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The Structure and Economics of Broiler Production in England

Andrew Sheppard

*SPECIAL STUDIES
IN AGRICULTURAL ECONOMICS*

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THE STRUCTURE AND ECONOMICS OF BROILER PRODUCTION IN ENGLAND

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SPECIAL STUDIES IN AGRICULTURAL ECONOMICS

University departments of agricultural economics in England and Wales have for many years undertaken economic studies of crop and livestock enterprises, receiving financial and technical support from the Department for Environment, Food and Rural Affairs and previously the Ministry of Agriculture, Fisheries and Food. Since April 1978 this work has been supported in Wales by the Welsh Office following the transfer of responsibilities for agriculture to the Secretary of State for Wales.

The departments in different regions conduct joint studies of those enterprises in which they have a particular interest. This community of interest is recognised by issuing reports prepared and published by individual Departments in a common series entitled *Special Studies in Agricultural Economics*. Titles of recent publications in this series are given in Appendix II.

The addresses of other departments involved in the collection of data in the Special Studies Programme are given in Appendix III.

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FOREWORD

Several major UK agricultural commodities, such as milk, beef, bacon and potatoes, are very familiar and frequent items of many people's diets. Whilst few people really know a great deal about how they are produced, they are seen as we travel through the countryside. Fields containing cattle, pigs and crops of potatoes, are at least familiar to the public, albeit more so in some geographical areas than others. But table chicken, or broiler, production is something about which the general public knows very little, especially relative to its importance and sheer popularity in the national diet. Broiler production is widely distributed, but a broiler house (or more usually a cluster of broiler houses), perhaps glimpsed from a car or a train, reveals nothing of its content and most people outside the very significant broiler industry (farmgate value more than £800m per year) probably do not even know what a broiler chicken looks like, still less that the unassuming buildings they see typically contain tens of thousands of birds.

A further surprise, if it were more widely known, would be that whereas the physical and economic structures of production of agricultural commodities such as milk, beef, bacon and potatoes are well known to agricultural economists in the farming and ancillary industries, education and government, the same could not be said of broiler production. In addition to the long-running and ongoing Farm Business Survey, Defra has for many years regularly commissioned studies of the production of most of the main agricultural commodities, but broiler production is not well represented in the Farm Business Survey and, until the present study, has never been the subject of a Special Economic Survey.

Our study took two parts, the first of which was research into the physical structure of the industry, the second a detailed investigation of the cost structure and profitability of production. The results are reported here, and we anticipate extensive interest in our findings from individuals inside and outside the industry.

The study was a considerable success. Its success can be measured both in that it established a substantial amount of detailed information about the broiler industry and that it engaged the interest of the people most closely involved in broiler production. When we approached producers and companies with a view to their taking part in the full-year costing, we received a virtual 100 per cent response. The earlier postal survey of the structure of production also achieved good response rates and 68 per cent of non company respondents to that survey (86 per cent of non-company respondents with broilers) and 100 per cent of company respondents requested a copy of a summary sheet of the results of the survey.

All those who took part in the full-year costing will now receive a copy of this report too, and it will be available for free download on the Centre for Rural Research Website, <http://www.ex.ac.uk/crr>. In making the results of our research available to participants, to the industry and to the wider world, we would like to express our gratitude to all who contributed in any way – to all who responded to our initial postal survey, those who took part in the costings, members and officials of the NFU and the British Poultry Council who offered views and advice on the design of the survey, as well as the important weight within the industry of their support of the study, to members of the Farm and Animal Health Economics and other Divisions of Defra, and to the staff of the seven universities and colleges who

gathered the costing data from farms in their own regions. We trust that all will now feel their efforts were worthwhile.

Professor Michael Winter
Co-Director, Centre for Rural Research

SUMMARY

Chicken takes a major part in the UK and western diet. For many people, especially the young, chicken is the meat of choice. Chicken has a ‘healthy’ image. On most menus, chicken is more likely to be encountered than any other meat, and the number of forms in which chicken is marketed is probably greater than for any other meat. At 23 kilograms per head per year, the consumption of table chicken in the UK exceeds that of any other meat and accounts for about a third of all meat consumed.

The great majority of all chicken produced and consumed in the UK is grown specifically for table consumption. Birds grown for meat production are known as broilers and this report is concerned with the structure and economics of broiler production in England.

The English broiler population in June 2002 was 78.9 million, on 1548 holdings. Ninety-eight per cent were in 703 flocks of more than 20,000 birds. Output for the year was close to 600 million birds, valued at £612 million, making the production of broiler chickens of substantial importance to the agricultural and wider economies. The degree of self-sufficiency in poultrymeat in the UK has declined to about 89 per cent in the early 2000s, from around 97 per cent in the late 1980s.

The broiler industry is only “lightly supported” by the EU and UK government, but it is closely regulated at the public hygiene and livestock welfare levels. All aspects of the product and the production environment are subject to routine testing and successive welfare codes have laid down basic requirements centred around freedom from thirst, hunger and malnutrition, and provision at all times of appropriate comfort and shelter, including when the birds are being transported. The industry’s own Assured Chicken Production code, and individual processors and supermarket groups, have gone yet further to assure consumers that their chicken has at all times been well-provided for and never caused to suffer.

Most broiler chickens are produced in a standardised and closely regulated environment in which they grow to a little over 2 kilograms liveweight in about 45 days. The barn, free-range and organic production sectors have seen growth in recent years, but remain relatively small. They offer more space, daylight and natural ventilation, and the birds take longer to reach the target slaughter weight.

Producers are concerned that welfare and other regulations, particularly those relating to the non-inclusion in animal feedingstuffs in the UK of animal remains, are either less-stringent in other countries with access to the UK and EU markets, or are less stringently applied. With profit margins under pressure, producers fear that yet more welfare and other regulation will further “export” the industry.

A further concern, at both farm and consumer level, relates to the concentration of commercial power in an industry heavily dominated by a small number of vertical integrators. Four companies between them not only process more than 70 per cent of all UK production, but produce almost a half of those birds themselves on company owned farms.¹ Farmer

¹ Here and subsequently in this report, the distinction made between company owned and farmer owned holdings is between those where a vertically-integrated poultry processor itself operates the holding, which it may or may not actually own, and where a farmer or farming company, separate as a business entity from the

owned holdings are almost invariably contracted to produce for one of those companies, or for one of eleven other processors prominent in the industry, with chicks, feed and some other inputs either supplied or closely controlled by the company that will process and market the broilers.

The study reported upon here, commissioned and supported financially by the Department for Environment, Food and Rural Affairs (Defra), had two elements, a structural survey and an economic survey. At all stages, the study was conducted independently of Defra and with total confidentiality. Farmer participation in one or both of the survey elements was entirely voluntary.

The structure survey preceded the economic study and, besides gathering more detailed information than was available elsewhere on the numbers of broiler chickens by regional location, production system and ownership, and on some other aspects of production and marketing, was used to provide a statistical basis for the economic study.

The structure survey was conducted by means of a questionnaire sent by post to all holdings in England recorded by the Agricultural Census as having had at least 2,000 broiler chickens on the census date in June 1998, 1999 or 2000. The cut-off point of 2,000 birds was set relatively low in the hope of locating a greater number of organic and free-range producers.

In the case of holdings known to be owned and operated by one of the vertically integrated companies, slightly modified, but essentially similar, questionnaires were sent to 16 company head offices, one questionnaire for each holding that they were believed to operate. The survey date, the date for which data was requested, was 30th April 2001 for the individual, farmer owned holdings and 1st October 2001 for the companies.

The questionnaires sought to establish ownership of the birds on a holding and whether production was conventional², less-intensive, free-range or organic. Provision was made for the fact that on the particular date chosen the holding might not be stocked to capacity. Supplementary questions enquired whether broiler numbers on the survey date represented normal full capacity and, if not, what normal capacity was, when the holding was last stocked to that level and why it was not on the day of the survey.

The survey also looked at the arrangements for purchasing the major inputs of chicks, feed, vaccines and medications, whether birds were reared separately according to sex, membership of assurance schemes, and at any special ways in which chickens were marketed. Finally, the questionnaire enquired of producers their greatest concerns regarding the future of their business.

An immediate and positive response indicated that the survey had caught producers' imagination and struck them as making a realistic approach to a genuine need. The survey no doubt also benefited from the support given by the National Farmers Union and the British Poultry Council.

processor, does the same. As with the company, the farmer or farming company might in fact not own the holding, but rent it.

² For want of a better "shorthand" term, the word conventional is used at this point and throughout this report to refer to mainstream, intensive controlled-environment broiler production

The number of replies from non company holdings was 505, or 69 per cent, an excellent response for a postal survey of farmers who, for the most part, had no established relationship with the surveying body, the Centre for Rural Research at the University of Exeter, and from a mailing list (based on a three year spread of census returns) that inevitably included many production units that were no longer in use.

For the company section of the survey, questionnaires were sent to 16 companies, of which 12 responded. In terms of companies, that was again an excellent response (75 per cent), but the smaller companies responded more readily than the larger and the number of sites represented was somewhat disappointing (32 per cent of 383).

Taking the two parts of the industry as a whole, the postal survey drew a response from 56 per cent of the production sites recorded by the Agricultural Census in June 2000, representing 56 per cent (also) of the broiler chickens recorded in England at that time.

Twenty per cent of responding holdings were no longer in broiler production, or had reduced capacity to less than the survey's lower limit of 2,000 birds. Holdings with birds on the survey date, or actively in production but between crops on that date, numbered 500.

The great majority of sites, both company and non company owned, were found to produce on conventional lines, selling birds aged 35 to 56 days, but some less usual systems and outlets were represented. Fifty-six per cent of respondents noted that they rear chicks separately by sex. In many cases, partial thins to reduce stocking density towards the end of the growing period took out some or all of a particular sex, usually the pullets. Most flocks had either already attained registered status within a quality assurance scheme, or were grading up towards such a scheme, most usually Assured Chicken Production. Both rearing separately by sex and registration under a quality assurance scheme were most strongly favoured by the larger flocks.

The section of the questionnaire asking respondents of their greatest concerns regarding the future of their business aroused considerable interest. Non company respondents were most concerned about 'Imported chicken from countries not subject to the same legislation', 'The power over the industry of supermarket groups' and 'Profit margins insufficient to invest with confidence for the future'. Respondents from company owned sites were notably less concerned about the first two of those, but placed much greater emphasis on 'Ever tighter welfare, hygiene and other regulations' and 'Increased feed cost because of legislation/supermarket demands'. 'Profit margins insufficient to invest with confidence for the future' was of similar concern to both company and non company respondents. 'Difficulty of finding and retaining suitable labour' was apparently not a major concern to either individuals or companies.

The Economic Survey

The Economic Survey took the form of a twelve-month costing, with farm data collected from individual holdings by fieldworkers from seven English universities, Cambridge, Exeter, Imperial College at Wye, Manchester, Newcastle, Nottingham and Reading, and Askham Bryan College, York. Informed by the structure survey, a representative sample of 70 non company holdings and 36 company owned and operated holdings was recruited, with the sample stratified according to size group and regional location.

All farm-level aspects of fixed and variable costs of production were examined, and gross and net margins determined. In addition to financial inputs and outputs, accurate measures of physical quantities of feed and labour inputs were required, and of liveweight yields. Also, precise numbers of birds placed on holdings and in due course taken out, with precise dates. Careful assessment was made of capital plant and equipment employed and of unpaid labour and other home-produced inputs. Feedingstuffs were categorised by type, non-compound feeds being identified separately in terms of both quantity and cost.

On each holding, the costing year was begun with preparations for the intake of the first complete new crop after the beginning of calendar year 2002, and ended with completion of the cleaning-out process following clearance of the last crop taken in during calendar year 2002. In some cases, the costing period was therefore a little more than 365 days and in some a little less.

