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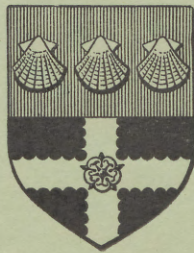
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Farm business analysis

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FARMING CHANGE IN BUCKINGHAMSHIRE

*Some Features Revealed in a
Study of Farm Business Structures
1961 — 1963*

By

Alan Harrison

Miscellaneous Studies No. 43

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of farm business structures. 1961-63.

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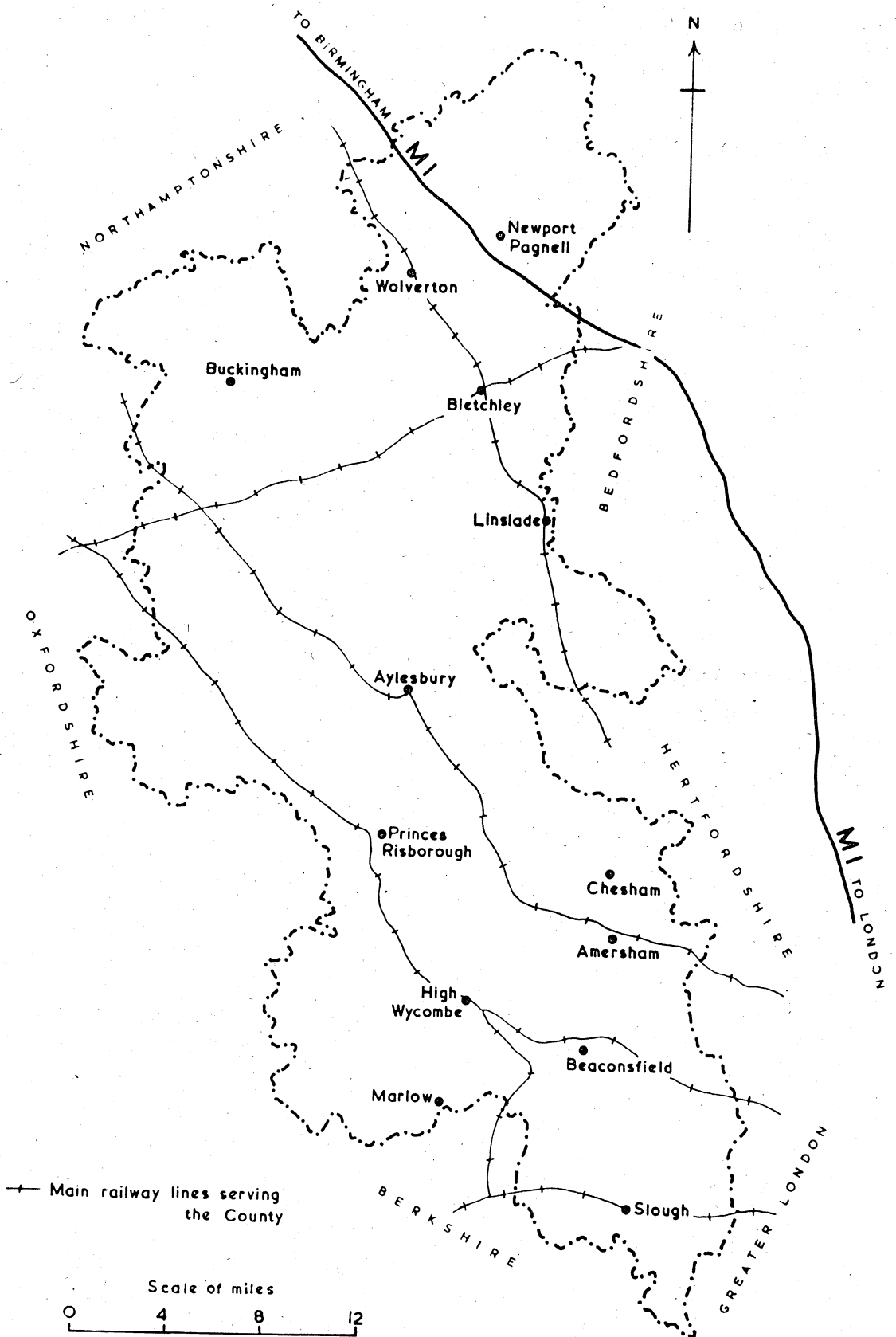
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BUCKINGHAMSHIRE



Introduction

An individual farmer may alter his scale of business activity in various ways. He may give up one farm completely in order to take another which is larger or smaller or which differs in any number of ways from the one being currently farmed. He may add land to, or take land from, a farm on which he is already established and operating. He may do so by buying or selling or by renting. If by renting then this may involve land under a full agricultural tenancy, under some form of longer-term leasehold or under a more restricted tenancy, frequently on a seasonal or grazing basis. Such changes in rented land may form part of a long-term plan to alter the pattern of farming units by a landlord who decides to farm on his own account land previously rented out to a tenant, or, to let off to a tenant land which he had previously farmed himself.

No change whatever may be made in the area of land being farmed yet greater or less degrees of change may be made in patterns and methods of production which involve a farmer - either alone or with others - in the use of more or less capital in one or more parts of his working or fixed farming resources. On the other hand, a farmer may alter the amount of personal effort he puts into his farming activities. He may take up or cease paid employment elsewhere. In the end he may decide to retire completely from farming.

In spite of the wide range of processes whereby the scale and tempo of farming may be adjusted it is only in terms of agriculture's aggregate product mix by counties and, to a lesser extent, in terms of its aggregate factor mix that the industry may be said to be well documented in official statistics and hence, almost inevitably, in secondary studies of farming structure and adjustment.

The present study, although not planned solely or even primarily as a study of farming change, may be claimed nevertheless to describe some salient features of farming change and to make good some of the gaps in factual information in this sector of agricultural economics. It is presented in the hope that fruitful discussion may ensue. Some results of more refined statistical testing of the data are presented in the appendix. Full scale analysis of that sort however would have delayed publication greatly without necessarily adding much to the field of study broadly considered. Further analysis of the data in both statistical and economic terms is regarded as a parallel and continuing task. This study forms the third stage in the analysis of material gathered in 1963 relating to patterns of farm businesses in Buckinghamshire, their sizes, types and general financial arrangements.

Study was made of owner-occupation and the broad pattern of land tenure and landlord-tenant relationships in so far as they bore on the sharing of the provision of fixed equipment. Some more general features of the data are presented in "Some Features of Farm Business Structures" J.A.E. Vol.XVI.No.3 where further details are given of the overall aims of the study and its organisation. That preliminary analysis was followed by a more detailed regional study of the county's farming. It was published in "The Farms of Buckinghamshire. Some Features of Farm Businesses in a County Adjoining Greater London".¹

1. University of Reading. Department of Agricultural Economics. Miscellaneous Studies No.40. February 1967.

Some Features of Farming Change in Buckinghamshire
as reflected in Official Statistics

The changes in the pattern of farm land use in Buckinghamshire between 1939 and 1965 as revealed in official statistics can be very quickly summarised. The area of crops and grass hardly changed but farming systems based very largely on the grazing of permanent pastures gave way to new ones in which over a third of the area of crops and grass was devoted to cereals and the area of temporary grasses was built up to almost five times what it was pre-war. In 1965 there were only 170,000 acres of permanent grass whereas before the war there were 290,000 acres.

The numbers of cattle reveal relatively little change over pre-war; this is in marked contrast to the numbers of pigs which more than doubled and to the numbers of poultry which showed a more than three-fold increase. During the war years farming systems based traditionally on pasture were seriously disrupted as the drive towards high output was based on a large arable acreage. The numbers of pigs and poultry were slashed so as to reduce dependence on imported feedingstuffs and a rapid fall was effected in the relatively un-intensive grazing sheep flock. The numbers of workers rose.

The changes between 1960 and 1965 are no less illuminating and provide an important back-cloth against which to interpret the complex patterns of resource, product and effort changes revealed on the individual farms with which this study is concerned. During those years the cereal acreage went up by one-third (from 90,000 to 120,000 acres) while the area devoted to other arable, market gardens and orchards fell. The area of permanent grass was reduced by over 18,000 acres and the area of temporary grass by almost 10,000. At the same time farming systems became less dependent on cattle and more dependent on pigs, poultry and sheep.

Labour of all types declined. Regular male workers fell by 1,000 (from 4,652) and regular female workers by 50 (from 340). The numbers of part-time and seasonal workers also declined. The work load that such farming systems represent cannot be easily summarised but it is very unlikely that it has been reduced and is certainly higher relative to the available labour force (less than two-thirds the pre-war level and a little more than half what it was in 1950) even allowing for the more rapid fall recently in the area of crops and grass.

The substitution of machine power for man power is a basic feature of this changed farming pattern on which there is often comment. One other important feature has received relatively little attention and as yet no separate study, namely the pattern of fixed capital agglomeration currently taking place.

Distribution of farmers in different age groups
according to degree of indebtedness (farm liabilities as % farm assets).

