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Swine - Cost of production
UNIVERSITY OF
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Ag. Econ Dept

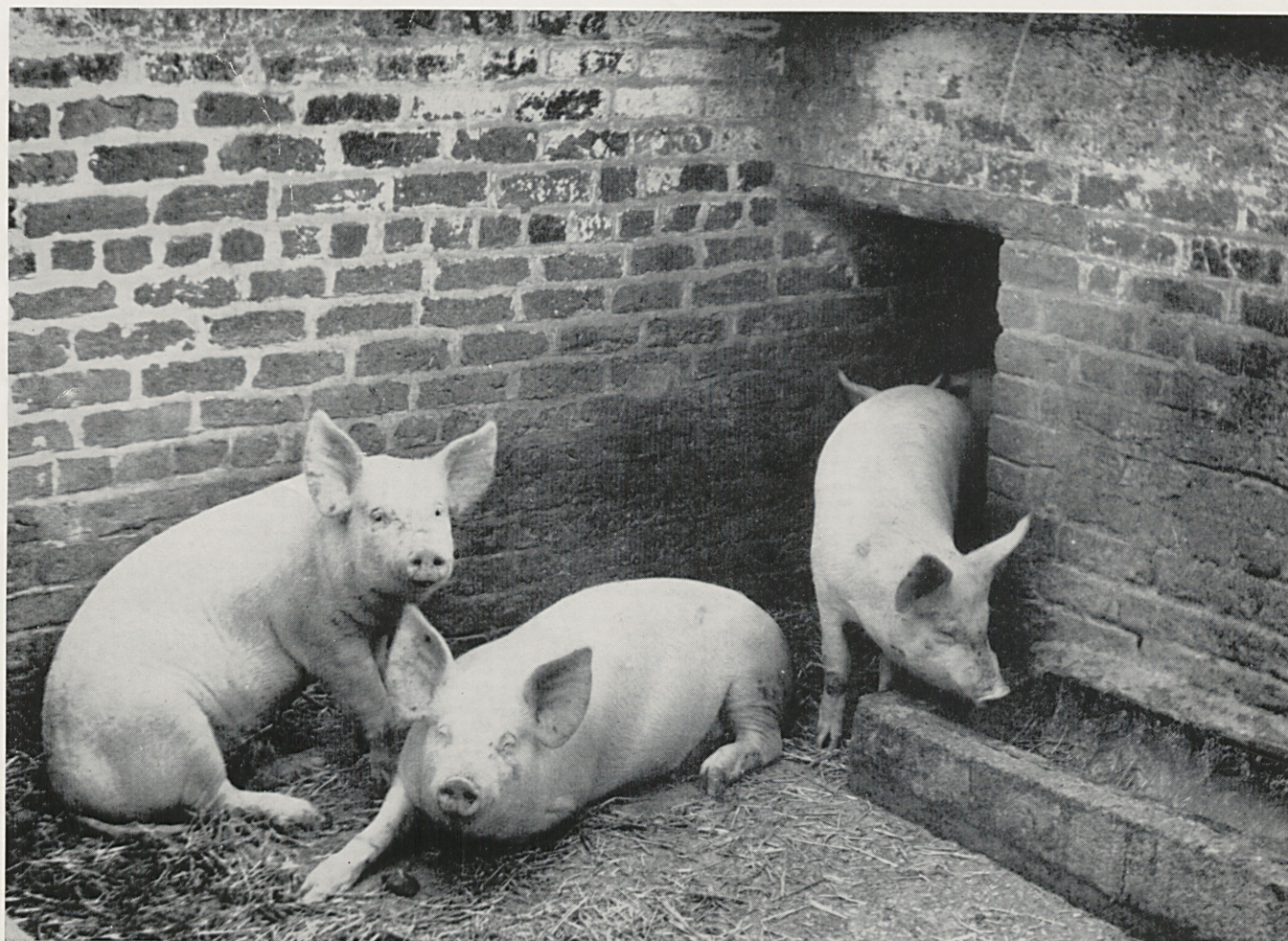


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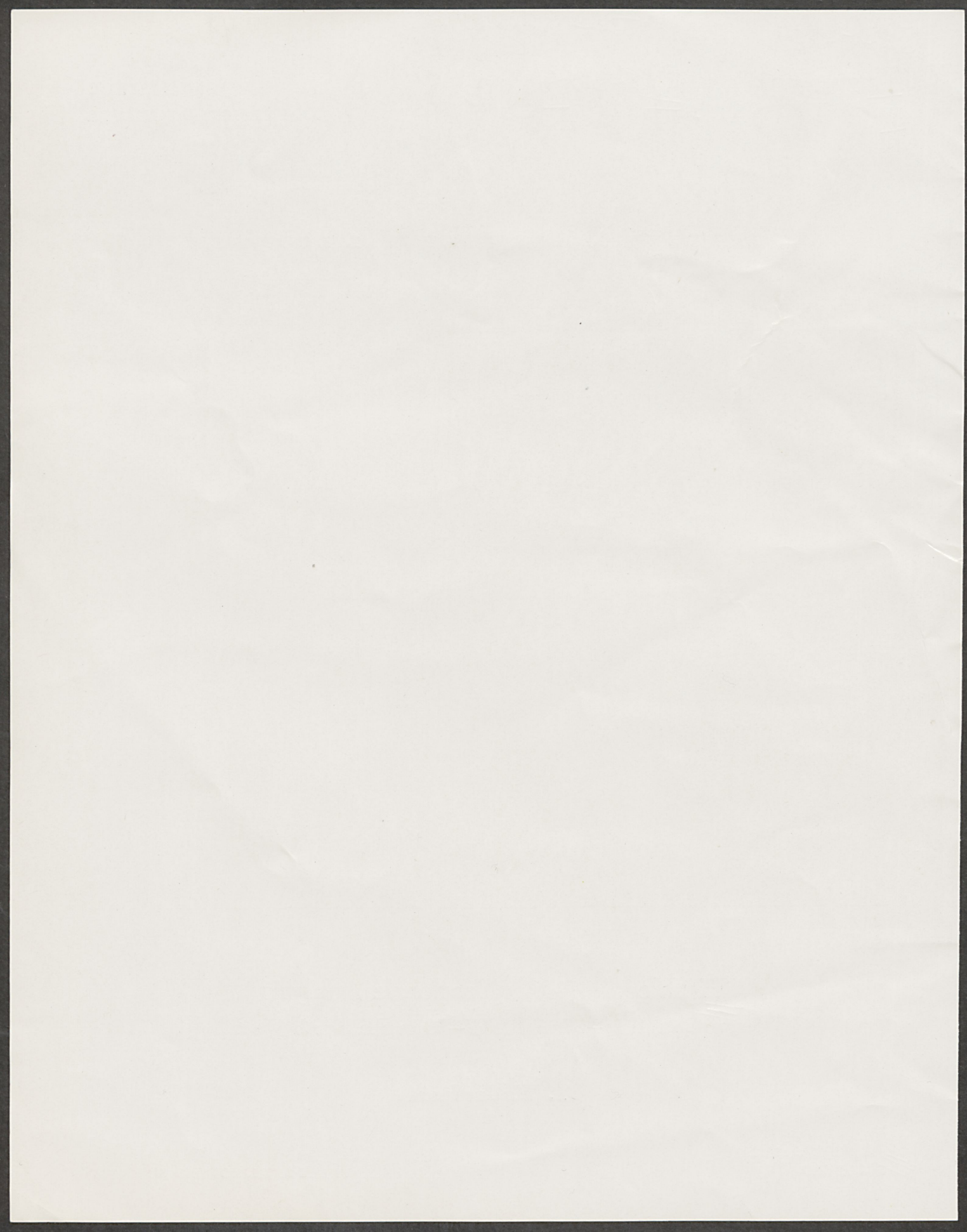
DEPARTMENT OF AGRICULTURAL ECONOMICS



Pig Keeping—An Economic Analysis
Surveys in 1956–57 and 1957–58 in the North West
by
T. W. Gardner

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PRICE THREE SHILLINGS AND SIXPENCE



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SUMMARY

1. Pig-keeping is a complex, of breeding and fattening for different markets, which cannot readily be separated into distinct parts.
2. Feed constituted 84 per cent. of production costs in 1956-57 and 81 per cent. in 1957-58. The margin of returns over these production costs were £19. 12s. 7d. per £100 livestock output in 1956-57 and £15. 16s. 4d. in 1957-58.
3. On 14 farms breeding pigs, the cost of producing eight week old stores averaged £4. 17s. 7d. in 1956-57 and £5. 0s. 10d. in 1957-58. Feed constituted 78 per cent. of outlay in 1956-57 and 74 per cent. in 1957-58. Variation in the cost of raising weaners depends chiefly upon the number of pigs weaned per sow per year.
4. Average costs per 100 lb. liveweight gain were £6. 5s. 9d. in 1956-57 and £5. 18s. 10d. in 1957-58: feed represented 85 per cent. in 1956-57 and 83 per cent. in 1957-58.
5. Pork production was less profitable than bacon production. Feed conversion may be better in bacon production.
6. Swill feeding is the cheapest method of fattening. Whey was a relatively cheap food where available; skim milk was little cheaper than purchased meal. Swill fed pigs brought a lower price per score but left the highest margin over feed costs.
7. Increased turnover spreads overheads as well as increasing the number of units on which profit can be obtained. Turnover is increased by keeping sties full and speeding up liveweight gain. Faster liveweight gain was associated with better meal conversion ratios but poorer bacon grading. Profit per pig over food cost was greater on the pigs fattened quickly: although this need not always be so, under conditions different from 1956-58, it is likely to continue unless the spread between grade prices is widened.
8. Fattening purchased stores proved more profitable than rearing weaners and fattening them during 1956-58. Weight was gained more quickly on the purely fattening farms; a greater proportion of the pigs was carried through to bacon weight. All costs were higher on the rearing farms, especially the cost of feed which was more expensive and fed more heavily.
9. Based on average performance and prices for 1956-58, it seems:
 - (i) that to acquire and maintain one sow producing twelve weaners per year for sale would involve an outlay rising to £54, exclusive of labour and buildings. Each litter of six provides £8. 15s. surplus of income over operating costs.
 - (ii) that to buy and fatten one store to bacon weight would require an outlay rising to £15. 4s.; the surplus of receipts over costs (excluding labour and buildings) per pig is £3. 14s.
 - (iii) that to acquire one sow and carry the progeny through to bacon weight would involve an outlay rising to £129; each litter of six fattened would provide a surplus of £32. 10s. over operating costs.

