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# UNIVERSITY OF BRISTOL

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## A COMPARISON OF PIG PRODUCTION BEFORE AND AFTER THE WAR

With Special Reference to South West England

by

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and

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Price Two Shillings and Sixpence

I, COURTENAY PARK,  
NEWTON ABBOT,  
DEVON.

## FOR E W O R D

The pig industry in the last twenty years has been subject to greater change than perhaps ever before. Conditions have ranged from those of uncertainty in the 1930's, restriction of production during the war, to great encouragement for expansion from 1947 onwards. The last year or so may have seen the beginning of another change which, though not as abrupt, may be of considerable significance to producers.

This Report aims to show how these changes have affected the industry by providing a comparative account of the position in pre-war and post-war years. It is divided into two main parts. In the first section, a general description is given of the industry as a whole in the two periods. The second section is concerned with the progress achieved by producers, and compares results obtained in a pre-war study in the South West with those for a post-war year.

It is hoped that this account of developments over recent years will have some interest for those connected with the industry. In addition to this, the aim has been to provide a record of the effect of varying conditions on pig production which may, perhaps, be of some use in meeting future problems.

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## I. NATIONAL ASPECTS OF PIG PRODUCTION

An account is given in this section of the changes which have occurred since the 1930's in the size of the industry and the contribution it has made to total agricultural output. An attempt is also made to assess the factors which have been responsible for the changes. Finally, a brief reference is made to the outlook for pig producers.

### Size of the Industry - Pre-War and Post-War

#### Numbers and Supplies.

The pig population of the U.K. in 1939 amounted to rather less than  $4\frac{1}{2}$  million, and this represented about the average level for the 1930's. Pig numbers were greatly reduced during the war and immediately after, so that by 1947 there were only just over  $1\frac{1}{2}$  million. The recovery since 1947 has been so rapid, however, that by 1954 the total had risen to about  $6\frac{1}{2}$  million. This meant that, whilst in 1947 the number of pigs equalled only 37% of that in 1939, by 1954 it was 142% of the 1939 total (see Table 1). There was a fall in the population after 1954, and the provisional figures for this year show that the number of pigs in June was about  $5\frac{3}{4}$  million.

The expansion in pig numbers has been relatively greater than that in other livestock. This can be seen from figure 1 in which livestock numbers have been expressed as a percentage of their 1939 population. Until 1947, pig numbers fell by more than any other class of stock. The pig population in 1955, on the other hand, showed a larger increase over its pre-war level than was the case with cattle, poultry or sheep. The increase in cattle numbers was the nearest approach to the change in the pig population, and it is probable that this was mainly due to favourable milk prices.

Home produced supplies of pork, bacon and ham have increased to above the pre-war level, but net imports have been a good deal lower than before the war. This means that the home pig industry is not only larger than in the 1930's, it also provides a greater proportion of the total pig-meat available to the home market. In 1938 the home industry provided 49% of total pig-meat supplied in this country but by 1954 the figure had increased to 64% (see Table 2). Total supplies of pig-meat are now greater than they were before the war.

#### Value of Output.

The agricultural industry as a whole has become more prosperous and produces considerably more than it did in the 1930's. It is

interesting to see how changes in the value of pig production have compared with agriculture generally. Table 4 shows how the value of pig production as a proportion of the U.K. agricultural output fell from 9.6% pre-war to 4.2% in 1946-47. The recovery since 1947 has been so rapid, however, that in recent years the pig industry has contributed a considerably larger share of total U.K. agricultural output than it did before the war. As a result, the value of pig production formed 14% of total agricultural output in 1952-53.

Table 4 does not provide a completely satisfactory measure of the importance of pigs in relation to agriculture as a whole. A considerable part of the increased importance of pig production is accounted for by the greater rise in pig prices compared with agricultural products generally. This means that the change in the proportion of resources devoted to pig production would be considerably less than the change in the relative importance of pigs as measured by value of production.

#### Prices and Costs.

Pig prices in recent years have been much higher than before the war, and figure 2 shows that in 1953 prices were over four times higher than those recorded in 1939. The increase applied rather more to bacon than to pork prices. The average price for all agricultural products, on the other hand, rose by a good deal less and in 1953 it was about three times the 1939 level. In fact, pig prices have increased by more than any other agricultural product except wool, compared with pre-war.

The change in product prices alone is not enough to establish whether the position for producers has been more favourable in recent years than before the war. It is also necessary to consider the changes which have taken place in the prices of the cost items.

The two main costs in pig production are food and labour, with the former being by far the more important. The two together account for over 90% of total costs, and food alone for over 80% of the total. Like pig prices, the cost of both food and labour has risen considerably but in neither case has the increase been as great as that for pig prices. The differing extent to which the prices of cost items and pigs have changed has resulted in a situation which is a good deal more favourable to pig producers than it was before the war. This point is illustrated in Table 5 by expressing the bacon pig price index as a percentage of the price index for the standard ration in various years. Taking 1938 as 100% the figure had increased to 150% by 1947 and was 119% in 1953.

### Factors Affecting the Pig Industry.

The above account has shown how conditions have been much more favourable to pig producers than they were before the war. It has also brought out the increased importance of pig production, both in absolute size and relative to agriculture generally, compared with the 1930's. It may be useful to discuss the two main factors which have been responsible for this change - government policy and economic considerations.

In most years since the war, economic factors alone have been sufficient to ensure a prosperous agriculture. In addition to this, however, the willingness of the Government to assist agriculture has also played a part, and this has been very apparent in the case of pig producers in recent years.

#### Government Policy.

Before the war, the Government was playing an increasingly important part in British agriculture. Farming was far from prosperous, and during the 1920's there had been various attempts to set up organisations by voluntary means which would put farmers in a stronger position with regard to marketing their products. The voluntary nature of these organisations was considered to be largely responsible for their failure because producers could disregard the arrangements whenever it suited their own individual interests. To overcome this difficulty the Agricultural Marketing Acts of 1931 and 1933 were passed, giving compulsory powers to schemes which had the support of a sufficient number of farmers.