Age of Farmer	Liabilities as % Assets								
	Nil	.1 - 9.9	10 - 19.9	20- 29.9	30- 39.9	40- 49.9	50- 59.9	60 and over	Total
20-24	-	-	-	-	-	71.4	-	28.6	100
25-29	35.3	14.7	17.6	-	-	14.7	5.9	11.8	100
30-34	28.4	20.9	12.7	6.7	-	8.9	-	22.4	100
35-39	26.1	10.9	19.6	11.9	2.2	7.6	15.2	6.5	100
40-44	37.2	19.7	13.5	8.1	11.6	2.7	1.8	5.4	100
45-49	45.8	14.9	12.4	16.0	3.6	0.7	1.5	5.1	100
50-54	50.3	23.1	12.3	2.6	8.5	1.3	-	1.9	100
55-59	57.5	15.0	5.9	9.1	-	0.7	1.4	10.4	100
60-64	66.7	16.2	8.9	0.5	3.0	0.2	1.5	3.0	100
65-69	75.6	15.0	3.4	3.4	0.9	-	-	1.7	100
70-74	61.3	24.2	11.3	1.6	-	1.6	-	-	100
75 and over	78.8	3.0	15.2	3.0	-	-	-	-	100

With a constantly shifting distribution of farmers within an age profile relatively constant over time it might be expected that an essentially similar pattern of capital adjustment to that found in 1961-63 would result under a wide range of economic conditions ranging from the relatively buoyant to the relatively depressed. While the relative importance of additions and depletions would change so as to reduce the capital introduced as overall profit margins fell the numbers and distribution of farmers making the changes might follow nevertheless a pattern not unlike the one encountered on this occasion. Such a possibility is reinforced by the fact that borrowing is low in farming and the full impact of a market rate for funds is thereby somewhat reduced. In its place is a pattern of lower, personally acceptable, rates of return on outlays somewhat divorced from more narrowly commercial criteria of success.

Almost 54% of farmers borrowed no funds at all and a further 16% had liabilities amounting to less than 10% of their farming assets, including land. Only 13% had liabilities in excess of 30% of their farming assets. Heavy borrowers provided therefore quite the exception and were restricted in the main to relatively new comers to full-time farming. More than one half of those farmers who borrowed made use of bank credit on its own while almost 80% used some bank credit. Patterns of borrowing were nearly always simple and hardly a single farmer borrowed from more than three sources.

In terms simply of whether they borrowed or not farmers differed little from the tenure groups for the county as a whole. This was the case also with those making use of bank borrowing alone. Those making use of

This slow rate of decline in numbers of farmers is in very marked contrast to that taking place in the numbers of farm workers who were by 1965 less than two-thirds of their 1939 total. The whole of the decline occurred, however, in the latter part of the period for the labour force rose in the war and early post-war years. Between 1960 and 1965 one thousand regular male workers left farming in Buckinghamshire - a rate of decline of almost 6% per annum. At this rate the number of regular workers - in 1965 not much over 3,500 - will soon be less than the number of farmers. But the decline in numbers of farmers does not represent the total withdrawal of managerial effort from farming. Between 1936 and 1963 the proportion of part-time farmers (those with another, income-yielding, occupation) rose from 33% to 40%.¹ This process of withdrawal is not the result of already established farmers taking up another occupation, for such a change - or its counterpart from part-time to full-time farming - occurs very infrequently (about the order of one-tenth of one per cent. per annum) but has come about mainly because there have been more part-timers among new entry farmers than among those retiring.

A further major sector of change between 1936 and 1963 was found to be that of land tenure with owner-occupation replacing renting of land. In this sector the current pattern is not one of a small rate of change in only one or two categories but is the net result of adjustments on a relatively large number of farms concerned with differing types and quantities of land. It also is linked to new entries into farming however. Of those taking up farming as a career in Buckinghamshire in 1961 to 1963, for example, 90% were able to farm on the scale which they desired only by purchasing some, and in most cases all, the land they wished to farm.

The movement towards owner-occupation would not seem to have been associated with any marked mobility between differently located farms. No less than 83% of farmers had never moved from the first farm they occupied, 9% had changed their farm but within the same county of Buckinghamshire while 8% had moved in from another county. Those who had never moved are divided in much the same way as the county's total of farmers so far as tenure is concerned. Those who had moved are not so divided, however. Of those moving farm inside the county, tenants occur more frequently (48% against 31%) while, of those moving from outside the county, owner-occupiers are the more common (50% against 22%). The differences reflect, among other things, the importance of local knowledge and connections in securing a farm to let.

On general grounds it may well be thought that these major trends towards fewer farms, more owner-occupation and more part-time farming will continue for some time. The displacement of farmers is the result of two sets of factors, the first stemming from the advantages of larger scale farming, the second reflecting the wishes of industrialists and others to engage in farming and, at the same time, to secure the benefits of living in the country.

1. Harrison 1966 page 8, 14 et seq.

Now that the greater part of land is farmed on a basis of owner-occupation further movement may be expected to become somewhat more attenuated especially if there is a sufficient rise in the level of rents to provide land owners with a more adequate direct financial return than they have enjoyed in the past or if other returns to land ownership are sufficiently increased to attract new landlords as distinct from owner-occupiers. There are signs of such movements but none as yet, so far as Buckinghamshire is concerned, on a scale sufficient to halt the movement towards owner-occupation.

One way of attempting to discover which of recent trends seem most likely to continue into the future might be to examine the special characteristics of farmers just embarking on their farming careers during the period of study. The following section is devoted to that task.

New Entries to Farming in Bucks. 1961 to 1963

Of the new entries almost one half (49%) were part-time farmers, while 11% were companies and 40% were full-time farmers. The high proportion of companies may not be significant, however, as there is a high associated standard error. The cases concerned involved rather special instances of company take-over by a number of larger company creditors following the failure of small part-farming companies.

The figures provide little evidence of any fall in the proportion of part-time farmers and seem to confirm the tendency for more industrialist and urban elements to enter farming, for fewer than one in five of the part-time farmers had a manual secondary source of employment. Just over 20% of the part-time farmers just beginning farming had low investments of tenant's capital per acre (less than £25) and reflects a wish to enjoy "residential" farming with a relatively low proportion of invested capital. The remaining part-time farmers moved to high investment rates per acre quickly and without borrowing.

Full-time farmers, on the other hand, were in marked contrast and almost without exception had to borrow in order to begin farming. In this respect they revealed a relatively new feature of farming.¹ They represent, therefore, almost the only sector of farming where borrowers have committed themselves heavily in relation to the assets they control.

Such a situation need not necessarily be dangerous for such newcomers to farming may well earn much higher rates on their capital than those currently prevailing. Declining land values could well result in a highly risky, somewhat unstable, position however, for this greater indebtedness is a result of the need for almost 90% of new entry farmers to purchase land in order to

1. See Harrison 1965. (336/7).

begin farming and for two-thirds of them to buy all the land they intended to farm. At prices regularly in the range of £200 - £300 per acre and initial investment of some £50 per acre and upwards in working capital to be made, it is clear that only those with large personal fortunes were able to begin farming on any large scale without borrowing. The tendency for new entry farmers to concentrate on cereals and cash-crop systems of husbandry may reflect a need to pursue systems of low capital intensity in the face of heavy borrowing rates as much as any greater profitability of cereal and cash-crop production at the present time.

The continuation of the movement towards owner-occupation seems clear. At the same time renting cannot be dismissed as of negligible importance. Eight of the fourteen farms of over 300 acres were rented and, where landlords were investing additional capital, then it was usually at a relatively high rate.

Features of Acreage Adjustments 1961 - 1963.

The numbers currently withdrawing completely from farming are small but there is a constant process of adding to and reducing their area of land by a somewhat higher proportion of the remaining body of farmers. An indication is given below of the numbers of farmers and the acres of land involved. The figures are based on the upward and downward adjustments of currently operating businesses during the period 1961 to 1963 inclusive. All changes involving new entry farmers, at their time of entry, and all changes involving retirement of farmers, at their time of retirement, are excluded. The account is not so complete as might have been wished as resources available for the present study did not permit cases of displacement of land, persons and other major resources to be followed up in order to record subsequent employments.

Over the three years 802 farmers - one-third of the sample - either added to or reduced the area of land they were farming. The greater part of these (659 or 82%) made only a single upward or downward adjustment while the remaining 18% were involved in more than one change. Each year, therefore, it would seem that at least 315 farmers¹ or about 12% of the total number of farmers were involved in acreage adjustments. This is in marked contrast to the numbers moving out of and into farming in any one year and the resulting net decline in numbers of farmers in any one year.

Of the 659 making a single change in acreage, 362 added to their land and 297 reduced it. Both these groups were mainly (75%) medium to large farms (50-300 acres) and were similar in terms of tenure also. They differed in that almost 62% of those adding land were full-timers whereas only 48% of

1. $1/3$ rd of 82% of 802 (220) plus $2/3$ rds of 802 minus 659 (95) = 315.

those reducing land were. They differed also in that those reducing land were less heavily indebted (60% had no liabilities) than those adding land (45% had no liabilities). However, those adding land included some of the more heavily indebted farmers - 17% were over 50% indebted (in terms of farm liabilities) against 5% for those reducing land.

By and large those adding to their land-holdings were also those investing in other farming capital - 67% of those adding land were also adding other resources. But 43% of those reducing land added to their other farming capital. Moreover of those adding to land 18% reduced other farming capital while of those reducing their acreage 36% reduced other farming capital.

Summary of Acreage Adjustment by Farmers (excluding any cases of retirement or first entry)

13091.5	Rented acres added.
7154	Rented acres taken away
5937.5	being an estimate of the greater number of rented acres added then given up. ¹
4099	Taken in hand by landlord ² .
2133	Owner-occupied land newly let to tenants.
1966	being an estimate of the reduction in land available for renting.
5510.5	Bought by (sold to) sitting tenants.
14099.5	Bought for owner-occupation.
7031.5	Sold by owner-occupiers.
7068	being an estimate of other sales (e.g. by landlords able to offer possession or by retiring owner-occupiers).