PIG KEEPING—AN ECONOMIC ANALYSIS

SURVEYS IN 1956-57 AND 1957-58 IN THE NORTH WEST

Introduction

Agricultural products are frequently the subject of controversy and in any particular period controversy tends to be dominated by one particular approach. Pigs are no exception. Of recent years interest has been concentrated on the end product and there is controversy between those on the one hand who hold that three separate channels are necessary for producing pork, bacon, and manufacturing meat, and those who maintain on the other hand that one heavy pig can satisfactorily supply all needs. This study was not designed to consider that controversy but, in attempting to investigate the economics of bacon pig fattening, it has at least become evident that breeding and fattening, pork and bacon production are too closely intertwined for it to be possible to study one section at a time.

This report, therefore, presents first a summary of the results from pig-keeping enterprises as a whole and then proceeds to consider some of the features which appear to influence profitability.

In the main, the pig units studied were part of a general farm set-up; there were only two specialist pig producers who recorded for two years. The scale of operation on the general farm varied, however, from an insignificant side-line to the production of many tons of pigmeat in the year. Pigs were predominantly crosses of Large Whites, with some Berkshire or Saddleback blood, although the Landrace influence was increasingly felt. Few herds were pure-bred. Meal feeding and bacon fattening were the most common form of production. Housing was extremely varied, often consisting of adapted farm buildings whether originally designed for pigs or for other stock. The farms studied were chiefly dairy farms in Cheshire and South Lancashire.

Summary of Two Years' Results

For purposes of overall study consideration is restricted to the twenty-five herds for which records are available for both 1956-57 and 1957-58. Since there are differences in starting point and in end product from farm to farm, the summary and comparisons in this section are given in terms of £100 livestock output. That is to say, comparisons are related to the value of pigs (or pigmeat) actually produced on the farm. In the breeding unit it is the value of pigs sold less depreciation on the breeding stock, in the feeding unit it is the difference between the cost of purchased pigs and the value of pigs sold, adjusted in both cases for changes in the value of pigs on hand between the beginning and end of the period. Throughout the growing period pigs have to be fed, tended, and housed; these are the costs which are set against each £100 of livestock output. The difference between costs and output represents the surplus or deficit on the pig enterprise and, being expressed as so much per £100 livestock output, affords a basis for comparison between farms.

1. AVERAGE COSTS AND MARGIN PER £100 LIVESTOCK OUTPUT: 25 PIG ENTERPRISES 1956-57 AND 1957-58.¹

	1956-57	1957-58
	£ s. d.	£ s. d.
Food	67 2 0	68 17 5
Labour	7 14 11	9 0 9
Other Expenses	5 10 6	6 15 6
Total Costs	80 7 5	84 13 8
Margin	19 12 7	15 6 4

1. Greater detail is contained in Tables in the Appendix.

It will be clear that profit from the pig enterprise in the broad terms of overall measurement depends upon three factors: (i) the output obtained per pig handled; (ii) the costs of obtaining that output; (iii) the scale of the enterprise.

In a purely fattening enterprise, where livestock output reflects the difference between the cost of stores and the returns for fat pigs, marketing skill is clearly important. This is not to deny the constant importance of good husbandry which is even more obviously important in a rearing enterprise. Success in obtaining a satisfactory livestock output by good marketing and husbandry is of no avail, however, if it has been obtained at too great a cost. Thus husbandry must be married with economy. If these points are satisfied so that there is an adequate margin per unit (per fat pig), it is still necessary for turnover to be on a sufficient scale if the pig enterprise is to provide an adequate total income.

These points may be illustrated by simplified examples. Suppose there are two parallel enterprises one with a breeding sow, the other with a pen of fattening pigs. If the sow rears eight pigs so that they eventually sell as baconers for £17 each, there will be a livestock output of £131 (i.e. 8 baconers at £17 = £136, less £5 depreciation on the sow). A pen of eight stores bought at £5 each and successfully fattened will also sell at £17 each as baconers; the livestock output here will be £96. In the processes of production it may be supposed that the following food and labour bills are incurred:

	<i>Sow and Young</i>	<i>Stores</i>
	£	£
Sow and creep feed (18 cwt.)	27	—
Fattening meal (48 cwt.)	72	72
Labour—rearing (30 hours)	6	—
feeding (40 hours)	8	8
	—	—
Food and Labour Costs	113	80
	—	—

These costs would leave a margin for incidental expenses and reward to the farmer of £18 on the sow unit, and £16 on the fattening unit for each completed batch. Since the expenditures incurred by farmers in obtaining these margins differ and because rearing and fattening takes longer than fattening alone, alternative measures of the margin are required. They are given in the following figures where it is assumed that baconers are fat at seven months and stores are bought at two months old.

	<i>Sow and Young</i>	<i>Stores</i>
	£	£
Livestock Output per batch (a)	131	96
Food and Labour Costs per batch (b)	113	80
	—	—
Margin per batch (a - b) (c)	18	16
	—	—
Margin per enterprise per year (d)	30.86	38.40
Margin per £100 Livestock, Output $\left(\frac{c}{a} \times 100\right)$.. (e)	13.74	16.67

In these simple figures the importance of output, costs, and turnover to profit margin are clearly shown: they are further emphasised by the following considerations: (i) If the stores had cost £1 more or the baconers (by reason of poor selling or feeding) had fetched £1 less per head, the final margin would have been halved; (ii) If the pigs could have been fattened on on $\frac{1}{4}$ -cwt. less meal each—by greater care in feeding or better control of temperature—there would have been an extra £3 margin on each enterprise; (iii) The scale of the enterprise depends upon the number of pigs housed and the rate of turnover: e.g. if two weeks could be taken off the fattening time without otherwise affecting the results, the annual margin on the breeding unit would be raised by £2. 7s. 6d., and on the fattening unit by £4. 5s. 4d.

In reading the further analysis of results from this study of pig keeping, these elements need to be borne in mind: they are always present although they cannot be repeated every time a particular aspect is under discussion.

Moreover, these considerations enable us to understand the changes shown to occur between 1956-57 and 1957-58 in Table 1 above. According to the Ministry of Agriculture, Fisheries and Food's "Market Report", the average price of young stores in 1957-58 was £5. 6s., or 19s. lower than in 1956-57. The price of bacon pigs in 1957-58, at 33s. 6d. (net of deficiency and feed adjustments) per score liveweight was some 3s. 7d. below 1956-57. Hence a pig of 213 lb. liveweight would have averaged £19. 15s. 6d. in 1956-57 and £17. 17s. 4d. in 1957-58, or some 38s. less in the second year. Owing to changes during the period, the Fatstock Marketing Corporation prices are difficult to compare but, using the A, B and L grades, prices per score deadweight fell from 49s. 6d. in 1956-57 to 45s. 1d. in 1957-58, so that an eight score pig would have averaged £19. 16s. in 1956-57 and £18. 0s. 8d. in 1957-58, or some 35s. less in the second year. Consequently, livestock output in money terms fell by almost £1 per baconer simply because of price changes. Similar quantities of labour and food would be required in both years and the cost of these per £100 livestock output would naturally rise, if their prices remained constant. Feed prices fell proportionately rather less than livestock output and the somewhat higher food cost per £100 livestock output reflects almost constant efficiency in its use in both years. An increase in the basic wage rate of 9s. per week in October 1957 allied to the reduced value of output per pig almost exactly accounts for the rise in labour cost per £100 livestock output. Other expenses increased by 22 per cent., whereas the rise attributable to diminished output would have been only one-third as large: there was probably scope for some economy under this head.

Given the conditions of these two years and a maintenance of constant standards, a pig producer was likely to obtain in the second year a margin reduced by about one-fifth. It is unlikely that most farmers could overcome so large a fall by feasible reductions in the use of food and labour alone. Such reductions would need to be allied to a greater turnover in order to maintain cash income under these circumstances. What is probably more relevant, however, than the absolute change in income from year to year is the rate of return which the pig enterprise yields, compared with the return from alternatives open to any particular farmer on his own farm.

Breeding

Fourteen farmers who supplied information in both years kept breeding sows whose progeny were reared and carried on for fattening. They were asked to keep separate records of the food eaten by the breeding stock and weaners on the one hand and by the fattening pigs on the other, as well as to distinguish between the labour employed in the two sections. This is clearly not easy to do since often, e.g., there is no change in the kind of meal fed until half way through the fattening stage. Based on the records obtained, however, Table 2 shows the costs of rearing weaners in each year on these fourteen farms.

2. AVERAGE COST PER PIG WEANED: 14 BREEDING UNITS, 1956-57 AND 1957-58.

	1956-57	1957-58
	£ s. d.	£ s. d.
Food	4 8 7	3 18 2
Labour	15 4	15 9
Other Expenses	9 3	12 1
Appreciation of Breeding Stock	-15 7	-5 2
Total Costs	4 17 7	5 0 10

Total weaner costs, as shown by Table 2, vary little between the two years largely because a fall in direct costs is offset by a smaller growth in stock appreciation. Stock appreciation arises from profitable breeder sales or increases in herd size and neither of these applies to a herd of stable size which concentrates on rearing pigs for fattening. Indeed, some depreciation would then be more likely but, as a very small part of weaner cost, it is probably best ignored in comparing costs on different farms or in different years. It is then possible to see that labour costs rose slightly in 1957-58 but less than the increase in basic wage rates and that food costs fell, rather more than would have been expected from the decline in meal costs. There was, therefore, some fall in direct costs of weaner production although it was less than the fall in the market price of store pigs.

As between farms there was considerable variation in the cost of producing weaned pigs. A small part of this can be attributed to differences in methods of feeding, and possibly to the number of sows in the unit although this seems to have had very little influence.¹ Much the most important factor is the number of pigs weaned per sow in the year. In 1956-57 this accounted for 45 per cent. of the variations recorded in the direct costs of producing weaners and in 1957-58 it accounted for almost 70 per cent. of the variation.² It is mainly the effect of averaging the cost of the sow's food over a varying number of weaners per sow which causes this type of relationship to exist. The number of pigs weaned per sow per year depends upon three factors: (i) pigs born per litter; (ii) the proportion of the litter reared; (iii) the number of litters per sow per year. The first factor depends chiefly upon the breeding stock; the other factors reflect chiefly husbandry. It is incredible, but unfortunately true, that some pig breeders do not know which of the three factors accounts for their poor figures for pigs weaned per sow per year.