In the pig industry, action was taken under these Acts by setting up the Pigs Marketing Board, the Bacon Marketing Board and the Bacon Development Board. The Pigs Marketing Board was the body of most direct interest to pig producers because it was the farmers' marketing body. Under this scheme an attempt was made to regulate the supply of bacon pigs by arranging contracts between producers and curers. Producers contracted to deliver a given number of bacon pigs within a certain period and agreements were made for settling prices. In addition, the Government sought to aid the home industry by a policy, begun in 1932, of imposing quotas on bacon imports.

These Government attempts to help pig producers were far from being a complete success and there are several reasons for this. In the first place, the restriction on imports did very little to raise the price of the home product. Secondly, the contract arrangements between producers

and curers were complicated and producers found difficulty in adhering to the terms of agreements. Perhaps the main weakness was the fact that the marketing of pork pigs was not regulated, so that this section was continually having an unsettling influence on the industry as a whole. On the outbreak of war in 1939, the marketing of pigs was taken over by the Ministry of Food as the sole buyer, so the system of selling on a contract basis was never satisfactorily established.

In post-war years, government policy has developed considerably from its pre-war efforts. The principle of Government responsibility for agricultural prosperity was embodied in the 1947 Agriculture Act which had as its aim the promotion and maintenance of a stable and efficient agricultural industry. This has been implemented by agreements on prices between representatives of the Government and farmers at the Annual Price Review, and the Government is committed to see that producers receive these prices.

In the case of pigs for slaughter, as with other fatstock, these agreements were fulfilled until 1954 by sale to the Ministry of Food at fixed prices. This meant that farmers were assured of a guaranteed price for their products which would not be subject to short-term fluctuations. Since the middle of 1954 there has been a change in the system of marketing. The position now is that, whilst the Government guarantees an average price (the collective guarantee) over the year for all pigs subject to guarantee payments, there is no longer any assurance that every individual pig will fetch this price.

It is true that there is an individual guarantee below which the return for any pig eligible for the guarantee cannot fall. But, above this, returns can be affected by market conditions and might vary at different places or dates, or according to consumer preferences for different qualities. Considerable concern was expressed by many in the farming industry over the prospects of a return to the auction system of marketing. As a result of this concern, the National Farmers' Union set up the Fatstock Marketing Corporation in 1954 with the aim of giving producers the benefits of deadweight grading and some stability in prices. The Corporation commenced buying pigs as soon as the free market system came into being. This organisation has a contract with the curers which covers over 90% of the bacon pigs produced in this country, and it also accepts pork pigs. The F.M.C. offers prices announced in advance for the various grades, and these prices are uniform over the whole country. It also seems to follow a policy of preserving steady prices over time because, although its prices may vary seasonally, there is considerable stability in the week by week prices.

The Government policy of guaranteeing the price of agricultural products has resulted in a considerable expenditure of money in the form

of guarantee payments in recent years. Although there was a change in marketing methods last year, the Exchequer liability incurred by supporting prices of agricultural products was still very great. In other words, the Government has attempted to introduce greater flexibility into the prices which individual producers receive but continues to acknowledge responsibility for preserving the prosperity of the agricultural industry as a whole.

This brief account indicates the increasing extent to which the Government was beginning to pursue a policy in support of agriculture even before the war. It is only in post-war years, however, that the Government has adopted an active policy on a really large scale. It is unlikely that this great change could have occurred in such a comparatively short space of time if war-time experiences had not attracted so much attention to agriculture.

#### Economic Factors.

Since the war the agricultural industry has shared in the gains made by the whole economy as a result of conditions of full employment. Also, the world shortage of many agricultural products both during and after the war meant that world prices of these products compared with pre-war years had increased by a good deal more than those of manufactured goods. The result was that this country has been paying more in terms of exports for its food imports. In this situation, compared with pre-war, home agriculture could expect to get more for its products in relation to prices for industrial goods. In addition to this, there was a great shortage of foreign exchange so that to some extent it has been worth while to offer prices above the world level for certain products in order to maintain this country's small gold and dollar reserves. These factors have all combined to have a favourable influence on agriculture generally, and the pig industry has shared in the gains made as a result.

The position in the immediate post-war years was especially favourable with regard to pigs. During the war, the number of pigs and other livestock for meat was greatly reduced owing to the need for growing crops for direct human consumption and the restriction on imports of animal feedingstuffs. The result of this policy was that by 1947 supplies of home produced meat, especially pig-meat, were much lower than pre-war. With the need to economise on imports, total supplies of meat available for consumption were well below the figures for 1938. Further, owing to the increase in population which had occurred between the two years, the difference in meat consumption per head was even greater. By 1947, then, meat consumption had been below a normal peace-time level for many years, and rationing continued.

These facts resulted in a drive for increased agricultural output and, with the launching of the Agricultural Expansion Programme in 1947, special emphasis was put on the production of livestock and livestock products. Considerable encouragement was given to pig production for two main reasons. In the first place, supplies of pig-meat had fallen by even more than was the case with other meat. Secondly, an improvement was required as soon as possible and a large increase in supplies of pigs for slaughter can be achieved much more rapidly than is the case with other fatstock. It is clear from this account that economic factors were greatly in favour of a large increase in pig production in this country.

One handicap to the pig industry in post-war years was the supply of feedingstuffs. Rationing of feedingstuffs during the war and immediately after was particularly strict in the case of pigs, and was necessarily a bar to expansion even in favourable price conditions. The ration was made more generous in the years following 1947, however, and rationing of feedingstuffs for pigs was finally discontinued from 1953.

### Prospects

There has been a great contrast in the position of pig producers between pre-war and post-war years. It is now clear, however, that the future presents certain problems for the industry. It has already been mentioned that pig prices in post-war years have increased relatively to 1939 by more than those of any other agricultural product except wool. It has also been shown that the pig price/food cost relationship has been more favourable to producers than before the war. In 1947, and for some years after, these facts could be explained partly by economic conditions and partly by Government policy. It is necessary to discuss whether such favourable prices can be expected to continue.