New entries and current retirements among existing farmers are specifically excluded but the figures just given do contain an estimate of the area given up by retiring farmers, over and above any land taken by new entries, since land released by retiring farmers could feature in the additions made by currently operating farmers.

-
1. Such an imbalance could arise because of new owner-occupiers retiring and subsequently letting their land or because the land of retiring tenants was split up between existing farmers.
 2. Only landlords who were already owner-occupiers feature separately. Landlords taking land in hand for the first time do not.

Thus :-

<u>Gains</u>	<u>Losses</u>
13,091.5 (+ rented)	7,154 (- rented)
4,099 (landlord in hand)	2,133 (owner-occupied to rented)
14,099.5 (+ owner-occupied)	7,031.5 (- owner-occupied)
<hr/>	<hr/>
31,290.0	20,417.5
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The difference between these two totals of 10,872.5 acres or 3,634 acres per year represents the surplus of land released by retirements over land taken by new entries. Conversely, in times of rising numbers of farmers, losses would have been greater than gains and the balance an indication of the surplus of land going to new entries over that released by retiring farmers.

A further though very rough check is possible on this figure. A firm estimate of the acreage entered into each year of the three year period (1961-1963) by farmers currently beginning their careers is 3,342 acres. The only firm information relating to retiring farmers, however, is for 1963 and suggests that some 7,910 acres would be released by farmers retiring in that year. The difference of 4,578 acres is somewhat bigger than the 3,634 acres previously arrived at, but, as the information relating to retirements may have erred on the high side because of over-estimating the number who would actually move off their farms during the year in question (in some cases legal proceedings were involved consequently outcomes and time periods were not known with complete certainty) nevertheless, the number may be thought to serve well enough for present purposes.

That so many farmers were involved in acreage adjustments itself reflects the intricate patterns of land tenure and land ownership which exist in the county. No fewer than 13 different tenure categories were employed in an earlier study to describe the county's farms according to land tenure. Even this took no account of more complex arrangements relating to repairs and provision of further capital.

So far as this county is concerned, the traditional notion of landlord-tenant relationship as applying between a tenant and a single landlord holds in only a minority of cases. The whole farm would seem only relatively infrequently to be the unit in terms of which acreage adjustments are effected and the whole field of land tenure, as far as usage is concerned, to be a good deal more flexible than is generally assumed.

The preponderance of additions to farm sizes by means of purchases by owner-occupiers is clear from the above figures; on the other hand, other categories of land adjustment are also important. Sales to sitting tenants averaged some 1,800 acres per year and additions to rented acres were not far

short of sales by owner farmers. While, on the one hand, a large number of landlords were taking land in hand there was, at the same time, a large amount of land being made newly available for letting by owner-occupiers no longer wishing to farm themselves.

Land under seasonal or grazing tenancies formed an important part of rental land entering into acreage adjustments. In total 4,486 acres of this type of land were involved over three years; 2,902 acres fell into the category of 'added rented' and 1,172 acres into the category of 'new lettings by owner-occupiers'. It is, therefore, an important category in its own right and particularly important it would seem where owner-occupiers wish to be rid of the burden of farming the land but not to lose almost complete control of it by allowing it to be let under a full agricultural tenancy. This category of tenure is very important in the southern part of the county¹ where relatively large areas are to varying degrees earmarked for development. It permits them to be kept in some form of productive use up to the time of development. Adjustments of farm size by means of grazing tenures were of little importance to farms of over 300 acres and of negligible importance on farms of over 700 acres.

A further small land tenure category was of importance in some parts of the county though restricted in the main to the south. This involved land under gravel working tenancies. Under this form of tenure the gravel company, having obtained ownership, secures the right to work the land for gravel at relatively short notice and in return undertakes where feasible to return the restored land to the tenant after working. Over the three years 1961 to 1963, 306 acres were taken for immediate working, 168 acres were returned after working and a further 1,532 acres of farm land came under new gravel leases to await gravel extraction in due course. The interruptions to working of gravel and to farming are kept within tolerable limits by this means and the net amount actually taken out of farming and into current working is low - currently of the order of 50 acres per year.

It is not only the pattern of land ownership and use which is changing, but rented land is being subjected to a relatively rapidly changing distribution of rewards as between landlords and tenants. The subject of rents has been studied over a number of years². The next section does not attempt a full analysis of the material yielded by the present enquiry but is restricted to features of special regional interest and to matters closely connected with investment decisions in farming.

1. See Harrison 1966 page 24.

2. The interested reader can refer to a series of C.L.A., Cambridge and A.L.S. studies, or, more recently, to A.L.S. articles in copies of 'Agriculture'.

Some features of Rental Changes in Bucks.

More than three out of five of the farms in Buckinghamshire in 1963 had some rented land and almost one in two rented 50% or more of the land they farmed. In 1963 30% of rents (the average rent paid for all the land on the individual farm) were over 80/- per acre but only 15% were over 90/- per acre; conversely 39% of farm rents were less than 60/- per acre. Rents of 60/- to 65/- tended to be the most common. Although rents have increased markedly since the 1958 Act directing arbiters not to grant any concessions to sitting tenants, rents in Buckinghamshire are still low in relation to the price of land. It is not claimed that the relationship between rents and land prices should necessarily be invariable and that the two should keep closely and steadily in step. At the same time relatively low rents have tended to accelerate the decline in landlordism and it may be wondered whether, at their present levels, they are likely to provide a serious alternative to the movement towards owner-occupation.

Three out of five rents had been increased during the period of tenancy; three out of five increases involved sums of more than £1 an acre. While the tendency for rents to increase is certainly a real one, therefore, it has not affected all farms. Only a relatively small number would have been tenancies of less than three years (the period for which a negotiated rent remains valid) and hence not due for reassessment in the period of study. Nor has the movement towards higher rents occurred equally over all parts of the county. Although rents in the south were tending to rise before the 1958 legislation they are generally higher in the north because of the better quality of both farms and land. Small farms rather than large ones showed some tendency to undergo rental increases before the new legislation.

Percentage distribution of farms in North and South
Bucks¹ according to rent per acre 1963.

	<u>Rent per acre</u>						
	<u>40/-</u>	<u>40-50/-</u>	<u>50-60/-</u>	<u>60-70/-</u>	<u>70-80/-</u>	<u>80-90/-</u>	
NORTH	6.3%	9.7%	15.2%	22.6%	15.7%	15.0%	15.5% (100)
SOUTH	29.2%	14.3%	9.6%	16.4%	4.3%	10.8%	15.4% (100)

Perhaps the most striking feature of rent increases, so far as the present study is concerned, is that on three-quarters of the farms where they had taken place there had not been any additional investment of capital by

1. The rural (and associated urban) districts of Newport Pagnell, Buckingham, Winslow, Wing and Aylesbury made up the North, Wycombe, Amersham and Eton the South.

the landlord. On the quarter where there had been landlord's investment the rental increase generally represented a high rate on the outlay. It would seem more true to say that an investment by the landlord provided the occasion for a large increase in rent rather than the reason for it. Only 13% of cases where rental increase and provision of fixed equipment coincided involved a rental increase of less than 10% on the outlay. The full figures are set out below.

Last rental increase as percentage of new investment by
landlord at the time of increase. Percentage distribu-
tion of farms. Bucks. 1963.

Rental increase as % of new investment by the landlord at that time.

<u>10%</u>	<u>10-20%</u>	<u>20-30%</u>	<u>30-40%</u>	<u>40-50%</u>	<u>50-60%</u>	<u>60-70%</u>	<u>70-80%</u>	<u>80-90%</u>	<u>90%</u>
13.3%	5.3%	5.3%	9.3%	10.6%	15.1%	6.2%	3.5%	0.9%	30.5%
(100)									

The broad pattern of investment changes on Bucks.farms 1961 - 1963.

Over the three year period, 59% of the farmers in the county added buildings or other equipment or made changes in stocking and cropping which involved them in additional capital investment. A further 16%, however, made changes which reduced the amount of capital being employed. A further 25% made no capital consuming or releasing changes in organisation and were in 1963 employing the same amount of capital as in 1961. Three out of four farmers, therefore, made changes involving an alteration in the amount of capital invested in their farms.¹

Almost 47% of farmers made changes involving an increase in the amount of capital in the farming system itself (so-called tenant's capital). Conversely, some 32% made no capital demanding change in their farming system and a further 21% made changes in their system which actually reduced the amount of capital being employed. Some 45% of farmers were involved in additional investment in buildings and a further 15% in the addition to, and the improvement of, services (water, electricity, drainage and so on).

