

An Analysis of Recent Policies for Beef and Milk

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INTRODUCTION

In most developed countries considerable confusion surrounds discussion of agricultural policies. This applies both on the theoretical level and even more so on the level of practical programmes. Where such confusion reigns it is usually a good idea to return to first principles. In the first place, why is there such a high government involvement in agricultural production and trade throughout the world? The answer, of course, lies in the nature of the market for agricultural products. In the case of nearly all foodstuffs the underlying demand is both income and price inelastic. As people get richer they are unwilling to consume much more farm products or to place premium prices on them. Hence demand for food *per se* increases at little more than the rate of population growth in developed economies. Even large shifts in the prices of food relative to those of other goods are unable to alter this tendency to any appreciable extent. On the other hand, the application of improved technology has led to a rapid increase in the underlying productivity of most factors engaged in agricultural production.

Under the classical assumption of perfect competition such a situation would lead to a rapid fall in the returns to the factors engaged in agriculture and an equally rapid shift of these resources out of agriculture and into other activities. Governments have been unwilling to see this *laissez faire* solution take place for various reasons both social as well as economic. Some of the more important of these reasons are listed below.

- 1 There is the self-sufficiency consideration which even in peacetime is by no means trivial, since few governments would like to be over-dependent on foreign countries for many of their basic foods.
- 2 Protection for non-farming industries is another consideration which must be taken into account. Such protection causes a rise in prices for many of the goods which farmers have to buy. Therefore on grounds of equity the latter are entitled to some protection also, and indeed if it is not forthcoming on a sufficient scale, there may be food strikes and other industrial actions.
- 3 Balance of payments considerations can be put forward as another reason either because of import saving or because agricultural exports have usually a low import content.
- 4 There is the "depressed area" consideration, which has both social and economic overtones. When the population of a rural area declines the overhead cost of maintaining the region becomes more

burdensome roads, schools, medical services, hospitals etc have still to be maintained, but with a declining population the financing of these costs out of local taxation becomes increasingly difficult. Tax payers from other regions must contribute to the upkeep, and the areas with declining populations become a severe drain on the economy as a whole, particularly if the depressed regions occupy a considerable proportion of the national territory. At the same time there is the social cost of absorbing the migrants in cities. Hence governments try to limit the spread of "depressed areas" by attempting in various ways to slow down the rural exodus.

For a country like Ireland there is a double incentive to prevent too rapid a movement of people out of agriculture. In most countries when people leave farms they are absorbed into native industries and help to contribute to national prosperity. In this country, however, when people leave the land most of them leave the country altogether which is not a very desirable situation. There is, therefore, a strong case in Ireland for supporting people in agriculture until such a time as sufficient non-farm employment opportunities are developed to absorb those who must inevitably leave farming. The cost of such supports is, however, very high, as can be seen from Table A 1 of the Appendix, where are given official figures for state expenditure in relation to agriculture over the years. Reference to this table shows that the total value of these payments was £4.3 million in 1938/39. A considerable increase took place in subsequent years and by 1963/64 their value was £38.5 million. The increase continued in the following years so that by 1967/68 they reached £69.0 million and in 1968/69 they were £79.3 million.

Figures for State expenditure in relation to agriculture are often interpreted as agricultural subsidies but this interpretation is not entirely correct if subsidies are considered as government payments received directly or indirectly by farmers. Many items included in Table A 1, are administrative, educational and other expenditure which are designed to improve the productivity of agriculture but are received by persons other than farmers.

The above discussion indicates why special policies have to be introduced for agriculture in developed economies. We have shown also that those policies can be very expensive and that in this country the costs have grown enormously in recent years. It also appears that if present policies are continued the expenditure will continue to grow in future years. Hence, a crucial matter for policy-makers is to consider if this rate of growth in expenditure is justified, taking accounts of the overall national economy and also if the present pattern of expenditure is suitable, or whether it should be altered in some way. The larger question relating to the overall level of State aid is outside the scope of this paper, which is concerned specifically with policies for beef and milk. In order to consider the latter policies, however, we must outline some broad criteria governing State aid to agriculture generally. These criteria are given in the following section.

CRITERIA FOR STATE EXPENDITURE IN RELATION TO AGRICULTURE

What should be the aims of an agricultural policy and what should be the criteria by which programmes within it are judged? The first point obviously is that an agricultural policy makes little sense in isolation. Its aim must be to relate developments in agriculture and the allocation of resources in agriculture to developments and resource allocation in the rest of the economy. The first such aim would appear to be to maximise, subject to various constraints, growth in employment and in real national income per head of the population. This implies allocating resources to agriculture as to other sectors in such a way as to achieve this. More specifically it entails the encouragement of efficiency, in the use of resources and the avoidance of under-utilisation or unemployment of resources. The second aim, which can be regarded as a constraint to the first, is the desire to achieve a greater equality in incomes on equity grounds. Thirdly, there appears to be a general consensus that some degree of stability in general price levels is desirable and should be an aim of any economic policy. Thus, in deriving policy goals for agricultural programmes, there appear to be three broad aims, namely growth, including efficiency and avoidance of unemployment, equity, and stability. It must be recognised that to a considerable extent these goals are contradictory and that some reasonable balance needs to be struck between them. We discuss each of the objectives below.

Economic Growth

For the purpose of this discussion national economic growth is defined as an upward secular trend in employment and in real income per head of the population. Agriculture's contribution to growth may be increased at any given point in time

- (a) by increases in the quantities employed in agriculture of existing type inputs such as land, labour, and capital goods
- (b) by innovation and improvement in resource inputs and by investment in research and education so as to provide for knowledge creation and dissemination
- (c) by recombination of inputs and products so as to obtain a higher volume of output from a given set of inputs or indirectly, by production of the same, or even a lower output with a smaller quantity of inputs, thus freeing resources for use in other sectors in which their marginal product is greater
- (d) by easing other restraints on growth such as balance of payments considerations. The drive towards economic growth in other sectors requires a relatively high level of imports thus straining our balance of payments. A relatively lower import content of agricultural inputs can be used as a justification for agricultural expansion.

Developments and innovations of the kinds listed at (b) and (c) above are loosely referred to as improvements in efficiency.

Efficiency

In agricultural policy discussions much emphasis has been placed on the ideal of promoting efficiency within the sector. Unfortunately however, commentators seldom define what they mean by efficiency and for this reason we often get confused and sometimes misleading policy suggestions on the basis of efficiency criteria. It is important, therefore, to be clear as to what is meant by the term efficiency.