Fattening

The financial results for twenty-five pig fattening units for the years 1956-57 and 1957-58 are summarised in Table 3. Since there is variety, particularly on different farms, in the size of pigs both at start and finish of fattening, these costs are related to liveweight gain.

3. AVERAGE COSTS PER 100 LB. LIVELWEIGHT GAIN: 25 FATTENING PIG UNITS, 1956-57 AND 1957-58.

	1956-57	1957-58
	£ s. d.	£ s. d.
Food	5 6 5	4 18 10
Labour	11 0	11 6
Other Expenses	8 4	8 6
Total Costs	6 5 9	5 18 10

1. Only coppers per weaner for each sow more or less in the breeding herd.
2. For the mathematically minded: if Y is the direct cost per weaner and X is the number of pigs weaned per sow per year: $Y = a + \frac{b}{X}$
In 1956-57, $a = 2.72$; $b = 36.95$; in 1957-58, $a = 1.24$; $b = 42.85$.

These costs are naturally dominated by expenditure on food (of which 95 per cent. is meal) and consequently show a fall in the second year. Labour costs do not reflect the full rise in basic wage rates because there was some slight economy of time spent attending to the fattening stock.

Farmers are interested in producing fat pigs rather than "100 lb. liveweight gain" and it may be as well to draw together the material so far presented on a standard basis before examining the factors which may affect the success of a fattening enterprise. At the start a store pig is required, either home-reared or purchased, and at the end a pork or bacon pig will be sold. Supposing that a store weighs 40 lb., a porker 130 lb., and a baconer 213 lb. liveweight (i.e. approximately 4½ score and 8 score deadweight, respectively), it is necessary to achieve 90 lb. liveweight gain to produce a porker and 173 lb. to get the bacon pig. On the basis of average farm costs and average market prices the outcome per fat pig in the two years can be compared.

4. A COMPARISON OF FATTENING IN 1956-57 AND 1957-58 ON A STANDARD BASIS.

	1956-57	1957-58
	£ s. d.	£ s. d.
Average market price of store pig (1)	6 4 11	5 6 0
Cost of adding 90 lb. liveweight (2)	5 12 4	5 6 11
Cost of adding 173 lb. liveweight (3)	10 17 2	10 5 7
Average sale price of pork pig (6½ sc. l.w.) .. (4)	12 14 0	11 3 8
Average sale price of bacon pig (10⅔ sc. l.w.) (5)	19 15 6	17 17 4
Margin per porker (4) - (1+2) (6)	16 9	10 9
Margin per baconer (5) - (1+3) (7)	2 13 5	2 5 9

These standard figures represent reasonably well the position on farms during these two years, except that results actually achieved in 1957-58 were not quite as good as Table 4 suggests chiefly because farmers were operating on a falling market. This was more particularly true of pork and a larger proportion of sales were in this market, during the second year.

On any particular farm, conditions and methods may cause deviations from any of these average figures. Factors affecting the cost of producing weaners have already been looked at; those affecting fattening must now be examined.

Bacon and Pork

If direct comparisons are attempted between farms from which predominantly bacon or predominantly pork pigs were sold, it is found that other differences (e.g. relating to breeding) confuse the issue. It is necessary to remove these factors. In at least one year during the survey, eleven farms breeding their own stock sold 95 per cent. or more of their pigs for bacon, another seven similar farms sold over 50 per cent. of their output as pork. Assuming that both groups reared weaners with equal efficiency of food consumption (allowing 20½ cwt. meal per sow and 56 lb. meal per weaner), the food consumed for fattening would appear as follows, with a store-buying group for comparison.

5. MEAL EQUIVALENT CONSUMED PER 1 LB. LIVELWEIGHT GAIN.

	<i>Eleven Farms rearing and selling Baconers</i>	<i>Seven Farms rearing and selling Porkers</i>	<i>Seven Farms buying Stores and selling Baconers</i>
	<i>lb.</i>	<i>lb.</i>	<i>lb.</i>
Purchased Meal	3.02	3.66	3.67
Home grown Meal	0.48	0.04	0.08
Roots	0.08	—	—
Skim Milk	0.10	0.09	—
Total Meal Equivalent .. .	3.68	3.79	3.75
Percentage Baconer Sales .. .	92.3	23.4	97.8
Percentage Porker Sales .. .	2.6	74.5	—
Average liveweight of Pigs Sold ..	197 lb.	157½ lb.	204 lb.

It would not be justifiable to assume from these figures that there is any real difference in the efficiency of food conversion between pork and bacon pigs. The incidental effects of housing, use of food other than meal, or the use of antibiotics, could readily account for such differences. Compared with the standard basis figures of Table 4, there are certain marked contrasts: the pigs sold from the bacon group are lighter whilst those from the pork group are distinctly heavier than the assumed standard; there is also a smaller difference in realised price per score between pork and bacon than average market returns show. Using farm recorded weights and sale values, but the same cost per 1 lb. liveweight gain for pork and bacon pigs, the average results for bacon and pork fattening in the two years can be set out in Table 6. If there is any error in this table it will be in favour of the pork group since it assumes equal food conversion ratios.

6. COMPARISON OF BACON AND PORK PRODUCTION, 1956-58: BREEDING UNITS.

	<i>"Baconer" Group (av. 197 lb. l.w.)</i>	<i>"Porker" Group (av. 157½ lb. l.w.)</i>
	<i>£ s. d.</i>	<i>£ s. d.</i>
Price of Store (reared)	5 5 0	5 5 0
Return per pig sold	17 17 9	14 5 1
Livestock Output (fattening) .. .	12 12 9	9 0 1
Cost of liveweight gain (from Table 3)	9 11 11	7 3 0
Margin per pig	3 0 10	1 17 1

Even on the basis of farm weights and sale values, therefore, the "pork" pig returns a smaller margin per head (£1. 17s. 1d.), than the "bacon" pig (£3. 0s. 10d.). The difference between bacon and pork pigs is smaller than that shown in Table 4 but it still indicates the advantage of fattening to heavier weights, in the circumstances of 1956-58. To obtain as large a net annual income from "pork" as from "bacon" production it would be necessary to turn out almost 1½ as many pigs (i.e. the ratio of £3. 0s. 10d. to £1. 17s. 1d.). Since there is only 40 lb. difference in the average weights of the finished pigs (197 lb. and 157½ lb.), the "pork" group is unlikely to be able to achieve this.

Feeding

It is clear from Table 5 that meal is the predominant constituent of the fattening pigs' diet. This is true whether measured in terms of meal equivalents or in terms of relative expenditure on different foods. Seven farms fed an all meal ration and, selling 99 per cent. of their pigs for bacon, achieved a conversion ratio of 1 lb. liveweight gain for every 3.75 lb. of meal used. The cost of food per 100 lb. liveweight gain was £5. 6s. 10d.

Thirteen farms fed whey in addition to meal and, taking 12 lb. of whey as equivalent to 1 lb. of meal, about ten per cent. of the ration was fed as whey. These farms produced almost 90 per cent. baconers, and achieved a conversion ratio of 1 lb. liveweight gain for every 3.92 lb. of meal equivalent used, at a food cost of £5. 1s. per 100 lb. liveweight gain. Whey, at an average cost of 1½d. per gallon, was equivalent to buying meal at 1½d. per lb.: purchased meal in fact cost almost 3½d. per lb. It was, therefore, an economical substitute. Fed at the levels shown here, it would continue to be a profitable substitute for meal at any cost up to 2½d. per gallon of whey, so long as meal cost over 28s. per cwt.

Skim milk was fed in addition to meal on ten farms. If 8 lb. of skim are equal in food value to 1 lb. of meal, approximately nine per cent. of the ration was fed as skim on these farms. Farmers here sold rather less than 75 per cent. of their pigs as baconers and achieved a conversion ratio of 1 lb. liveweight gain for every 4.16 lb. of meal equivalent at a cost for food of £5. 9s. 2d. per 100 lb. liveweight gain. Skim milk cost 4½d. per gallon or, at 3.4d. per 1 lb. of meal equivalent, almost as much as meal. There is no appreciable economy in buying skim milk at 4½d. per gallon unless purchased meal rises above 32s. per cwt.

Finally, six farms fed swill in addition to meal. Swill can be of such variable food value and the conditions of purchase and treatment so different from one farm to another that no generalisations about its equivalent meal value or cost can be made. The food cost of 100 lb. liveweight gain with swill feeding averaged £3. 6s. 11d. and this was, therefore, much the cheapest form of feeding.

By no means all of the pigs sold for bacon from these farms were sold by grade; it is consequently impossible to say what effect the different systems of feeding may have had on the grading quality of the carcase. The main contrast is clearly between swill feeding and other methods. At the levels recorded during this survey, the food cost of fattening a bacon pig was roughly £3 lower with swill feeding than by other methods. Swill feeding must introduce additional elements of uncertainty such as greater dangers of disease and inability to control so closely the quality of the end product. In this limited group there is no evidence of a higher mortality amongst swill fed pigs but such satisfactory results are only achieved by great care on the part of the feeder and this will make extra demands on his time. Although no grading is available for swill fed pigs the return per score liveweight of 33s. 2d. may be compared with the average of 34s. 11d. per score for the farms in Table 1. The difference in return on a ten-score pig is only 17s. 6d. and thus leaves over £2 advantage to the swill feeder to meet the greater uncertainty and provide a larger profit margin.

Turnover

It is well recognised in business that income per year depends upon two factors: (i) the margin per unit of production; (ii) the number of units produced. So far, analysis has been concerned with the first of these factors. A slightly exaggerated but simple example will demonstrate the importance of turnover in pig production. Suppose that a young store can be bought for £5 and will sell for £17 as a baconer; that it will require 5 cwt. of meal costing £7. 10s. and that sundry costs amount to 10s. in the fattening process. Buildings and labour will be required and the annual cost of these for each fatterer space may be assumed to be £1. 10s. and £2 respectively. If one farmer gets two batches of pigs through per year and another gets three batches through the relative costs and returns would be as in Table 7.