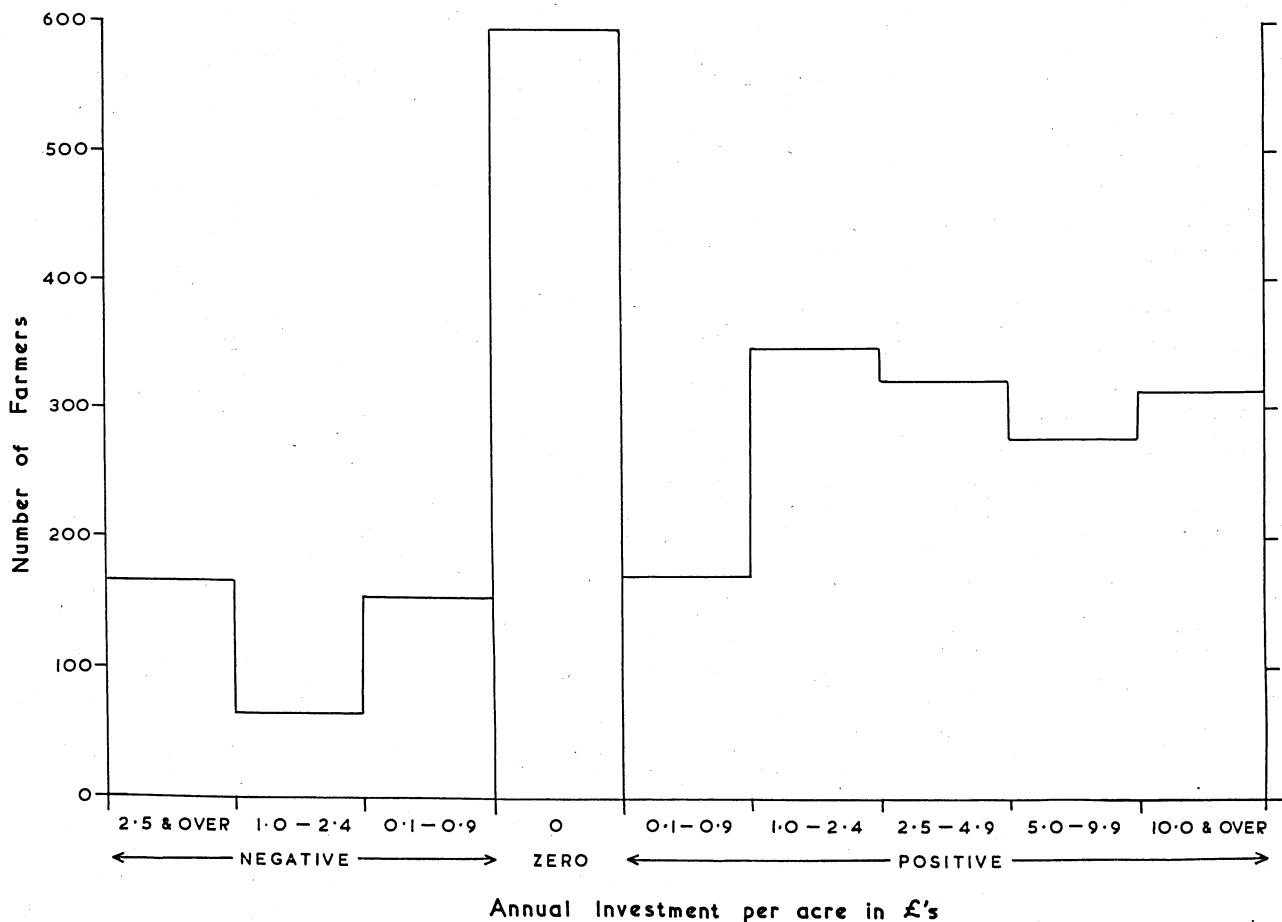
It is important to note that it is only capital consuming or capital releasing changes that are involved. During the same period many other

1. These changes are in addition to any acreage changes that may have been made during that period. Furthermore no attempt was made to measure standards of maintenance of fixed equipment which will therefore be in addition to the figures quoted. They would, of course, need to be taken into account in calculating any net capital formation.

adjustments must also have taken place - use of new varieties and types, alterations in day-to-day and seasonal organisation and routines, in general managerial and working efficiency - a wide range of changes frequently lumped together under the single, though perhaps not otherwise helpful, title of qualitative.

Compared with the few movements into and out of farming the numbers involved in capital changes were large. A high proportion of such changes, however, involved only small sums and either negative or only slightly positive rates of change. Almost 55% of farmers made either no change or changes

Number of farmers adding to, reducing, or leaving the amount of capital invested unchanged. Buckinghamshire 1961-1963.



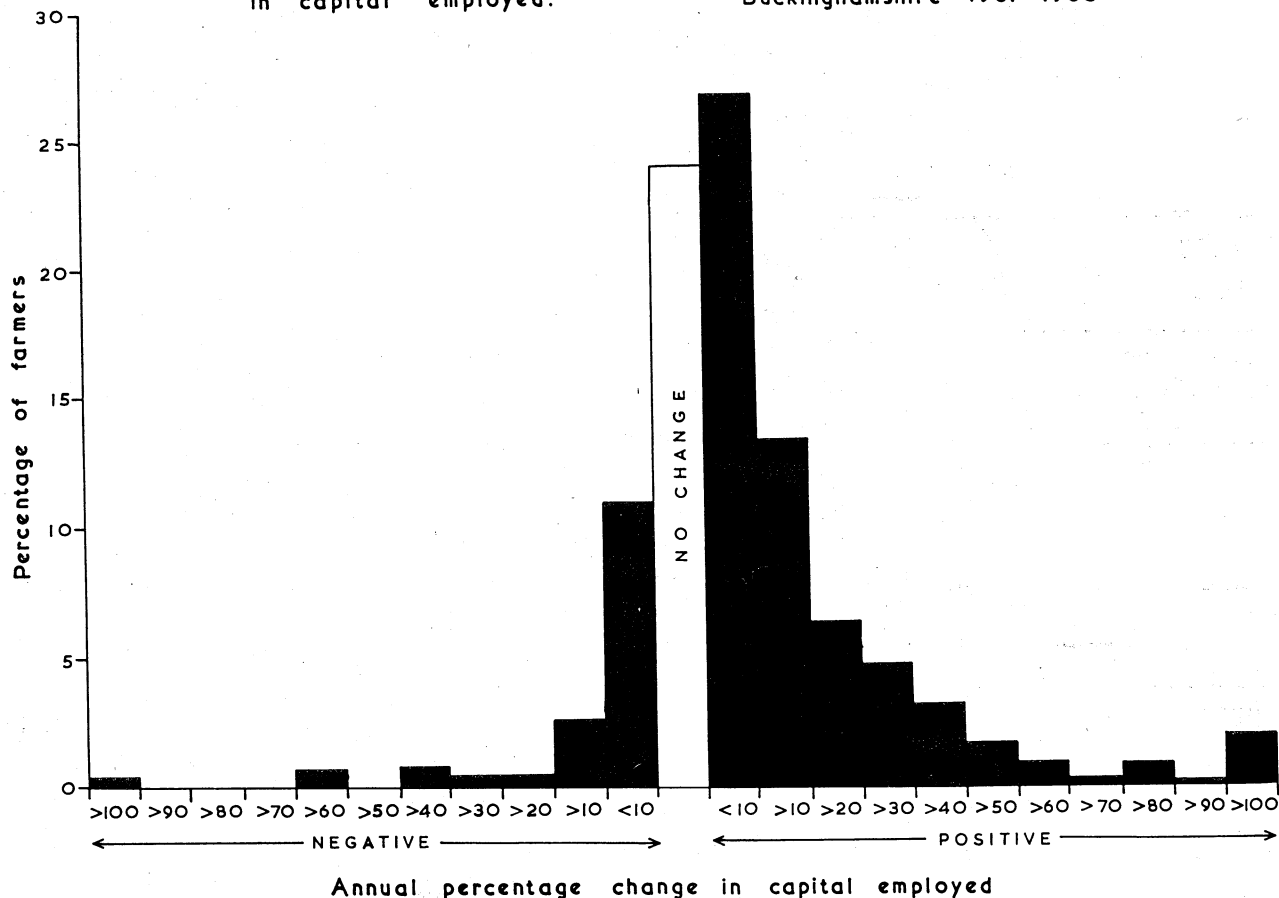
within the region of plus or minus 50/- per acre per year. The 'normal' situation may, therefore, be thought of as being a 'no-change' one. To a large extent it would seem, moreover, so far as the farming system is concerned that changes largely cancel out in the aggregate and that it is not always easy to isolate trends.

The central point in this examination of farming change therefore needs to be one emphasising not change but the lack of it in farming. Farms are relatively small businesses (almost 60% of them in 1962 had an investment of capital in total of less than £10,000), run on a family basis and relying to only a limited degree on borrowed funds (over 70% had liabilities of less than 10% of their assets, 56% had no liabilities at all other than those incurred in the general way of trade). Between 1961 and 1963 over a half of the farmers made either no change in their farming system or a change requiring less, instead of more, capital. Even allowing for investment in buildings, and taking account, therefore, of investments by landlords as well, showed that on just over 40% of farms there was no more capital being employed in total (ignoring any rise in land prices) at the end of 1963 than at the beginning of 1961. The numbers making heavy introductions of new capital were relatively small, only 13% investing over £10 per acre per year. It is true that 47% of farmers added capital to their farming systems but the greater part of these were at rates of less than 50/- an acre. Moreover 21% of farmers reduced the amount of capital in their farming systems. The 47% added £1,816,020 to their farming systems but, at the same time, the 21% released some £458,644 for investment elsewhere.

While, therefore, there is evidence of much more change within farming than is often suggested, to a large extent, this process of change is in terms of a large number of very small upward and downward adjustments. This pattern of small scale adjustments of capital relying in the main on internal funds reflects agriculture's high risk position. It is not a product of farming's dependence on climate, or concern with biological growth processes of all kinds, but arises because farming's small scale pattern of firms is based almost entirely on individual proprietorships run by individual proprietors whose entire personal fortunes are 'at risk' in their farming businesses.

The result is that - as the following table shows - relatively few farmers made outlays which were large in relation to their existing scale of business activities.

Distribution of farmers according to annual percentage change
in capital employed. Buckinghamshire 1961-1963.



Farmers with no liabilities tended to be those making no change in intensity of capital employment. Moreover, farmers making the largest reduction in investment tended to be those whose liabilities represented a relatively high proportion of other assets - in some cases this was because of pressure from creditors, in most however it represented a prudent pruning of commitments and a certain retrenchment in reaction to being over-extended.