The first point to notice is that there is no longer a shortage of pig-meat, and consumption per head is now back to the pre-war level. Supplies of all meat are more plentiful than at any time since the war and it is very doubtful if sales of pig-meat can be increased at present prices.

The second point of importance is the fact that the price of the home product is high relative to that of imports. In recent years the home industry has been heavily subsidised, whilst the Government has made a profit on imported bacon. In spite of this, the home industry is supplying a higher proportion of total pig-meat in this country than it did before the war. This situation can no longer be explained solely by the need to restrict imports. The need to restrict imports from

European countries (nearly the whole of this country's imports of pig-meat come from Europe) is less than it was in the years immediately after the war. This is partly due to some improvement in the U.K's position in international trade and also by arrangements in Europe to facilitate trade.

In the face of these changes in the economic position of the pig industry the very favourable relationship between the prices of pigs and food could only be maintained by Government action. The amount of subsidies paid out on pigs in recent years has been very great and amounted to almost £57 million in 1954/55. The Government has, however, made it clear that it is not prepared to continue to spend such large sums of money in support of pig producers. In 1954 there was a reduction of 3/- per score dead-weight in the price of pigs for slaughter and, as a result of the 1955 Price Review, there was a further fall of 2/6 per score dead-weight. Equally significant, is the statement in this year's White Paper on the Price Review which says, in the section on pigs, ".... the Government will have to look for further reduction in Exchequer liability in the future".

It seems that, whilst the Government is prepared to continue to accept responsibility for agricultural prosperity generally, it is not prepared to spend large sums of money in support of one section in an effort to counterbalance the true economic situation of that section. In other words, it is prepared to allow economic factors to play a large part in determining the relative position of each section.

The present economic situation and Government policy together indicate that the future position of pig producers may be less favourable. There have already been clear indications that the post-war expansion of the pig industry has come to an end. In these conditions, it is important to assess the ability of producers to meet their problems. In the next section a comparison is made of results achieved by a group of producers in 1938 with those obtained by another group in 1953/54.

Table 1.

Pig Population of the U.K.

<u>Year</u>	<u>Total ooo's</u>	<u>% of 1939 level</u>
1938	4383	99.7
1939	4394	100.0
1942	2143	48.8
1945	2152	49.0
1947	1628	37.1
1949	2823	64.2
1951	3891	88.6
1952	4962	112.9
1953	5165	117.5
1954	6251	142.3
1955	5827 *	132.6

\* Provisional

Table 2.

Pork, Bacon and Ham Supplies (U.K.)

	<u>'ooo Tons</u>			
	<u>Home Supply</u>	<u>Net Imports</u>	<u>Total</u>	<u>Home Supply as % of Total</u>
<u>1938:</u>				
Pork	178	38	216	82.4
Bacon and Ham	215	371	586	36.7
Total:	393	409	802	49.0
<u>1947:</u>				
Pork	15	5	20	75.0
Bacon and Ham	98	131	229	42.8
Total:	113	136	249	45.4
<u>1954:</u>				
Pork	345*	33*	378*	91.3
Bacon and Ham	239	301	540	44.2
Total:	584	334	918	63.6

\* Estimated. Information taken from C.E.C. Review "Meat".

Figure 1

Index Of Livestock Population - United Kingdom  
(1938 = 100)