7. EFFECT ON COSTS AND MARGINS OF FATTENING THREE BATCHES INSTEAD OF TWO BATCHES OF PIGS PER YEAR: STANDARDISED CONDITIONS.

	<i>Per Year</i>		<i>Per Pig</i>	
	<i>2 Batches</i>	<i>3 Batches</i>	<i>2 Batches</i>	<i>3 Batches</i>
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Weaner	10 0 0	15 0 0	5 0 0	5 0 0
Food	15 0 0	22 10 0	7 10 0	7 10 0
Sundry	1 0 0	1 10 0	10 0	10 0
Buildings	1 10 0	1 10 0	15 0	10 0
Labour	2 0 0	2 0 0	1 0 0	13 4
Total Costs ..	29 10 0	42 10 0	14 15 0	14 3 4
Return	34 0 0	51 0 0	17 0 0	17 0 0
Margin	4 10 0	8 10 0	2 5 0	2 16 8

Such figures make it clear that both margin per unit and total margin can be increased by increasing the rate of turnover. In practice, the average rate of turnover depends upon (i) success in keeping the utilised pens full of growing pigs and (ii) the speed with which liveweight is added. The second factor is likely to depend primarily upon the feeding system but this may in turn affect the grading results and thereby the cash return. Speed of growth will also be affected by the strain of pig and the housing of the pigs. It is not possible to isolate all these influences in analysing farm results and the following farm figures can be no more than an indication of the two main factors at work.

A comparison of the accommodation available with the average number of fattening pigs on hand for a small group of farms suggests that it is normal for about 70 per cent. of the accommodation to be in use. Farmers may have good reasons for leaving some pens unused but the variation between years, in opposite directions on different farms, by as much as twenty percentage points, suggests that these variations are not all careful policy decisions. In so far as it is those farmers who make fuller use (about 85 per cent. of capacity) of their accommodation whose stocking rate varies least, there would appear to be scope for other farmers to increase their utilisation of available housing. If housing costs 30s. per pig space per year (as in Table 7) and accommodation is utilised 85 per cent., the real charge per average feeder space used rises to 35s. 4d.: if utilisation is only 65 per cent. the housing charge per feeder rises to 46s. 2d. The difference on this account alone between 85 per cent. and 65 per cent. utilisation of space is sufficient to reduce the profit margin by four or five shillings per pig.

There are two ways in which the turnover of pigs may be measured from a general survey. One is to relate the number of fat pigs sold to the average number kept: variations in the age of stores bought in and the weight of pigs sold out reduce the value of this figure. An alternative, which avoids these difficulties, is to calculate the average daily liveweight increase per pig. Table 8 gives some of the pertinent information averaged over the two-year period, for sixteen farms which had sufficiently full records available.

8. COMPARISON OF AVERAGE RATES OF FATTENING ON SIXTEEN FARMS: 1956-57 AND 1957-58.

Daily liveweight increase per pig		No. of farms	Pigs sold for Bacon	Proportion of baconers Grade A or better	Meal per 1 lb. liveweight gain
Range	Average				
lb.	lb.		per cent.	per cent.	lb.
0.8—1.1	0.972	6	65	73	4.26
1.1—1.3	1.229	5	90	52	4.21
1.3—1.6	1.383	5	95	50	3.73

Feeding varied from farm to farm but it was not the cost of food which determined the rate of liveweight increase. Meal fed to the fastest growing pigs was some 10s. per ton cheaper than that fed to the slowest growers. It is to be noted that, on the farms with the slowest growers, fewer pigs were carried through to bacon weight. Since these herds were primarily producing bacon, this relationship may only reflect a tendency to sell off before they reach bacon weight those pigs which are not growing well. It may also help to explain why pork pigs have a poorer food conversion ratio than baconers, in Table 5. Finally, a smaller proportion of the faster growing pigs sold for bacon achieved good grades.

What effect does the combination of quicker growth and poorer grading have upon the financial results? Assuming that the slower growth is due to restricted feeding only and that all other conditions are similar (stores at 40 lb. liveweight cost £5. 5s. are fattened to 197 lb. liveweight=148 lb. deadweight, and that meal costs £32 per ton), the top and bottom groups from Table 8 may be used as examples. Two alternative assumptions will be made as to the prices received for bacon pigs: (i) that pigs grading A or better average 49s. per score (an average of deadweight prices for the grades A or better) and that other pigs average 44s. per score (average of grades below A); (ii) that pigs grading A or better average 49s. per score (AA price) and that the rest average 46s. 6d. per score (B+ price).

	Meal per 1 lb. liveweight gain	Meal Fed	Meal Cost	Meal + Weaner Cost	Return		Margin	
					Assump. (i)	Assump. (ii)	Assump. (i)	Assump. (ii)
	lb.	lb.	£	£	£	£	£	£
Group I	4.26	669	9.55	14.80	17.62	18.01	2.82	3.21
Group II	3.73	586	8.36	13.61	17.20	17.76	3.59	4.15

Spending less per pig on food and achieving poorer grading is, on these assumptions, more profitable by some 15s. 6d. to 18s. 9d. per pig. This, however, is only part of the story. Good meal conversion rates are associated with quick growth and consequently the annual throughput is larger with the good converters. The additional effect of this on the annual margin per fattening place, which would meet other costs and provide a profit is as follows:

	Meal per 1 lb. liveweight gain	Margin per Pig		Days to Fatten	Pigs Fat per Year	Yearly Margin per Fattening Place	
		Assump. (i)	Assump. (ii)			Assump. (i)	Assump. (ii)
	lb.	£	£			£	£
Group I	4.26	2.82	3.21	162	2.26	6.38	7.26
Group II	3.73	3.59	4.15	114	3.22	11.55	13.36

These are figures based on actual farm performance. What they mean are, firstly, that at the level of bacon grade prices quoted, it is more profitable to get 50 per cent. than it is to get 73 per cent. of the bacon sales graded A or better provided the food cost per pig is 5s. to 10s. lower. The lower food cost may be achieved either by feeding the same quantity of meal but paying 10d. to 1s. 8d. less per cwt., or by paying the same price per cwt. and feeding 18 lb. to 35 lb. less per pig.

Secondly, because of the greater turnover, it is possible to make a smaller profit per quick fattening pig and still achieve the same annual profit. For example, the slow fattening pig costs £5. 5s. for the store and £9. 11s. for feed, or £14. 16s. direct costs. At 48s. per score it realises £17. 15s. leaving a margin of £2. 19s. per pig. With a turnover rate of 2.26 pigs per year, the annual margin is £6. 13s. 6d. But the quick fattening pig has a turnover rate of 3.22 per year and, to achieve the same annual margin, needs to clear only £2. 1s. 6d. per pig. That is, to sell for £15. 13s. 9d. or 42s. 6d. per score which is 5s. 6s. per score less than the slow fattener.

The level of prices for fat pigs is, however, most important since it affects the range within which the slow and quick fatteners can operate equally profitably. Continuing to work on the basis of farm performance as given in Table 8, it is possible to show a series of relative prices per score which the slow and quick fattening groups would need to obtain in order to achieve equal margins per year, over store and feed costs, with enterprises of the same average size. When the slow fattening group (I) obtains the price per score listed in the left-hand column below, the quick fattening group (II) will achieve an equal margin if they obtain the price per score listed in the right-hand column.

<i>Group I price per score</i>	<i>Group II price per score</i>
44s.	39s. 7d.
46s.	41s. 0d.
48s.	42s. 5d.
50s.	43s. 10d.
52s.	45s. 3d.

On the basis of farm results and the range of average prices obtaining in 1956-58, quickly fattened but poorer grading pigs should have been as profitable as the slowly fattened better grading pigs even when they sold for 4s. 5d. to 6s. 9d. per score less. The group prices per score are, of course, averages of grade prices and it is the greater proportion of lower grade—and lower priced—pigs in the quickly fattened group which gives them the lower return per pig.

Most pigs sold for bacon, according to national statistics, fall into the AA+, AA, +B, or C grades; this is true also of the herds under consideration here. In the slow fattening group (I) over 60 per cent. graded AA+ or AA, 10 per cent. were grade A, and over 20 per cent. graded B+, B, or C: in the quick fattening group (II) just over 40 per cent. graded AA+ or AA, 10 per cent. A, and some 45 per cent. B+, B, or C. In each group AA+ and AA were about equally represented; so also were B+, B, and C. It is therefore possible to estimate approximately the difference in price between grade B and the average of AA+ and AA which would be necessary to equate the annual margins under Group I and Group II standards of performance. Corresponding to the range of group average prices already quoted, the grade prices would need to be as follows:

<i>Group I average price per score</i>	<i>Average Grade AA+ and AA price per score</i>	<i>Grade B price per score</i>
44s.	48s. 0d.	32s. 2d.
46s.	50s. 6d.	32s. 7d.
48s.	53s. 0d.	33s. 0d.
50s.	55s. 6d.	33s. 5d.
52s.	58s. 0d.	33s. 11d.

There is currently a difference of 1s. per score between AA+ and AA prices, thus the AA+ price would be 6d. above the average shown in the central column. The spread between grade B and grade AA+ prices which would make slow fattening, good grading pigs as profitable as the quicker fattened pigs (in terms of margin over weaner and feed cost) is therefore from 16s. 4d. to 24s. 7d. per score. In practice, the difference between AA+ and B prices has been some 5s. per score.

To the question "does it pay to push pigs through and grade B, rather than hold them back trying to get top grade?" there may be no universally applicable answer. It appears clear, however, that with the conditions obtaining in the herds examined above and the ruling price differentials for grades, it is more profitable to fatten quickly, obtaining a better meal conversion ratio and to sacrifice the grading record.

Breeding and Fattening

When discussing the broad results for the two-year period, earlier in this report, it was shown that a comparison of a breeding and fattening enterprise on the one hand with a fattening enterprise based on purchased stores on the other might give apparently different results according to the basis of comparison. The basis normally most favourable to the breeding¹ enterprise will be a comparison of profit margins per pig sold. Because the throughput of fat pigs per sty is normally lower per year with the breeding than the fattening enterprise, comparison of margin per sty per year is less favourable. Least favourable to the breeding enterprise is comparison on the basis of £100 livestock output. This form of comparison is presented in Table 9 and the alternative bases of comparison follow.