It will be helpful to look at the total sums involved and the roles played in aggregate by the different tenure groups. The main figures are set out on the next page.

BUCKS. 1961-63. INVESTMENT CHANGES¹

£s
in Farming Systems

	By Tenants	By owner-occupiers	By part Tenant part Owner	TOTAL	PER ACRE
MINUS	104380	237614	116650	458644	-1.2
PLUS	418894	894829	562297	1876020	+5.1
NET	314514	657215	445647	1417376	+3.9
	22.2%	46.4%	31.4%	100%	

in Buildings and Fixed Equipment

	By Landlords	By Tenants	By owner-occupiers	TOTAL	PER ACRE
MINUS	1200	-	16760	17960	-0.05
PLUS	486935	179434	1327912	1994281	+5.4
NET	485735	179434	1311152	1976321	+5.4
	24.6%	9.1%	66.3%	100%	

in Services (Water, Drainage, etc.)

PLUS	20776	53760	315804	390340	+1.1
	5.3%	13.8%	80.9%	100%	

1. Cash totals are inclusive of any grants to which investors might be entitled. Total figures are something of an underestimate because of the absence of data from the non co-operating farms (some 5% only). Where there is no co-operation, however, then there must always be a danger of distortion - in this case certain types of part-timers, those relying on certain types of finance and perhaps the generally less successful being not adequately represented. See Harrison 1965 and discussion. Standard errors associated with the various sub-totals in the above table are calculated and commented on in the Appendix.

The additional capital introduced into farming in the form of buildings (including farm houses) fixed equipment and associated services was some £950,000 greater than the net addition by way of working capital. The part played by specific government support measures in this sector is of course important, nevertheless, the whole explanation does not lie there; whereas 45% of farmers invested and would presumably have qualified for grants only 31% (or some 67% of those presumed eligible) did so.

One point of primary importance to emerge is connected with the earlier discussion of rents and concerns the role of landlords in providing additional farming capital. They were responsible for a quarter of the 'buildings' capital added but, on those same farms, tenants provided in total well over a third of the capital sum provided by their landlords - and this for items traditionally a landlords' responsibility. On the other hand landlords provided only a little over 5% of the additional investment in 'services' and, in total not much more than a third of that provided by their tenants. The investment by tenants in this field emphasises their security of tenure and reflects the long period of low rents which they have enjoyed. That they tended to invest for the relatively short-term, however, raises the question of whether or not some form of longer term leasehold might not be in some cases in the interests of both tenant and landlord alike in order to provide tenants with the medium term security necessary to recoup investment in fixed equipment and to rid some landlords of an unwelcome sector of management and investment.

So far as tenure is concerned owner-occupiers dominated the investment picture, however. They provided two-thirds of the additional investment in buildings, four-fifths of the capital in services and, dividing the share of tenant - owner-occupiers equally between tenants and owner-occupiers separately, nearly two-thirds of the extra capital introduced via working resources of different types.

Of the net total of £3,784,037¹ extra capital invested in farming in the three years

Landlords provided	13.3% (12.8% Buildings & 0.5% Services)
Tenants provided	14.4% (8.3% Working, 4.7% Buildings and 1.4% Services)
Tenant - owner-occupiers provided	11.8% (all working)
Owner-occupiers provided	60.5% (17.5% working, 34.7% Buildings, 8.3% Services)
	100.0%

1. The cash totals are inclusive of any grants to which investors might be entitled.

Two-thirds of the additional capital was introduced by owner-occupiers therefore - double that of the other two investing groups together.

Owner-occupation has been the means of providing the greater part of the land required by new entries to farming over recent years. It has provided the chance for the young, ambitious and energetic to begin their farm business careers. At the same time its additional capital demands have tended to sift out those most short of capital. Once into farming, however, rising land values have provided an increasing equity base for borrowing and investment so reducing the risks of early farming years and mortgage servicing on relatively slender margins

Important as the role of owner-occupiers undoubtedly is, however, there is a good deal which knowledge of their special circumstances alone cannot account for adequately. It is to a description of the wide range of causal factors which would seem to be involved that we must now turn.

Some more detailed features within the different sectors of farming change.

Three sets of factors are closely connected with patterns of farm capital deployment. Firstly, there are factors connected with the longer term structural trends already noted. These include the growing importance of part-time farming and more especially the effects of the entry of new farmers with large capital fortunes hitherto employed in urban, professional and industrial activities. They embrace also the effects of the movement towards owner-occupation in the face of high land prices, in turn connected closely, in south Bucks. especially, with the impact of urban, leisure and industrial demands for land. Secondly, there are relative profitability factors resulting in changes in farming's product and resource mix. Such factors include supply and demand effects, changing skills and training and a whole range of technological developments. Thirdly, there are factors closely connected with farmers' personal circumstances, attitudes and motivation. In individual cases a rigorous examination of causal sequences attaches weight to a very wide range of factors relating both to farmer and farm-soils, topography and aspect, suitability of equipment and so on. Nevertheless certain factors concerned with an individual's general context of motivation seem to be particularly important. The factor singled out is age or career stage, behind which lie questions of numbers and demand of dependents, technical and managerial skills, liabilities-assets ratio, credit rating, attitude towards risk, scale of activity and rate of return on outlay. The list is not exhaustive and factors are interlocking and mutually interdependent.

Longer Term Factors

The overall position of the different tenure groups and the dominant role of owner-occupiers has already been noted. Further details are presented in

the following figures which reveal a tendency for the proportion of owner-occupiers to rise (the proportion of tenants to fall) as farmers are classified according to increasing intensity of investment.

Proportions of different tenure groups with increasing investment rates per acre per year
Bucks. 1961 - 63.

	Investment rates per acre per year. £'s				
	.1 to .9	1.0 to 2.4	2.5 to 4.9	5.0 to 9.9	10.0 and over
	%	%	%	%	%
Owner-occupiers	22.1	20.6	31.9	38.2	67.9
Tenants	52.9	37.1	39.0	45.7	17.1
Tenant-owner-occupiers	25.0	42.3	29.1	16.1	15.0
	100.0	100.0	100.0	100.0	100.0

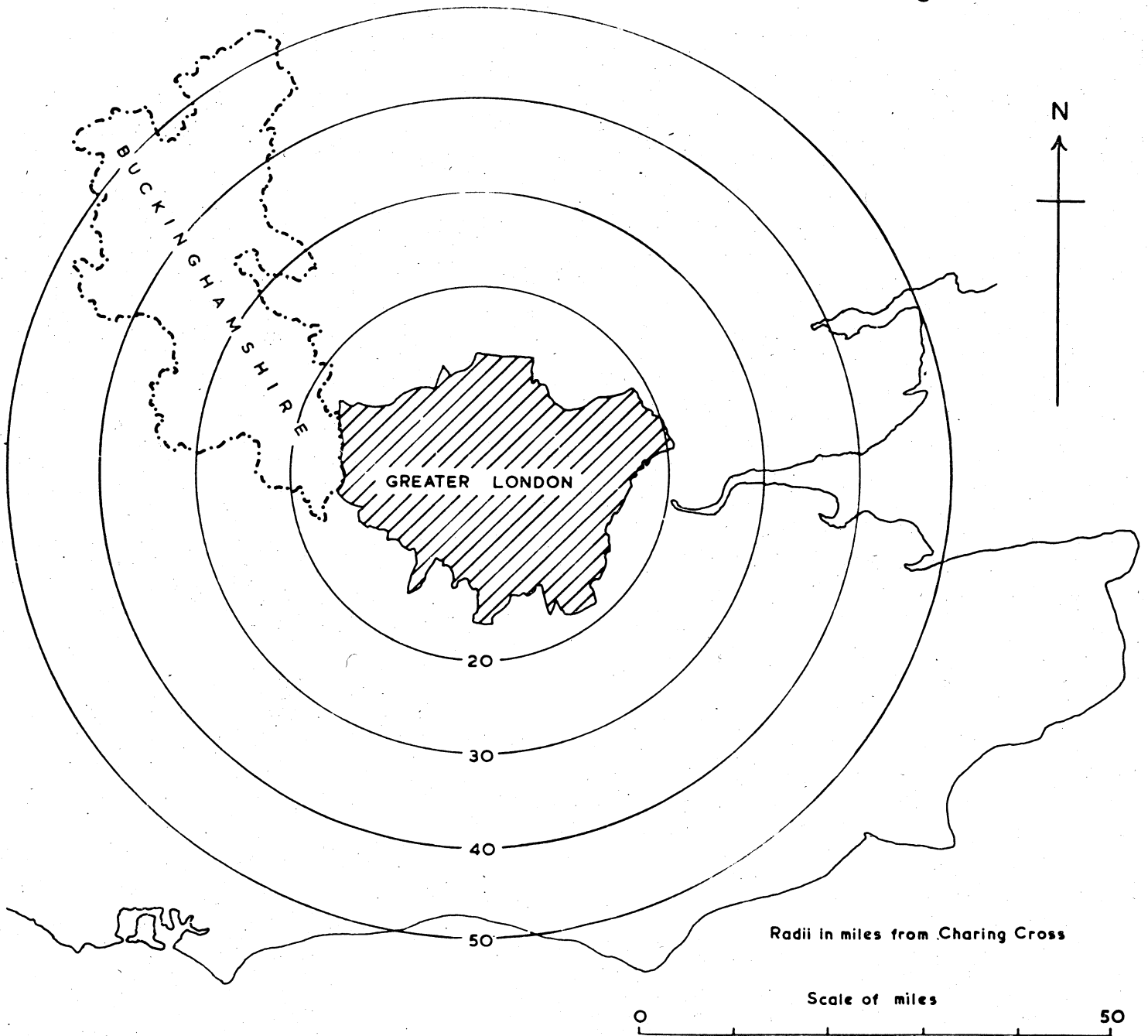
This tendency also has regional characteristics. Thus, investing owner-occupiers are more common in the South than in the North (62% against 53%) while investing tenants are more common in the North than in the South (66% against 51%). These regional differences do not reflect tenure alone but more part-time farming by industrialists and a wide range of other features stemming from proximity to London. As can be seen from the map overleaf the county adjoins Greater London. The position is a complex one, however, as the following figures show.

