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AGRICULTURAL ADJUSTMENT UNIT • UNIVERSITY OF NEWCASTLE UPON TYNE

# **Efficiency in Agriculture and the Share of the Domestic Market**

**John Ashton**

**2**

## THE AGRICULTURAL ADJUSTMENT UNIT THE UNIVERSITY OF NEWCASTLE UPON TYNE

In recent years the forces of change have been reshaping the whole economy and, in the process, the economic framework of our society has been subject to pressures from which the agricultural sector of the economy is not insulated. The rate of technical advance and innovation in agriculture has increased, generating inescapable economic forces. The organisation of production and marketing, as well as the social structure, come inevitably under stress.

In February 1966 the Agricultural Adjustment Unit was established within the Department of Agricultural Economics at the University of Newcastle upon Tyne. This was facilitated by a grant from the W. K. Kellogg Foundation at Battle Creek, Michigan, U.S.A. The purpose of the Unit is to collect and disseminate information concerning the changing role of agriculture in the British and Irish economies, in the belief that a better understanding of the problems and processes of change can lead to a smoother, less painful and more efficient adaptation to new conditions.

### Publications

To achieve its major aim of disseminating information the Unit will be publishing a series of pamphlets, bulletins and books covering various aspects of agricultural adjustment. These publications will arise in a number of ways. They may report on special studies carried out by individuals; they may be the result of joint studies; they may be the reproduction of papers prepared in a particular context, but thought to be of more general interest.

The Unit would welcome comments on its publications and suggestions for future work. The Unit would also welcome approaches from other organisations and groups interested in the subject of agricultural adjustment. All such enquiries should be addressed to the Director of the Unit.

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EFFICIENCY IN  
AGRICULTURE AND  
THE SHARE OF THE  
DOMESTIC MARKET

JOHN ASHTON

Paper No. 2

AGRICULTURAL ADJUSTMENT UNIT  
UNIVERSITY OF NEWCASTLE UPON TYNE

1967

## EFFICIENCY IN AGRICULTURE AND THE SHARE OF THE DOMESTIC MARKET\*

### The Present Situation

In considering the state of the home market, and the share which is supplied from domestic agriculture we should start by looking at its present size and its potential for growth. In this respect it would be reasonable to take the National Plan as a starting point. The estimates contained in the Plan took account of probable population increase. They also took account, in the event optimistically, of income growth and its effect on the demand for food. In general, however, one can accept the projections contained in the Plan. What they demonstrate is that the possibilities for agricultural expansion are limited. In postulating that the maximum growth in demand would be 1.3 per cent per annum, between 1964 and 1970, the Plan brought us face to face with one of the principal constraints which confronts agriculture. Although particular lines of farm production may be better placed than others in this respect, there is, in general a lack of scope for further progress towards national self-sufficiency.

In the case of temperate products, the extreme case of external dependence is butter where our farms supply less than 10 per cent of the domestic market. But any controlled attempt to expand this proportion would, in the long term, raise the price to such an extent that the quantity demanded would be drastically reduced. Similar consequences for the British butter market might be expected as a result of the implementation of the Common Agricultural Policy in the E.E.C. as it stands at present. If we join the Community on the basis of the present pricing regime, the sale of butter will drop to a marked extent as consumers reduce consumption and switch to margarine.

At the other end of the range, we are virtually self-sufficient in the cases of liquid milk (100%), potatoes (96%), eggs (96%), pork (97%) and poultry meat (98%). Moreover, a high degree of self-sufficiency exists for beef and veal (73%), coarse grains (71%), and milk products, excluding butter and cheese (82%). What is left? For wheat and flour there is still about 50% of the market, but we cannot yet grow the hard wheats to which we have become accustomed for our bread despite the development of new varieties. Also more than 60% of the market for bacon and ham is supplied from overseas. It might be rash to suggest that there is no room in the domestic market for coarse grains from countries with markedly favourable conditions for their production. Equally, the output for additional beef supplies from British farms might not have looked so attractive if the estimates had been prepared during the last few months instead of in the summer of 1964. In the case of mutton and lamb, we share this market, too, with overseas suppliers

\* This paper is based on that given by the Author at the Annual General Meeting of the National Farmers' Union in London, on 25th January, 1967.

but the pattern of sharing largely arises in this case from seasonal production in the Southern Hemisphere complementing our own seasonal output.