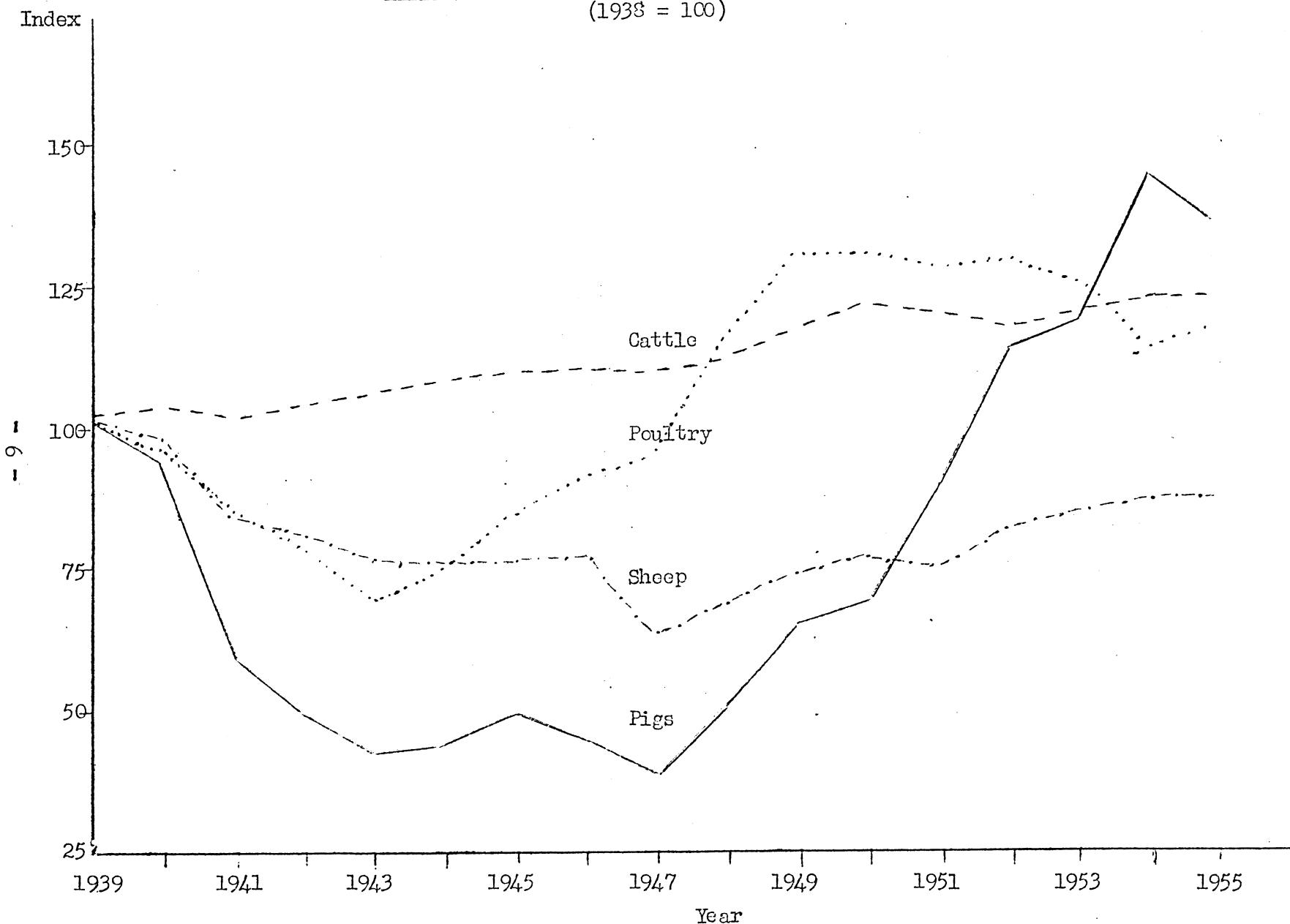


Table 3.

Meat Consumption Per Head (U.K.)

	<u>1938*</u>	<u>1947</u>	<u>1953</u>
	lb.	lb.	lb.
Beef and Veal	54.9	42.0	36.8
Mutton and Lamb	25.2	24.2	24.2
Pork	10.6	1.0	12.1
Bacon	<u>28.1</u>	<u>10.1</u>	<u>25.0</u>
Total:	118.8	77.3	98.1

\* Average 1934-38. Information taken from  
C.E.C. Review "Meat".

Table 4.

Value of Gross Agricultural Output of  
United Kingdom

	<u>Total</u>	<u>Pigs</u>	<u>Pig Output as %</u> <u>of Total</u>
	£'m	£'m	%
Pre-war average*	292	28	9.6
1944-45	582	23	4.0
1945-46	624	28	4.5
1946-47	616	26	4.2
1949-50	906	67	7.4
1950-51	935	88	9.4
1951-52	1089	123	11.3
1952-53	1156	162	14.0

\* Average of 3 years, 1936-37 to  
1938-39.

Figure 2

Comparative Price Movements of all Agricultural Products,  
Bacon Pigs, and Pork Pigs.  
(1936-8 = 100)

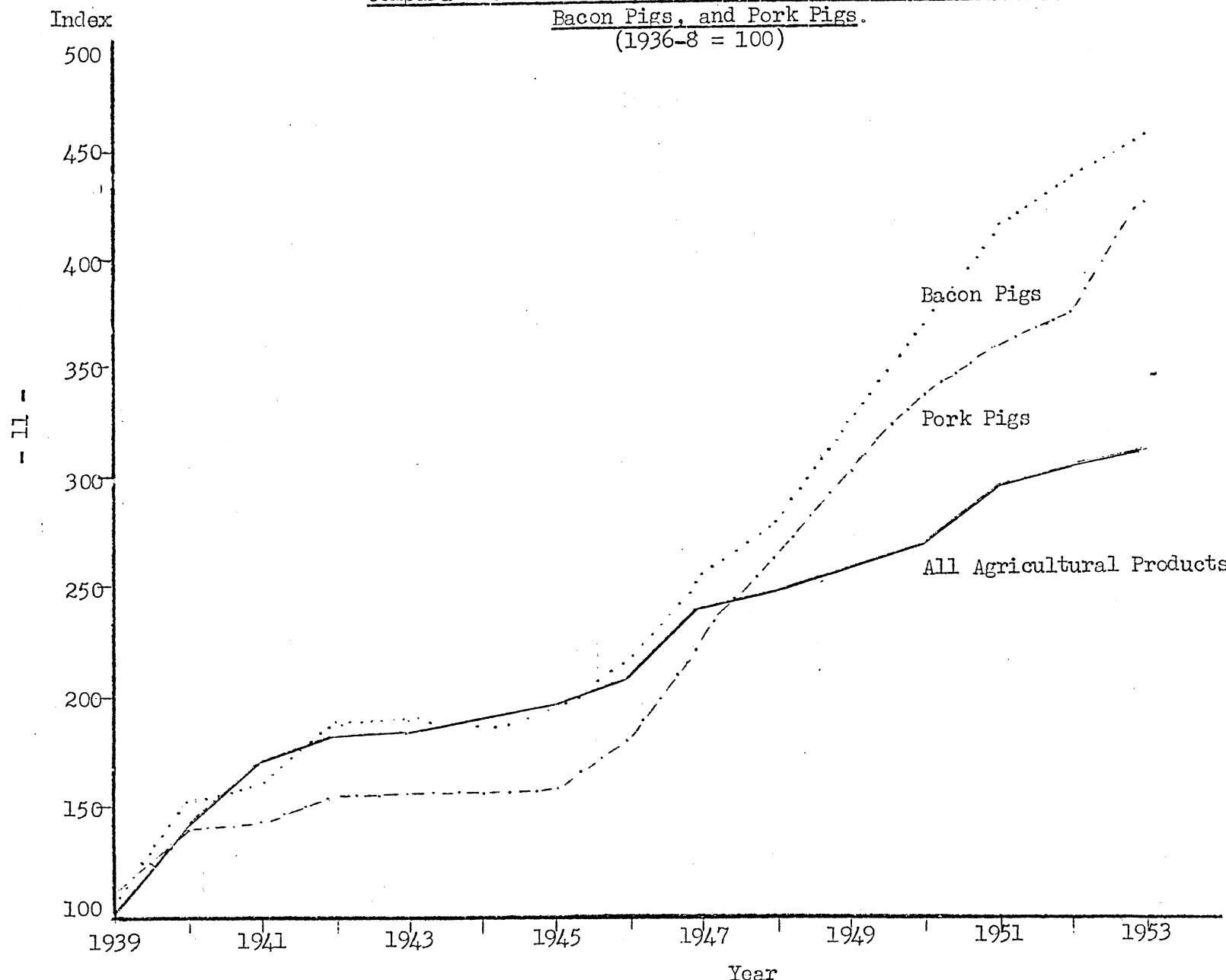


Table 5. Relation between Pig Prices and Food Costs

	1938		1947		1950		1953							
	<u>Cost per ton</u>													
<u>Components of Standard Ration:</u>														
	£	s	£	s	£	s	£	s						
Maize Meal (20%)	7	11	11	15	26	14	34	2						
Barley (40%)	7	17	17	2	25	10	31	2						
Wheat Offals (30%)	7	10	9	4	18	12	24	18						
White Fish Meal (10%)	15	13	22	4	34	5	49	8						
Standard Ration	8	9	14	3	24	11	31	13						
Bacon Pig Prices (sc. d/wt)	12/9d		31/10d		46/3d		57/1d							
<u>1938 = 100</u>														
Ration Cost Index	100		167		291		375							
Bacon Pig Price Index	100		250		363		448							
Bacon Index as % of Ration Index	100		150		125		119							