Percentage of farmers using less, or more, or the same amount of capital in regions progressively more distant from London.¹ Bucks. 1961-63.

	Regions				
	I	II	III	IV	V
MINUS	18.9	21.4	12.7	15.8	9.5
NO CHANGE	28.8	29.2	27.9	18.2	22.0
PLUS	52.3	49.4	59.4	66.0	68.5
	100.0	100.0	100.0	100.0	100.0
% farmers in region	9.2	22.3	28.1	34.4	6.0

1. See Harrison. 1966. page 17. Region I is between 10 and 20 miles Region V between 50 and 60 miles from the centre of London.

A Map to show the location of Buckinghamshire in respect to Greater London and the rest of South Eastern England



The proportion of farmers using capital releasing changes tended to fall with distance from London yet at the same time farmers making the largest capital releasing changes tended to occur relatively more frequently nearer London.

Thus:-

	<u>Regions</u>				
	I	II	III	IV	V
% of farmers in region investing					
- 2.5/acre/year and over	17.1	8.8	5.9	5.0	0.0

On the other hand, although investors (all plus changes) tended to be relatively more common further from London the highest positive investment rates of all were relatively more common nearer London.

Thus:-

	<u>Regions</u>				
	I	II	III	IV	V
% of farmers in region investing					
+ 10.0/acre/year and over	28.0	13.3	12.6	11.5	0.0

Investment in buildings differed only slightly with distance from London. A smaller proportion invested in buildings in the very south (37% against a county average of 46%) which reflected a tendency to plan more for the short term in that area but slightly fewer added buildings in the very north (Region V 38%) which probably reflected an already more adequate provision of buildings as well as lower investment rates under more traditional landlord-tenant tenure.

The tendency for the proportion of farmers investing in services to increase with distance from London is due to tenants becoming relatively more numerous and to their willingness to undertake such investments.

Thus:-

Percentage of farmers in different regions adding to Services

	<u>Regions</u>				
	I	II	III	IV	V
	0.9	10.9	16.9	19.3	25.9

The narrower spread of investment rates in the north would seem to result from a somewhat more cautious and more traditional outlook and

approach whereas the wider spread of investment rates in the south probably reflects a generally more dramatic and more intensively active pattern of changes taking place. Such contrasting investment rates reflect the greater impact, especially nearer London of farmers with different educational, social and business backgrounds who have wider experience of business and financial matters.

One result of these changes was to leave the most capital intensive somewhat more intensive and the least capital intensive even less so. In other words there was a tendency for the spread of rates of capital employment per unit of land to become wider. About 18% of farms had an investment of tenants' capital of less than £25 per acre and accounted for only 10% of additional investment while, at the other end of the scale 2% of farms had an investment of tenants' capital of over £300 per acre and accounted for 6% of additional investment. Proportion of farmers and proportion of investment corresponded fairly closely for the intervening groups.

But the regional location of investors according to tenure or business status must not obscure the fact that the overall picture was dominated by a small group of very heavy investors. It is to the special features of this group that we must now turn.

Some features of those investing most heavily

Farming is an industry of small businesses - small in terms of acres and small in terms of the amounts of capital employed. Corresponding to the way in which the largest farms dominate farming's aggregate structure in terms of the total acres they occupy (2% over 700 acres have more than 15% of the total area, 13% over 300 acres have more than 45% of the total area) and the total amounts of capital they employ¹ is the way in which a relatively small number of farms dominates the investment picture.

Of the £3,784,037 capital added in 1961 - 63 no less than 34% was contributed by the 77 farmers (only 3% of the total) who invested more than £10,000 each over that period. These heavy investors followed the general pattern of investment for the county devoting only a slightly lower proportion of their outlay to the farming system (36.8% against 37.6%) and a slightly smaller share to investment in buildings and houses (48.0% against 52.2%) but a somewhat higher proportion to services (15.2% against 10.2%).

These farms tended to be large. Over 95% were over 200 acres each and 27% over 1,000 acres each. Not one farm was less than 100 acres. Their farmers revealed a rather marked contrast to the declining investment rates with increasing years among farmers in general for 25% were over 60 years of

1. See Harrison 1965. Table 7. p.345.

age and 57% were over 50. But a relatively high proportion of these farmers had not farmed long - over 40% for example, had farmed for less than 10 years and 65% less than 20 years. For the group as a whole part-time farmers outnumbered full-time farmers by five to three, all being farmers with city, business or industrial interests. They tended, therefore, to be people of relatively large personal fortunes relying relatively little on farming for their incomes. They tended on that score, therefore, to be persons who could benefit from company formation and single proprietorships and partnerships outnumbered private companies by only a very little more than three to two. Yet for the county as a whole private companies were outnumbered by about twenty to one.

The overall importance of the heaviest investors is further emphasised when the 172 farmers investing between £5,000 and £10,000 each are considered. Together with the group already referred to (the 77 investing over £10,000 in total) only about 10% of farmers were involved but they were responsible for no less than 63% of total investment (73% of investment in working resources, 57% of investment in buildings and houses and 59% of investment in services).

The general effect of bringing into consideration farms investing between £5,000 and £10,000 in total is to reduce the bunching in terms of age, size of farm and business status. The under 30's are important in this group although not represented at all among the heaviest (over £10,000) investors; the relative importance of the older farmers is reduced and the relative importance of those farming less than 10 years is increased, full-time farmers are in the majority whereas part-timers were among the heaviest investors. The group is less dominated by the largest farms and 17% were of less than 50 acres. While there were relatively more non-borrowers among the £5,000-£10,000 group there were also relatively more heavier borrowers - 33% had a liabilities-assets ratio of over 20% against a corresponding figure of 16% for the heavier investors.

Not all the farmers investing heavily in total had necessarily a very high investment rate per acre. In fact, 315 farmers had investment rates of £10 per acre and over; they represented 13% of the farmers in the sample. Amongst them were 51 of the 77 with total investments of over £10,000. One effect of reclassifying farms according to whether they invested at this rate or not was to exclude all farms of over 1,000 acres.

Apart from the exclusion of the very largest farms there was marked over-lapping of the heaviest investors (in terms of total and in terms of rate of investment). It is not surprising, therefore, to find that these farms also dominated the investment situation - indeed this 13% provided nearly one half (49%) of the additional capital invested between 1961 and 1963.

The two investment criteria (total and rate) reveal further interesting and contrasting features. By grouping according to rate of investment two new farmer-characteristics are given much greater emphasis. Young farmers become relatively more important consequently adding emphasis to the early rather than middle and late stages of the farmer's career. A

high proportion are single (19% against 16%) and more females (11% against 1%). Small and relatively small farms are more common. The joint effect is to bring in farmers of widely differing social, and business backgrounds from those dominating the total investment group and to alter in a radical way the pattern of investment portrayed.

Taking the farmers with the heaviest investment rates first in each case 33% were under 40 (against 10% of farmers with the heaviest total investment) - 10% were under 30 (against none for the other group). Furthermore, 65% (against 40%) had been farming for less than 10 years, and 82% (against 65%) for less than 20 years. Moreover, the alteration of criterion served to change the group from a large-farm dominant to a medium-farm dominant one - no less than 95% of the second group were of less than 200 acres compared with 15% of less than 200 acres in the first group.

In terms of tenure the composition of the groups was almost the same for in both owner-occupiers and tenant-owner-occupiers were in the majority. Private companies were rather less important in the rate group than the total group though still many times more important than in the county as a whole.

The overall result is to change a part-time dominant group to a full-time dominant one with no less than 63% having no source of earned income other than the farm. The part-time farmers included are still persons with professional and business backgrounds. That this is so emphasises the marked difference between the two broad groups of part-time farmers, the second group tending to be those with a manual job either on an engaged or self-employed basis¹.

Of the heavy investors per acre relatively more made no use of borrowed funds and a somewhat higher proportion borrowed at heavier rates (19% had liabilities over 50% of assets against 8% for the other group).

All these factors bore together to alter very radically the overall investment pattern of the two groups. The heavy investment rate group - which covered 13% of all farmers - accounted for no less than 64% of total new investments in farming systems but they were less dominant for buildings (38%) - as also were the heavy (total) investors - and also for services. This

1. Harrison. 1965. p.332.

".....Part-time farmers are far from forming a homogeneous group, however. Socially and in income terms they fall into a bi-modal type of distribution with a professional (relatively-high-other-income) group making up the larger peak, and a manual worker (relatively-low-other-income) group making up the smaller peak. With these farmers especially in mind, it must not be imagined that because other income is greater than farm income, it is therefore a higher income. Preliminary checks suggest that this is far from being the case."

reflects the wider spread of investing farmers in the fixed equipment sector and also the role of landlords who in total provided almost a quarter of the investment in buildings and houses.