Allowance was made for varying contractual relationships with processors. As was revealed by the structure survey, for the most part, non company producers own the birds and pay for all inputs, although in many cases chicks, feed and vaccines are supplied by the processor and paid for by way of a deduction from the return for the birds ultimately sold. However, in some cases, some or all of those costs are never paid and are not known to the farmer, a smaller payment for the finished chicken takes account of the “free” inputs. Producers were not excluded from the survey if they did not have access to information on the value of inputs such as chicks, feed, vaccines and medications provided by the processor. Nevertheless, in every case, full detail of quantity of feed used and numbers and liveweights of birds in and out were required, as well as details of such payment system as was adopted and of all costs incurred by the operator of the holding.

For the most part, securing and retaining the co-operation of those whose holdings had been selected to form a part of the survey sample presented no difficulties. With the exception of the few who ceased production during the year, all the individual producers and all but one company (one selected holding) who agreed to take part in the study saw it through to completion.

The great majority of recorded holdings, whether company owned or not, proved to be conventional producers, with all inputs such as chicks, feed and vaccines carrying an identifiable cost and the chickens produced being paid for at a price that reflected this. Twelve holdings were subject to other payment structures, of which a group of five were free range producers.

Making due allowance for the holdings where full physical information was available, but not all financial details, “All flock” results for non company and company holdings were computed, and for many sub groups based on size and other production characteristics. Weighted figures were produced that combined all the holdings in the survey in such a way as to represent all the holdings in England. The overall net margin of 3.0 pence per bird can therefore be said to be the average figure for the 600 million birds produced in England in calendar year 2002. Much of the detail behind that figure is also presented in a similar manner.

One of the most striking features of the results of the survey is the narrow range of many of the figures across the various production types, size groups, even the top and bottom

thirds.³ Those found to fall within a very tight band included feed conversion ratio, the average weight at which birds were sold and, with the exception of the two minority contractual arrangements with a different cost structure, gross margins. That despite the fact that survey flocks were distributed throughout England and flock size varied widely, with the largest flock almost 36 times the size of the smallest. The age of buildings and other plant also varied, and local management (if not the processing company's requirements, guidance and stipulations) was necessarily different in almost every case. Clearly, though, the great majority of broiler chicks placed on several hundred different farms throughout England were essentially similar, they were fed and managed in much the same way, and they were ultimately harvested at much the same weight, having eaten much the same quantity of feed over much the same period of time.

Most holdings costed worked on a production cycle of between 45 and 50 days with birds on the holding, with seven to ten days break between crops giving them either six or seven crops in the period of the costing. Most chicks were provided by the company that would process the finished broilers, at a cost that ranged across the various analysis groups from 22.3 to 23.3. Companies invoiced their own holdings with a slightly lower average chick cost than the corresponding cost to non company holdings, but the average placing on the company owned holdings was almost double the average of the non company holdings and the difference in cost may be accounted for purely by quantity.

The feed input is also primarily sourced from the processor, almost invariably to the processor's specification, and frequently from the processor's feed mill. As with the chicks, feed is most usually invoiced to the non company producer as a deduction from the final payment for birds sold. With an all non company flocks figure of £147, compared with £144 for all company flocks, evidence of companies charging their contracted producers more is slight, other than for reasons of relatively smaller volumes and the fact that company holdings are more heavily concentrated in the eastern counties (the predominant grain growing area) than are the non company holdings.

The proportion of purchased compound feed used by all groups was between 89 and 100 per cent, with most of the balance made up by wheat. It is suggested that the very similar feed ration presented to almost all birds is an important reason for the close correspondence of feed conversion rates.

The third input, or set of inputs, that is usually provided by the processor, and invoiced as a contra against the birds produced, is vaccines and medications. Non company producers obtain and pay for them independently rather more often than chicks or feed, but they are not a major cost item – 1.5 per cent of value of output, compared to 71.4 per cent for feed and 4.1 per cent for labour.

Chicks, feed and vaccines and medications, the inputs most usually provided to non company farms by the processor, constituted more than 80 per cent of total costs. Cost items associated with buildings, equipment and machinery amounted to 7.3 per cent of total costs, £8.94 per square metre of the production area (floor area) provided. Electricity, gas, heating oil and water charges totalled 3.3 per cent of total costs, or 3.8 pence per bird.

The amount of labour put into broiler holdings and its cost were among the more variable items in the survey. The weighted mean for all holdings was 4.6 hours per 1000

³ Top and bottom thirds were defined by net margin as a percentage of value of output.

birds sold, with a range among conventional production groups from 3.3 to 6.9 hours. Free range producers input 14.7 hours per 1000 birds sold.

The lowest labour cost group, as with lowest labour usage, was the top third non company holdings, and the highest cost was incurred by the smallest sized non company holdings. However, rather high labour costs were also found on company farms, even though they were not particularly heavy users in terms of labour hours.

Company holdings were also notable for greater fixed costs other than labour. Thus, although the companies were ahead of the non company holdings at the gross margin level, higher fixed costs reduced the company holdings to an average nil return. This compared with an eight pence per bird net margin on the non company holdings.

Over the period that the industry has been under review for the purposes of this study, the vertically integrated processing companies have been seen to be closing their smaller and less efficient sites, and in some cases further enlarging the already large, as indeed were many non company producers. At times of slack demand for chickens, the companies were also inclined to rest their less efficient sites. Some sites were sold off and during the time-span of the study two companies were taken over by bigger companies. Some smaller companies cut the proportion of processing throughput produced on their own holdings.

From harvest 2003, feed prices rose very significantly and in spring 2004 producers paid around £20 a tonne more for feed than they did in 2002. The price paid by processors for finished birds was increased by about three pence per kg. Feed cost per bird in the late spring of 2004 was therefore increased by about nine pence, whilst the return was increased by 7.2 pence, reducing net margin by 1.8 pence a bird. Rather more holdings will have operated at a loss in the first two quarters of 2004 than were doing so in 2002, but the average bird will still be produced at a profit. On non company holdings, the average profit will remain as much as five pence more than for the average of all birds. It appears likely, however, that, at least until the lower 2004 harvest cereal prices work through, the average company produced bird will have been produced at a small loss. Companies can be expected to respond to that situation with rigorous measures.

Table i Summary of the cost structure of broiler production, weighted all flock results

	% of total costs	pence per bird sold
Chicks (incl. mortality)	20.9	23.6
Feed	58.3	65.7
Vaccines, other veterinary & medications	1.2	1.4
Other variable costs	2.0	2.3
Labour	3.4	3.8
Electricity, gas, heating oil and water	3.3	3.8
Buildings, machinery and equipment costs	7.3	8.2
Other fixed costs	<u>3.5</u>	<u>4.0</u>
	<u>100.0</u>	<u>112.6</u>
Value of sales	102.6	115.6
Net margin	2.6	3.0

THE STRUCTURE AND ECONOMICS OF BROILER PRODUCTION IN ENGLAND

1. INTRODUCTION

Chicken takes a major part in the UK and the western diet. Its importance is readily apparent from even a superficial inspection of supermarket shelves and cold cabinets, high street and other fast food outlets, restaurant, school, hospital and other menus. In such places, and of course the typical home, chicken is more likely to be encountered than any other meat. The number of forms in which chicken is marketed – from whole, ready-to-cook and pre-cooked chickens, and the many selected halves quarters, breasts, legs and wings of chickens, to hotly-spiced, ‘wings of fire’, processed meat formed into breaded “drumsticks”, pan-ready chicken Kievs, and much, much else – is probably greater than for any other meat. For many people, especially the young, chicken is the meat of choice. Chicken has a ‘healthy’ image. It is known to be low in fat and to be eaten in quantity by superstar athletes.

The great majority of all chicken produced and consumed in the UK is grown specifically for table production. Spent laying hens are used in manufactured products such as meat pastes and pies, but their contribution to the total poultrymeat resource is small. Birds grown specifically for meat consumption are known as broilers and this report is concerned exclusively with broiler production.

The UK population of broilers in June 2002 was recorded as rather more than 105 million birds, on almost 3000 holdings. All but 63 thousand (less than 0.1 per cent) were in 1706 flocks of more than 1000 birds and 97 per cent were in 713 flocks of more than 20,000 birds. The UK output for the year was in the region of 800 million birds, valued at the farm gate at £816 million. The England share of that output was 75 per cent, or 600 million birds valued at £612 million. A carcass weight of 1.2 million tonnes of home-produced chicken was joined on the UK market by net imports of 0.2 million tonnes to provide for a per capita consumption of 23 kilograms a year. Accounting for about a third of all meat consumed, the consumption of table chicken in the UK exceeds that of any other meat.

Clearly, the production of broiler chickens is of substantial importance to the UK agricultural and wider economies. In terms of EU and UK government financial support and intervention, the industry is only “lightly supported”, but it is closely regulated at the public hygiene and livestock welfare levels. Concern about infection with the Salmonella organism and, in the past, the routine inclusion in feed or water of antibiotics and other growth promoters has led to a progressively higher level of regulation of all aspects of the production environment and routine testing of carcasses, feed, and feed processing facilities.

Successive welfare codes have laid down basic requirements centred around “five freedoms” – freedom from thirst, hunger and malnutrition, and provision of appropriate comfort and shelter. The codes have reduced stocking rates, particularly in the final stages of the production cycle, such that birds are not injured and do not suffer discomfort because of over-crowding. The industry itself, with the now almost universal Assured Chicken Production code, and individual processors and supermarket groups, have gone yet further to assure consumers that their chicken has at all times been well-provided for and never caused to suffer.

The great majority of birds are produced in a standardised and closely regulated environment in which they grow to a little over 2 kilograms liveweight in about 45 days. All light provided is artificial and the chicken has no need to move more than a few feet to obtain feed and water. The barn, free-range and organic production sectors are relatively small, but they have seen growth in recent years and are not without significance. All offer more space, daylight and natural ventilation, and the birds take longer to reach the target slaughter weight.

The degree of self-sufficiency in poultrymeat in the UK has declined to about 88 per cent from around 97 per cent in the late 1980s. The situation may in fact have changed to an even greater extent than that, there being some doubt about the definition of “processed” chicken meat in the figures. Producers are concerned that welfare and other regulations, particularly those relating to the non-inclusion in animal feedingstuffs in the UK of animal remains, are either less-stringent in other countries with access to the UK and EU markets, or are less stringently applied. With profit margins under pressure, producers fear that yet more welfare and other regulation will further “export” the industry.

A further concern, at both farm and consumer level, relates to the concentration of commercial power in an industry heavily dominated by a small number of vertical integrators. Four companies between them not only process upwards on 70 per cent of all UK production, but produce almost a half of those birds themselves on company owned farms. Most of the rest are produced on farmer owned holdings, but with chicks, feed and some other inputs either supplied or closely controlled by the company.

The Structural and Economic Surveys

In the year 2000, it was determined to undertake a structural and economic study of the broiler industry in England as a part of the Defra programme of Special Studies in Agricultural Economics. Despite the importance of broilers to the agricultural sector and the nation, such a study had not been conducted before. A study of the economics of broiler production was to be undertaken on a representative sample of English farms during calendar year 2002, the sample to include both farmer owned and company owned holdings.

A structure survey would precede the economic study. The objective of the structure survey was to gather more detailed information than was available elsewhere on the numbers of broiler chickens by regional location, production system and ownership, and on some other aspects of production and marketing. The results of the structure survey would be used to better inform the industry, other stakeholders and policy makers on those matters, and to provide a statistical basis for the sampling framework of the economic study. Ultimately, the results of the economic study would be statistically weighted according to the pattern of production revealed by the structure survey.