Efficiency or more specifically economic or allocative efficiency is directly concerned with the allocation of resources and consequently is central to the formulation of policy decisions. An increase in economic efficiency takes place due to any change, where the increased value resulting from the change is greater than the cost of making the change. It should not be confused with increases in *productivity*, which relate changes in the *volume* of output to changes in the volume of some, or all, of the inputs used in the production of this output, without taking account of what has happened to the prices of outputs or of inputs.

This point seems so elementary that it would hardly be worth making, were it not for the disturbing tendency of many people to recommend policies on the basis of so-called efficiency, (which is really productivity) disregarding price considerations, thus leading to ridiculous proposals being put forward on both macro and micro levels.

There are, of course, many practical difficulties in determining economic efficiency in the artificial market conditions obtaining in agriculture. However, provided the principle of opportunity cost is kept firmly in mind and is so defined as to include social overhead costs, for example, new houses, hospitals, schools, etc. in towns to which labour displaced from agriculture may move, as well as the more normal private costs associated with the individual farm as an enterprise, it should be possible to arrive at policy conclusions which, if not optimum, are at least not too far from the optimum.

Income Distribution

Government support for agriculture involves a distribution of incomes (a) between agriculture and the rest of the economy, and (b) within agriculture itself. Both of these concepts present special problems which are discussed below.

(a) The main arguments in favour of income redistribution as between agriculture and the rest of the community are those outlined in the Introduction. To these may be added one further statement. Because of the nature of the demand for agricultural produce, farmers as a whole are penalised for output increases, by having less revenue from greater production. They are therefore the victims of the progress which they have helped to create. The reduction in revenue to farmers as a group has contributed to what is known as the "income gap". Governments in many countries have attempted to narrow this gap by paying compensation to farmers for the losses they bear as part and parcel of economic progress. Policies leading to extra market prices for farm products and other subventions in recent times could be regarded as applications of the

compensation principle The amount of compensation to be paid, however, is impossible to determine objectively, because the main body of agricultural workers are self-employed persons who cannot be satisfactorily compared with any other group But even if agreement were reached as to the group, or groups with which agricultural workers should be compared and on the magnitude of the income gap which should be allowed, there are serious problems involved in making the actual measurements¹ Hence, the overall level of compensation will always have to be decided on the basis mainly of non-economic considerations, but, of course, certain income benchmarks can be established in a base year for reference purposes, and levels of compensation determined on the basis of these in subsequent years

(b) Principles of compensation as between agricultural workers are equally impossible to define objectively because as at (a) the allocation of subsidies involves value judgements relating to distributive and social justice People having a socialistic philosophy would probably claim that compensation should be paid on the basis of need, with the smaller and more vulnerable farmers getting the bulk of the payments Those having capitalistic views on the other hand would no doubt argue that payments should be made on the basis of resources invested with the larger and better-equipped farmers getting the major portion of the subsidy Others, including the writer, would favour a somewhat in-between arrangement

It is felt that people should be rewarded for hard work, energy and enterprise and that there must be adequate reward also for non-labour investments In the absence of adequate rewards, investments of enterprise or capital will not take place and there will be stultification and decay If, therefore, equal payments are made to all farmers or if the smaller ones are to get more per head of the compensation than the "larger", then the incentive motive may be destroyed and the resources of the more enterprising larger farmers will move out of the industry leaving behind those of the less enterprising Having said this, however, we must make certain important qualifications

In the first place, the amount available for compensation purposes is limited and if paid strictly on the basis of resources used or of commodities produced a large number of the smaller farmers would secure very little support and would be rapidly forced out of business As explained above, a too-rapid exodus out of agriculture is both socially and economically undesirable Also, in this situation, a small number of large farmers would receive an inordinately high level of support which is equally undesirable Because of economies of scale the latter group should be able to produce at lower costs per unit than smaller farmers and hence should not need the same level of support It is felt, therefore, that there should be some modification of the principle of compensation on the basis of resources used Extra compensation should be given to the smaller and more

¹ See for example O'CONNOR, R. Observations on the Measurement and Distribution of Irish Farm Incomes, *Journal of Agricultural Economics and Rural Sociology*, Vol 1, No 2, 1968

vulnerable farmers though not of course on such a scale as to block structural readjustments. Also, there should be equal opportunity for all farmers to avail of a fair share of the public money paid to the sector.

It might be mentioned in this connection that guaranteed prices (other than multi-tier price systems) are very inefficient instruments for re-distribution incomes, and in many instances the effects may be perverse, i.e., they may increase income inequality. Hence, other instruments are best used for the distribution of compensation payments within the agricultural sector. Among the latter, might be mentioned progressive taxation, direct payments to farmers, and multi-tier price systems.

Stability

Though stability of employment for all workers in the national labour force is a very important policy goal, we concentrate here on price stability because it is of the most relevance for farmers. The latter do not worry too much about employment *per se*, since they themselves can at least exist during periods of depression. They worry very much, however, about price levels, because agricultural prices are notoriously variable and affect very much the farmer's standard of living.

Price stability is, therefore, strongly favoured by farmers, since it contributes greatly to stability of income. Moderate price stability is also favoured by many economists on the grounds that price stability leads to allocative efficiency, which in turn leads to economic growth.

Johnson² has argued that the allocation of resources in agriculture can be improved only when there is a reduction both in the instability of the general price level and in the prices of particular products, while Kaldor³ says "free market prices tend to be highly unstable, and expectations based on such prices tend to be quite inaccurate and highly uncertain. This impairs their effectiveness in guiding and encouraging and efficient use of resources. A guaranteed price announced prior to the time producers make their production plans can greatly reduce price uncertainty and this reduction can contribute to a more efficient use of agricultural resources."

While a generalised system of administered prices may in theory offer a superior alternative to free market pricing this may not be true in practice. Pricing to encourage allocative efficiency requires that prices be established on the basis of supply demand criteria. For product allocation this means that prices should be set at market clearing levels taking one year with another. In practice, however, prices for some products tend to be set at higher than market clearing levels resulting in resources being channelled into the production of commodities for which there is no effective demand. Inefficiency in resource allocation and product mix may thus become widespread. Hence, great care must be taken in setting administrative prices if they are to be of aid in efficient resource allocation.