In any case, the exclusion of overseas supplies from our market is not just a simple option. As a trading nation, whose standard of living depends upon its success in export markets, we cannot afford to ignore the maintenance of our trading position. As the leading importer of commercial food supplies, Britain has taken a lead and supported many attempts in the field of international co-operation to achieve a better and more orderly flow of agricultural commodities. Generally we have given overseas suppliers access to our markets; we have participated in a number of international commodity agreements; we have always been ready to discuss with other countries measures to improve mutual trading relations. This liberal policy in the trading field has not been without benefit to our export effort in the post-war era.

### **Developments in Marketing and Effects on Production**

Before discussing what determines market shares in the long-term, there is another respect in which the National Plan was optimistic, namely the difference between the farm-gate demand for food and demand at the retail level. In a developed economy, the increase in expenditure on food is shared unequally between farmers, on the one hand, and food processors and distributors on the other. There is no moral in this proposition, which is the result of market forces and the fulfilment of the wishes of consumers. It reflects the relative strengths of demand for food supplies as they leave the farm-gate and for food—whatever its source—as it is presented to the consumer. The tendency for a higher proportion of consumers' expenditure to go to the distributive sector than to farmers, can be regarded as quite firm. For instance, between 1955 and 1964, when agricultural output went up by less than 30 per cent at current prices and the domestic producers' share of the home market was at least maintained, if not increased, consumers' expenditure on food went up by about 40 per cent. Estimates for the U.S.A. show that the 'farmers' share of the consumer's dollar expenditure on food' declined from 43 cents in 1954 to 39 cents in 1964. Thus, the development of 'convenience foods', while generally enlarging the home producers' market, have enlarged, to an even greater extent, the market return of those who develop, process and handle these products.

End-products are becoming more sophisticated as the demand for 'convenience foods' is met, and new skills are being developed in the production and promotion of these products. The demand for specified and consistent quality of produce, coupled with regularity of supplies, is growing. Moreover, the market in food supplies is becoming increasingly competitive, both nationally and, in some cases internationally. Indeed, in most sectors of processing and distribution, it is apparent



that there is little in the way of excess margins which might otherwise enhance farmers' incomes.

These considerations point to a substantial increase in the influence of the marketing system on the pattern and type of agricultural production. There is a growing volume of production on contract terms, e.g. horticultural produce, potatoes, peas and beans, eggs and poultry meat. Such contracts to an increasing extent are stipulating the methods of production, including agreement with producers over use of requisites. Correspondingly, there is a growing involvement of marketing firms in applied research related to food and food products. These developments can be expected to spread to other commodities during the 1970's.

In response to these forces, production will tend to increase in scale and become more specialised, with concentration into fewer hands. These tendencies have been clearly evident in recent years. Thus, since 1960 in England and Wales, the number of milk producers has declined by about 26,000 while those engaged in wheat production have fallen by 12,000. The number of pig and egg producers has declined by 9,000 and 12,000 respectively. These reductions have given rise to a marked increase in the concentration of production and considerable increases in scale. Thus, by 1965, 30 per cent of milk production came from herds with 50 cows or more; 42 per cent of wheat production from producers with 100 acres or more, and 21 per cent of pig production from herds of 50 sows or more. Most striking of all: 62 per cent of egg production came from flocks of over 1,000 birds and 71 per cent of broiler production from flocks with over 20,000 birds.

### **The Demand Situation**

There are three further aspects of the demand situation which should be mentioned briefly. First, there is the question of entry into the E.E.C. The main determinants of market shares will hold good whether or not we join the E.E.C. If we joined the Community the direction of agricultural progress would be different, as a result of a changed price and cost situation giving rise to a re-deployment of the industry's resources. It would also mean that the degree of protection afforded to the industry against third countries, in the short-term, would be greatly enhanced. But it would be taking an unduly complacent view to expect that the protection afforded in the E.E.C. could continue at the same level indefinitely.

Secondly, there is the question of food aid. It is attractive to producers seeking markets to contemplate the task of filling the hungry bellies around the world. But what is lacking is a conclusive argument to show that the long-term solution for inadequate food supplies in poor countries is to harness the agricultural capacity of the rich, industrialised countries. What the poor countries require is not the food surpluses of U.S. and Europe, the purchase of which would eat into their limited supplies of foreign exchange, but capital and markets for the development of their own agriculture. To the extent that we accept an international obligation

in the arena of economic development we must be careful not to cloud the issue by believing that these poor countries present unlimited market opportunities for food. Their requirements are, in fact, know-how, finance and the other ingredients for economic advance. There are, of course, the extreme circumstances of famine and disaster. But the rich countries have not been found wanting in meeting these special needs, usually with supplies from the specialist primary producers. Even in these circumstances the problem is not solely to get the food to the country in need. There are also the general inadequacies which exist in the internal distribution systems in the poorer countries.