The two elements (structural and economic) of the Broiler Special Study were commissioned and supported financially by the Department for Environment, Food and Rural Affairs (Defra). All aspects of the collection and analysis of data for the structure survey were carried out by the Centre for Rural Research at the University of Exeter. The Centre for Rural Research also undertook design and coordination of the economic survey and analysis of the resulting data. On farm data collection was undertaken on a regional basis by seven English universities, Cambridge, Exeter, Imperial College at Wye, Manchester, Newcastle, Nottingham, Reading and Askham Bryan College, York. At all stages, the study was conducted independently of Defra and with total confidentiality. Farmer participation in one or both of the survey elements was entirely voluntary.

2. THE STRUCTURE SURVEY

The structure survey was conducted by means of a questionnaire sent by post to all holdings in England recorded by the Agricultural Census as having had at least 2,000 broiler chickens on the census date in June 1998, 1999 or 2000. The three year spread was to accommodate holdings that, with the usual all-in all-out production system of broiler production might not have had chickens on the holding on a particular census date, as well as those that might not have returned the census form each and every year. Although relatively few broiler chickens are kept on holdings with less than 10,000 birds, the lower cut-off point, 2,000 birds, was chosen in the hope of locating and learning more about a greater number of organic and free-range producers.

In the case of holdings known to be owned and operated by one of the vertically integrated companies, slightly modified, but essentially similar, questionnaires were sent to 16 company head offices, one for each holding that they were believed to operate. The survey date, the date for which data was requested, was 30th April 2001 for the individual, farmer owned holdings and 1st October 2001 for the companies.

A covering letter explained the purpose and benefits of the survey. It also stressed the strict confidentiality with which individual farm data would be treated and emphasised the voluntary nature of the survey. It further indicated that completion of the questionnaire should take only a few minutes.

Questionnaires were “mail-merged”, such that they showed details of the name, address and holding number for which they were intended. All accompanying letters were personally addressed by the same process.

Samples of the individual holding and company questionnaires can be seen in Appendix B. Questions occupied both sides of a single A4 sheet and sought to establish ownership of the birds on the holding and whether the housing type was conventional, less-intensive or free-range, and whether or not production was organic. Provision was made for the fact that on the particular date chosen the holding might not be stocked to capacity. Supplementary questions enquired whether broiler numbers on the survey date represented normal full capacity and, if not, what normal capacity was, when the holding was last stocked to that level and why it was not on the day of the survey.

The survey also looked at the arrangements for purchasing the major inputs of chicks, feed, vaccines and medications, whether birds were reared separately according to sex, membership of assurance schemes, and at any special ways in which chickens were marketed. Finally, the questionnaire asked producers to tell us of their greatest concerns regarding the future of their business.

Questionnaires sent out to holdings believed to be owned independently of the major processors numbered 733. Forty-three per cent were returned almost immediately and without any reminder. Clearly, the survey had caught producers’ imagination, struck them as making a realistic approach to a genuine need, and was no doubt also benefiting from the public support for the study given by the National Farmers Union and the British Poultry Council. Producers who did not initially respond were sent a duplicate questionnaire and, eventually, a third and final letter of reminder. The number of replies was thus brought up to 505, or 69 per cent. That was an excellent response for a postal survey of farmers who, for

the most part, had no established relationship with the surveying body, the Centre for Rural Research at the University of Exeter, and from a mailing list (based on a three year spread of census returns) that inevitably included many production units that were no longer in use.

Table 1 Response to the survey, non company holdings by year that holding was last recorded as having at least 2,000 broiler chickens (i.e. in field of survey)

	Holding last in field of survey at June			All years
	1998	1999	2000	
Forms sent out	74	74	585	733
Usable forms returned	55	51	399	505
%	74.3	68.9	68.2	68.9

Almost 80 per cent of holdings on the mailing list were recorded as having not less than 2,000 broiler chickens in June 2000, the balance were evenly divided between June 1998 and June 1999. Perhaps it was only by chance that the response from holdings last recorded as being in the field of survey in 1999 was equal to the average response rate to the survey as a whole and that the response from those last known to be in the field of survey as far back as 1998 was somewhat better than average.

For the company section of the survey, a total of 383 questionnaire forms were sent to 16 companies, one for each holding that they were known from the June 2000 Agricultural Census to be operating at that time. Along with the number of flocks, the number of questionnaires per company was heavily skewed towards the largest operators and, perhaps inevitably, the smaller companies responded more readily than the larger. That despite it being made clear that there was no need to fill in all of every questionnaire where the answer to some questions was exactly the same as on other forms, and that information on matters such as numbers of birds on site on the specified date would be perfectly acceptable in spreadsheet or some other form.

Twelve companies responded to the company section of the survey, providing information on 123 production sites. In terms of companies, that was again an excellent response (75 per cent), but the number of sites was somewhat disappointing (32 per cent). Nevertheless, as a response to a request for information that might be regarded as commercially sensitive from people whose management time and office resources would in many cases be very stretched, it was a good response.

Taking the two parts of the broiler chicken industry as a whole, the postal survey succeeded in drawing a response from 628 of 1116 production sites (56 per cent), recorded by the Agricultural Census on June 2000 to have had 43.4 million broilers, which was also 56 per cent of the 77.6 million total recorded for England at that time.

By contrast, the 628 responding holdings reported having on the survey dates a total of 35.1 million birds actually on farm, equivalent to only 41 per cent of the total of 85.6 million recorded for England in the June 2001 Agricultural Census. This may suggest that respondents to the Agricultural Census over-record the number of birds on their holdings on the census date, perhaps recording nominal capacity, rather than actual numbers on the specified date. However, it does not necessarily mean that the total broiler population is overestimated by the census.

- It may be that some broiler holdings, especially those newly established or newly expanded beyond “smallholding” size, are missed by the census. (If so, they were, of course, also missed by our survey.)
- On the other hand, it is entirely conceivable that holdings sufficiently well established to have appeared in one or more of the 1998 to 2000 Agricultural Censuses were less likely to increase flock size than those newly established and appearing for the first time in the 2001 census (and thus missed by our survey). Indeed, unless they had created additional growing space, the flock sizes on established holdings would very likely have decreased in response to the reduced stocking density requirement of a new set of welfare codes implemented in 2001.
- It could also be that expansion of the national flock was disproportionately accounted for by those of the large integrated companies that did not respond to our request for information.

Of the 628 holdings responding to the survey, 128 (20 per cent) were no longer in broiler production, or (in the case of five flocks) had reduced capacity to less than the survey minimum of 2,000 birds. That could be seen as inevitable with a group of holdings last definitely recorded as having not less than 2,000 birds as much as three years earlier. The number of birds last recorded by the Agricultural Census for those holdings no longer having the minimum 2,000 bird capacity averaged 36,808 per holding.

Small numbers of respondents protested that they had never kept broiler chickens, or not for a very long time, and some that the poultry on their holdings were not broiler chickens but other poultry, such as rearing pullets for laying, or turkeys. The experience of the Centre for Rural Research with other surveys based on information derived from the Agricultural Census is that a small proportion of holdings in a particular production category listing will be found to have been included in error, and the proportion in this case was not outside the usual range.

The number of responding company and individual sites with birds on the survey date, or actively in production but between crops on that particular date, amounted to 500.

Table 2 Numbers of responding company and non-company sites actively in production, with total birds and average flock size

Ownership of site	Number of sites	Total birds million	Average flock size
Company	114	13.0	113,705
Non-company	386	28.8	74,557
All sites	500	41.7	83,483

The great majority of sites, both company and non company owned, were found to produce on conventional lines, selling birds aged 35 to 56 days. Some less usual systems and outlets identified were as in Table 3.

Table 3 Non conventional production systems and types, per cent of sites and average flock size

	% of sites	Average flock size
Free range	6	30,423
Organic	3	68,257
Poussin	1	55,400
Halal	2	36,033

Of the non conventional systems, company owned sites were involved only in free range organic production. Their average flock size was in excess of 100,000 birds, whereas those of non company owned sites were 14,224 for free range and 37,230 for organic production.

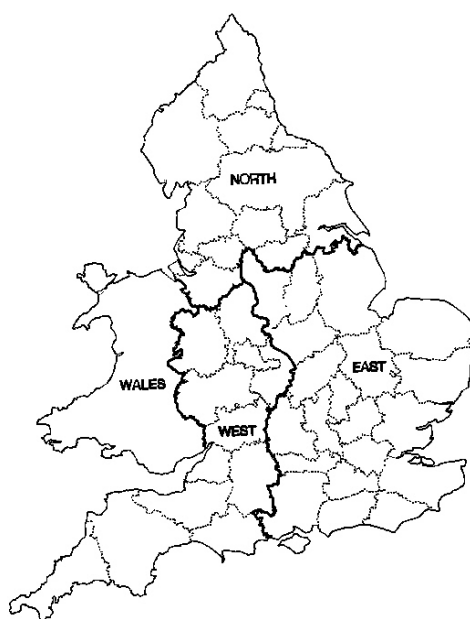
Distribution of responding producers and average flock size varied somewhat by region.

Table 4 Per cent of producers by English EU region and average flock size

	% of producers	Average flock size
North England	29	60,412
East England	37	94,917
West England	35	88,807

Company owned sites occurred most frequently in East England and least often in North England. In the North and the West, non company sites account for the majority of both sites and birds. Total production in the Eastern region greatly exceeds production in either the North or the West, and in the East company activity dominates production.

Figure 1 E.U. regions, England and Wales



Fifty-six per cent of respondents (28.7 million birds) noted that they rear their broiler chickens separately by sex, 40 per cent that they do not (4 per cent some, sometimes, or question not answered). Those that rear separately include significant numbers of company sites as well as non-company sites. In many cases, partial thins to reduce stocking density towards the end of the growing period took out some or all of a particular sex. Where this was done, it was usually, but not invariably, the pullets that were removed first.

Table 5 Per cent of holdings rearing separately by sex and average flock size

Cockerels and pullets	%	Av. flock size
Reared separately	56	101,673
Not reared separately	40	65,476

Seventy-one per cent of non company flocks and 98 per cent of company flocks had either already attained registered status within a quality assurance scheme, or were grading up towards such a scheme. By far the most frequently named scheme was Assured Chicken Production (ACP), but the schemes of various individual processors and supermarkets were also mentioned.

Table 6 Non-company and company flocks having already attained or grading-up towards an Assurance Scheme

	non company flocks		company flocks	
	%	Av. flock size	%	Av. flock size
Yes	71	89,329	98	112,591
No	26	35,291	2	39,500

Both rearing separately by sex and registration under a quality assurance scheme were most strongly favoured by the larger flocks.

The final section of the questionnaire asked respondents to tell us of their greatest concerns regarding the future of their business. Eight possibilities were listed, and a space provided for any concerns not covered by that list.

As can be seen from Table 7, non company respondents were most concerned about 'Imported chicken from countries not subject to the same legislation', 'The power over the industry of supermarket groups' and 'Profit margins insufficient to invest with confidence for the future'. Respondents from company owned sites were notably less concerned about the first two of those concerns, but placed much greater emphasis on 'Ever tighter welfare, hygiene and other regulations' and 'Increased feed cost because of legislation/supermarket demands'.

'Profit margins insufficient to invest with confidence for the future' was of similar concern to both company and non company respondents, with one company of significant size drawing particular attention to the fact that broiler producers are subject to inflationary costs, whilst selling into a market with deflationary pricing, "constraining already low profit margins".

'Difficulty of finding and retaining suitable labour' was apparently not a major concern to either individuals or companies.

Table 7 Greatest concerns about the future of the business, non company and company respondents

Per cent of responses*	Production site operator	
	non company	company
	%	%
Ever tighter welfare, hygiene and other regulations	10	26
Increased feed cost because of legislation/supermarket demands	7	23
Imported chicken from countries not subject to the same legislation	29	10
Profit margins insufficient to invest with confidence for the future	15	12
Difficulty of finding and retaining suitable labour	1	2
The power within the industry of large commercial businesses	6	0
The power over the industry of supermarket groups	22	6
The risk of a food scare relating to poultry meat	8	1
Other	<u>2</u>	<u>20</u>
	<u>100</u>	<u>100</u>

* Respondents were requested to tick no more than three. Copies of the questionnaires sent to non-company and company producers can be seen in, respectively, Appendices B1 and B2.

