less Trading Expenditure, Depreciation and a charge on Fixed Capital, adjusted up or down for any change in livestock or crop valuations. At this stage no charge has been made for the value of the manual work done by the farmer and his wife.

Surplus

This is Net Profit less an estimated charge for the manual work of the farmer and wife. The rate at which manual work is charged is varied according to the trend in Agricultural Wage Board Rates. Surplus is not the same as Management and Investment Income because in the latter, certain interest charges, (bank overdraft, hire purchase, etc.) are excluded.

Interest

This relates to interest on loans for Trading purposes only and excludes loans specifically for farm or land purchase. It includes interest on bank loans, hire purchase and private loans, but not capital supplied by farmers or partners in a business.

Tenants' Capital

This represents the sum of the average valuations of Livestock, Livestock products, Crops and produce, Machinery and Fixed Equipment. It should be noted that in the 1966/67 year there was a major re-valuation of some items with increases ranging from 10-15%. However, the basis of any changes was the same for all sizes of farms. It is stressed that value of tenants' capital is not the same as actual ownership, as no account is taken of levels of indebtedness.

Capital Expenditure

This item includes expenditure on machinery and vehicles and also on fixed equipment coming under the heading of tenants' fixtures and qualifying for allowances under Section 314 of the 1952 Income Tax Act or for the Farm Improvement Scheme. Capital expenditure is net of grants received and in the case of equipment, any sales are set off against purchases. Capital expenditure may also include fencing and work of a land improvement nature.

Trading Revenue, Trading Expenditure and Net Trading Income

Net Trading Income is defined as the difference between Trading Revenue and Trading Expenditure. Trading Revenue includes some items of a non-cash nature such as produce to Labour and to Farmhouse. Trading Expenditure includes as a contra the same revenue item of produce to Labour and also Board and Lodgings to Paid Labour. Apart from the general aspect of cash available through borrowing and the effect of outstanding debtors and creditors this balance of Net Trading Income is the nearest equivalent to a figure of "cash" available for taxation, living expenses, saving and any investment in new equipment or fixtures.