² JOHNSON, D., *Gale Forward Prices for Agriculture*, University of Chicago Press, 1947, p. 8.

³ KALDOR, D., *Relation of Agricultural Price Policy to Economic Growth and Income Distribution*, Iowa State University, Ames, Iowa, June 1963 (mimeograph).

DESCRIPTION OF PRESENT POLICIES IN RELATION TO DAIRYING AND BEEF PRODUCTION

In this section we describe briefly present policies in relation to milk and beef production and later we evaluate the extent to which they achieve one or more of the objectives set out in the previous section. The policies we propose to examine are those in relation to product subsidies for (i) butter and other milk products, and (ii) carcass beef. We also examine livestock headage grants. We ignore policies in relation to elimination of diseases and those concerned with building grants and livestock improvements because they are more in the nature of overheads which benefit many enterprises. We also ignore policies for the regulation of liquid milk supply and price, since these involve no State expenditure other than certain small regulation and administration costs.

Cattle and Beef

Prior to the introduction of the bovine tuberculosis eradication scheme in 1954 and indeed for some years afterwards dry cattle producers received no State support of any kind from the Irish government. A scheme of guarantee payments was introduced in July 1960 in respect of fat cattle and carcass beef in order to provide farmers with an outlet for untested and reactor cattle which could not be exported as stores. This scheme concluded on 31st March 1962⁴. Total expenditure under the scheme was £2.5 million in respect of fat cattle and £2.1 million in respect of carcass beef.

In the Spring of 1965 prices for store cattle were exceptionally high and the meat factories found difficulty in purchasing cattle in competition with the live exporters. To enable the factories to compete with the live trade there was introduced in February 1965 a temporary scheme of payments to carcass beef exporters for good quality fat bullocks and heifers slaughtered by them and exported to the United Kingdom. It was intended that this scheme would cease on 30th June 1965 but it remained in operation throughout the year and continued in operation until the coming into effect of the Free Trade Area Agreement on 1st July, 1966.

Under the conditions of this agreement our store cattle, sheep and lambs are guaranteed free access for all time to the British market. In addition, the fattening period, after which store cattle and sheep exported to the UK from this country qualify for guarantee payments under the UK fatstock Guarantee Scheme, has been reduced to two months, instead of three months as previously.

The agreement provides for the extension of UK fatstock guarantee payments to annual quantities of 25,000 tons roughly (100,000 cattle) of Irish carcass beef and 5,500 tons of mutton and carcass lamb (roughly 280,000 lambs). In addition, the Irish government has agreed to support from the Exchequer any quantities of eligible beef, mutton and lamb exported to Britain in excess of those quantities. The support payments are

⁴ Report of store cattle study group appointed by the Minister for Agriculture and Fisheries (Pr 297), Stationery Office, Dublin, 1968.

made by the Department of Agriculture and Fisheries either to the licensed meat exporters or directly to producers if the latter so desire

Despite the Free Trade Agreement, 1966 proved a very difficult year for cattle producers. Between May and November of that year the prices of cattle dropped by over 50s per cwt and the government had to come to the rescue with a temporary subsidy on fat cattle exported to the UK in the Autumn of that year. The total payment under the scheme was £656,000.

Total State payments on live cattle, carcass beef and fat lamb exported in the years 1964-1965 to 1968-1969 are given in Table 1, together with estimated payments for 1969-70

TABLE 1
STATE EXPENDITURE ON LIVE CATTLE, CARCASS BEEF AND FAT LAMB EXPORTED TO THE UK IN YEARS 1964-65 TO 1968-69 WITH ESTIMATED PAYMENTS FOR 1969-70

| | 1964-5 | 1965-6 | 1966-7 | 1967-8 | 1968-9 | 1969-70 |
|---------------|--------|--------|--------|--------|--------|---------|
| | £000 | | | | | |
| Carcass beef* | 43 | 89 | 800 | 4,475 | 1,482 | 1,224 |
| Fat cattle | | | 656 | | | |
| Fat lambs | | | 123 | 169 | 50 | 26 |
| Total | 43 | 89 | 1,579 | 4,694 | 1,532 | 1,250 |

* Net subsidy from British government under FTA Agreement

SOURCE Department of Agriculture and Fisheries

Livestock Headage Grants

Under the Second Programme for Economic Expansion which was published in 1963,⁵ a scheme was introduced whereby a subsidy of £15 was paid for each additional calved heifer introduced into herds. The objective of this scheme was to bring about an increase in the national cow and cattle population of the country at a relatively small cost as payments were only made on increased cows.

The calved heifer scheme in conjunction with other factors including increased prices for milk has had the effect of bringing about a substantial increase in the cow herd from 1,323,000 in 1963 to 1,655,000 in 1969. The cost of obtaining the increases, however, has been much heavier than anticipated. Payments under the scheme up to 30 June 1969 when it was terminated were £10.1 million for an increase of 332,000 cows. This works out at about £30 per extra cow, instead of the nominal £15, because as

⁵ *Second Programme for Economic Expansion* (Pr 7239), Stationery Office, Dublin, August 1963

some herds increased other decreased so that the net gains were much fewer than the actual number of payments

Beef Cow Scheme

Under this scheme which came into operation in 1969 farmers on holdings not selling milk are paid £12 for each cow, in excess of two, which is matched by a calf. The objective of this scheme is to prevent further people going into milk production in view of the heavy cost of subsidising milk exports at the present time. This scheme is not sufficiently long in operation to permit an assessment of its success or otherwise, but later we will comment on the usefulness of this type of scheme.

Subsidies for Butter and Other Milk Products

In recent years the Exchequer support for dairy products is made up of three parts as follows

- (1) a grant to Bord Banne,
- (2) a creamery milk allowance, and
- (3) a special allowance for high quality creamery milk.

(1) With a few minor exceptions, all exports of dairy products are handled by Bord Banne and export losses and subsidies incurred are met as to two-thirds by an Exchequer grant. The other one-third and the Bord's administrative expenses are met from a levy paid by creameries on milk purchased by them. The current levy is 3d per gallon.

(2) The price which creameries pay to their suppliers for milk is supported by a fixed price for butter which is at present 369s per cwt. In addition, an allowance is paid to the Exchequer to creameries on the quantity of milk for manufacturing purposes received by them (milk purchased by creameries for liquid consumption is not supported). As from 1st September 1968 the allowance is 8d per gallon on the first 7,000 gallons delivered by each supplier and 7d per gallon on the remainder (two tier price).⁶ This allowance enables creameries to increase correspondingly the price they can pay to producers for milk.