## II. COMPARISON OF PRE-WAR AND POST-WAR STUDIES

One of the pre-war studies into the economics of pig production carried out by S.T. Morris in the South West Province was for the year 1938\*. It is therefore possible to compare the results for the last pre-war years with those obtained in the recent pig investigation†, covering an approximately similar area, for the period October 1953 - October 1954. The two samples are not identical and are not necessarily representative of pig producers in the area. It is possible, however, that in some respects the two samples are unrepresentative in similar ways so that a comparison may provide useful results.

### The Samples

The 1938 investigation was restricted to farms in Devon and Cornwall, but the 1954 study also included some farms in Dorset. In each case, weekly record sheets were kept, and valuations of stock and feedingstuffs made at the beginning and end of the year. The 1938 study was part of a four year programme (1936-39) of investigation into the costs of pig production. It is expected that the 1954 investigation will be continued until at least 1956.

<u>County</u>	<u>No. of Farms</u>	
	<u>1938 Study</u>	<u>1954 Study</u>
Devon	16	25
Dorset	-	12
Cornwall	16	19
	32	56
	-	-

In the majority of cases the pig enterprise was part of the general farm but one or two specialist producers were included in the sample. In both studies emphasis was laid on the investigation of commercial herds. A few gilts and boars were sold for breeding purposes, but these were a small minority and would not appreciably affect the results.

\* "A Comparative Study of 32 Pig Enterprises for the year 1938".

+ "An Economic Study of Pig Production in South West England 1953/54"  
(56 farms)

The average value of output on farms in the 1938 study was £727, compared with £2253 on farms in the 1954 investigation. If allowance is made for the increase in pig prices (they were over four times higher in 1954 than in 1938) then it seems that the average scale of production was larger on the farms taking part in the 1938 study. The average number of sows on farms mainly dependent on breeding was 11.1 in the 1938 investigation compared with 10.2 in 1954. The sale of fat pigs accounted for 92% of the total number of pigs sold off farms in the 1938 study, but the figure for the 1954 investigation was 81%. The sale of stores and weaners played a more important part in the 1954 investigation than in the 1938 study. Purchased pigs accounted for 54% of total pigs added to the feeding stock in 1938, but it was considerably lower on farms in the 1954 investigation and amounted to 32%.

#### Profitability.

The following table gives the average levels of costs and profit (for definition of profit as used here, see the Appendix), per £100 of output in the 1938 and 1954 studies. Certain items, such as an estimate for rent, have been excluded from the original results of the 1954 study so that results for the two investigations are on a comparable basis. The table shows that producers in the later investigation obtained a rather higher level of profit if the two years are compared in this way.

Table 6. Costs and Profit per £100 Output

	<u>1938 Study</u>	<u>1954 Study</u>
No. of Farms	32	56
	£	£
Food Costs	75.8	68.7
Labour and Other Costs	<u>5.6</u>	<u>8.3</u>
Total	81.4	77.0
Profit	<u>18.6</u>	<u>23.0</u>
Output	100	100

It will be appreciated, however, that a comparison of profit per £100 of output is useless as a means of assessing profitability in the two periods. In 1938 a much greater physical output was needed to obtain £100 than in 1954, due to the change in pig prices. For instance, the average price per score (deadweight) for all bacon pigs sold off farms in the 1938 study was 12/9½d. In the 1954 investigation, on the other hand, the average

price per score had risen to 51/8d. This means that, although profit per £100 of output was not a great deal higher in 1954 than in 1938, the same physical output would yield a much larger total profit in 1954. In order to overcome this difficulty, a calculation has been made of the costs and profit margins in both years as a result of producing a given amount of pig-meat.

A comparison of profit in the two years would not be valid unless it took account of the differing importance of systems of production in the two studies. For instance, it was stated in the discussion of the samples that the fattening of purchased pigs played a more important part on farms in the 1938 study than was the case in 1954. The sale of stores and weaners, on the other hand, was a good deal less important in 1938 than in the 1954 investigation. It was found in both studies that the average level of profit for £100 of output varied according to the system of production, and was lowest in the case of farms which fattened purchased pigs.

For this reason, a comparison was made of profit from the production of the quantity of pig-meat worth £100 in 1938, according to the system of production. No comparison is made in respect of farms selling mainly stores and weaners because there were only two which followed this system in the 1938 investigation. It can be seen from Table 7 that the difference in profit between the two years on farms fattening home bred pigs was similar to that where mainly purchased pigs were fattened.

Table 7. Profit by System from Production of Pig-meat worth £100 in 1938.

	<u>1938</u>	<u>1954</u>	<u>% Increase in Profit</u>
<u>Farms Fattening Home-Bred Pigs:</u>			
No. of Farms	16	36	
Profit (from 155 sc. pig-meat)	£21.4	£96.2	350
<u>Farms Fattening Purchased Pigs:</u>			
No. of Farms	14	9	
Profit (from 188 sc. pig-meat)	£14.5	£63.0	369

The above table shows that the average profit from producing the same amount of pig-meat was much higher on farms in the 1954 investigation than on those studied in 1938. These figures alone, however, are not

enough to provide a comparison of the real value of profit in the two years. The purchasing power of the £ has diminished rapidly since 1938 - the 'Economist' index has fallen from 100 in 1938 to 43 in 1954\*. This means that the profit of £21.4 in 1938 for farms fattening home-bred pigs would be equivalent in purchasing power to £49.9 in 1954. Similarly, the 1938 profit of £14.5 on farms fattening purchased pigs would roughly approximate to £33.8 in 1954. Even these figures are approximately half the average profit actually obtained for an equivalent production of pig-meat by the farms in the 1954 investigation.