3. THE ECONOMIC SURVEY

As stated in the introduction above, an important objective of the structure survey was to provide a statistical basis for the sampling framework of the economic study. In the light of the information gathered by the structure survey, it was determined to take a sample of 100 representative holdings, consisting of 70 non company holdings and 30 company owned and operated holdings. In each sub-sample, flocks were recruited according to size group and to regional location. The distribution of the selected holdings, by region, flock size and ownership is shown in Table 8.

Table 8 Distribution of flocks selected for the economic survey, by region, flock size and ownership

Flock size band	<u>Non company holdings</u>				<u>Company holdings</u>			<u>Regional</u>	
	2K-40k	40k-100k	>100k	total	2K-40k	40k-100k	>100k	total	totals
North	8	7	5	20	1	0	0	1	21
East	7	7	6	20	3	14	10	27	47
West	10	11	9	30	0	2	8	10	40
Total	25	25	20	70	4	16	18	38	108

Although the nominal sample for the study was 100, divided 70:30 between non company and company holdings, the company sector was over-sampled (by eight) at this stage to allow for the fact that a single company declining or ultimately unable to co-operate would be likely to take out several potential records and would be rather more difficult to replace in the survey than a single non-company holding.

The Economic Survey took the form of a twelve-month costing, with farm data collected from individual holdings, as is usual with such studies, by fieldworkers from seven English universities, Cambridge, Exeter, Imperial College at Wye, Manchester, Newcastle, Nottingham and Reading, and Askham Bryan College, York. Data for company holdings was collected by the most appropriate participating university or college (usually the one in whose province the company head office was located), even in cases where not all the selected holdings belonging to that company were located in the one province.

All farm-level aspects of fixed and variable costs of production were examined, and gross and net margins determined. In addition to financial inputs and outputs, accurate measures of physical quantities of feed and labour inputs were required, and of liveweight yields. Also, precise numbers of birds placed on holdings and subsequently taken out, with precise dates. Careful assessment was made of values of capital plant and equipment employed and of unpaid labour and other home-produced inputs. Feedingstuffs were categorised by type, non-compound feeds being identified separately in terms of both quantity and cost.

A particular feature of the study was that the start and end dates of the costing were not strictly set as 1st January 2002 and 31st December 2002. That was to avoid the difficulties of valuing a part-grown crop (batches of broiler chickens are usually referred to as “crops”). On each holding, the costing year was begun with preparations for the intake of the first complete new crop after the beginning of calendar year 2002, and ended with completion of the cleaning-out process following clearance of the last crop taken in during calendar year

2002. In some cases, therefore, the costing “year” was in practice a little more than 365 days and in some a little less.

Allowance was made for varying contractual relationships with processors. As was revealed by the structure survey, for the most part non company producers own the birds and pay for all inputs, although in many cases chicks, feed and vaccines are paid for by way of a deduction from the return for the birds ultimately sold. However, in some cases, some or all of these costs are never “paid” and are not known to the farmer. In every case, full detail of quantity of feed used and numbers and liveweights of birds in and out were required, as well as details of such payment system as was adopted and of all costs incurred by the operator of the holding.

Analysis of Survey Results

Data was collected and gathered together and submitted to the co-ordinating Centre, Exeter, on an electronic spreadsheet that also had the capability to calculate many efficiency measures on an ongoing basis and calculate Gross Margins crop by crop as the year progressed. The spreadsheet also had a built-in facility for checking that all necessary information had been entered and that the resulting values fell within expected ranges (where they did not, but were nevertheless correct, the fieldworker was able to note that the data had been double-checked and was correct).

The spreadsheet, with its checks, worked well and that, together no doubt, with conscientious work by fieldworkers and the fact that broiler farms tend to be well documented, resulted in the timely submission to Exeter of high quality data that required little further dialogue with regional centres or amendment of figures as first recorded. However, the original timetable for collection of the company data unfortunately proved non-achievable, and that caused delay to the processing of the results from the company sub-sample and, ultimately, to this report.

Two records submitted (one non company, one company holding), were rejected because they had gone out of production during the year with only two crops completed. All others had a throughput of from three to eight crops in the recording period and were accepted. Some holdings were given an extended break between crops by processors who wished to delay the arrival at their plant of the next batch of birds, but this is considered a part of the normal production pattern and such holdings were included in the study.

Table 9 Distribution of flocks recorded for the economic survey, by region, flock size and ownership

Flock size band	<u>Non company holdings</u>				<u>Company holdings</u>			Regional	
	2K-40k	40k-100k	>100k	total	2K-40k	40k-100k	>100k	total	totals
North	10	5	8	23	0	0	2	2	25
East	5	7	5	17	2	13	8	23	40
West	9	9	12	30	0	2	9	11	41
Total	24	21	25	70	2	15	19	36	106

Records accepted for inclusion in the further analysis were as set out in Table 9. There it is seen that the total number of non company records exactly attained the target of 70 and that company records totalled two short of the target of 38. It will however, be recalled

that company flocks were deliberately over-sampled and that nominal targets were 70:30, so the actual totals of 70 and 36, with a grand total of 106 was very satisfactory.

In the event, only one company with flocks selected to form a part of the representative sub-sample declined or otherwise failed to do so and only one of that company's holdings had been selected, so the loss to the study was not great. For the most part, Centres experienced no difficulty in securing and retaining the co-operation of farmers whose holdings had been selected to form a part of the non company sub sample.

As is usual with Special Economic Studies such as the present one, Centres over-sampled at their own level to ensure ultimate delivery of their contracted numbers. In the event, with the exception of a few broiler producers who ceased production during the year, all those who agreed to take part in the study saw it through to completion and seventy-one non-company records were submitted to Exeter, the co-ordinating Centre. As noted above, one non-company record (along with one company record) was rejected on the grounds that the holding had gone out of production during the year with only two crops completed, so 70 usable records remained.

Comparison of Table 9 with Table 8, the distribution of holdings selected for the study, reveals some movement within the sub samples between size groups and between regions. The north and the west both gained additional holdings, making up most of the losses of the east. There was also some marginal gravitation up the scale on size groups. The latter effect was mostly accounted for by flock sizes becoming larger, or proving to be larger, than the size group to which they were recruited.

In addition to characteristics of region, flock size and ownership, each holding had one or more other distinguishing features. The great majority, whether company owned or not, were conventional (mainstream intensive controlled-environment) producers, with all inputs such as chicks, feed and vaccines carrying an identifiable cost and the end product being paid for at a price that reflected this, usually in the range of 48 to 50 pence per kg liveweight. Fifty-one non company and 35 company flocks fell into this category, a total of 86.

Seventeen flocks on non company holdings remained at all times the property of the processor. On six of those holdings, the charging and payment structure was much the same as on farms where the birds were the property of the holding operator – i.e. a payment of about 48 pence per liveweight kg for the birds produced, with realistic deductions for the chicks, feed, vaccines and other veterinary inputs. For most practical purposes, comparison of those flocks with the strictly conventional producers is realistic.

On the other 11 non company holdings where the birds remained at all times the property of the processor, the processor provided chicks, feed, vaccines and other veterinary inputs without charge. As each crop left the farm, it was not paid for on the conventional basis, but at a lower rate, reflecting (as the conventional payment system almost invariably also does) performance in terms of growth rates, mortality, etc., and the fixed costs and such variable costs as are incurred by the grower, but not the major cost items of chicks, feed, vaccines and other veterinary inputs. For the purposes of this study, the payment to the producer has been treated as a payment for keeping the birds, not as a payment for the birds themselves. Five of the 11 processor owned flocks on non company farms were free range.

The remaining three holdings costed, one company owned and two non company owned, had characteristics that, whilst not wholly unusual, meant that they could not be included in any of the above groups. For reasons of confidentiality, it is not possible to present in this report data derived from groups of less than five holdings, so their distinguishing characteristics and all data that could lead either to their identification, or to deduction of financial or other information specific to them, has been withheld.

The groups of holdings, as characterised in the above four paragraphs, are summarised in Table 10 and information on size groups is added. In subsequent tables, size groups are merged where a single group does not have at least five holdings, and top and bottom thirds have been computed only where the resulting sub-group represents at least five holdings.

Table 10 Distribution of flocks, by ownership, type of production and flock size

	Size group 1	Size group 2	Size group 3	Total
Non company holdings				
Flock property of producer				
Conventional production	16	15	20	51
Chicks, feed & med. not charged	1	2	3	6
Other	2	0	0	2
Flock property of processor				
Conventional production	1	3	2	6
Free range production	4	1	0	5
Company holdings				
Conventional production	2	15	18	35
Other	0	0	1	1
Total	26	36	44	106

Appendix Tables A1 to A5 present much of the detail of the findings of the survey. There the data is set out by the holding type and size group categories of Table 10 and have had top and bottom thirds added. Weighted “All flock” results for non company and company holdings have also been computed. In Tables A1 and A2, weighted figures are presented that combine together all the holdings in the survey in such a way as to represent all the holdings in England. Thus it can be said, for instance, that the net margin of £3.20 per £100 value of output (or 3.0 pence per bird) was the average figure for the 600 million birds produced in England in calendar year 2002.

Table 11 provides an outline summary of the results. Whether considering the full data set or the summary, one of the most striking features is the narrow range of many of the figures across the various production types, size groups, even the top and bottom thirds. Most remarkable of all is feed conversion ratio (kg of feed per kg of liveweight output), which has a value of 1.9 for every group except the three minority contractual arrangements, one of which is free range production. The range of weights at which birds are sold is only from 2.2 to 2.6 kilograms (that is, of course, an average, individual birds on individual holdings will be sold at weights outside those limits). With the exception of the two minority

contractual arrangements that have a different cost structure⁴, gross margins across all production groups range only between 20.5 and 26.9 per cent of the value of output.

Table 11 Summary of the key results of the economic survey

	Number of flocks	Crop size	Days in unit	% mortality	kg liveweight at sale	kg feed per kg lwt output	Labour hrs per 1000 birds	£ cost per 1000 birds	£ feed per tonne of feed	£ Gross margin per £100 output	£ cost labour per £100 output	£ other fixed costs per £100 output	£ net margin per £100 output	£ net margin per £100 output	
All flocks weighted	106	83,969	47	3.8	51	2.4	1.9	4.6	22.7	145	71.4	24.6	4.1	17.3	3.2
Top third	35	86,366	45	3.9	53	2.4	1.9	3.8	22.7	147	71.5	24.9	3.0	10.5	11.4
Bottom third	35	81,950	49	4.2	51	2.5	1.9	5.6	22.6	145	71.5	24.6	5.0	25.2	-5.6
Non company holdings, conventional production															
All flocks weighted	51	63,020	46	3.8	54	2.5	1.9	4.4	23.0	147	73.1	23.0	3.4	11.2	8.4
Size group 1	16	22,751	48	3.8	55	2.6	1.9	6.9	22.3	148	74.1	21.6	5.0	13.2	3.4
Size group 2	15	63,041	45	3.3	54	2.4	1.9	4.0	23.1	145	72.6	23.4	3.1	10.9	9.3
Size group 3	20	129,564	46	4.0	54	2.5	1.9	4.2	23.0	149	73.5	23.1	3.3	11.4	8.4
Top third	17	88,037	46	3.8	56	2.6	1.9	3.3	23.2	146	71.2	25.3	2.6	9.6	13.1
Bottom third	17	63,284	44	3.6	55	2.4	1.9	5.7	22.4	153	75.8	20.5	4.7	14.6	1.2
Minority contractual arrangements															
Conventional production															
- flock holder owned, but chicks,															
feed, vaccines & medications supplied	6	100,115	40	4.0	54	2.2	1.8	5.4	-	-	-	90.5	20.0	50.4	20.1
- flock property of processor															
Free range flock property of processor	5	21,633	56	6.3	43	2.4	2.2	14.7	-	-	-	93.1	16.3	37.7	39.2
Company holdings, conventional production															
All flocks weighted	35	116,544	48	3.8	49	2.3	1.9	4.2	22.5	144	69.7	26.2	4.4	21.8	0.0
Size groups 1 & 2	17	63,752	49	4.2	50	2.5	1.9	5.1	22.6	142	68.8	26.9	5.0	29.3	-7.4
Size group 3	18	166,802	48	3.8	50	2.4	1.9	4.1	22.5	145	71.0	25.0	4.3	18.6	2.0
Top third	12	158,799	47	3.8	50	2.3	1.9	3.8	22.3	145	71.1	24.6	4.1	15.2	5.4
Bottom third	12	71,955	50	4.4	50	2.5	1.9	5.2	22.5	144	70.0	26.2	5.0	32.7	-11.5
Size groups															
Size group 1	Average crop size of 2,000 to 39,999 birds														
Size group 2	Average crop size of 40,000 to 99,999 birds														
Size group 3	Average crop size of 100,000 or more birds														

“Conventional” is taken to be mainstream, intensive controlled-environment broiler production – see also Footnote 2 above.