(3) An additional allowance is paid from the Exchequer on creamery milk which comes within a defined premium grade under a quality grading scheme. Payments under this scheme were 1d per gallon from its inception in 1965 until March 1967. Since April 1967, the payment is 2d per gallon.

Exchequer supports under these headings since 1961-62 are given in Table 2 together with the average price received by farmers for manufacturing milk.

⁶ As and from 1 September 1969 a multi-tier system has been introduced whereby producers are paid 9d per gallon on the first 7,000 gallons delivered, 6d per gallon from 7,000 to 14,000 gallons, 7d per gallon from 14,000 to 20,000 gallons and a sliding scale thereafter up to 60,000 gallons over which no production allowance is paid.

TABLE 2

COMPOSITION OF EXCHEQUER MILK PRICE SUPPORTS AND AVERAGE PRICES RECEIVED BY PRODUCERS FOR MANUFACTURING MILK, 1968-69

| Year | Export Subsidy | Milk Price Allowance | Quality Bonus | Total State Support | Total Support Per Gallon | Average Price received* by farmers |
|---------|----------------|----------------------|---------------|---------------------|--------------------------|------------------------------------|
| | £m | | | Pence | | |
| 1961-62 | 4 70 | — | — | 4 70 | 3 70 | 19 63 |
| 1962-63 | 2 18 | 0 99 | — | 3 17 | 2 35 | 19 57 |
| 1963-64 | 3 41 | 2 63 | — | 6 04 | 4 30 | 20 30 |
| 1964-65 | 2 40 | 5 76 | — | 8 16 | 5 41 | 22 12 |
| 1965-66 | 3 61 | 6 53 | 0 52 | 10 66 | 6 55 | 22 45 |
| 1966-67 | 3 45 | 9 46 | 0 83 | 13 74 | 8 00 | 23 73 |
| 1967-68 | 3 30 | 13 52 | 2 45 | 19 27 | 10 00 | 25 10 |
| 1968-69 | 6 91 | 15 66 | 2 80 | 25 37 | 11 70 | 25 71 |

* This is the price received for whole milk with skim returned to the farmer. An extra payment is made for skim milk retained by creameries.

As can be seen from this table the total support per gallon increased from 3 7d in 1961-62 to 11 7d in 1968-69 or by over 300 per cent. Despite this rise, however, the average price per gallon received by farmers increased by less than one-third over the same period. The subsidy required per gallon of milk varies considerably depending on the product manufactured and on the country of disposal. Thus products consumed on the home market are subsidised to the extent of their share of the milk price allowance which is paid on all manufacturing milk delivered, regardless of its subsequent disposal. Similarly, the home market must be credited with a share of the quality bonus which is paid on all manufacturing milk reaching a certain standard.⁷ Products exported require an export subsidy in addition to the price allowance and quality bonus and this subsidy varies with the products exported and their destination.

In 1958 the total quantity of whole milk on which a price allowance was paid was 520 million gallons. The value of the price allowance paid on this was £15 66 million or 7 23d per gallon. The quality bonus paid in that year was £2 8 million, and when this is averaged over all milk it comes to 1 29d per gallon. The price allowance and quality bonus were, therefore, 8 52d per gallon. Of the total amount of manufacturing milk purchased in 1968, 225 million gallons were used on the home market or went

⁷ It would be incorrect to suggest that the *domestic consumer* is subsidised to this extent. A levy of 28s per cwt is paid by creameries to An Bord Baine on all butter sold on the domestic market. This cost, which amounted to about £1 million in 1968, is of course eventually recouped from home butter consumers.

Table 3

DISTRIBUTION OF MILK EXPORTS 1968

| Product | Amount | Value (f o b) | DESTINATION | | | | | | Manu facturing Cost ^b | NET VALUE | | | | MILK EQUIVAL | |
|-----------------------------|---------|------------------|-----------------|--------|-------|-----------|-------|-------|--|-----------------------|----------------|-----------------------|----------------|-----------------------|----------------|
| | | | Britain and N I | | | Elsewhere | | | | Per Ton | | Per Gallon | | Britain and N I | Else- where |
| | | | Amount | Value | Price | Amount | Value | Price | | Britain and N I | Else- where | Britain and N I | Else- where | | |
| | | | tons | £000 | £/ton | tons | £000 | £/ton | | £ | £ | d | d | million | gallons |
| Creamery Butter | 36 759 | 9 824 | 27 461 | 8 745 | 318 4 | 9 298 | 1 079 | 116 1 | 46 | 272 4 | 70 1 | 12 7 | 3 3 | 141 7 | 48 0 |
| Other Butter | 440 | 175 | 131 | 50 | 381 6 | 309 | 125 | 404 5 | — | — | — | — | — | 0 8 | 1 8 |
| Cream | 2,381 | 708 | 2 381 | 708 | 297 4 | — | — | — | 13 | 284 4 | — | 23 2 | — | 7 0 | — |
| Dried Milk (Full Cream) | 8 651 | 2 435 | 3 541 | 728 | 205 6 | 5 110 | 1 707 | 334 1 | 48 | 157 6 | 286 1 | 20 3 | 36 9 | 6 6 | 9 5 |
| Cheese | 21 005 | 6 133 | 20 037 | 5 823 | 290 6 | 968 | 311 | 321 3 | 66 | 224 6 | 255 3 | 24 2 | 27 6 | 44 6 | 2 1 |
| Butter Oil | 888 | 412 | 641 | 349 | 544 5 | 247 | 63 | 255 0 | 78 | 466 5 | 177 0 | 18 4 | 7 0 | 3 9 | 1 5 |
| Condensed Milk (Full Cream) | 42 | 5 | 42 | 5 | 119 0 | — | — | — | — | — | — | — | — | † | † |
| Chocolate Crumb | 47 573 | 6 916 | 34 902 | 4 642 | 133 0 | 12 671 | 2 273 | 179 4 | — | — | — | — | — | 21 6 | 7 9 |
| Total Above | 117 739 | 26,608 | 89 136 | 21 050 | — | 28 602 | 5,558 | — | — | — | — | — | — | 226 2 | 70 8 |
| Skim-Milk Powder | 25 542 | 1 925 | 7 432 | 684 | 92 0 | 18 110 | 1 241 | 68 5 | 47 | 45 0 | 21 5 | 4 5 | 2 15 | 17 8 | 43 5 |
| Total | 143 281 | 28 533 | 96 568 | 21 734 | — | 46 712 | 6 799 | — | — | — | — | — | — | — | — |