It is important to remember, however, that by no means all profit is spent on consumer goods. In the first place, no allowance has been made for certain overheads in the calculation of costs, so that these expenses would have to be paid out of profit. Secondly, in many cases a considerable portion of profit is reinvested in the farm business, and not spent on consumer goods. This means that an attempt to measure the change in the real value of profit by an index based on consumer spending is not completely satisfactory. Despite these qualifications, it seems certain that pig farming in 1954 was far more profitable than it was in the pre-war year.

There are two main factors which might account for the greater profit from pig production in 1954 compared with 1938. In the first place, methods of production may have been more efficient in the later year. Secondly, it was shown in Section 1 that changes in prices had brought about favourable conditions for pig production compared with 1938. This would result in increased profitability even if the level of efficiency remained the same in the two years. The remainder of this section is concerned with assessing the relative importance of these two factors.

#### Measures of Efficiency

##### Food Costs.

Table 6 shows that food was by far the most important cost in both years. The increase between the two years in food costs of producing the same physical output was 265%. This difference in food costs between the two years is explained to a large extent by the increase in feeding-stuffs prices. An attempt is made here to ascertain whether the cost increase was either more or less than can be accounted for by the higher prices of feedingstuffs.

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\* 'Economist' index of purchasing power of £ (based on all consumer spending).

The rise in the food prices per cwt meal equivalent of all food used was smaller than the increase in the price of a standard ration, using national figures (see Section II, Table 5). The price per cwt of meal equivalent of all foods fed was 9/- in the 1938 study, compared with 30/6d in 1954. This represents an increase of 23%, whilst the rise in the price of the standard ration (meal only) was 26 1/2. This may mean that farms in the 1954 investigation used rather cheaper types of feedingstuffs or more by-products than those in the 1938 study.

The main difference brought out by Table 8 is the higher proportion of home-grown corn that was fed in 1954 than in 1938. The cheapness of pre-war imported feedingstuffs meant that very little corn was grown on the farm for feeding to pigs. The increase in food prices which had occurred by 1954 resulted in a tendency to feed more home-grown barley. This corn was, however, valued at market prices, so the fact that it was home-grown does not account for the smaller rise in feed prices between the two studies than the change in the national price of the standard ration. A number of farms in both investigations fed skim milk, especially in West Cornwall, but in neither study did it account for an important part of total food fed.

Table 8. Analysis of Food Costs

<u>Type of Food</u>	<u>Per £100 Food</u>	
	<u>1938</u>	<u>1954</u>
Purchased meals and concentrates	97.6	87.2
Home-grown corn	0.8	8.3
Skim milk and whey	1.5	1.9
Other Foods	0.1	2.6
	100.0	100.0

It is now necessary to decide whether there was any difference in the physical quantities of food needed to obtain the same production of pig-meat in the two years. It will be appreciated, of course, that the amount of food required for a given production of pig-meat will vary according to the system of pig production. For instance, on farms fattening home-bred pigs some food will be fed to the breeding stock. For this reason, separate comparisons have been made of farms where mainly home-bred pigs are fattened and of those where most pigs for fattening have been purchased. The calculations involve some estimation in converting values of output into physical quantities of pig-meat but if this is remembered, then the comparison is useful.

On farms fattening mainly home-bred pigs, it required approximately 116 lb. of meal equivalent to produce a score of pig-meat in 1938 compared with 127 lb. in 1954. It will be understood, of course, that these overall conversion rates are determined by other factors besides the efficiency with which fattening pigs convert food. The amounts of food stated include a share of the ration of the breeding stock, so that if a large number of pigs is born per sow this should help to improve the overall conversion rate. Further, no allowance has been made for weight increases made by pigs which died before reaching slaughter weight, and this means that if mortality rates are reduced then the overall conversion rate of food should be improved. Farrowing and mortality rates are discussed in the next part of this section.

A similar calculation of food conversion rates has been made in the case of farms fattening purchased pigs. Once again, the estimation of physical production from the value of output is only approximate. On the farms following this system in 1938 it needed 108 lb. of meal equivalent to produce a score of pig-meat. In the 1954 study 123 lb. of meal equivalent produced a score of pig-meat. These figures are roughly equivalent to the efficiency with which fattening pigs convert food, because very few breeding pigs were kept on the farms which followed this system.

To sum up the comparison of food costs in the two years, a small saving may have been obtained by the substitution of cheaper types of feedingstuffs. The estimates of conversion rates must be treated with caution, but it seems safe to say that the results on farms in the 1954 study were no better, and may have been worse, than those recorded in the 1938 investigation.

#### Farrowing and Mortality Rates.

It would perhaps be surprising to find any great change in farrowing rates over a period of less than twenty years. Improvement in this respect is important but it is likely to be a long-term process. The number of pigs born per litter is not alone a sufficient measure of the productivity of sows. Regularity of breeding is equally important. For this reason, Table 9 gives both the average size of litters and the numbers born per sow per year, and it shows that the figures for the two years are very similar.

Table 9.

Reproduction Rates

<u>Per Litter</u>	<u>1938</u>	<u>1954</u>
No. born alive	9.7	9.5
No. deaths	2.2	1.4
No. weaned	7.5	8.1
<u>Per Sow per Annum</u>		
No. born alive	17.0	17.3
No. deaths	3.8	2.7
No. weaned	13.2	14.6
No. litters	1.8	1.8
Time per 2 litters	13.7 months	13.3 months

It may be possible to achieve a reduction in mortality rates by improved management more quickly than farrowing rates can be improved. In this connection it is interesting to note that both pre-weaning and post-weaning deaths were lower in 1954 than in 1938. Of course, the death of a pig which would soon have been ready for slaughter is a more serious loss than if a suckling pig dies. But the large number of deaths which occur before pigs are weaned may well mean that it is this category which offers the largest scope for improvement, and this may have an important effect on profit. For instance, in 1954 one pig fewer per sow per year died before weaning than on the farms which took part in the 1938 study. At present prices this might affect profits by as much as 5/- or 6/- on every pig produced.