⁴ The two minority contractual arrangements with a (radically) different cost structure were 1) those of the producer owned/operated flocks where the processor provided chicks, feed, vaccines and medications but did not invoice for them, instead taking account of those inputs in the price paid for the broilers produced and 2) processor owned free range flocks on producer owned/operated holdings, where the price paid for the broilers produced was similarly reduced, but the producer did not have those variable costs. Thus, in both cases, with all major Variable Costs taken out of the calculation, Gross Margin was in excess of ninety per cent of the (much reduced) price paid for the birds.

With a small number of companies accounting for a very large proportion of all birds, whether owned or grown under contract by independent producers, and the number of genetic lines of broiler chickens dominating the market being even fewer, some growth and performance characteristics would be expected to be closely similar, if the birds were all grown in identical circumstances. However, the latter is not the case. Survey flocks were distributed throughout England and flock size varied widely, with the largest almost 36 times the size of the smallest. The age of buildings and other plant varied widely, and local management was different in every case, even though most costed holdings were producing to the specifications of one or another of the relatively small number of processors.

Clearly, though, the great majority of broiler chicks placed on several hundred different farms throughout England were essentially similar, they were fed and managed in much the same way, and they were ultimately harvested at much the same weight, having eaten much the same quantity of feed over much the same period of time. The different companies compete against each other and against the rather slender margins of the business to improve growth rates through genetic improvement and through improvements in feed formulations and management practices. It seems, however, that their inputs, practices and product are, by the measures of a survey such as this (which, admittedly, is primarily concerned with group averages, rather than individual performances), rather similar in their essentials.

Chick, feed and vaccine and medication costs

Most holdings costed were working on a production cycle of between 45 and 50 days with birds on the holding, with seven to ten days break between crops giving them either six or seven crops in the period of the costing. (It will be recalled that the survey was concerned with all crops placed on holdings during calendar year 2002, in many cases the last crop was not *finished* until sometime in January or February 2003.) Most chicks were provided by the company that would process the finished broilers, at a cost that ranged across the various analysis groups from 22.3 to 23.3 pence and averaged 22.7 pence. Companies invoiced their own holdings with a slightly lower average chick cost (22.5 pence) than the corresponding cost to non company holdings (23.0 pence), but the average placing on the company owned holdings at 116,544 chicks was almost double the average of the non company holdings (63,020 chicks) and the reason behind the difference in cost may be accounted for purely by quantity.

The feed input is also primarily sourced from the processor, almost invariably to the processor's specification, and frequently from the processor's feed mill. As with the chicks, feed is most usually invoiced to the non company producer as a deduction from the final payment for birds sold. Average price per tonne for the various groups of company holdings was from £142 to £145 a tonne, whilst non company holdings paid between £145 and £153 a tonne. With an all non company flocks figure of £147, compared with £144 for all company flocks, it appears that the companies charge their contracted producers much the same per tonne as they invoice their own holdings. The three pounds a tonne difference between the average figures may be entirely for reasons of relatively smaller volumes delivered to the contracted producers and the fact that company holdings are more heavily concentrated in the eastern counties (the predominant grain growing area) than are the non company holdings.

Table 12 Chick cost, all flocks weighted and selected holding types

	Flocks	Crop size	Chick cost pence
All flocks weighted*	106	83,969	22.7
Top third	35	86,366	22.7
Bottom third	35	81,950	22.6
Non company holdings, conventional production			
Flock property of producer			
All flocks weighted	51	63,020	23.0
Top third	17	88,037	23.2
Bottom third	17	81,950	22.4
Flock property of processor			
Company holdings, conventional production			
All flocks weighted	35	116,544	22.5
Top third	12	158,799	22.3
Bottom third	12	71,955	22.5

* For financial measures the all flocks figures are based on the 94 flocks for which full financial data was available. Top and bottom thirds within that group (defined by the percentage that Net Margin was of value of Output) were restricted to 31 holdings. See note on Tables A1 and A2 for fuller information

The proportion of purchased compound feed used by all groups was between 89 and 100 per cent, with most of the balance made up by straight wheat, either purchased or, in a small number of cases, home-grown. A very small quantity of purchased barley was used and small quantities of minerals, vitamins and other additives, but no other feed ingredients and the survey did not discover any instance of a producer home-mixing the full ration. The very similar feed ration presented to almost all birds is an important reason for the close correspondence of feed conversion rates; there seems to be no significant element in the industry (if there is any element at all) that operates on a regime of more or less dense feed and in consequence returns greater or lesser feed conversion ratios.

The only possible exceptions to the above are the three groups in the survey dubbed “minority contractual arrangements”. One of those was the group of five free range flocks that remained at all times the property of the processor, even though farmed by an independent operator on a non company holding. There the birds were grown to the standard average weight of 2.4kg and took 56 days to attain that weight, achieving a feed conversion ratio of 2.2:1 (compared to the standard 1.9:1). Unfortunately, the cost of the feed ration was not known to the farmers concerned, but it is thought unlikely that it was cheaper per tonne than the rations used by the conventional flocks.

Similarly, information was not available on the cost of the ration used by six flocks on non company holdings where production and ownership of the birds was conventional, but a different payment structure meant that the producer was not invoiced for chicks, feed, vaccines and medications. That is a pity, because the feed conversion ratio of that group was 1.8:1. Clearance of the birds at an average 2.2kg and at an average age of only 40 days probably explain the superior feed conversion, but it would be instructive to know more about the feed ration as growth rates in that group of holdings were close to the upper end of

the range at 54 grams per day. The survey did establish that in that group the ration was 99.7 per cent compound, with a small quantity of straight wheat accounting for the balance.

Table 13 Feed cost, conversion ratio and growth rates, all flocks weighted and selected holding types

	Flocks	Crop size	Feed Cost £ per tonne	% Compound	Feed conversion ratio	Growth grams per day
All flocks weighted*	106	83,969	145	92	1.9	51
Top third	35	86,366	147	93	1.9	53
Bottom third	35	81,950	145	91	1.9	51
Non company holdings, conventional production						
Flock property of producer						
All flocks weighted	51	63,020	147	92	1.9	54
Top third	17	88,037	146	91	1.9	56
Bottom third	17	81,950	153	97	1.9	55
Primary inputs not charged	6	100,115	-	100	1.8	54
Flock property of processor						
Free range	5	21,633	-	100	2.2	43
Company holdings, conventional production						
All flocks weighted	35	116,544	144	91	1.9	49
Top third	12	158,799	145	93	1.9	50
Bottom third	12	71,955	144	89	1.9	50

* See note on Table 11, above and on Tables A2 and A3.

We have fuller information on the third “minority” group of six holdings where production and the payment structure were entirely conventional except that the flock remained at all times the property of the processor. In their case, compound feed was charged at an average of £153 a tonne (the average price charged to all non company flocks for compound feed), but the overall ration was cheapened to £147 at tonne by the inclusion of almost eight per cent wheat, two-thirds of which was home-grown. These flocks also returned an exceptional feed conversion ratio of 1.8:1 and in their case birds were sold at the average weight of 2.4 kg after an average 45 days on the holding, growing at 54 grams per day. Others in the industry would no doubt like to know more about those producers, not least because their superior physical performance was rewarded with gross and net margins that were among the best in the survey.

The third input, or set of inputs, that is usually provided by the processor, and invoiced as a contra against the birds produced, is vaccines and medications. Non company producers obtain and pay for them independently rather more often than chicks or feed, but they are not a major cost item – 1.5 per cent of value of output, compared to 71.4 per cent for feed and 4.1 per cent for labour.

For most other inputs, the non company producer has a large degree of freedom to obtain the best price he can from the most convenient or obliging supplier.

Output, variable and fixed costs

For the purposes of this study, the convention was adopted whereby the cost of chicks (purchased livestock) is deducted from the total value of sales to arrive at an output figure. In the case of the Costs and Returns per Bird section of the Appendix tables, a separate mortality charge was deducted from value of sales before arriving at output. That represents the cost *per bird sold* of the incoming chicks that die. It is not an additional charge, but is shown in explicit form in that section, whilst it is implicit in the Costs and Returns per £100 Output section.

From output, a number of costs known collectively as variable costs are deducted to arrive at gross margin. In the case of this study they are feed, vaccines and other veterinary and medication costs, contractor's charges other than for cleaning out the houses (which are a fixed cost), bedding and litter, and sundry other costs such as detergents and disinfectants for cleaning out and rolls of paper on which baby chick crumbs are placed when the birds first arrive.

From the gross margin, labour and other fixed costs are deducted to arrive at net margin. Other fixed costs include heat, light and water, small tools, maintenance and repairs to buildings and equipment, contract manure removal, other machinery costs (including depreciation), office and administration costs, depreciation charges on buildings of up to ten years old, and any rent paid. Finance charges and interest on capital are not included, but must be paid out of net margin, as must the reward to the operator for his or her entrepreneurial input, as distinct from payment for the operator's labour input, which is included as part of the labour cost.

Table 14 illustrates the relative importance of the various cost items, heavily dominated by feed, chicks and labour, in that order. It might also be noted that the inputs most usually provided to non company farms by the processor amount to more than 80 per cent of total costs.⁵

The last four items in the "All Flocks" column in Table 14 amount to 7.3 per cent of total costs. On the average site in the survey they represent £8.94 per square metre of floor area.

Electricity, gas, heating oil and water charges amounted, for "All Flocks", to a relatively modest 3.3 per cent of total costs, or 3.8 pence per bird. Even that, however, would constitute a large outgoing when multiplied by the more than half a million birds a year produced by the average holding in the study. Some holdings, of course, produced many more than that.