*Estimated from data supplied by Dr T O'Dwyer An Foras Taluntais Does not include profit

†Less than 50 000 gallons

Source Basic data from Trade Statistics of Ireland CSO December 1968

into stocks⁸ Hence the total State payment on home consumption and stocks of dairy products was £7.98 million leaving a balance of £10.48 million (i.e., £15.66+2.8—£7.98) for subsidisation of exports This, along with the export subsidy of £6.91 million comes to £17.39 million which when averaged over 297 million gallons of whole milk equivalent exported comes to 14.05d per gallon in Exchequer payments

As stated above the level of export subsidy varies with the product exported and with destination The distribution of these exports is given in Table 3, which shows that while we received high prices for some products like full cream milk and cheese, we received very low prices for others When manufacturing costs are deducted the average price received for butter on markets other than Britain and Northern Ireland was only equivalent to 3.3d per gallon The price received for butter oil on these markets was somewhat better but it was still only equivalent to 7d per gallon The last two products accounted for 49.5 million gallons of milk or for about one-sixth of our total whole milk exports in that year

EXTENT TO WHICH MILK AND BEEF POLICIES ACHIEVE THE OBJECTIVES SET OUT IN A PREVIOUS SECTION

Contribution to Economic Growth and Efficiency

The effect on the agricultural price structure of the various schemes in operation since 1960 is shown in Table A 2 where price-indices to base 1960=100 for a number of agricultural products are given Of the prices in this table the ones directly affected by state policy are those of pigs, wheat, feeding barley, sugar beet and creamery milk Prices for these enterprises are guaranteed in some way and because of this should not be very variable from year to year However, as can be seen from the table, wheat prices have fluctuated considerably from year to year due to the effect of weather on the quality of the crop Barley has shown similar very variable from year to year However, as can be seen from the table, wheat prices have fluctuated considerably from year to year due to the effect of weather on the quality of the crop Barley has shown similar though not such pronounced fluctuations The remaining product prices given are not controlled in any way but of course they may be indirectly affected by the others, or by non-price state schemes For example, store cattle prices in the period in question may have been affected by payments under the Bovine Tuberculosis eradication scheme and by the payments on carcase beef in recent years Similarly, recent sheep prices are no doubt affected by the payments on the exported mutton and lamb, introduced after the signing of the Free Trade Agreement with Britain in 1966

Since prices in 1968 cannot be expected to have any effect on production in that year we consider price changes from 1960 to 1967 As can be seen from Table A 2 all prices rose between these years but as might be expected some rose to a greater extent than others For example, the price of oats rose by only about 2 per cent whereas those of potatoes and turkeys rose

⁸ Stocks of butter increased by 1,300 tons between the beginning and end of 1968 This is equivalent to about 6.7 million gallons of milk

by over 30 per cent. The latter prices, however, are notoriously variable and have fluctuated widely over the years. Of the other prices in the table, creamery milk and sugar beet prices rose by almost 30 per cent, wheat prices by 25 per cent, cattle prices by 12 per cent, sheep prices by 11 per cent and hen egg prices by about 6 per cent. The increase in the overall agricultural price index was about 19 per cent.

The effect of these prices and other factors on the pattern of production is shown in Table A 3 where areas under certain crops and numbers of certain livestock are given for the same years. As can be seen from this table milch cows and total cattle increased dramatically in the period 1960 to 1968, but there have been declines in all other enterprises with the exception of pigs and feeding barley. Despite the increased acreage of barley, however, there has been a drop of over 20 per cent in the total tillage area, and sheep numbers, after increasing steadily up to 1965, have declined rapidly since. The growth in sheep numbers up to 1965 cannot be explained satisfactorily in terms of sheep prices alone, as the latter were quite depressed in the years 1961 to 1963. In the same years, however, milk prices were also pretty static and with succeeding bad harvests, farmers must have found sheep production more profitable than tillage.

With the introduction of the calved heifer subsidy scheme in 1964 and increases in creamery milk prices in each succeeding year, cow and cattle numbers fairly swept ahead but at the expense of sheep and most tillage crops. Unfortunately the decline in tillage coupled with the increase in pig numbers has been associated with a heavy increase in imported feeds and bread wheat, the volume index of which increased by over 100 per cent between 1960 and 1965 and by almost 80 per cent between 1960 and 1968 (see Table A 4). Hence, though the volume of gross agricultural output rose by 16 per cent between 1960 and 1967 (see Table A 5) the volume of non-labour inputs increased by nearly 50 per cent so that there was hardly any increase in the volume of net agricultural product (i.e. income arising in agriculture) in these years. If net product is related to the number of workers employed, the showing of agriculture is much better. As can be seen from Table A 5 the growth in labour productivity (i.e. volume index of net product divided by index of labour force) has been about 22 per cent or an average of about 3 per cent per annum in the seven years in question. This means that a much reduced labour force has succeeded in maintaining the 1960 volume of product, but unfortunately many of the workers leaving farming have had to emigrate for a living.

We turn next to assess the effect of the present pattern of production on economic efficiency within agriculture. In making this assessment we must consider if the subsidies as presently invested in cattle and dairying are employed in the most economical manner within the agricultural sector or if they could give higher returns if invested in other farm enterprises or in other forms of the same enterprises. Expected returns from these subsidies if invested outside the agricultural sector are not considered. For the purpose of assessment under review here we return to Table 3 and examine the implications of some of the figures in that table. These data can be divided roughly into two groups.

- 1 For whole milk products other than chocolate crumb sold on the British market, and for such products as dried full cream milk and cheese sold on other markets, amounting in all to the equivalent of about 218 million gallons, an average f o b price of about 20d per gallon was obtained in 1968. If however, manufacturing and other costs within the state are deducted the average net return comes to about 17d per gallon. The total f o b value of these milk products was £18m and the total subsidy paid for them was £11.8m. The export value per £1 subsidy was therefore about £1.5 (i.e. 18/11.8). In addition, it is estimated that beef, hides and offals to the value of £30m f o b would be available for exports as a by-product of the milk. The subsidy on this beef is estimated at £1.0m, hence if exports or import saving from skim milk are ignored the export value of beef and milk per £1 subsidy is £3.8 (i.e. 48/12.8). In the peculiar circumstances of the world food market it is considered that the subsidisation of the above products at this level is reasonable.
- 2 When we turn to the remainder of the milk exports, however, the position is not nearly so good.