The third aspect is the development of new forms of food. Revolutionary processes are already being pioneered in a variety of fields. Instant milk has now made a mark on the pattern of consumption; the extent and prominence of store shelves devoted to these products throughout the United States of America is striking. In the longer term there are other new food possibilities. Protein foods based on vegetable products have been developed in the U.S.A. in experimental form to simulate red meat and poultry. Such processes are of profound interest to the major food manufacturers and distributors, and an influence to be reckoned with. In fact, in looking to the 1970's, it would be negligent to assume that such developments will not take place. Moreover, we cannot ignore that, at some stage in income growth, price alone is not the sole determinant of consumers' buying habits. The facility of having, in the larder, ample supplies of a range of products, is something which the consumer is coming to expect as a matter of course.

### **The Determination of Market Shares**

Turning now to the long-term determinants of shares of the market, the most important factor is the degree of 'comparative advantage' enjoyed by different producers. Comparative advantage relates not only to the extent and quality of our physical resources, but also to their value in alternative uses. Thus, it does not pay to expand the production of grapes in this country because it would divert resources from other and more profitable uses. In practice we grow a very small quantity and import most of our requirements in the form of inexpensive products from countries which have the appropriate climate and can profitably use their resources in this line of production. Contrast the situation in Belgium before and after the establishment of the Common Market. Originally, Belgium had a heavily protected, high-cost system of producing grapes in heated glass-houses. Now, within the Common Market, the Belgian consumer can buy imported grapes at much lower cost than before. Thus, national political forces were originally responsible for deviations from the natural pattern of production suggested by the competitive ability of different groups of producers. But the existence of such deviations is generally limited by the need to retain general agreement to forgo cheaper sources of supply.



Comparative advantage, and therefore competitive position, is influenced by the resources available to agriculture and the stage of technological development. Land resources are subject to wide qualitative differences according to climate, topography and location in relation to markets. Labour varies in skill and productivity from one country to another, and the capital available to agriculture will depend to some extent on the degree of development of the economy. The availability of these different resources and the way in which they are combined is of profound importance. In this respect one should note that in agriculture in advanced economies there is a substitution of capital for other resources, which may diminish the disparities in cost which arise from natural conditions. This feature has contributed to the success of British agriculture in the post-war period—a subject which will be referred to later in this paper.

The introduction and adoption of new technology calls for comment. In a suitable economic environment, producers are willing to invest capital in their businesses. When times are hard, however, there is little incentive to innovate. Given the reasonable conditions which have existed in the U.K. since the war, farmers have adopted new and capital-intensive technology at a remarkable rate. Part of such development results from the investment in research, a basic requirement for economic progress. Part is in response to what Galbraith described as the 'technological imperative'—basically the need to keep up with the rest. The problem for agriculture however, is that most technological development tends to increase output, and, faced with a limited total market, there is economic pressure on the industry to reduce the number of production units.

Against this background of endowment with resources, the opportunities for alternative use of these resources and the prevailing levels of technology, how will British agriculture's share of the domestic market for food work out in practice? In the first place there is the question of the range of market requirements in terms of seasonality and quality. Thus, as mentioned earlier, home-produced and New Zealand lamb complement each other in terms of their main marketing seasons. Similarly fresh and frozen beef complement each other in terms of extending the range of quality offered to consumers. In neither case is the position static. Technological development in the form of improved handling and storage of products, as well as improvement in livestock production, could alter the situation and affect market shares. In the case of quality, patterns of consumption can change and, with rising incomes, consumers move towards better quality products.