The lower mortality rates of 1954 compared with those of 1938 can be partly accounted for by the fact that swine fever occurred in two herds in the earlier year, and these had death rates a good deal above the average. This fact, however, accounts for only a small part of the difference in the figures for the two years.

Table 10.

Mortality Rates.

	<u>1938</u> %	<u>1954</u> %
Pre-weaning	22.3	15.3
Post-weaning	3.9	1.9

Grading Results.

The grading standards which were in operation until July, 1954, were a good deal lower than pre-war standards. This means that nearly all pigs sold for slaughter in the 1954 study were graded on a more lenient basis than those in the 1938 investigation. This fact is of great importance when comparing the figures in Table 11. The percentages in each grade in the two years were fairly similar so that, allowing for the higher standards of 1938, it can be said that the average quality of pig produced was better in 1938 than in 1954. It should be noted that this higher quality was achieved with a conversion rate at least as good as that obtained by producers in the 1954 study.

Table 11. Grading Results  
(1954 Grading Standard lower than 1938)

<u>Grade</u>	<u>1938</u>	<u>1954</u>
A	64.6	64.8
B	26.0	22.8
C	7.5	9.6
L	0.1	0.3
F	<u>1.8</u>	<u>2.5</u>
	100.0	100.0
<hr/>		
Average weight	8 sc. 0 lb.	7 sc. 16 lb.
<hr/>		

The main reason which explains the higher average quality of pig produced in 1938 compared with 1954 is the fact that, in post-war years, the emphasis for a long time was on quantity rather than quality, and this was reflected in the prices paid for the various grades. In these conditions, it is not surprising that producers paid less attention than before the war to the quality of pig produced. Another factor which may account for some of the difference in quality as shown by these figures is that by no means all of the pigs which were sold for bacon in 1938 were graded. It is possible that the average quality of the non-graded pigs may have been lower than that of those which were graded, so that the grading figures for 1938 may over-estimate the level of quality achieved in that year.

Since the summer of 1954 there has been much more emphasis on quality production. In the first place, grading standards were raised to approximately the pre-war level, but the grading of belly fat has not

yet been re-introduced. Also, the decontrol of marketing of bacon and meat has meant that prices for different qualities vary according to the level of supply and demand. The F.M.C. price schedule for the various grades of bacon pigs has shown considerable variations for the different grades of bacon pigs over much of the past year. Pig producers have made a remarkable response to this incentive and the progress made over the last year is shown in Table 12. The proportion of Grade A pigs received by the F.M.C. has increased by a great deal since decontrol of marketing. Equally significant, is the increasing ability of producers to send pigs within the required weight range. The percentage of pigs which are either light-weight or over-weight has fallen heavily as a result of the F.M.C.'s price policy and producers' management ability.

Table 12. Grading Results of Pigs Eligible for Guaranteed Payments Delivered to Bacon Factories by F.M.C.

Grade	July 1954	September 1954	March 1955	W/C June 6
	%	%	%	%
A	39.5	46.2	57.1	57.8
B	21.9	24.5	23.8	24.0
C	14.0	13.2	9.6	10.3
L	0.2	0.2	0.3	0.3
F	4.5	3.3	1.8	2.0
Light wts	13.7	6.3	4.3	2.1
Over wts	<u>6.2</u>	<u>6.3</u>	<u>3.1</u>	<u>2.5</u>
	100.0	100.0	100.0	100.0
	—	—	—	—

There are, of course, other factors which influence the level of efficiency attained. It is thought, however, that those dealt with in this section are the easiest to consider in a comparison of this nature, and also the most important.

#### Effect of Price Changes.

This section concludes with an attempt to assess the extent to which price changes could have accounted for the different levels of profit in the two years.

Table 13 shows the output, food costs, and margin from the production of pig-meat worth £100 in 1938. Separate results in respect

of 1938 and 1954 are given for farms fattening home-bred pigs and for those where most fattening pigs were purchased. The table also shows the equivalent figures at the 1938 level of efficiency, using 1954 prices.

Table 13.

Margin over Food Costs from Production  
of Pig-meat worth £100 in 1938.

	<u>1938 Study</u>	<u>1938 Results at</u> <u>1954 Prices*</u>	<u>1954 Study</u>
<u>Farms Fattening Homebred</u> <u>Pigs</u>			
No. of Farms	16		36
	£	£	£
Output (155 sc.)	100	399	399
Food	<u>73</u>	<u>264</u>	<u>271</u>
Margin	27	135	128
	—	—	—
<u>Farms Fattening Purchased</u> <u>Pigs</u>			
No. of Farms	14		9
	£	£	£
Output (188 sc.)	100	405	405
Food	<u>80</u>	<u>289</u>	<u>309</u>
Margin	20	116	96
	—	—	—

\* Pig prices assumed are those recorded in the 1954 study. Food price is calculated by using price index for standard ration.

The figures representing the 1938 level of efficiency at 1954 prices are an improvement on the results which were actually achieved in 1954. This means that the higher margin achieved by farms in the 1954 study compared with those in the 1938 investigation can be explained completely by the more favourable prices ruling in the later year.

### III. CONCLUSIONS

The greater prosperity enjoyed by producers in recent years compared with pre-war seems to have been due largely to favourable prices. There is no evidence that efficiency differed greatly in the two periods.

A comparison of the results obtained from studies of pig production in the South West shows that the real value of profit made by a group of producers in 1954 was more than double that for the 1938 investigation. This was not achieved by a reduction in the quantity of feedingstuffs required to obtain the same amount of pig-meat. There was little change in the number of pigs born per sow per year, but the farms in the later investigation had better results with regard to pre-weaning mortality rates. A rough estimate shows that the quality of pigs produced was lower in the 1954 study than in 1938. By far the most important reason for increased profitability in the later year was the much more favourable relation of pig prices to feedingstuffs prices compared with 1938.