The milk in question amounts to 49.5m gallons exported in the form of butter and butter oil to markets other than the U.K. The f o b value of this milk was £1.1m or the equivalent of 5.4d per gallon if no account is taken of manufacturing costs and about 3.4d if the latter costs are considered. The total subsidy paid on this was over £4m (see Table A.6) so that the export value per £1 subsidy was only 5.5s (i.e. £1.1/4). If skim milk other than that required for calf feeding (see appendix notes) is assumed to be exported to markets other than Britain and Northern Ireland, the total export value of all the milk products under review is £2.2m, so that export value per £1 subsidy on this basis is about 11s (i.e. 2.2/4). Despite the apparent improvement in returns as a result of adding in the skim milk the situation is highly unsatisfactory but it is even worse than the above figures show. The marginal milk has been produced in response to the support prices which farmers received for all milk and not for the marginal milk alone. The surplus is therefore costing more than the direct subsidy paid on it and if in 1968 the financial authorities had decided to eliminate the low priced milk by reducing prices they would have saved something in excess of the above subsidy of £4m (See Technical Note at end of Appendix). Alternatively, if the low priced milk were reduced by quota and the 1968 rate of subsidy paid on the remainder, the price paid to farmers for the latter could have been increased by about 0.4d per gallon (See footnote to Table A.6).

It is often claimed that the subsidy on the low priced milk should not be related to the milk alone but to the milk and the cattle which are joint products. The value of the beef, hides and offals available for export as by-products of the marginal milk are about £7.1m (see Table A.6). As there is an additional subsidy on the beef of

£0.5 m the export value per £1 of all "direct" subsidies is about £2.0. Put this way the position does not look too bad. Nevertheless it is extremely doubtful if we should be exporting the marginal milk and paying the heavy subsidy on it. By using the land for some other enterprise we should be able either to increase exports or reduce imports. Let us examine therefore the possibility and implications of producing some other commodities instead of the "surplus" milk. The result of such an examination should enable legislators to decide on suitable alternative policies, if any, and on the means of implementing these policies.

ALTERNATIVES TO "SURPLUS" MILK PRODUCTION

As an initial exercise an assessment was made of the resources used in the production of 49.5 m gallons of milk and of the benefit to the economy generally from the production of the latter using 1968 yields, prices and subsidy levels. The results of this assessment are set out in the form of a partial input output table in the Appendix (see Table A 6).

Having established to the best of our ability what is referred to as the present position we then proceeded using similar techniques to assess the returns from alternative systems on the same land area leaving the remainder of the agricultural sector unchanged. In making these assessments it was assumed that all final products produced would be exported at 1968 prices, cattle and sheep going out as dead meat, and milk in the form of butter. Figures for the alternative systems are set out in Tables A 7 to A 10 and a summary of the more important results is given in Table 4.

TABLE 4
SUMMARY OF ALTERNATIVE SYSTEMS (£000)

| Systems (a) | (1) | (2) | (3) | (4) | (5) |
|--|-----------|----------|-----------|-----------|------------|
| Income Arising (b) from | | | | | |
| Cattle | 2,289 | 3,714 | 2,731 | 3,730 | — |
| Dairying | 5,736 | — | 4,156 | 3,862 | 6,544 |
| Sheep | — | — | — | — | — |
| Barley | 472 | 907 | 1,017 | 560 | 328 |
| (1) Total Farming Sectors | 8,497 | 4,621 | 7,904 | 8,152 | 6,872 |
| (2) Direct Product Subsidies | 4,513 | 219 | 3,270 | 3,349 | 520 |
| (3) Farm Income less Subsidies | 3,984 | 4,402 | 4,634 | 4,803 | 6,352 |
| (4) Subsidies required to maintain Farm income at system (1) level | 4,513 | 4,095 | 3,863 | 3,694 | 2 145 |
| Income Arising (b) from | | | | | |
| Grain Milling | 60 | 91 | 134 | 60 | 28 |
| Milk Processing | 414 | — | 371 | 346 | — |
| Animal Slaughter | 544 | 497 | 485 | 557 | 637 |
| Other Intermediate | 268 | 372 | 348 | 326 | 503 |
| (5) Total Non-farming Sectors | 1,286 | 960 | 1,338 | 1,289 | 1,168 |
| (6) Total Farm and Non-farm Incomes less subsidies | 5,270 | 5,362 | 5,972 | 6,092 | 7,520 |
| (7) Product exports (f o b value) Total | 9,165 | 9,990 | 11,075 | 10,282 | 9,703 |
| Per £1 subsidy at (4) above | 2 0 | 2 4 | 2 9 | 2 8 | 4 5 |
| (8) Farm Income per Acre of Grassland (c) from | | | | | |
| Cattle | 8 9(7 0) | 7 7(7 3) | 9 2(8 5) | 11 2(9 7) | — |
| Dairying | 23 1(6 9) | — | 23 1(6 1) | 23 1(6 1) | — |
| Cattle and Dairying | 15 9(7 0) | — | 14 5(7 6) | 15 2(8 5) | — |
| Sheep | — | — | — | — | 12 8(11 8) |
| Barley | 19 4 | 19 4 | 19 4 | 19 4 | 19 4 |

(a) System (1) 100,000 Dairy Cows plus joint products (present situation)

(2) Single Suckling

(3) Double Suckling with Dairying, (Cattle sold March/April)

(4) Double Suckling with Dairying, (Cattle sold June/July)

(5) Sheep (Mid season fat lamb production)

(b) Return to labour, capital and management

(c) Figures in brackets represent income per acre less subsidies, other figures represent income including subsidies

In preparing the various figures use has been made of the most up-to-date farm management survey results of An Foras Taluntais and of similar type data supplied by the Department of Agriculture and Fisheries. The author is also indebted to the Department of Applied Agricultural Economics of University College, Dublin for data and advice and to the Central Statistics Office for figures concerning both the farming and the non-farming sectors. It should be added, however, that the results obtained depend very much on the assumptions made regarding prices, yields and levels of technical ability, and other workers using different assumptions would obtain substantially different results. Nevertheless, it is felt that the findings are realistic for the levels of technology which exist on Irish farms and give reasonably correct orders of magnitude for the different systems.