⁵ In fact they account for a still greater proportion of total costs (85 per cent) on non company farms, where labour and other fixed costs average less than on company farms

Table 14 The cost structure of broiler production, weighted all flock, holder owned and company owned flock results

	All Flocks	holder owned	company owned	All Flocks	holder owned	company owned
	% of total costs			pence per bird sold		
Chicks (incl. mortality)	20.9	21.5	20.6	23.6	23.9	23.3
Feed	58.3	62.4	55.3	65.7	69.5	62.9
Labour	3.4	3.1	3.5	3.8	3.5	4.0
Vaccines	0.7	0.8	0.6	0.8	0.9	0.7
Other veterinary and medicines	0.5	0.4	0.6	0.6	0.5	0.6
Contractors' charges	0.5	0.8	0.4	0.6	0.9	0.4
Bedding and litter	1.3	1.0	1.5	1.4	1.1	1.6
Other variable costs	0.2	0.2	0.2	0.3	0.3	0.3
Electricity	1.1	1.1	1.2	1.3	1.2	1.3
Gas	1.6	1.2	1.9	1.8	1.4	2.2
Heating oil	0.1	0.3	0.0	0.1	0.3	0.0
Water	0.5	0.4	0.5	0.5	0.4	0.6
Small tools and miscellaneous	0.9	0.4	1.3	1.0	0.4	1.5
Contract manure removal	1.5	0.6	2.2	1.7	0.6	2.5
Other fixed costs	1.1	0.1	1.8	1.2	0.2	2.0
Specialist machinery depreciation and repairs	0.2	0.5	0.1	0.3	0.5	0.1
Broiler equipment depreciation and repairs	1.3	1.8	0.9	1.4	2.0	1.0
Building repairs and maintenance	2.8	0.2	4.7	3.1	0.2	5.3
Building depreciation/rent paid & site rent ⁶	3.0	3.2	2.9	3.4	3.6	3.3

⁶ Site rent is an accounting charge for use of the land area used by an intensive livestock enterprise and is distinct from any rent paid on buildings. In cases where a broiler unit is owner-occupied, the site rent is imputed; where the unit is rented, it forms a part of the total rent paid.

The amount of labour put into broiler holdings and its cost were among the more variable items in the survey. With the exception of the small group of free range producers (where the labour input per 1000 birds produced was 14.7 hours), the range of hours per 1000 birds was from 3.3 for the top third non company holdings to 6.9 for the group of non company flocks with less than 40,000 birds. The weighted mean for all holdings was 4.6 hours. The mean cost per £100 of output (excepting the two minority groups without full cost structures available) was £4.10, with a range from £2.58 to £4.99.

Table 15 Labour cost and usage, all flocks weighted and selected holding types

	Flocks	Crop size	Labour cost £ per £100 output	Labour hours per 1000 birds	Labour cost £ per hour
All flocks weighted*	106	83,969	4.10	4.6	8.59
Top third	35	86,366	3.01	3.8	7.74
Bottom third	35	81,950	4.96	5.6	9.14
Non company holdings, conventional production					
Flock property of producer					
All flocks weighted	51	63,020	3.41	4.4	7.42
Top third	17	88,037	2.58	3.3	7.92
Bottom third	17	81,950	4.71	5.7	7.62
Flock property of processor	6	78,664	3.89	5.0	7.21
Company holdings, conventional production					
All flocks weighted	35	116,544	4.43	4.2	9.57
Top third	12	158,799	4.05	3.8	9.49
Bottom third	12	71,955	4.99	5.2	9.37

* See note on Table 11, above and on Tables A2 and A3.

The lowest labour cost group, as with lowest labour usage, was the top third non company holdings, and the highest cost was again found with the smallest sized non company holdings. However, rather high labour costs were also found on company farms, even though they were not particularly heavy users in terms of labour hours. Undoubtedly, that is because they have to employ all labour, paying at least a proportion of their staff rather well to undertake responsibilities and unsocial working hours that self-employed owner-operators of non company holdings (i.e. farmers) would undertake themselves.

The proportion of farmer and spouse labour on company holdings was, of course, nil; on non company holdings it was 56 per cent (by value). “Unpaid” family labour in the survey did not go unpaid so far as the survey records were concerned. All was costed at the relevant rate for an equivalent employed worker, depending on age, skill level and hours of overtime.

Company holdings were also notable for greater fixed costs other than labour. The sum of all fixed costs other than labour on company holdings averaged 21.8 per cent of value of output, whilst on the average non company holding they were 11.2 per cent, a difference of nine pence per bird. Thus, although the companies were ahead of the non company holdings at the gross margin level, the higher other fixed cost, together with the labour cost, which was

also higher, reduced the company holdings to an average nil return. This compared with the eight pence per bird net margin seen on the non company holdings.

Table 16 Other fixed costs, gross and net margins, all flocks weighted and selected holding types

	Flocks	Crop size	Gross margin - £ per £100 output -	Fixed costs other than labour	Net margin
All flocks weighted*	106	83,969	24.6	17.3	3.2
Top third	35	86,366	24.9	10.5	11.4
Bottom third	35	81,950	24.6	25.2	-5.6
Non company holdings, conventional production					
Flock property of producer					
All flocks weighted	51	63,020	23.0	11.2	8.4
Top third	17	88,037	25.3	9.6	13.1
Bottom third	17	81,950	20.5	14.6	1.2
Flock property of processor	6	78,664	26.0	13.1	9.1
Company holdings, conventional production					
All flocks weighted	35	116,544	26.2	21.8	0.0
Top third	12	158,799	24.6	15.2	5.4
Bottom third	12	71,955	26.2	32.7	-11.5

* See note on Table 11, above and on Tables A2 and A3.

Why do companies have higher fixed costs? As was suggested with the labour cost item, companies often have to pay a premium rate for skills and services which a farm, even a specialist chicken holding, would often supply from its own resources. Companies seek economies through inviting competitive tenders for the supply of various goods and services to all their sites, or by themselves providing a service centrally. Such an approach involves head office overheads, travel time and costs that the independent operator frequently does not incur. The non company producer, usually operating in just one locality, can make the most of local tradesmen, such as electricians and jobbing builders, that the companies are not in a position to employ. There is also the much-vaunted inclination of the owner-operator to work harder and more efficiently than a company employee, with the benefit of freedom of independent action and initiative, and the financial incentive to seek every possible saving.

If their margins are no better than breakeven, why are the companies producing rather more than half of all chickens on their own holdings? Whilst losses were not entirely confined to the small sites (and some small sites made useful profits), they were most frequently encountered in the smaller size groups.⁷ Over the time from the June 2000 Agricultural Census to the 2001 Structure Survey, and from then to the calendar year 2002 costing period, we were able to note that companies were closing sites, and in some cases further enlarging the already large, as indeed were many non company producers. At times of reduced demand for chickens, the companies were also inclined to rest their less efficient sites – which of course compounded the losses as overhead costs continued to be incurred. Some sites were sold off. During the period of the study two companies were taken over by

⁷ Although there were fewer losses on non company sites, this remark is also true of them.

bigger companies, and some smaller companies cut the proportion of processing throughput produced on their own holdings.

So it appears that the companies that see themselves as committed to producing large numbers of chickens themselves are striving to be more efficient producers, concentrating on large sites, which, on the evidence, are capable of making a profit for them, whilst many of the smaller sites do not.

That, of course, was the situation in 2002, which is now the past. From harvest 2003, feed prices rose very significantly and in spring 2004 producers paid around £20 a tonne more for feed than they did in 2002. The price paid by processors for finished birds was increased by about three pence per kg. Feed cost per bird was therefore increased by about nine pence, whilst the return was increased by 7.2 pence, a reduction in the margin of 1.8 pence per bird. Other costs for the most part will have been subject to at least some inflationary increase, whilst improvements in the efficiency of production can be presumed to have continued – not least through the continued replacement or abandonment of the least efficient plant and holdings.

The situation on individual holdings no doubt continues to be as varied as it was during 2002, but overall it can be said with some confidence that margins will have narrowed to the extent that rather more holdings would have been operating at a loss in the first two quarters of 2004 than were doing so in 2002. Nevertheless, the average bird would still have been produced at a profit. On non company holdings the average profit will remain as much as five pence more than for the average of all birds, but the average company bird will have been produced at a small loss. Companies can be expected to respond to that situation with rigorous measures.

APPENDICES

APPENDIX A

Detailed financial and production results

APPENDIX B

The questionnaire forms - Questionnaire sent to non company holdings
- Questionnaire sent to company holdings

APPENDIX C

Latest publications in this series

APPENDIX D

Addresses of other university departments publishing in this series

Table A1 Feedingstuffs used, all flocks

		All flocks Weighted¹	Top third¹	Bottom third¹	Non-company flocks²	Company flocks²
Number of flocks		106	35	35	51	35
All feed	£ per tonne	145	147	145	147	145
Compound	%	92.5	92.9	91.2	92.4	91.2
	£ per tonne	151	152	151	153	150
Wheat - purchased	%	6.3	3.9	8.2	4.5	8.8
	£ per tonne	83	84	84	82	84
- home-grown	%	1.2	3.2	-	3.1	-
	£ per tonne	63	64	-	63	-
Barley - purchased	%	0.0	-	-	0.0	-
	£ per tonne	72	-	-	72	-
Minerals, vitamins & additives	%	0.0	0.0	0.0	0.0	0.0
	£ per tonne	798	634	2823	653	2355

1 These columns correspond to the similarly headed columns in Table A2. For financial measures the figures shown are based on 94 flocks for which full costs of all inputs, including chicks, feed, vaccines and other medications were recorded and full payment (in the region of 48 pence per liveweight kg) was made to the producer. For purely physical measures, common to all flocks regardless of pricing structures, figures from all 106 recorded flocks have been used. In both cases, the data available has been weighted to accurately reflect the total balance within the industry between flock size groups, the English regions and between company and non-company owned holdings. For financial measures the top and bottom thirds number 31, for physical measures they number 35.

2 Correspond to the All flocks weighted columns of Table A3 and Table A5.

Table A2 Financial and production results, all holdings

		All flocks weighted	Top third	Bottom third
Number of flocks ¹		106	35	35
Crop size		83,969	86,366	81,950
Output - composition per £100				
Sales	£	125.6	124.8	124.9
Less purchased chicks	£	25.6	24.8	24.9
Costs and margins per £100 output				
Feed	£	71.4	71.5	71.5
Other variable costs	£	4.0	3.6	4.0
Gross margin	£	24.6	24.9	24.6
Labour	£	4.1	3.0	5.0
Other fixed costs	£	17.3	10.5	25.2
Total costs	£	96.8	88.6	105.6
Net margin	£	3.2	11.4	-5.6
Costs and return per bird produced				
Sales	p	115.6	118.9	118.5
Chick cost	p	22.7	22.7	22.6
Mortality	p	0.9	0.9	0.9
Output	p	92.0	95.3	94.9
Feed	p	65.7	68.2	67.8
Other variable costs	p	3.7	3.4	3.8
Gross margin	p	22.7	23.7	23.3
Labour	p	3.8	2.9	4.7
Other fixed costs	p	15.9	10.0	23.9
Total costs	p	89.0	84.4	100.2
Net margin	p	3.0	10.9	-5.3

Table A2 (continued) Financial and production results, all holdings

		All flocks weighted	Top third	Bottom third
Number of flocks ¹		106	35	35
Crop size		83,969	86,366	81,950
Detail of Fixed Costs other than Labour				
per £100 output				
Electricity	£	1.4	1.2	1.6
Gas	£	2.0	1.5	2.4
Heating oil	£	0.1	0.2	0.1
Water	£	0.6	0.4	0.7
Small tools & miscellaneous	£	1.1	0.4	1.8
Contract manure removal	£	1.8	0.7	2.7
Other fixed costs	£	1.4	0.2	2.5
Specialist machinery depreciation & repairs	£	0.3	0.4	0.0
Broiler equipment depreciation & repairs	£	1.6	1.8	1.8
Building repairs & maintenance	£	3.4	0.2	6.1
Building depreciation/rent paid & site rent	£	3.6	3.4	5.5
Total Fixed Costs other than Labour	£	17.3	10.5	25.2
per bird produced				
Electricity	£	1.3	1.1	1.5
Gas	£	1.8	1.4	2.3
Heating oil	£	0.1	0.2	0.1
Water	£	0.5	0.4	0.6
Small tools & miscellaneous	£	1.0	0.3	1.7
Contract manure removal	£	1.7	0.7	2.5
Other fixed costs	£	1.2	0.2	2.3
Specialist machinery depreciation & repairs	£	0.3	0.4	0.0
Broiler equipment depreciation & repairs	£	1.4	1.7	1.7
Building repairs & maintenance	£	3.1	0.2	5.8
Building depreciation/rent paid & site rent	£	3.4	3.3	5.3
Total Fixed Costs other than Labour	£	15.9	10.0	23.9

Table A2 (continued) Financial and production results, all holdings

		All flocks weighted	Top third	Bottom third
Number of flocks ¹		106	35	35
Crop size		83,969	86,366	81,950
Number of crops		6.0	6.2	6.1
Days in unit	days	47	45	49
Mortality	%	3.8	3.9	4.2
Growth rate per day	grams	51	53	51
Liveweight at sale	kg	2.4	2.4	2.5
Return per kg liveweight at sale	p	47.9	48.0	47.3
Feed per kg liveweight output	kg	1.9	1.9	1.9
	p	27.4	27.9	27.2
Labour hours per 1000 birds	hours	4.6	3.8	5.6
Cost per hour of labour	£	8.59	7.74	9.14
Farmer & spouse labour (by value)	%	22	37	10
Cost per tonne of feed	£	145	147	145
Per cent compound feed	%	92	93	91

1 For financial measures the figures shown are based on 94 flocks for which full costs of all inputs, including chicks, feed, vaccines and other medications were recorded and full payment (in the region of 48 pence per liveweight kg) was made to the producer. For purely physical measures, common to all flocks regardless of pricing structures, figures from all 106 recorded flocks have been used. In both cases, the data available has been weighted to accurately reflect the total balance within the industry between flock size groups, the English regions and between company and non-company owned holdings. For financial measures the top and bottom thirds number 31, for physical measures they number 35.