It is possible, of course, that the results of the two investigations are not representative of the change in efficiency of the industry as a whole. It is difficult to overcome this by a comparison on a larger scale owing to the small number of pre-war investigations into the economics of pig production.

The failure of producers in the 1954 study to obtain a higher level of efficiency than was achieved by those in the 1938 investigation might be explained by several factors. In the first place, producers have had to adapt themselves to the great change in demands made upon them. During the war, the need was to reduce pig production very heavily so that resources could be put to other uses. From 1947, on the other hand, emphasis was put on the need for a heavy increase in the quantity of pig-meat produced in this country. In these conditions, it is hardly surprising if there has been no great change in the level of efficiency. Secondly, the favourable price and cost conditions which have existed in recent years have attracted new producers into the industry, and some of these may be less efficient than producers with many years experience. Finally, favourable prices may well have led some producers to feel that the problem of raising efficiency has not been very urgent since the war.

The statement that efficiency may have been no greater in 1954 than in 1938 does not mean that pig producers made no progress during the period. Efficiency may have fallen during the war when the size of the industry was reduced, so that if the 1954 level of efficiency was up to the

pre-war standard this might represent an improvement over 1947. Also, producers made a great response to the demand first made in 1947 for an expansion in production. This in itself represents an achievement at a time when an increase in supplies of livestock and livestock products was considered to be very important.

Recently, there has been a change of emphasis from a demand for increased production to one for lower costs of production and higher quality pigs. This is likely to become increasingly important. In respect of quality, producers have shown a remarkable ability in the last year to respond quickly to price incentives and penalties. It seems likely that this progress will continue, though at a slower rate now that the initial improvement has been made. The lowering of production costs is likely to be a slow process and significant results cannot be expected quickly.

Perhaps the most important lesson which can be learned from the experiences of producers since the 1930's is the need for stability. The necessity, first, for a drastic restriction of the industry during the war and then for a rapid expansion from 1947, meant that it was impossible for producers to concentrate on lowering costs. If they are assured of reasonably stable conditions over the next few years, producers may well prove themselves as capable of meeting the need for greater efficiency as they were of meeting the demands made on them in recent years. This does not mean that no change in conditions should be allowed to affect producers. It does mean that every attempt should be made to make these changes less disrupting to the industry than they have been since 1939.

## APPENDIX A

### Definition of Terms

#### Profit.

In this Report profit is the difference between output and all costs (as defined in this Appendix) which have been charged to the pig enterprise. It should be noted that this profit figure does not coincide with management and investment income for the pig enterprise for two reasons. In the first place, no charge has been made for interest on capital, repairs to buildings used by pigs, or rent of land. Secondly, no share of general farm overheads (such as share of car, telephone, stationery expenses, accountant's fees, rent of farmhouse, etc.) has been charged.

#### Output.

The output (or production) is the value of the pigs sold during the year plus any credits, less the cost of purchased pigs, plus or minus the difference in the opening and closing valuations.

#### Food.

Purchased: The figures quoted are the delivered prices from which discount and credit for sacks (where applicable) have been deducted. Costs of grinding and mixing have been included.

Home-grown: Cereals and pulses have been entered at their estimated market value. Grinding costs have been included. Bulky crops such as fodder beet, potatoes, mangolds, etc., have been entered at their estimated cost of production.

#### Labour.

Paid: Charged at the rate paid on the farm including allowance for perquisites, production bonuses, overtime, etc.

Family: This is work done by the farmer or by an unpaid member of his family. Rate charged was that paid for equivalent type of hired labour.

#### Other Costs.

These were comprised of the following:-

Heat, light and water charges.

Service fees and haulage of sows.

Miscellaneous subscriptions, registration fees, etc.

APPENDIX B

Some Publications on Economic Aspects of Pig Production.

Pre-War.

Pig Keeping Costs and Financial Results for Six Years, 1923/24 - 1928/29.  
James Wyllie, Department of Economics, Wye College, London University, 1930.

Management in Pig Production. Farm Economics Branch, University of Cambridge, 1937.

An Economic Study of Pig Production, 1936/37. A.W. Menzies-Kitchin,  
Farm Economics Branch, University of Cambridge, 1937.

Some Economic Considerations of the Pig Industry in Devon and Cornwall, 1936.  
S.T. Morris, Department of Economics, Seale Hayne Agricultural College,  
1937.

A further Economic Study of Pig Enterprises on Devon and Cornwall Farms,  
1937. S.T. Morris, Department of Economics, Seale Hayne Agricultural  
College, 1938.

A Comparative Study of 32 Pig Enterprises for the year 1938. S.T. Morris,  
Department of Economics, Seale Hayne Agricultural College, 1939.

A Comparative Study of 26 Pig Enterprises for the year 1939. S.T. Morris,  
Department of Economics, Seale Hayne Agricultural College, 1940.

Post-War.

Some Economic Aspects of Pig Keeping in Wales. A.M. Morgan Rees.  
Department of Agricultural Economics, University College of Wales, 1952.

Costs and Returns in Pig Production, 1947/51. D.B. Wallace, Farm  
Economics Branch, University of Cambridge, 1952.

Profit in Pig Production. G.B. Clarke, Farm Economics Branch,  
University of Cambridge, 1952.

APPENDIX B (cont.)

Costs and Efficiency of Pig Production; a comparison between England and Denmark. H.M.S.O. 1954.

Costs and Returns from Keeping Pigs on 13 Yorkshire Farms, 1953/54. I.G. Simpson, Economics Section, Department of Agriculture, University of Leeds, 1955.

Some Economic Aspects of Pig Production, 1953/54. D.S. Thornton, Department of Agricultural Economics, University of Reading, 1955.

Investigation into the Economics of Pig Production in South West England, 1953/54. Estelle Burnside and W.M. Strong. Department of Economics (Agricultural Economics), University of Bristol, Newton Abbot, 1955.