The systems examined are as follows

- 1 100,000 cows and followers requiring 529,000 acres, at 1968 yields and prices (present situation). Followers are all the cattle produced by these cows which are on farms at any one time.
- 2 Single suckling (Cattle sold March/April at 2 years of age)
- 3 Dairying and double suckling (Cattle sold March/April at 2 years of age)
- 4 Dairying and double suckling (Cattle sold June/July at 2½ years of age)
- 5 Sheep (Mid season fat lamb production)

An attempt was made to assess another system namely sheep and barley growing, the barley being produced to replace the 1968 imports of barley, milo and corn offals. A preliminary examination of this system showed very promising results but in the time available it was impossible to make a realistic assessment of the effect on the economy as a whole of the rise in feeding stuffs prices which would come about as a result of the import substitution. For this reason the results obtained are not given, but it is felt that a separate study of this kind would prove useful for policy purposes.

System (1) (Present System)

As can be seen from Table 4 the income arising in the farming sectors from the present system was £8.5m of which £2.3m comes from cattle, £5.7m from dairying and £0.5m from home grown barley used for feeding cows and cattle. The direct product subsidies paid on this system were £4.5m. Farm income less these subsidies was therefore £4.0m. Direct subsidies in this context means the subsidies paid on the marginal products without reference to the amounts paid on the rest of the output, which were required to generate the marginal products. Income arising in the associated non-farming industries was £1.3m giving a total farm and non-farm income less direct subsidies of £5.3m. The f.o.b. value of exports from this system was £9.2m or £2.0 per £1 product subsidies⁹.

⁹ As the import contents of this and the other systems are rather small they have been ignored in preparing Table 4.

Based on the assumptions made regarding yields and levels of feeding etc., the income arising per acre of grassland including subsidies was £8 9 from cattle, £23 1 from dairying, £15 9 from cattle and dairying combined and £19 4 from barley. When direct product subsidies are deducted the return per acre from cattle is £7 0 from dairying, £6 9 and from dairying and cattle combined £7 0.

The output of the dairying sector includes in addition to milk sold, the value of calves other than dairying replacement transferred to the cattle herd, as well as milk whole and skim fed to these calves. The imputed value of these transfers is deducted from cattle sales in obtaining income from this sector. It is assumed that all barley is sold off farms and later repurchased by dairy farmers and cattle producers in the form of barley meal and compound feeds. Hence the barley acreage is not attributed to the livestock sectors.

(2) *Single Suckling*

The income arising in the farming sector from single suckling on 529,000 acres was estimated at £4 6m. As it was assumed that all the single suckled calves would be sold in March and April 1968 at 2 years of age, export subsidies on the meat produced would average only about 1d per lb or a total of about £0 2m.¹⁰ The recent beef cow subsidy has been omitted.

Farm income less subsidies at £4 4m is only £0 4m higher than the corresponding figure for system (1). Hence to keep farm income from single suckling as high as from dairying and cattle combined would require a subsidy of £4 1m which is little less than that required for the present system.

From the national point of view, however, the single suckling would be preferable to the present system since both the absolute value of exports and the value of exports per £1 imputed subsidy from it are higher than those from the latter. Also since the various international projections indicate that the outlook for milk is not nearly as favourable as that for beef the present situation is likely to become much worse in the future.¹¹ It is of interest, therefore, to estimate the level of subsidy which would be required in order to shift farmers from dairying to single suckling on the assumption that the present pattern of dairying supports remain substantially unchanged.

Before going on to make this estimate, however, it should be emphasised that a rise in the subsidy on beef cows without a corresponding rise in those on sheep and tillage is likely to reduce the levels of the latter enterprises leaving the level of dairying substantially unchanged. At the moment dairying provides a relatively high and stable level of income and under the present support system it will be difficult to shift any significant number of

¹⁰ It should be mentioned that if March-April 1969 prices had been used a subsidy of about 2 7d per lb d wt. would be required. This works out at about £597,000 for the total meat involved.

¹¹ Agricultural Commodity Projections for 1975 and 1985, *Monthly Bulletin of Agricultural Economic and Statistics*, FAO, Rome, Beef—Vol 17, March 1968, Milk and Milk Products—Vol 17, June 1968.

well-established producers into alternative systems. Accordingly, an increase in beef cow subsidies alone is not the answer to the problem. As indicated in a later section, such an increase would have to be accompanied by changes in all other subsidy arrangements including those on dairying.

Having said this, however, it must also be stated that there are bound to be some dairy farmers who would be glad to change over to beef cows if they could be assured of anything like the same income as at present. To determine the level of subsidy required to equate income from single suckling and dairying at present prices we compare income per cow from dairying alone with that from a single suckling system where the calves are sold in late Autumn at 8 or 9 months of age. In making this comparison we assumed that the single suckled calves would be sold in November weighing on average 533 lbs for bullocks and 490 lbs for heifers. The prices used (20s 6d per cwt for bullocks and 17s 6d per cwt, for heifers) were obtained from Mr J McKeown of the Department of Applied Agricultural Economics, University College Dublin, and relate to the 1968 single suckle sales in Dublin. Reference to Table A 6 shows that the income arising in the dairying sector from 100,000 cows was £5.7m or £57 per cow. The calculation made for single suckling (calves sold in November) gave a figure for income arising of about £23 per cow or a difference of about £34 per cow from the two systems. This difference must be interpreted carefully because dairying and single suckling are very unsimilar enterprises. Though the acreage requirements per cow and replacements are about the same for the two systems, the income from the suckling is likely to be much more variable than that from dairying. On the other hand, the labour requirement of suckling is less than that from the other, making it an attractive enterprise for some of the older farmers. Hence a smaller subsidy than £34 per cow would likely entice some farmers out of the dairying but, of course, as stated earlier, a subsidy of this order of magnitude would also entice people out of sheep and tillage as well. Taking everything into consideration, however, it is felt that single suckling does not offer any alternative to dairying at present milk prices for any large number of farmers. There are of course some farmers getting gross margins per acre almost equal to dairying from single suckling, through the use of good grassland management techniques, and bulls which produce very fast growing calves. Every effort should be made to encourage husbandry of this kind by the provision of the best possible breeding stock.