9. COSTS AND MARGIN PER £100 LIVESTOCK OUTPUT ON 14 BREEDING AND FATTENING, AND 10 FATTENING UNITS: 1956-57 AND 1957-58.

	<i>Breeding and Fattening</i>	<i>Fattening</i>
	£ s. d.	£ s. d.
Food	72 8 4	63 9 1
Labour	9 18 9	6 18 4
Other Expenses ..	7 3 6	5 2 9
Total Costs ..	89 10 7	75 10 2
Margin	10 9 5	24 9 10

These figures correspond to a margin of approximately 35s. per pig sold by the breeding units and 59s. per pig sold by the fattening units. Because of the greater turnover on the fattening units the approximate average margins per fattening place per year were, respectively, £4 and £8. 11s.

Each of the three methods of comparison shows the fattening of purchased stores to have been more profitable than breeding and fattening together. It is reasonable to enquire why this should be so particularly as the breeders, by rearing their own stores for under £5, started fattening with an initial advantage of some 18s. per pig.

First, the purchased stores tended to be heavier than the home reared. Second, 93 per cent. of the pigs on the fattening farms were carried through to bacon weight compared with two-thirds

1. Used to designate the "breeding and fattening" enterprise.

on the breeding farms. Consequently, on the breeding farms pigs averaged 148 lb. liveweight gain and on the fattening farms 156 lb. liveweight gain. At the standard costs of Table 3, this would mean an outlay per pig on breeding farms of £9. 1s. and on fattening farms of £9. 11s. Average market returns would give the breeding farms £16. 3s. per pig and the feeding farms £17. 15s. per pig. There would be an advantage of 22s. per pig to the feeding unit arising from the difference in the weights of the pigs concerned.

Further, if meal conversion is poorer in pork production, this will act to the disadvantage of the breeding farms. It may account for as much as 2s. reduction in their relative margin per pig. Up to this point, analysis based on standard performance would lead one to expect a difference between the breeding and fattening units of only some 6s. in profit per pig. In fact the difference was 24s.

Prices realised by the pigs from breeding farms were 7s. above market average; from the fattening farms pigs realised 3s. better than average. This should practically have equalised profits per pig sold from the two systems.

Feeding, however, cost some 10s. per pig more on the breeding farms and almost 10s. per pig less on the fattening farms than standard calculations would suggest. In similar manner, labour costs and sundry costs on the breeding farms were 1s. and 2s. 6d. respectively above average, whilst on the fattening farms they were respectively 2s. and 6d. below average.

It is natural that labour and sundry costs per pig should be somewhat higher on the breeding farms since they have greater difficulty in maintaining a full quota of fatteners than where store pigs are bought as required. There seems less justification for extra food costs. Whilst the rate of growth was slower on the breeding farms, the difference between 1.07 lb. and 1.21 lb. liveweight gain per day is less than between the first two groups of Table 8. Yet as great a difference in food conversion ratios as shown there has already been allowed for in the standard calculation above.

The net disadvantage in margin per pig to the breeding farms, therefore, should not exceed 10s. to 12s. This takes account of their advantage in rearing, and the financial disadvantages associated with producing a larger proportion of pork pigs and perhaps having a less regular supply of stores. With reasonably similar efficiency in fattening, the results for the two groups might be expected to turn out as shown in Table 10.

10. COMPARISON OF FATTENING COSTS IN BREEDING UNITS AND FATTENING ONLY UNITS, ASSUMING COMPARABLE EFFICIENCY OF FATTENING BUT ALLOWING FOR DIFFERENCES IN END PRODUCT (1956-58 CONDITIONS AND PRICES).

	<i>Breeding Group</i>	<i>Fattening Group</i>
	£ s. d.	£ s. d.
Cost of Store Pig	4 19 3	5 18 0
Cost of Fattening per pig ..	9 5 0	9 7 6
Total Cost per pig	14 4 3	15 5 6
Sale of Fat Pig	16 2 11	17 15 2
Margin per pig	1 18 8	2 9 8
Value added on farm	16 2 11	11 17 2
Margin per £100 livestock output	11 19 5	20 18 9

This table shows a substantial advantage to the fattening farms but it is considerably less than that shown in Table 9. The reason why the difference in realised margins per pig is more than twice as great as that shown in Table 10 is entirely attributable to feeding. The breeding group

feeds more expensive food and feeds more heavily—at least $\frac{1}{4}$ lb. more meal equivalent¹ per 1 lb. liveweight gain. Feed costs the breeding group more per 1 cwt. meal equivalent because they use more skim and less whey, because they feed a greater proportion of meal, and because their purchased meal costs approximately 1s. per cwt. more.

In this survey fattening purchased stores proved more profitable, by all tests, than breeding and fattening. Differences in fattening costs were partly responsible and such differences are matters for individual farmers to attend to. For the rest, the margin per £100 livestock output was greater on fattening than on weaner production. Weaners selling at £5. 15s. and costing £4. 19s. to produce give a margin of 16s. per head or approximately £14 per £100 livestock output. Bacon pigs selling at £18. 18s and costing £16 to produce (including the purchase of stores) leave a margin of £2. 18s. per head or approximately £22 per £100 livestock output.

Assuming that these costs are justified as representing comparable standards on the part of breeders and feeders, equal rates of return on their output would be obtained; (i) if bacon pig prices were lower or, (ii) if weaner prices were adjusted to affect both parties. If weaner prices had been about £6. 3s. under 1956–58 conditions, equality of return would have been achieved, as the following figures show.

	Weaner Production	Baconer Production
	£	£
(a) Purchased livestock	—	6.16
(b) Production costs	4.95	10.25
(c) Selling value	6.16	18.90
(d) Margin [$c - (a + b)$]	1.21	2.49
(e) Livestock output ($c - a$)	6.16	12.74
(f) Margin per £100 livestock output ($\frac{d}{e} \times 100$)	19.6	19.6

Capital Requirement

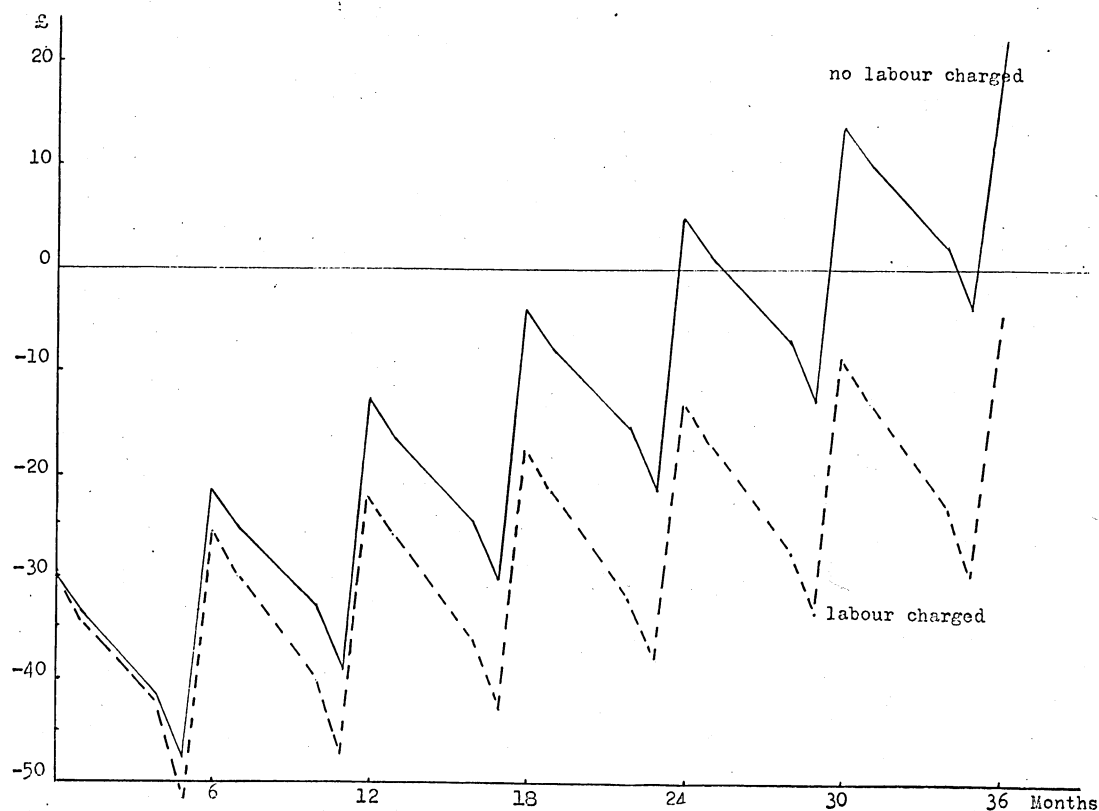
The buildings in which pigs are housed and the equipment of those buildings are too varied for any rational discussion of them to be based upon this survey. It is possible, however, to indicate the investment required in stock and food to operate different systems of pig keeping and the time span which will elapse before the operation becomes self financing.

In the figures which follow, the calculations are based on the findings of this survey; different assumptions about costs, prices or rates of growth would naturally modify the pictures shown. In each case it is assumed that the first step is the purchase of the initial unit of stock. What the graphs show is the cash balance, month by month, for the particular type of enterprise. From the graphs it is possible to tell how long must elapse before the initial investment of cash is recouped, approximately what the maximum investment rises to, and, if the graph continues far enough, how long it will be before a further unit of expansion can be financed out of the enterprise without borrowing.

For the farmer who has cash to invest the choice of enterprise will depend upon the return on his investment (of which margin per £100 livestock output is one measure). These graphs will only help to show the size of enterprise which he can contemplate. If a man needs to borrow money for expansion the graphs can assist by showing, in addition to the amount of money required, the period which he will need for repayment.

1. After making generous allowance for some 1 per cent. swill (by value) fed by fatteners, but to which no exact meal equivalent can be given.

All graphs allow for the purchase of stock, feed, and essential sundries (e.g. veterinary). They assume that labour is available and no charge for buildings or farm overheads is included. The effect of having to pay for labour is illustrated by the broken line in Graph I.