Table A3 Financial and production results, non company holdings, conventional production, flock property of producer

		All flocks Weighted	Size group 1	Size group 2	Size group 3	Top third	Bottom third
Number of flocks		51	16	15	20	17	17
Crop size		63,020	22,751	63,041	129,564	88,037	63,284
Output - composition per £100							
Sales	£	125.0	122.8	125.7	124.7	123.8	125.2
Less purchased chicks	£	25.0	22.8	25.7	24.7	23.8	25.2
Costs and margins per £100 output							
Feed	£	73.1	74.1	72.6	73.5	71.2	75.8
Other variable costs	£	3.9	4.4	4.1	3.4	3.5	3.8
Gross margin	£	23.0	21.6	23.4	23.1	25.3	20.5
Labour	£	3.4	5.0	3.1	3.3	2.6	4.7
Other fixed costs	£	11.2	13.2	10.9	11.4	9.6	14.6
Total costs	£	91.6	96.6	90.7	91.6	86.9	98.8
Net margin	£	8.4	3.4	9.3	8.4	13.1	1.2
Costs and return per bird produced							
Sales	p	119.5	124.9	117.1	121.1	125.3	115.4
Chick cost	p	23.0	22.3	23.1	23.0	23.2	22.4
Mortality	p	0.9	0.9	0.8	1.0	0.9	0.8
Output	p	95.7	101.7	93.2	97.1	101.2	92.2
Feed	p	70.0	75.3	67.6	71.4	72.0	69.9
Other variable costs	p	3.7	4.5	3.8	3.3	3.6	3.5
Gross margin	p	22.0	21.9	21.8	22.4	25.6	18.9
Labour	p	3.3	5.1	2.9	3.2	2.6	4.3
Other fixed costs	p	10.7	13.4	10.1	11.1	9.7	13.4
Total costs	p	87.7	98.3	84.5	89.0	87.9	91.1
Net margin	p	8.0	3.4	8.7	8.1	13.3	1.1

Table A3 (continued) Financial and production results, non-company holdings, conventional production, flock property of producer

		All flocks Weighted	Size group 1	Size group 2	Size group 3	Top third	Bottom third
Detail of Fixed Costs other than Labour							
per £100 output							
Electricity	£	1.3	1.6	1.3	1.2	1.2	1.5
Gas	£	1.4	2.1	0.9	1.5	1.3	1.5
Heating oil	£	0.4	0.1	0.6	0.3	0.3	0.7
Water	£	0.4	0.6	0.5	0.3	0.3	0.4
Small tools & miscellaneous	£	0.5	1.0	0.5	0.3	0.4	0.5
Contract manure removal	£	0.6	0.8	0.6	0.6	0.8	0.6
Other fixed costs	£	0.1	0.3	0.2	0.1	0.1	0.2
Specialist machinery depreciation & repairs	£	0.5	0.7	0.5	0.5	0.3	0.8
Broiler equipment depreciation & repairs	£	2.2	1.9	1.9	2.4	1.6	2.5
Building repairs & maintenance	£	0.2	0.3	0.2	0.2	0.2	0.2
Building depreciation/rent paid & site rent	£	3.6	3.7	3.9	3.9	3.0	5.7
Total Fixed Costs other than Labour	£	11.2	13.2	10.9	11.4	9.6	14.6
per bird produced							
Electricity	£	1.3	1.6	1.2	1.2	1.2	1.4
Gas	£	1.3	2.2	0.8	1.4	1.3	1.4
Heating oil	£	0.3	0.1	0.5	0.3	0.3	0.7
Water	£	0.4	0.6	0.5	0.3	0.3	0.3
Small tools & miscellaneous	£	1.5	1.0	0.5	0.3	0.4	0.5
Contract manure removal	£	0.5	0.8	0.5	0.6	0.8	0.5
Other fixed costs	£	0.1	0.3	0.1	0.1	0.1	0.2
Specialist machinery depreciation & repairs	£	0.5	0.7	0.4	0.5	0.3	0.7
Broiler equipment depreciation & repairs	£	2.1	2.0	1.8	2.3	1.6	2.3
Building repairs & maintenance	£	0.2	0.3	0.1	0.2	0.2	0.2
Building depreciation/rent paid & site rent	£	3.4	3.7	3.6	3.8	3.0	5.3
Total Fixed Costs other than Labour	£	10.7	13.4	10.1	11.1	9.7	13.4

Table A3 (continued) Financial and production results, non-company holdings, conventional production, flock property of producer

		All flocks Weighted	Size group 1	Size group 2	Size group 3	Top third	Bottom third
Number of flocks		51	16	15	20	17	17
Crop size		63,020	22,751	63,041	129,564	88,037	63,284
Number of crops		5.8	5.3	6.1	6.0	6.0	5.6
Days in unit	days	46	48	45	46	46	44
Mortality	%	3.8	3.8	3.3	4.0	3.8	3.6
Growth rate per day	grams	54	55	54	54	56	55
Liveweight at sale	kg	2.5	2.6	2.4	2.5	2.6	2.4
Return per kg liveweight at sale	p	47.9	47.5	48.0	47.8	47.8	47.7
Feed per kg liveweight output	kg	1.9	1.9	1.9	1.9	1.9	1.9
	p	28.3	28.7	27.8	28.6	28.1	28.9
Labour hours per 1000 birds	hours	4.4	6.9	4.0	4.2	3.3	5.7
Cost per hour of labour	£	7.42	7.36	7.32	7.57	7.92	7.62
Farmer & spouse labour (by value)	%	56	87	56	39	41	48
Cost per tonne of feed	£	147	148	145	149	146	153
Per cent compound feed	%	92	95	91	94	91	97

Table A4 Financial and production results, non-company holdings, minority contract arrangements

- a) Conventional production, flock property of producer, but chicks, feed, vaccines and medications not charged
b) Conventional production, flock property of processor
c) Free range production, flock property of processor

Flock type (see above)		a	b	c
Flock ownership		non company	company	company
Type of production		conventional	conventional	free range
Number of flocks		6	6	5
Crop size		100,115	78,664	21,633
Output - composition per £100				
Sales	£	100.0	126.2	100.0
Less purchased chicks	£	-	26.2	-
Costs and margins per £100 output				
Feed	£	-	70.6	-
Other variable costs	£	9.5	3.4	6.9
Gross margin	£	90.5	26.0	93.1
Labour	£	20.0	3.9	16.3
Other fixed costs	£	50.4	13.1	37.7
Total costs	£	79.9	90.9	60.8
Net margin	£	20.1	9.1	39.2
Costs and return per bird produced				
Sales	p	21.7	116.1	62.5
Chick cost	p	-	23.3	-
Mortality	p	-	0.8	-
Output	p	21.7	92.0	62.5
Feed	p	-	64.9	-
Other variable costs	p	2.1	3.1	4.3
Gross margin	p	19.6	24.0	58.1
Labour	p	4.3	3.6	10.2
Other fixed costs	p	10.9	12.0	23.5
Total costs	p	17.4	83.6	38.0
Net margin	p	4.4	8.3	24.5

Table A4 (continued) Financial and production results, non-company holdings, minority contract arrangements

- a) **Conventional production, flock property of producer, but chicks, feed, vaccines and medications not charged**
b) **Conventional production, flock property of processor**
c) **Free range production, flock property of processor**

Flock type (see above)		a	b	c
Flock ownership		non company	company	company
Type of production		conventional	conventional	free range
Number of flocks		6	6	5
Crop size		100,115	78,664	21,633
Detail of Fixed Costs other than Labour				
per £100 output				
Electricity	£	4.8	1.3	1.6
Gas	£	2.1	1.9	3.7
Heating oil	£	1.7	0.2	0.0
Water	£	1.6	0.5	0.9
Small tools & miscellaneous	£	0.9	0.1	0.8
Contract manure removal	£	3.3	1.3	5.0
Other fixed costs	£	1.1	0.4	0.1
Specialist machinery depreciation & repairs	£	2.1	0.6	2.0
Broiler equipment depreciation & repairs	£	26.6	1.1	5.6
Building repairs & maintenance	£	2.1	0.1	0.4
Building depreciation/rent paid & site rent	£	4.0	5.7	17.5
Total Fixed Costs other than Labour	£	50.4	13.1	37.7
per bird produced				
Electricity	£	1.1	1.2	1.0
Gas	£	0.5	1.7	2.3
Heating oil	£	0.4	0.2	0.0
Water	£	0.4	0.4	0.6
Small tools & miscellaneous	£	0.2	0.1	0.5
Contract manure removal	£	0.7	1.2	3.1
Other fixed costs	£	0.2	0.4	0.1
Specialist machinery depreciation & repairs	£	0.5	0.5	1.3
Broiler equipment depreciation & repairs	£	5.8	1.0	3.5
Building repairs & maintenance	£	0.5	0.1	0.3
Building depreciation/rent paid & site rent	£	0.9	5.2	10.9
Total Fixed Costs other than Labour	£	10.9	12.0	23.5

Table A4 (continued) Financial and production results, non-company holdings, minority contract arrangements

- a) Conventional production, flock property of producer, but chicks, feed, vaccines and medications not charged**
- b) Conventional production, flock property of processor**
- c) Free range production, flock property of processor**

Flock type (see above)		a	b	c
Flock ownership		non company	company	company
Type of production		conventional	conventional	free range
Number of flocks		6	6	5
Crop size		100,115	78,664	21,633
Number of crops		6.0	6.3	6.0
Days in unit	days	41	45	56
Mortality	%	4.0	3.2	6.3
Growth rate per day	grams	54	53	43
Liveweight at sale	kg	2.2	2.4	2.4
Return per kg liveweight at sale	p	9.9	47.9	26.1
Feed per kg liveweight output	kg	1.8	1.8	2.2
	p	-	26.8	-
Labour hours per 1000 birds	hours	5.4	5.0	14.7
Cost per hour of labour	£	8.06	7.21	6.93
Farmer & spouse labour (by value)	%	23	58	75
Cost per tonne of feed	£	-	147	-
Per cent compound feed	%	100	92	100

Table A5 Financial and production results, company owned holdings, conventional production