The relatively heavy flow of capital finding its outlet in terms of working resources is to be explained in a number of ways - the relative difficulty of finding the right opportunity for investing in land (in spite of the observed frequency of such changes), the fact that so many of the farmers concerned were young working farmers with all the associated characteristics of vigour and ambition, the fact that many, because of being at the early stages of their farming careers, still employed a relatively low proportion of working capital (had relatively high fixed costs) and for them the 'right' resource mix was a very different one from the 'right' one for the relatively old farmers of the other group. Taxation issues - both of income and capital - also bore on these questions. No less than 65%, however, were already employing capital in 1962 at £50 per acre and over (against 40% for the other group).

Type of Farm and Investment Patterns

The second main feature of investment patterns concerns the movement towards more profitable and away from less profitable product mixes. This must - subject to rigidities and gaps in knowledge of all sorts on the part of individual operators - be a general feature of investment patterns and much of the change revealed in official statistics, concerned as they are with aggregate product changes, is to be interpreted in these terms (for example the rising output of cereals generally and of barley in particular). Sufficiently detailed study of the profitability of individual farms was not made to permit a full analysis to be made on this occasion. But the following distributions of farmers according to investment changes was revealed within the different type of farming groups.

	Type of farming group					
	Dairying	Pigs	Poultry	Rearing and Fattening	Cropping	Mixed
% of farmers making investment changes						
MINUS	13.8	0	19.5	18.7	13.4	15.8
NO CHANGE	19.6	11.9	39.0	32.9	17.4	12.5
PLUS	66.6	88.1	41.5	48.4	69.2	71.7
	100.0	100.0	100.0	100.0	100.0	100.0
% of farms in group	17.3	3.5	6.3	42.1	12.3	18.5

The low proportion of investing farmers on the poultry and rearing and fattening farms is very striking as are the relatively high numbers reducing the capital employed on those farms. Investment groupings on the other types of farms are somewhat similar to each other. The relatively small numbers of 'no change' farmers reflects a tendency to move out of 'other livestock' (excluding pigs) and into cropping (and pigs). Changes within the pig group generally stand in somewhat sharp contrast to changes in the other groups but are in line with the trends observed in official statistics and reflect the relative ease with which investment rates can be changed in that enterprise.

Again these features are linked with regional patterns and tie in closely with size of farm and more personal characteristics of the farmer. It is to some of these features that the examination must now turn.

Some features bearing on motivation

Reference has already been made to the ways in which part-time farmers (farmers with another income-yielding occupation) do not form a single homogeneous group but differ in the degrees to which they depend on their farm for the income it yields and in their social and business environments. This reflected in their investment patterns in a number of ways. For example, it was found that part-time farmers were more likely to be making the largest negative investment changes or no change at all than were full-time farmers. At the same time, amongst those making additional investments of capital, part-timers tended to become relatively more numerous, while full-timers tended to become relatively less numerous, as investment rates per acre rose.

The full figures are set out below.

Percentage of part-time and full-time farmers and companies¹ according to investment per acre groupings. Bucks.1961-1963.

£	Investment changes per acre per year								
	-2.5 & over	-1 to -2.4	-.1 to -.9	No change	.1 to .9	1.0 to 2.4	2.5 to 4.9	5 to 9.9	10 & over
Part-time	66.6	24.2	24.4	61.4	16.9	30.9	24.8	33.2	34.3
Full-time	31.0	75.8	75.6	37.9	82.6	68.6	70.3	66.1	61.9
Companies	2.4	0.0	0.0	0.7	0.5	0.5	4.9	0.7	3.8
		<u>Minus</u>		<u>No change</u>		<u>Plus</u>			
Part-time		42.6		61.4		29.0			
Full-time		86.4		37.9		68.7			
Companies		1.0		0.7		2.3			

1. In this analysis the term companies does not cover all businesses with company status but is limited to those cases where the business form is not merely a cloak for an otherwise single proprietor type of business organisation. They are companies, therefore, revealing a relatively wide degree of capital contribution and control.

Farmers with professional and town backgrounds tended to be relatively more numerous amongst farmers investing at higher annual rates per acre than among those investing at lower rates per acre. Farmers with farm backgrounds appeared relatively less frequently among investors as investment rates became progressively higher.

The above factors were linked closely to a tendency for single farmers to incur the heaviest rates of change (both plus and minus) in capital employment and for farmers with children to be more likely to have higher investment rates than farmers without children. The need to invest in order to provide income for dependents would seem on balance to be more important than direct competition for funds for immediate consumption.

Younger farmers with fewer dependents are clearly in a better position to embark on riskier changes in organisation - ones involving relatively untried or unfamiliar lines of production or ones involving relatively large changes in scale of activity. The relevant figures were as follows.

	- £10/acre	+ £10/acre	No changes
Single	12.0%	15.0%	57.3%
Married (& children)	5.5%	12.0%	61.8%
Married (no children)	7.1%	13.1%	49.3%

Children may provide an incentive to invest; they also involve costs and as such compete directly for investment funds - especially for example where heavy costs of education are involved. The presence or absence of immediate heirs is no sure guide to investment rates in individual cases, however, for high investment rates were pursued by some relatively old and childless farmers because another member of the family - perhaps a nephew - was to follow on the farm. The category, married without dependent children, covered those whose families had grown up and left as well as those who had not started to raise a family. The group contained a high proportion of the relatively old and this is reflected in the fact that it showed much the highest proportion of farmers making no investment changes (38% against an average of 25% for the county).

This interplay of motivational factors can perhaps be usefully summarised in terms of the presence of an investment cycle which farmers would seem to pursue over their careers as a whole. It can be presented in terms of age of farmer or perhaps more clearly, especially in view of the relatively late entry into farming of some part-timers, in some form of career stages according to the lengths of investment horizons involved.

The following patterns of investment were revealed when plotted against age of farmer.

Percentage distribution of farmers (excluding companies)
by age groups according to investment changes. Bucks.1961-63.

	Age of farmers						
	Under 25	25-35	35-45	45-55	55-65	65-75	75 and over
MINUS	-	4.6	13.6	23.0	25.9	29.5	2.6
NO CHANGE	-	5.7	5.7	28.5	28.5	15.1	15.8
PLUS	1.0	10.5	22.2	22.2	29.0	10.6	1.9
% of farmers in age group	.6	8.3	16.8	24.0	28.4	14.7	5.5

It is clear that the older farmers were more concerned with making resource changes which released funds for consumption, or for investment elsewhere or simply to reduce the work load or indebtedness involved. Even to reduce investment required initiative and enterprise, however, and amongst the oldest farmers of all, no change whatever was being made in the amount of capital employed. A natural cleavage seemed to take place at around the 45 year old mark. Beyond that age group farmers appeared to be progressively more concerned with consolidation and security followed by retrenchment and redeployment of assets and finally, in the oldest age groups of all, a tendency to make no change whatever in the amounts of capital employed. The figures are summarised below.

	<u>Under 45</u>	<u>Over 45</u>
MINUS	19.0	81.0
NO CHANGE	12.1	87.9
PLUS	36.0	64.0
% Farmers	27.4	72.6

When farmers are classified according to the numbers of years they have spent on their farm then a similar cleavage is apparent at around the 30 years farming stage. Thus:-

	<u>Under 30 yrs.farming</u>	<u>Over 30 yrs.farming</u>
MINUS	71.3	28.7
NO CHANGE	60.1	39.9
PLUS	81.2	18.8
% Farmers	72.8	27.2

Parallel to and closely linked to this career pattern of investment is one of borrowing and consolidation in terms of equity or owner interest.

It would seem very probable in view of the expansion, for example, in cereal growing, in pig production (69,000 to 98,000 1960-65) and poultry production (1,473,000 to 1,770,000 during the same period) that a large amount of investment has been in highly specialised buildings.

Such investments are a relatively new feature of farming. As such they may well present a structural rigidity in output adjustment in the future, especially when seen against the distribution of land, other buildings and fixed equipment. Downward adjustments, including total withdrawal of resources, in supply responses as a result of future product price falls may become all the more sluggish in consequence and be further retarded by rigidities in associated patterns of skills and highly specialised working resources.

Present data are not refined enough to embark far in testing such hypotheses. They do go some way to fill in details behind the aggregate changes which have just been briefly outlined. Sectors of this changing pattern need to be examined in turn; the first deals with acreage adjustments.

Changes in the Numbers of Farmers

Buckinghamshire is a county of slowly declining farming numbers. In 1936 there were 3,171 farms of 5 acres and over; by 1961 their numbers had fallen to 2,600.¹ Over the 25 years, therefore, there was an overall drop of 571 in the numbers of farmers. This represents an average of 23 per year or (0.7%) over the average number of farmers during that period.

It is not known how this rate of decline in numbers of farmers varied over the years. It may well have gone on relatively slowly or perhaps even not at all during and immediately after the war years. Information obtained for 1961-63 suggests that it is now proceeding more rapidly than can have been the case over much of the period in question. In 1963 - the only year for which information is available - 78 farmers retired from farming. On the other hand 36 farmers started on their farming careers in the county in that same year so that the fall in farming numbers was 42. In 1961, 40 farmers and, in 1962, 36 farmers began farming in Buckinghamshire, 1.6% and 1.5% respectively of the total number of farmers in the county at that time.

To round off the figures in summary, it seems that about 80 farmers per year are retiring from farming and being replaced by about 40 new entry farmers; in other words, per annum some 3% are retiring to be replaced by $1\frac{1}{2}\%$ of new entries, in that same year and to give, therefore, a net decline of about $1\frac{1}{2}\%$ per annum.

1. See Harrison, The Farms of Buckinghamshire 1966, page 5.

extended merchant credit (those extending their credit beyond the normal period and for which a discount for prompt payment was offered) were mainly tenants. The more specific and institutional the source of credit the more likely it was that the larger farms would make the greatest use of it. Of those using only bank credit 15% farmed less than 50 acres. Of those using only merchant credit 50% farmed less than 50 acres.