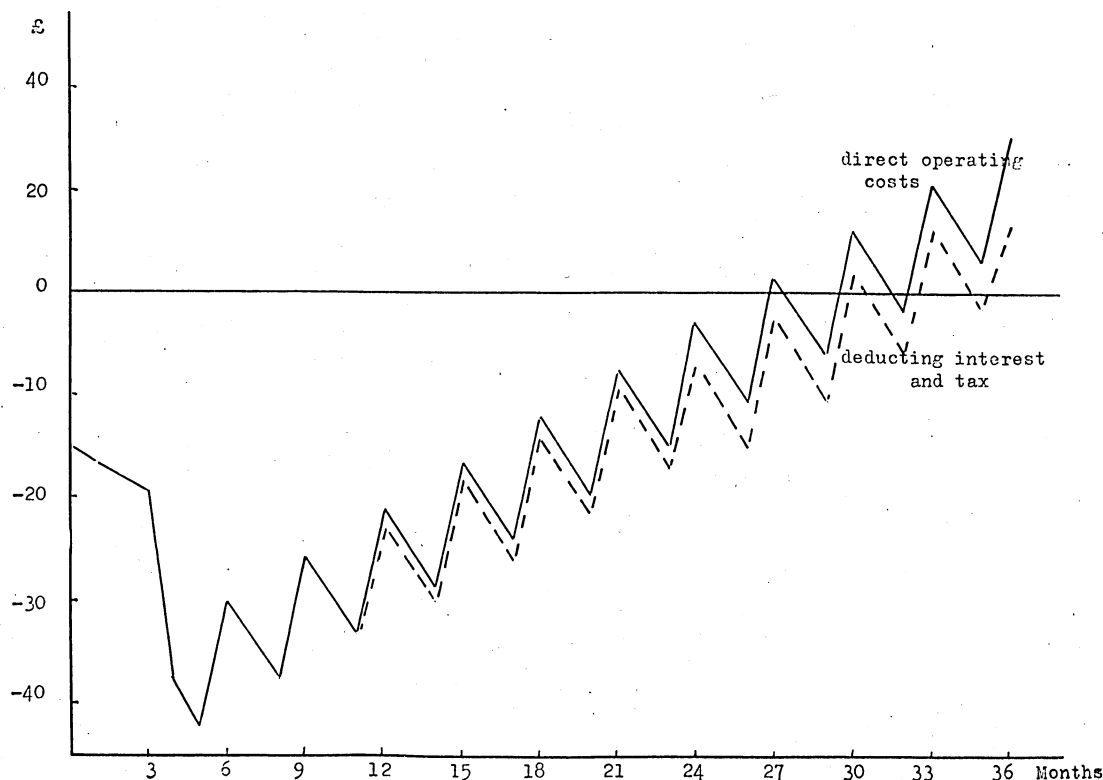


GRAPH I. CASH BALANCE, SELLING WEANERS FROM ONE SOW

(i) *Breeding sow producing weaners for sale.* The assumptions underlying Graph I are that a sow or gilt is bought for £30 and that service costs £1. Weaners reared per sow average twelve per year and these are taken as coming from two equal litters: larger but less frequent litters giving the same annual average per sow would modify the length of the monetary cycle without greatly affecting the final outcome. Food required per month is taken as $1\frac{3}{4}$ cwt. for the sow and $\frac{1}{4}$ cwt. per weaner; it has been charged at £30 per ton. Sundry costs are charged at 10s. per weaner. It is assumed that the weaned pigs sell at eight weeks for an average price of £5. 10s. On these assumptions, there is an operating outlay of £24. 5s. every six months and an income of £33, giving a surplus of £8. 15s. Three litters would provide sufficient surplus to repay a loan covering operating expenses only but it would require seven litters ($3\frac{1}{2}$ years) before the whole outlay on purchase of sow and operating costs was recouped.

Whilst profitable, rearing calls for fairly extended credit if it is to be initiated on borrowed funds. If in addition labour costs (or living expenses) are to be charged against the enterprise at 15s. per month, the process becomes too long, having regard to the need to replace sows, to be started wholly on borrowings for it would require fourteen litters to clear total indebtedness.

In Graph IA, two modifications of the sow enterprise calculations are shown. First, the enterprise is doubled but it is arranged for one sow to farrow each quarter instead of both at six-monthly intervals. This system shortens somewhat the time required to recover from receipts the initial and operating investment. Moreover, since there are receipts from weaner sales every three months the fluctuations in the cash balance are reduced. With many sows, farrowing at regularly spaced intervals (and producing equal sized litters), the cash balance would improve steadily instead of fluctuating.

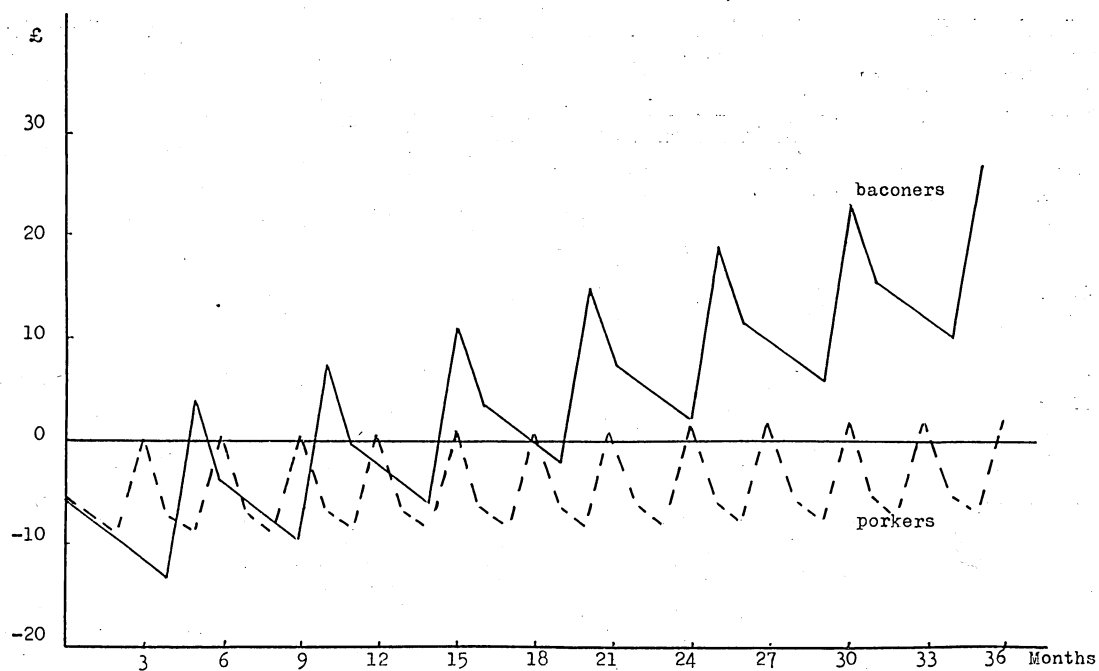


GRAPH IA. CASH BALANCE, SELLING WEANERS FROM TWO SOWS

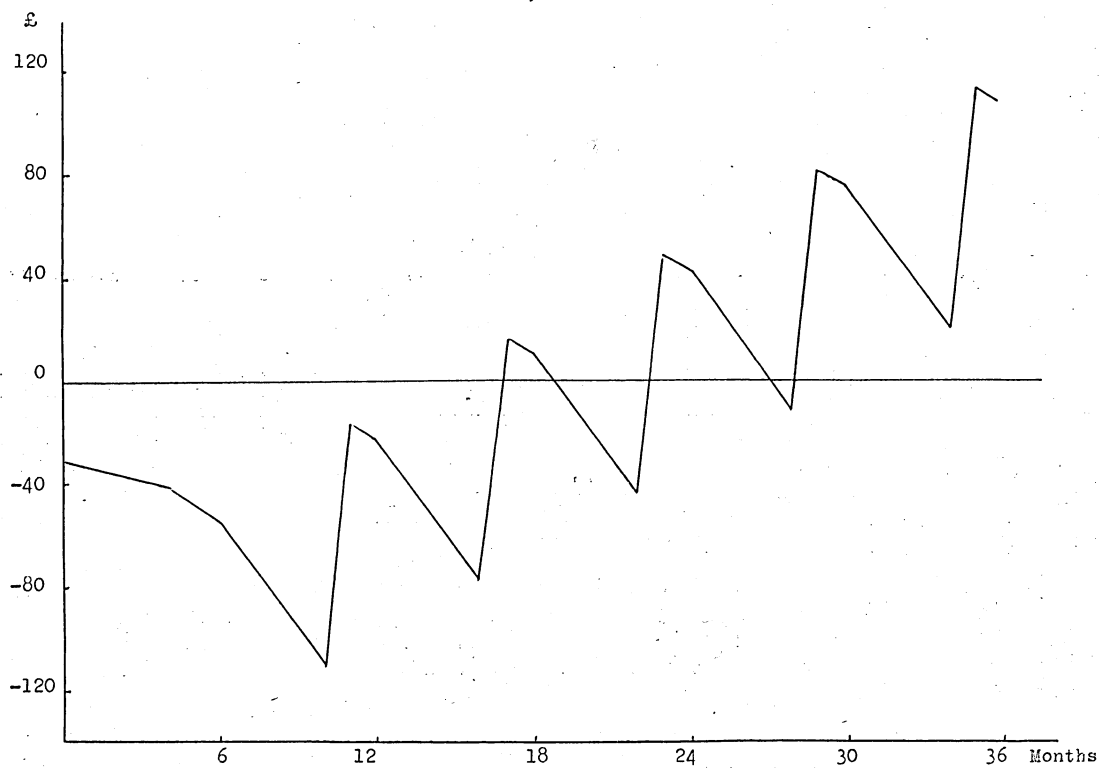
Second, an attempt is made to allow for interest on borrowed capital (at 5 per cent. per year) and for the incidence of income tax on trading profits. Tax is charged at six shillings in the pound, which is approximately the incidence on additional income where tax is paid at the standard rate. For simplicity in the graph, interest is paid at the year end and tax at the end of the year following that in which profit is earned. These adjustments have a modest early influence, deferring by six months complete freedom from indebtedness. When clear of debt, tax will reduce the available margin from £35 to £27. 10s. per year.

(ii) *Purchasing stores for bacon fattening.* A similar history of rising and falling indebtedness is shown in Graph II for the fattening of purchased stores to bacon weight. Assumptions upon which this graph is based are: stores bought at £5. 15s. fattened in five months to sell at eight score dead weight for £18. 18s. (47s. 3d. per score). Fed $3\frac{3}{4}$ lb. meal per 1 lb. liveweight gain, with meal costing £30 per ton; sundry costs are 5s. per pig.