		All flocks Weighted	Size group 1 & 2 combined	Size group 3	Top third	Bottom third
Number of flocks		35	17	18	12	12
Crop size		116,544	63,752	166,802	158,799	71,955
Output - composition per £100						
Sales	£	125.9	124.8	125.4	126.0	123.9
Less purchased chicks	£	25.9	24.8	25.4	26.0	23.9
Costs and margins per £100 output						
Feed	£	69.7	68.8	71.0	71.1	70.0
Other variable costs	£	4.1	4.3	4.0	4.3	3.8
Gross margin	£	26.2	26.9	25.0	24.6	26.2
Labour	£	4.4	5.0	4.3	4.1	5.0
Other fixed costs	£	21.8	29.3	18.6	15.2	32.7
Total costs	£	100.0	107.4	98.0	94.6	111.5
Net margin	£	0.0	-7.4	2.0	5.4	-11.5
Costs and return per bird produced						
Sales	p	113.5	118.5	115.5	112.7	121.8
Chick cost	p	22.5	22.6	22.5	22.3	22.5
Mortality	p	0.9	1.0	0.9	0.9	1.0
Output	p	90.2	94.9	92.1	89.5	98.3
Feed	p	62.9	65.4	65.5	63.6	68.8
Other variable costs	p	3.7	4.1	3.7	3.8	3.7
Gross margin	p	23.6	25.5	23.0	22.0	25.7
Labour	p	4.0	4.7	4.0	3.6	4.9
Other fixed costs	p	19.7	27.8	17.2	13.6	32.1
Total costs	p	90.2	101.9	90.3	84.7	109.6
Net margin	p	0.0	-7.0	1.9	4.8	-11.3

Table A5 (continued) Financial and production results, company owned holdings, conventional production

		All flocks Weighted	Size group 1 & 2 combined	Size group 3	Top third	Bottom third
Detail of Fixed Costs other than Labour						
per £100 output						
Electricity	£	1.5	1.6	1.5	1.5	1.5
Gas	£	2.4	2.6	2.3	2.1	2.5
Heating oil	£	0.0	0.0	0.0	0.0	0.0
Water	£	0.7	0.8	0.6	0.7	0.6
Small tools & miscellaneous	£	1.6	2.0	1.5	1.2	2.1
Contract manure removal	£	2.7	3.9	2.1	2.1	3.8
Other fixed costs	£	2.3	2.9	1.9	1.4	3.1
Specialist machinery depreciation & repairs	£	0.1	0.0	0.1	0.2	0.0
Broiler equipment depreciation & repairs	£	1.1	1.9	1.1	1.0	2.2
Building repairs & maintenance	£	5.9	9.3	4.3	3.9	10.0
Building depreciation/rent paid & site rent	£	3.6	4.5	3.1	1.0	6.9
Total Fixed Costs other than Labour	£	21.8	29.3	18.6	15.2	32.7
per bird produced						
Electricity	£	1.3	1.5	1.4	1.3	1.4
Gas	£	2.2	2.5	2.1	1.9	2.4
Heating oil	£	0.0	0.0	0.0	0.0	0.0
Water	£	0.6	0.7	0.6	0.6	0.6
Small tools & miscellaneous	£	1.5	1.9	1.4	1.1	2.1
Contract manure removal	£	2.5	3.7	2.0	1.9	3.7
Other fixed costs	£	2.0	2.7	1.8	1.3	3.1
Specialist machinery depreciation & repairs	£	0.1	0.0	0.1	0.2	0.0
Broiler equipment depreciation & repairs	£	1.0	1.8	1.0	0.9	2.1
Building repairs & maintenance	£	5.3	8.8	3.9	3.5	9.9
Building depreciation/rent paid & site rent	£	3.3	4.3	2.9	0.9	6.8
Total Fixed Costs other than Labour	£	19.7	27.8	17.2	13.6	32.1

Table A5 (continued) Financial and production results, company owned holdings, conventional production

		All flocks Weighted	Size group 1 & 2 combined	Size group 3	Top third	Bottom third
Number of flocks		35	17	18	12	12
Crop size		116,544	63,752	166,802	158,799	71,955
Number of crops		6.6	6.4	6.4	6.3	6.3
Days in unit	days	48	49	48	47	50
Mortality	%	3.8	4.2	3.8	3.8	4.4
Growth rate per day	grams	49	50	50	50	50
Liveweight at sale	kg	2.3	2.5	2.4	2.3	2.5
Return per kg liveweight at sale	p	48.4	48.0	48.4	48.7	47.9
Feed per kg liveweight output	kg	1.9	1.9	1.9	1.9	1.9
	p	26.9	26.7	27.5	27.6	27.3
Labour hours per 1000 birds	hours	4.2	5.1	4.1	3.8	5.2
Cost per hour of labour	£	9.57	9.32	9.59	9.49	9.37
Farmer & spouse labour (by value)	%	-	-	-	-	-
Cost per tonne of feed	£	144	142	145	145	144
Per cent compound feed	%	91	89	92	93	89

APPENDIX B1 Questionnaire sent to non company holdings

CONFIDENTIAL

National Survey of Broiler Production 30th April 2001

Holding number

Please complete this form *only for broiler chickens kept on the specific holding opposite*

Name

If the broiler chickens on the holding are farmed by someone else, please pass this form to that person.

Address1

Address2

Address3

Postcode

Section A: Numbers of Broiler Chickens

1. How many broiler chickens are there on the holding on 30th April 2001?	
2. Is that number your normal full capacity?	YES/NO
<i>If NO, continue to Question 3. If YES, go to Question 6</i>	
3. At your normal full capacity, how many birds would there be on the holding?	
4. When was the most recent date on which you were stocked to full capacity?	
5. Why are you currently not stocked to capacity? (Tick reason)	
i. Between crops	
ii. A recent partial thin	
iii. One or more houses undergoing repair	
iv. Have ceased production altogether	
v. Other (specify)	

Section B: Ownership and Contractual Arrangements

6. Who owns the broiler chickens on the holding? (Tick as appropriate)			
i. Yourself (or the business for which you are replying)			
ii. The business that will process the chickens			
iii. A feed firm			
iv. Other (specify)			
7. Do you (or the business for which you are replying) own broiler chickens on other sites?			
YES/NO	If YES, how many different sites?		
8. How do you pay for:-			
	CHICKS	FEED	VACCINES & MEDICATION
i. Cost deducted from payment for broilers			
ii. Supplied "free" by contractor			
iii. Purchased directly and paid for by yourself			

Section C: Housing, Management and Marketing

9. What is the total floor area of the broiler houses? (specify sq.ft./sq.metres)	
10. In how many separate houses?	
11. Are your incoming chicks reared separately according to sex?	YES/NO
12. At what age/weight are your broilers generally slaughtered?	
Age in days	
Liveweight in kg	
13. Have you already attained, or are you grading-up towards, an Assurance Scheme such as Assured Chicken Production (ACP)?	YES/NO
i. Already attained (state which scheme)	
ii. Grading-up towards (state which scheme)	
14. When marketed, do your chickens carry a particular descriptive label? YES / NO / DON'T KNOW (If YES, tick all those that apply)	
i. Corn fed	<input type="checkbox"/>
ii. Free range	<input type="checkbox"/>
iii. Organic	<input type="checkbox"/>
iv. Retailer's own brand	<input type="checkbox"/>
v. Other (specify)	<input type="checkbox"/>

Section D: Your View of the Future

15. What are your GREATEST concerns about the future of your business (Tick no more than three)	
i. Ever tighter welfare, hygiene and other regulations	<input type="checkbox"/>
ii. Increased feed cost because of legislation/supermarket demands	<input type="checkbox"/>
iii. Imported chicken from countries not subject to the same legislation	<input type="checkbox"/>
iv. Profit margins insufficient to invest with confidence for the future	<input type="checkbox"/>
v. Difficulty of finding and retaining suitable labour	<input type="checkbox"/>
vi. The power <i>within</i> the industry of large commercial businesses	<input type="checkbox"/>
vii. The power <i>over</i> the industry of supermarket groups	<input type="checkbox"/>
viii. The risk of a food scare relating to poultrymeat	<input type="checkbox"/>
ix. Other (specify)	<input type="checkbox"/>
.....	

Other comments: (You are welcome to attach a separate sheet or letter if you wish)

Would you like to receive a summary of the findings of this survey?

YES/NO

Please return this form to the University of Exeter in the FREEPOST envelope provided (no stamp is required).

Thank you very much for your help.

APPENDIX B2 Questionnaire sent to company holdings

CONFIDENTIAL

National Survey of Broiler Production 1st October 2001

«CPH»

«name»

«add1»

«add2»

«add3»

«add4»

«pcode»

Please complete this form *only for broiler chickens kept on the specific holding opposite*. If you operate more than one holding, we should have sent a separate form for each holding. If we have not, please let us know.

If you are completing more than one form, there is no need to write answers that are the same on every form. Just complete one form in full and write a note against questions where for your company the answer is always the same. This could apply to most questions other than numbers one to five, nine and ten.

Section A: Numbers of Broiler Chickens

1. How many broiler chickens are there on the holding on 1 st October 2001?	
2. Is that number the normal full capacity for that holding?	YES/NO
<i>If NO, continue to Question 3. If YES, go to Question 6</i>	
3. At normal full capacity, how many birds would there be on the holding?	
4. When was the most recent date on which the holding was stocked to full capacity?	
5. Why is the holding currently not stocked to capacity? (Tick reason)	
i. Between crops	
ii. A recent partial thin	
iii. One or more houses undergoing repair	
iv. Have ceased production altogether	
v. Other (specify)	

Section B: Ownership and Contractual Arrangements

6. Who owns the broiler chickens on the holding? (Tick as appropriate)			
i. Yourself (or the business on whose behalf you are replying)			
ii. A separate business that will process the chickens			
iii. An individual or company other than your own that also owns and operates the holding			
iv. Other (specify)			
7. Do you (or the business for which you are replying) own broiler chickens on other sites?			
YES/NO	If YES, how many different sites?		
8. How are these inputs provided?	CHICKS	FEED	VACCINES & MEDICATION
i. From within your own company or group			
ii. Purchased from a source outside your company			
iii. Provided by processor (other than your company)			

Section C: Housing, Management and Marketing

9. What is the total floor area of the broiler houses? (specify sq.ft./sq.metres)													
10. In how many separate houses?													
11. Are your incoming chicks reared separately according to sex?	YES/NO												
12. At what age/weight are your broilers generally slaughtered?													
	<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="width:33%;"></td> <td align="center">1st thin</td> <td align="center">2nd thin</td> <td align="center">Final</td> </tr> <tr> <td style="padding: 2px 5px;">Age in days</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding: 2px 5px;">Liveweight in kg</td> <td></td> <td></td> <td></td> </tr> </table>		1 st thin	2 nd thin	Final	Age in days				Liveweight in kg			
	1 st thin	2 nd thin	Final										
Age in days													
Liveweight in kg													
13. Have you already attained, or are you grading-up towards, an Assurance Scheme such as Assured Chicken Production (ACP)?	YES/NO												
i. Already attained (state which scheme)													
ii. Grading-up towards (state which scheme)													
14. When marketed, do your chickens carry a particular descriptive label? YES / NO / DON'T KNOW (If YES, tick all those that apply)													
i. Corn fed													
ii. Free range													
iii. Organic													
iv. Retailer's own brand													
v. Other (specify)													

Section D: Your View of the Future

15. What are your GREATEST concerns about the future of your broiler production business (Tick no more than three)	
i. Ever tighter welfare, hygiene and other regulations	
ii. Increased feed cost because of legislation/supermarket demands	
iii. Imported chicken from countries not subject to the same legislation	
iv. Profit margins insufficient to invest with confidence for the future	
v. Difficulty of finding and retaining suitable labour	
vi. The power <i>within</i> the industry of large commercial businesses	
vii. The power <i>over</i> the industry of supermarket groups	
viii. The risk of a food scare relating to poultrymeat	
ix. Other (specify)	
.....	

Other comments: (You are welcome to attach a separate sheet or letter if you wish)

Would you like to receive a summary of the findings of this survey? YES/NO

Please return this form to the University of Exeter in the FREEPOST envelope provided (no stamp is required).

Thank you very much for your help.

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