What is left, in the long-term, is the basic advantage enjoyed by one country, or region, over another for producing a range of industrial and agricultural commodities. In certain foodstuffs there is no question of our being able to compete. These include all the equatorial, tropical and semi-tropical products, to the level of maize and tobacco. Over a wide range of temperate products, British

agriculture has vastly improved its competitive standing as a result of technological advance and increased inputs of capital. The record is impressive and not enough credit has been accorded to this achievement. There is scarcely any line of temperate production in which the best twenty per cent of British producers are not competitive with their counterparts overseas in terms of economic, as well as technical standards of performance. In practically every line those at the head of the league table are setting a cracking pace. In the production of pigs, our best producers excel the standards of the Dane. In our main cereal areas, production is generally low-cost and efficient. Field-scale vegetable production, including production for processing, has emerged as one of the outstandingly successful sectors of British agriculture. Equally impressive are the current standards in poultry and egg production. Not least, of course, we have seen a widespread rationalisation of milk production, coupled with standards of economic and technical performance, which would have appeared unattainable a decade ago.

It is not these above-average levels of performance which pose the problems. At the heart of the matter is the wide range of performance that exists from the very poor to the very good. The production costs associated with higher levels of technology are generally much less than those incurred by traditional methods, even though the disparity between the old and the new can be masked, for some producers, by the historical nature of their level of costs. This poses a dilemma when it comes to working out policies to encourage innovation. Any price level favourable to innovators may be at least as favourable to those who do not have to meet the full range of current cost-levels. In other words, simple product-pricing is too crude an approach to give maximum encouragement to technological change. Yet if the industry does not innovate it will not gain a share of the market for new products and it could lose some of its share of the market for existing products. It cannot afford to stand still because its competitors will not do so; thus innovation takes place, output expands and, in the face of a slowly expanding and inelastic demand situation, prices fall. This is the paradox underlying technological advance in agriculture. Thus, the British market for broiler chickens might be in American hands if British producers had not seized the opportunities offered, but in seizing the opportunity the domestic price of chicken has fallen substantially. This example underlines the international nature of technological development, since the introduction of broiler technology was almost exclusively American in origin. It also prompts the thought that we have really moved into 'international free trade' in technology. Science knows no frontiers and it would be quite misleading to base long-term international trading policies on short-term technological advantages.

It follows that, if the industry innovates it will retain, or increase, its share of the market. This has certainly happened in a number of lines in the last ten years. But product prices, in real terms, will tend to fall as the result of more efficient

production. To adapt to these lower prices means that structural adjustment, in terms of increased specialisation, concentration of production in fewer hands, and fewer producers in total must take place if individual incomes are not to be depressed. This problem is not confined to agriculture. It has happened throughout British industry, e.g. cotton textiles, coal, aircraft construction, shipbuilding and newspaper production.

### **Conclusions**

In looking to the future, agriculture should not involve itself in sterile arguments about what share of the market should go to the domestic producer. Rather, it should use its energies to identify the conditions which will affect future market shares and the means by which it can adjust itself to meet the challenge of those conditions. In this respect, agriculture, like other industries, is faced with a grave dilemma in identifying and pursuing its objectives. The future prosperity of the individuals within the industry is unlikely to depend upon an ever expanding share of the market, when scope for such expansion is limited. Rather, it will depend upon the will and ability to innovate, even if British agriculture has a smaller share of the domestic market, with fewer and more specialised units. There is, in fact, a choice between having an industry with a large number of people achieving a low income or a smaller number enjoying a larger income. This aspect of economic well-being for any industry is likely to become more prominent throughout the economy. It is not exclusively an agricultural problem.

Short-term considerations tend to dictate the preservation of the existing organisation and structure of an industry. At the same time, the underlying technical and commercial forces at work will surely bring about fundamental changes. The argument in this paper can be summarised in two sentences. The long-term objective should be to achieve a competitive and prosperous industry, but undue preoccupation with the business of market shares is bound to divert attention from that objective. If British agriculture accepts the challenge of the 1970's, market shares can be left to look after themselves and may well provide us all with a pleasant surprise.

## LIST OF PUBLICATIONS

### Bulletins

	PRICE ( <i>excluding packing and postage</i> )
1. Farmers and the Common Market B. H. Davey and S. J. Rogers	5s 0d
2. Efficiency in Agriculture and the Share of the Domestic Market J. Ashton	5s 0d
3. Trends in Agriculture: A Review of Current and Future Developments B. H. Davey	5s 0d

### Books

Economic Change and Agriculture Edited by J. Ashton and S. J. Rogers (Oliver and Boyd 1967)	42s 0d
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Details of the publication programme and a subscription scheme can be obtained from the Administrative Officer of the Unit.

October 1967