Of all borrowers barely 18% farmed less than 50 acres each whereas 36% of the county's farms were of this size.

This pattern of relatively flexible and fluid deployment of resources during a farmer's early years followed by a period of high investment and consolidation during the middle years in turn replaced by a period of reducing investment over the later working years, on top of an essentially low-borrowing low-investment position overall must go a long way to explain the marked contrast between the small numbers involved in complete withdrawal from the industry and the relatively large numbers changing the amount of capital (including land) under their control - changes being effected in both an upward and a downward direction.

But the lack of change in numbers is more apparent than real for although small numbers are involved in total, and hence even fewer on balance, the trend is a steady one. In changes of scale relatively large numbers are involved, motivated as individuals in a large number of different ways, and superimposed it seems on a relatively stable career pattern of investment and disinvestment. But in this sector it is the appearance of change which is more apparent than real. Although large numbers are involved the majority involve small sums and they operate to a large degree in opposite directions thereby cancelling each other out.

It was acknowledged at the outset that this work was not planned entirely, or even in the main, as a study of farming change but as a more static study of farm structure. It remains finally to draw some of the findings together in the light of this deficiency.

Conclusion

Patterns of investment and structural change in farming are multi-dimensional and capable, therefore, of being described in widely differing terms. From such contrasting descriptive material, hypotheses and predictions relating, with varying degrees of precision, to different sectors of the industry are to be expected to emanate. One sector might, for example, deal with aggregate movements of resources and flows of funds both in absolute terms and relative to other sectors of the economy. Another might seek to identify change in terms of the parts played by sub-groups identifiable in terms of size, tenure, sources of finance, business status and so on. Yet

another might examine factors relating to personal and group motivation as they affect patterns of resource deployment - individually and by groups - in the face of changing risk patterns. And so on. It follows that no single account is to be expected to prove equally well fitted - in terms of resulting range and precision of relevant hypotheses - to all sectors of study.

So far as this study is concerned it was planned with no single sectoral issues in mind. It cuts across all the sectors, for example, of possible study, or domains of explanation, just outlined. Its wide ranging nature is no accident, however, for it was planned initially as an attempt to discover no more than the size patterns of basic decision making units in farming, their tenure and other features thought to be more relevant to the understanding of resource and finance patterns. Even with these central and relatively modest ends in view the study could only be regarded at the outset as largely exploratory. It was not known what general degree of response was to be expected nor how willing farmers would be to discuss more personal investment issues.

Because such a high response was obtained it was possible to enquire about investment patterns and issues more closely connected with structural change. But it was not planned directly as a study of change as such. And indeed it could not have been so planned from available basic farming statistics relating to the county (or any other for that matter) at that time.

The lack of detailed information about subsequent and prior factor histories has already been referred to as one serious deficiency in the present study. The lack of detailed income figures is another and precludes checks on the efficiency of changes in different farming sectors and measures of overall returns to investment in farming's different activities. These gaps in basic data rule out, therefore, a wide range of studies into short-term adjustments in farming systems. That much is clear.

On the other hand, if the causal factors isolated in this study should prove to be basically the correct ones,¹ then the lack of individual income figures need not necessarily prove a complete impediment to the construction of a model, or series of related hypotheses, capable of predicting sector responses, within that aggregate, to changes in the economic environment.

Income is itself both a cause and an effect. As a cause it is an important determinant of the direction and pace of activity in competing

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1. They are borne out to some degree in American studies e.g. M.E. Wirth 'Lifetime changes in Financial Problems of Farmers' in the Journal of Farm Economics Vol.46 No.5 Dec.1964 p.1191, just as the findings relating to farming's aggregate business structure are also paralleled by other studies including for example Hesser & Janssen, 'Use of Credit by Farmers in Central Indiana', Purdue, Indiana and O'Neill & Harris, 'Some Aspects of the Sheep Industry's Capital Account'. Quarterly Review of Agricultural Economics, Vol.XVII No.1. Jan.1964.

investment sectors as its various components, separately and in aggregate, reveal overall and sectoral efficiencies. The possibility of a continuing low or negative correlation of investment with income is surely barely tenable as a serious hypothesis. But the data also suggest that income is, in a more significant and fundamental way itself an effect, the result of other factors. Level of income is a function of age and hence energy, skills and ambition, in turn closely linked to numbers of dependents and attitudes to risks and to the size of the farmer's personal fortune - however obtained - and his actual resource forms, particularly in terms of more fixed resources, in the face of varying economic circumstances. There is relatively little borrowing in farming and a proper understanding of the ownership pattern of assets is central to an understanding of the investment pattern. These factors would seem to determine the basic structure of investment. Overall scale and actual outlets for funds must over time be directed towards resource-product combinations holding out greater hope of profit and therefore growth. Such sectors might be fairly easily identifiable, in the first instance, from product and sector price changes. But in such terms the key question becomes that of discovering how fortunes are built up and dispersed among members of the farming community and, while within it, income must be an important factor (both dependent and independent) it is far from being the only one.

These basic motivation factors, as it were, operate - currently and in this century it seems - on and within a pattern of changes in land tenure and a changing relationship between agriculture and the rest of the economy in broad socio-economic terms. The trends stemming from these - more recent if not more temporary - factors have been commented on and some quantitative assessment of their directions and rates offered.

But more comprehensive answers to questions in this ill-documented field must wait on further studies - perhaps until it may prove possible to incorporate into official statistics and other routine studies of farm businesses questions relating to sizes of businesses and their finance.

Experience already gained in the field leaves no doubt that a wide range of questions, methodological (statistical and definitional) and operational (field techniques) will arise, not all capable of definitive answers. The scope for such studies is however ill matched in the extreme to the resources currently devoted to them and in relation to the need if the capital and entrepreneurial structure of farming and the mechanisms whereby adjustments in that structure are effected are to be understood.

Appendix

Sampling Procedure

The scarcity of information on many aspects of farm business structures placed serious restrictions on the degree of sampling precision which could be achieved in the present study. Moreover, it could not be assumed even, at the outset, that farmers would co-operate readily enough to make a study employing a random sample worthwhile. However, as a result of an earlier, smaller scale study* it was possible to estimate the degree of variance for some of the factors to be studied - particularly the investment of additional capital. It was decided, therefore, to apply the stratified random sampling procedure set out in the table below to the 1961 parish lists of addresses and acreages of holdings, these being the latest available at that time (late 1962).

Table 1
Stratified Sample of Holdings
(Bucks. M.A.F.F. 1961)

Size Groups	(A) 5-99 acres	(B) 100-299 acres	(C) 300-699 acres	(D) Over 700 acres	Total
Numbers of Holdings on) County List)	(1770 (59.2%	945 31.6%	250 8.4%	24 0.8%	2989 100%
Sampling Percentages	10%	25%	50%	100%	-
Numbers of Holdings in sample	177	236	125	24	562
Numbers of Non-co-operators	8	19	5	Nil	32
Numbers of Usable Records	169	217	120	24	530

* See "Some Aspects of Capital Investments on Farms" in the Farm Economist, Vol.IX No.9, 1960.

It was not possible to obtain information for 32 of the 562 holdings selected and of the 530 usable records 24 were found not to be farms. A further 22 records had to be rejected so as to eliminate double counting. This need arose because holdings - pieces of land for which the Ministry obtains separate census returns - may be run together to form a single farm business.*

Because variable sampling fractions were applied to the four basic sizes of holdings strata (5-99, 100-299, 300-699 and over 700 acres) certain problems arose in the computation of the standard errors involved in the figures for domains (e.g. investment by different tenure groups) which cut across strata.

In view of the prohibitive amount of arithmetic involved only a small number of standard errors were calculated. The formula applied is to be found in Yates, "Sampling Methods for Censuses and Surveys" page 301 (9.3e).

* If a complete enumeration were being made of the farms in a given area, there would be no danger of double counting within the region, though some convention would need to be adopted to deal with those cases where parts of businesses lay outside the region in question.

The problem arises in the following way. The data gathered relates to whole farms not to holdings. A single farm might in fact consist of one (or more) holdings and might, therefore, be separately represented by two (or more) sampling units (i.e. holdings) which might, indeed, be in different size-groups. Unless the complication is allowed for the number of farms will be over-estimated. Thus, there is an estimate of the number of farms which were made up of "A" size holdings associated with "B" size holdings and a corresponding estimate of "B" size holdings associated with "A" size holdings and so on for all combinations of the four holdings strata. In each case records based on a lower sampling fraction were rejected in favour of those based on a higher sampling fraction so as to remove the danger of double counting.

The results of these tests are summarised in the table below.

Table II

Standard errors of a selected number of characteristics
(see footnote to text page 16).

Characteristic	Bucks (1961-63)		
	Value £	Standard Error £	95% Confidence Range £
Total investment in farming system by tenants	314,514	52,115	210,284 - 418,744
Total investment in farming system by owner-occupiers	657,215	89,253	478,709 - 835,721
Total investment in farming system by tenant/owner-occupiers	445,647	34,570	376,507 - 514,787
Total investment in buildings and services by landlords	506,511	74,786	356,939 - 656,083
Total investment in buildings and services by tenants	233,194	33,361	166,472 - 299,916
Total investment in buildings and services by owner-occupiers	1,626,956	186,020	1,354,916 - 1,998,996

The relatively large standard errors involved - and hence the wide interval associated with a 95% confidence range - emphasise the variation of individual investment figures. This is especially true so far as tenants are concerned and the adjustments they make in their farming systems.