Here, each cycle includes the cost of the store as well as operating costs. Every five months there is an outlay of £15. 3s. 9d. a receipt of £18. 18s., and a surplus of £3. 14s. 3d. After five cycles (25 months) the initial debt will be cleared.



GRAPH II. CASH BALANCE, FATTENING PURCHASED STORES



GRAPH III. CASH BALANCE, PRODUCING BACONERS FROM ONE SOW

For purposes of comparison, fattening for pork is also illustrated on Graph II. The assumptions are similar except that pigs are fattened in three months to sell at 4½ score dead weight for £11 (49s. per score): they are fed 3.9 lb. meal per 1 lb. liveweight gain. The surplus per cycle is only 4s. to set against £10. 16s. costs and it would take almost fourteen years to recover all the borrowing necessary to start this enterprise.

(iii) *Breeding and Fattening.* Graph III combines the breeding unit of the first graph with the fattening of the weaners to bacon weight under the feed, time, and price assumptions of Graph II. Initial sales are delayed here until the eleventh month but thereafter recur half yearly. The operating outlay each six months is £80. 17s. 2d., income is £113. 8s. giving a surplus of £32. 10s. 10d. Three cycles, therefore, recover the normal operating cost once the sale of baconers has started. To cover the initial breeding period costs as well, four cycles are necessary; these extend to 29 months and also provide a sufficient margin to cover the purchase of the sow.

This information for the various types of pig enterprise is summarised in Table 11 so that the financial requirements can be seen and also the period for which they are required. The Table shows in addition the return per unit, available to meet any further costs for labour or new buildings.

11. CAPITAL REQUIREMENTS FOR OPERATING PIG ENTERPRISES.¹

Enterprise	Unit	Maximum Investment		Cycle in Months	Surplus per Cycle	Period required to recover Investment ⁷	
		A ²	B ³			A ²	B ³
		£	£		£	months	months
<i>Selling Weaners</i>							
(i) No Labour charged	1 Sow	24.250	54.250	6	8.750	18	42
(ii) Labour charged	1 Sow	28.750	58.750	6	4.250	42	84
(iii) Litter every 3 months	2 Sows	33.125	93.125	3 ⁴	8.750	15	36
<i>Fattening</i>							
(iv) Purchased store for Pork	1 Store	10.799	—	3	0.201	162	—
(v) Purchased Store for Bacon	1 Store	15.185	—	5	3.715	25	—
(vi) Own Stores for Bacon	1 Sow	98.735	128.735	6 ⁵	32.540 ⁶	29	29

Notes

1. Table 11 is based on the operating and price assumptions given in the text: no charge is made for buildings—or for labour, except in enterprise (ii).
2. Investment A refers to operating costs only.
3. Investment B refers to operating costs plus purchase of sow where applicable.
4. Six months to first sale of weaners; three monthly cycle thereafter.
5. Eleven months to first sale of weaners; six monthly cycle thereafter.
6. £14.665 surplus in the first eleven months, then as shown.
7. These periods may be longer than shown by the graphs since it is assumed that, e.g., food fed in a month when pigs are sold is paid for before the income from sales is received. In the graphs they are treated as concurrent.

APPENDIX 1.

"Standard Appendix"

A. 1956-57

1. TOTAL STOCK ACCOUNT FOR 28 HERDS

No.	Opening Valuation	£	£	No.	Closing Valuation	£	£
32	Boars	932		35	Boars	925	
214	Sows and Gilts ..	5,835		294	Sows and Gilts ..	8,391	
442	Suckling Pigs ..	938		635	Suckling Pigs ..	1,319	
2,602	Feeding Stock ..	30,755		2,624	Feeding Stock ..	32,119	
			38,460				42,754
	<i>Purchases</i>				<i>Sales</i>		
4	Boars	190		32	Boars	1,111	
23	Sows and Gilts ..	885		150	Sows and Gilts ..	4,164	
			1,075	41	Suckling Pigs ..	—	5,275
7	Suckling Pigs ..	—		205	Stores	1,943	
4,474	Stores	29,179		1,030	Porkers	14,129	
			29,179	5,518	Baconers	106,906	
3,822	Pigs born alive ..	—		45	Other fat pigs ..	700	
			68,714	28	Casualties	178	
					Guarantee receipts		
					etc.	1,422	
							125,278
	<i>Livestock Output</i> ..	104,609			<i>Deaths</i>		
				768	Suckling Pigs ..	—	
				207	Stores	—	
				8	Boars and Sows		16
11,620		173,323		11,620		173,323	

2. CONVERSION PER 1 LB. LIVWEIGHT GAIN: 24 FEEDING SECTIONS

Number of pigs sold	5,807	Meal or meal equivalent
Liveweight of pigs sold	1,122,143 lb.	fed per 1 lb. liveweight
Average liveweight of pigs sold	193.2 lb.	gain 3.75 lb.

3. COSTS PER £100 LIVESTOCK OUTPUT 28 HERDS

		<i>Cwt. Meal Equivalent</i>	£	£
<i>Food</i>				
Purchased:				
Concentrates	38.04	62.730		
Other (i)	1.39	1.155		
Other (ii)	—	0.323		
Homegrown:				
Concentrates	1.31	1.523		
Other (i)	0.98	0.805		
Other (ii)	—	—		
Grazing	—	0.135		66.671
<i>Labour</i>				7.558
<i>Miscellaneous</i>				5.405
Subtotal				79.634
Surplus				20.366
Total				100.000

4. COSTS PER WEANER: 16 BREEDING SECTIONS

	<i>Quantity</i>	£
Food: Concentrates	2.44 cwt.	4.350
Other foods (i)	0.05 „ ME ¹	0.039
Other foods (ii)	—	—
Grazing	—	0.050
Labour	4.29 hours	0.750
Miscellaneous		0.442
Herd Depreciation		— 0.782
Weighted Average Cost per Weaner	2,827 weaners	4.849

1. M.E.=meal equivalent.

5. COSTS PER 100 lb. LIVEWEIGHT GAIN: 28 FEEDING SECTIONS

	£	
Food	5.344	
Labour	0.541	
Miscellaneous	0.411	
Weighted Average Cost	6.296	
		6,798 Pigs sold
		1,070,321 lb. total liveweight gain

Standard Appendix

B. 1957-58

1. TOTAL STOCK ACCOUNT FOR 35 HERDS

No.		£	£	No.		£	£
	<i>Opening Valuation</i>				<i>Closing Valuation</i>		
41	Boars	1,045		47	Boars	1,371	
424	Sows and Gilts ..	12,041		458	Sows and Gilts ..	11,627	
902	Suckling Pigs ..	2,059		788	Suckling Pigs ..	1,762	
3,833	Feeding Stock ..	46,329		4,212	Feeding Stock ..	46,878	
			61,474				61,638
	<i>Purchases</i>				<i>Sales</i>		
10	Boars	404		70	Boars	1,913	
40	Sows and Gilts ..	1,446		231	Sows and Gilts ..	5,680	
			1,850	24	Suckling Pigs ..	63	
9	Suckling pigs ..	18					7,656
6,318	Stores	33,391		248	Stores	1,677	
			33,409	2,208	Porkers	25,535	
6,242	Pigs born alive ..	—		7,801	Baconers	135,410	
			96,733	79	Other fat pigs ..	545	
				19	Casualties	116	
					Guarantee Receipts		
					etc.	2,465	
							165,748
	<i>Livestock Output</i> ..		138,309		<i>Deaths</i>		
				1,181	Suckling pigs		
				443	Stores		
				10	Boars and Sows		
17,819			235,042	17,819			235,042

2. CONVERSION PER 1 LB. LIVELINEIGHT GAIN: 28 FEEDING SECTIONS

Number of pigs sold	8036	Meal or meal equivalent
Liveweight of pigs sold	1,539,274 lb.	fed per 1 lb. liveweight
Average liveweight of pigs sold	191.5 lb.	gain 3.76 lb.

3. COSTS PER £100 LIVESTOCK OUTPUT, 35 HERDS

	<i>Cwt. Meal Equivalent</i>	£	£
<i>Food</i>			
Purchased:			
Concentrates	42.64	64.994	
Other (i)	1.69	2.168	
Other (ii)	—	0.540	
Homegrown:			
Concentrates	1.31	1.423	
Other (i)	1.22	1.055	
Other (ii)	—	0.006	
Grazing	—	0.134	
<i>Labour</i>			70.320
<i>Miscellaneous</i>			9.036
Subtotal			6.791
Surplus			86.147
Total			13.853
			100.000

4. COSTS PER WEANER: 23 BREEDING SECTIONS

	<i>Quantity</i>	£
Food: Concentrates	2.15 cwt.	3.595
Other foods (i)	0.09 „ M.E.	0.114
Other foods (ii)	—	0.002
Grazing		0.036
Labour	4.23 hours	0.825
Miscellaneous		0.524
Herd Depreciation		— 0.011
Weighted Average Cost per Weaner	5,160 weaners	5.085

5. COSTS PER 100 LB. LIVELWEIGHT GAIN: 35 FEEDING SECTIONS

	£	
Food	4.998	10,336 Pigs sold
Labour	0.529	1,559,098 lb. total liveweight gain
Miscellaneous	0.429	
Weighted Average Cost	5.956	

Appendix II

Additional Tables

1. AVERAGE AND RANGE OF COSTS PER £100 LIVESTOCK OUTPUT FOR 25 PIG ENTERPRISES

A. 1956-57

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
		£ s. d.	£ s. d.
Purchased Concentrates	38.3 cwt.	62 19 5	
Home grown Grain	1.4 "	1 11 11	
Whey	1.5 " M.E. ¹	18 5	
Skim Milk	0.4 " "	13 4	
Roots	0.6 " "	9 4	
Swill		7 1	
Grazing		2 6	
Total Feed			67 2 0
Labour	43.1 hours		7 14 11
Other Expenses			5 10 6
Average Cost			80 7 5
Margin			19 12 7
Output			100 0 0

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
			£ s. d.	£ s. d.
Purchased Concentrates	16.7 cwt.	52.4 cwt.	30 4 0	96 0 5
Total Feed			46 13 8	96 3 10
Labour	18.9 hours	83.1 hours	3 4 5	15 3 0
Margin			-7 11 0	36 7 0

1. M.E.=meal equivalent.

B. 1957-58

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
		£ s. d.	£ s. d.
Purchased Concentrates	42.0 cwt.	63 4 5	
Home grown Grain	1.8 "	2 0 6	
Whey	2.1 " M.E.	1 10 6	
Skim Milk	0.9 " "	1 5 8	
Roots	0.4 " "	6 11	
Swill		6 9	
Grazing		2 8	
		<hr/>	
Total Feed			68 17 5
Labour	46.3 hours		9 0 9
Other Expenses			6 15 6
			<hr/>
Average Cost			84 13 8
Margin			15 6 4
Output			100 0 0

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
			£ s. d.	£ s. d.
Purchased Concentrates	16.7 cwt.	74.8 cwt.	31 14 0	119 4 0
Total Feed			46 16 10	127 15 5
Labour	26.3 hours	73.5 hours	5 13 2	18 6 2
Margin			-45 18 0	37 8 0

2. AVERAGE AND RANGE OF COSTS PER 100 LB. LIVEWEIGHT GAIN FOR 25 PIG ENTERPRISES
A. 1956-57

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>			
		£	s.	d.	£ s. d.
Purchased Concentrates	3.08 cwt.	4	19	6	
Home grown Grain	0.11 "		2	6	
Whey	0.14 " M.E.		1	9	
Skim Milk	0.04 " "		1	3	
Roots	0.04 " "			8	
Swill				9	
Total Feed					5 6 5
Labour	3.03 hours				11 0
Other Expenses					8 4
Average Cost					6 5 9

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>		<i>Highest</i>	
			£	s. d.	£	s. d.
Purchased Concentrates	1.40 cwts.	4.06 cwts.	2	5 7	7	10 5
Whey	0.17 ¹ " M.E.	0.86 " M.E.		2 1		11 4
Skim Milk	0.14 ¹ " "	0.66 " "		4 3		19 9
Total Feed			3	10 5	7	10 5
Labour	1.49 hours	5.35 hours		5 0		19 8
Average Cost			4	17 3	8	10 10

1. Smallest quantity fed where used: some farmers fed none at all.

B. 1957-58

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
Purchased Concentrates	3.05 cwt.	£ s. d.	£ s. d.
Home grown Grain	0.14 "	4 9 11	
Whey	0.19 " M.E.	3 1	
Skim Milk	0.08 " "	2 8	
Roots	0.02 " "	2 3	
Swill		4	
		7	
Total Feed			4 18 10
Labour	2.93 hours		11 6
Other Expenses			8 6
Average Cost			5 18 10

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
Purchased Concentrates	1.98 cwt.	4.74 cwt.	£ s. d.	£ s. d.
Whey	0.37 ¹ " M.E.	0.58 " M.E.	2 15 8	6 18 10
Skim Milk	0.04 ¹ " "	0.06 " "	3 5	8 3
Total Feed			11	17 10
Labour	1.58 hours	4.91 hours	3 4 8	7 5 8
Average Cost			6 0	1 1 0
			4 6 5	8 2 0

1. Smallest quantity fed where used: some farmers fed none at all.

3. AVERAGE FEED CONSUMPTION PER 100 LB. LIVWEIGHT GAIN, 1956-58: FOUR TYPES OF FEEDING

<i>Item</i>	<i>Meal only</i>	<i>Whey</i>	<i>Skim Milk</i>	<i>Swill</i>
	lb. M.E.	lb. M.E.	lb. M.E.	lb. M.E.
Purchased Concentrates	367	351	371	171
Home grown Grain	8	1	6	29
Whey	—	39	—	—
Skim Milk	—	—	38	6
Roots	—	1	1	13
Meal Equivalent	375	392	416	219
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Swill (Cost)	—	—	—	9 9
Total Feed Cost	6 3 0	5 0 11	5 9 2	3 6 11
	<i>per cent.</i>	<i>per cent.</i>	<i>per cent.</i>	<i>per cent.</i>
Pigs sold for Bacon	99	90	73	76

4. AVERAGE AND RANGE OF COSTS PER PIG WEANED FOR 14 BREEDING UNITS

A. 1956-57

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
		£ s. d.	£ s. d.
Purchased Concentrates	2.37 cwt.	4 4 6	
Home grown Grain	0.10 "	2 3	
Roots	0.05 " M.E.	11	
Grazing	—	11	
Total Feed			4 8 7
Labour	4.42 hours		15 4
Other Expenses	—		9 3
Appreciation of breeding stock	—		— 15 7
Average Cost	—		4 17 7

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
			£ s. d.	£ s. d.
Purchased Concentrates ..	0.88 cwt.	3.61 cwt.	1 15 1	6 3 0
Total Feed	—	—	3 2 5	6 7 8
Labour	1.62 hours	9.97 hours	5 8	1 14 0
Average Cost	—	—	3 2 7	8 17 2
			<i>Average</i>	
Sows per unit	3.0	55.0	15.7	
Pigs weaned per sow per year	9.0	16.3	11.1	

B. 1957-58.

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
Purchased Concentrates	2.24 cwt.	£ s. d.	£ s. d.
Home grown Grain	0.06 "	3 14 9	
Roots	0.04 " M.E.	1 6	
Whey	0.02 " "	10	
Grazing		2	
		11	
Total Feed			3 18 2
Labour	4.07 hours		15 9
Other Expenses	—		12 1
Appreciation of breeding stock	—		-5 2
Average Cost	—		5 0 10

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
Purchased Concentrates	0.83 cwt.	5.67 cwt.	£ s. d.	£ s. d.
Total Feed	—	—	1 11 11	9 6 11
Labour	1.81 hours	10.80 hours	2 6 10	9 9 0
Average Cost	—	—	6 5	2 16 8
			3 9 10	10 6 5
Sows per unit	3.7	64.7	<i>Average</i>	
Pigs weaned per sow per year..	6.0	16.4	18.5	
			10.9	

5. AVERAGE AND RANGE OF COSTS PER 100 LB. LIVEWEIGHT GAIN FOR 10 UNITS FATTENING ONLY
A. 1956-57

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
Purchased Concentrates	2.95 cwt.	£ s. d.	£ s. d.
Home grown Grain	0.05 "	4 13 11	
Whey	0.21 " M.E.	1 2	
Skim Milk	0.02 " "	2 7	
Roots	0.04 " "	6	
Swill		8	
		1 2	
Total Feed			5 0 0
Labour	2.74 hours		10 5
Other Expenses			7 10
Average Cost			5 18 3

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
Total Feed	3.10 cwt.ME ²	4.24 cwt.ME ²	£ s. d.	£ s. d.
Average Cost	—	—	3 10 5	6 11 5
			4 17 2	7 9 11
Feeders per unit	14.0	289.3	<i>Average</i>	
Turnover of Feeders per year..	1.8	3.4	133.5	
Liveweight Gain per Feeder			2.7	
per day	0.820 lb.	1.457 lb.	1.175 lb.	
M.E. ¹ per lb. Liveweight Gain..	3.48 lb.	4.75 lb.	3.65 lb.	
Fat pigs sold for Bacon	85 per cent.	100 per cent.	97 per cent.	

1. M.E.=meal equivalent.

2. Excluding swill fed.

B. 1957-58

<i>Item</i>	<i>Quantity</i>	<i>Cost</i>	
Purchased Concentrates	2.89 cwt.	£ 4	s. d. 3 6
Home grown Grain	0.10 "		2 3
Whey	0.28 " M.E.		4 2
Skim Milk	0.05 " "		1 9
Roots	0.02 " "		5
Swill			1 0
Total Feed			4 13 1
Labour	2.60 hours		10 7
Other Expenses			7 10
Average Cost			5 11 6

<i>Range</i>	<i>Lowest</i>	<i>Highest</i>	<i>Lowest</i>	<i>Highest</i>
Total Feed	3.11 cwt.ME ²	4.95 cwt.ME ²	£ 3	s. d. 4 8
Average Cost	—	—	£ 4	s. d. 6 5
Feeders per unit	12.0	298.0	<i>Average</i>	
Turnover of Feeders per year..	2.3	4.6	132.1	
Liveweight Gain per Feeder			3.1	
per day	0.951 lb.	1.604 lb.	1.235 lb.	
M.E. ¹ per 1 lb. Liveweight Gain	3.47 lb.	5.55 lb.	3.73 lb.	
Fat pigs sold for Bacon	71 per cent.	100 per cent.	90 per cent.	

1. M.E.=meal equivalent.

2. Excluding swill fed.

APPENDIX III

Definitions

Livestock Output is the value of livestock produced on the farm and is calculated as follows:—

Opening value of pigs	£1,100	Pigs sold	£3,900
Pigs bought	£1,200	Closing value of pigs ..	£1,100
Livestock Output	£2,700		
	<hr/> £5,000		<hr/> £5,000

Production Costs are the outlay on *feed, labour, and other expenses* which enables a pig-keeper to produce his livestock output.

Feed. Purchased feed is charged at the actual cost paid by the farmer. Home grown feed is charged at estimated market value. Where meals are mixed on the farm an allowance for the power and labour costs involved is included in the cost of feed.

Labour refers only to time spent directly on the pig enterprise. Employee's time is charged at the rates actually paid (including National Insurance and paid holidays). Unpaid family labour is charged as employees or, failing this, at statutory rates.

Other Expenses include veterinary and medicinal costs, marketing and transport costs for pigs, a rental charge for buildings used, and any other operating costs directly incurred by the pig enterprise, such as electricity for heating or fans. No charge is made for a share of farm overheads.

Margin is the difference between *livestock output* and *production costs*.

Feed Conversion Ratio is the quantity of feed consumed, expressed as *meal equivalent*, per 1 lb. increase in liveweight.

Meal Equivalent is the quantity of meal having the food value of a given quantity of some other feed. The following values have been used in this report:

1 lb. of meal is equivalent to	4 lb. potatoes
	5 lb. fodder beet
	8 lb. skim milk
	12 lb. whey.

Liveweight and Deadweight. To complete certain analyses it has been necessary on occasion to convert from dead to live weight, and *vice versa*. In the bacon weight range deadweight has been taken as 75 per cent. of liveweight; in the pork range deadweight has been taken as 70 per cent. of liveweight.

Averages. Weighted averages have been used throughout; that is to say, the averages are based upon the total numbers, quantities and costs in the group—not upon the average of farm averages.

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