(3) and (4) *Dairying and Double Suckling*

In estimating the returns from double suckling, this enterprise could not be taken on its own. Dairying had to be included with it so as to have a source of calves for the double suckling cows. Going outside the system for calves would affect the part of the economy not under review, which is assumed to be held constant.

Two systems of double suckling were examined. System (3) in which the cattle were sold fat in March and April at the age of two years, and System (4) in which the cattle were sold in June and July at the age of 2½ years.

and having the same live weight as those in System (3) As can be seen from Table 4 there is not a great deal to choose between the two systems From the cattle farmers' point of view, System (4) is superior to System (3) but the f o b value of exports from System (3) is substantially higher This arises because more cows and cattle can be carried under the shorter feeding system (System (3)) Expenses of cattle, however, are higher under the latter system mainly because of the heavy grain feeding required Hence cattle income per acre is lower under System (3) than under System (4)

TABLE 5

Comparison of returns and subsidies from 529,000 acres as between present system (System (1)) and double suckling where cattle are sold June/July and calves are purchased from outside areas (System (5 A))

| Income arising in farming from | System (1) | System (5 A) |
|--------------------------------|------------|--------------|
| | £000 | |
| Cattle | 2,289 | 5,552 |
| Dairying | 5,736 | — |
| Barley | 472 | 632 |
| Total farming sectors | 8,497 | 6,184 |
| Direct Product subsidies | 4,513 | 749 |
| Farm income less subsidies | 3,984 | 5,435 |

Farm income less direct subsidies from System (4) is about £0.8m higher than from System (1) Therefore, in order to keep income from the former system as high as from the latter would require a total subsidy of £3.7m compared with £4.5m as at present (1968) This comparison, however, does not tell us very much because of the high level of milk subsidy in both systems

A more meaningful comparison is that of farm income from System (1) with that from a system where all the land is devoted to double suckling with calves being purchased from outside areas Farm income and other figures for the latter system (called System (5 A)) are shown in Table 5 along with the corresponding figures from System (1)

As can be seen from Table 5 the income arising in farming from System (5 A) is £6.2m compared with £8.5m from System (1) When direct product subsidies are deducted, net incomes from these systems are £5.4m and £4.0m respectively Hence in order to keep farm income from the two systems equal (at present milk prices and ignoring gains or losses in the remainder of the economy) System (5 A) would require a direct subsidy of £3.1m as against one of £4.5m for System (1) In percentage terms this is a fairly substantial saving which might be translated into a

worthwhile absolute national gain if the double suckling system could be popularised by the use of a suitable incentive scheme

To determine the level of grant per cow needed to entice farmers out of dairying at present prices and into double suckling it is necessary to calculate the returns from the latter system under conditions where the calves are sold in Autumn at about 7 or 8 months of age. In making this calculation it was assumed that the double suckled calves would be sold in November weighting 440 lbs for bullocks and 415 lbs for heifers. Using the same price per cwt. as for the single suckled calves (which are probably on the low side for animals of this weight) it is estimated that the income arising per cow from double suckling would be about £32 as against £57 per cow from dairying. The difference of £25 per cow gives an idea of the subsidy level required to entice some farmers to switch over from dairying. The exact level is difficult to predict, but taking everything into consideration it would probably take the full £25 per cow to entice any sizeable proportion of dairy farmers to make the change over. Though the labour requirements for double suckling are less than for dairying, the acreage required per cow is higher, while the fact that an extra calf has to be purchased for each cow tends to make the capital requirements for many farmers higher as well. There would also be the hazard of a drop in Autumn calf prices if a large number of farmers were to change over from dairying, but it is felt that this might not be too drastic, as many of the double suckling farmers would over-winter their calves, particularly if autumn prices were low.

The figure of £25 per cow compares with a similar figure for the average milk subsidy per creamery cow in the State in 1968 and with one of the £40 per cow on the 100,000 cows in Table A 6. Again it should be mentioned that if the present milk subsidy is left unchanged any large payment on double suckling cows is likely to reduce sheep and tillage more than dairying.

System (5)

The income arising in the farming sectors from the sheep production system at 1958 prices was £6.9m. The direct mutton and lamb subsidy included in these figures was £520,000. Farm income less subsidies is, therefore, £6.4m which is about £2.4m greater than the corresponding figure for System (1). Hence to keep farm income from sheep production as high as from dairying and cattle combined would require a subsidy of £2.1m compared with £4.5m for System (1). This is equivalent to £2.4 per ewe for 883,000 ewes, or to about 4s. 6d. per £1 exports provided of course that only the ewes producing the exports are subsidised.

In order to determine the level of subsidy required to entice dairy farmers (at present prices) into sheep production it is necessary to compare sheep production with dairying alone on an acreage basis. As can be seen from Table 4 the farm income including subsidies per acre of grassland is £23.1 for dairying and £12.8 for sheep production. The latter figure is probably lower than the average national return from sheep production¹²

¹² See *Farm Management Survey 1966-67*, An Foras Taluntais, 1969, p. 52

(a) for the reason stated in the footnote in the appendix notes on sheep and (b) due to the fact that an increase of this magnitude in sheep presents a problem of cull ewe disposal. The latter, accounting for about one-fifth of total numbers sold would have to be exported at very low prices, and in doing the present exercise the price received by farmers for cull ewes was assumed to be £4 each. On the basis of the figures given here, however, an extra subsidy (additional to that for mutton and lamb) of £10.3 per acre would be required in order to make sheep production equivalent to dairying from the individual farmer's point of view. This works out at £6.0 per ewe, since the stocking rate for sheep is assumed to be 0.58 acres per ewe plus followers. It would likely not take this level of subsidy to entice a number of farmers to change over to sheep since the capital and labour requirements for the latter are much less than for dairying. The incentive required, however, would be fairly substantial but in view of the low export price for marginal milk some type of additional incentive is justified for lowland-sheep production.

Incentives for sheep are however not as easy to design as might appear from the above discussion. On the surface it would seem that a straight headage grant for ewes would yield valuable results but unfortunately, this is not so. The high export/subsidy ratio for sheep in the table is due to the fact that all production is assumed to be exported and the subsidy is only related to the animals from which the production is obtained. It would be difficult if not impossible to reproduce this situation in practice. If a subsidy were paid on ewes it would have to be paid on all ewes in the state but in view of our high level of home mutton consumption, any worthwhile grant of this nature would be very costly in terms of export earnings. There were about 1.9m ewes in the state in 1968 producing net exports of live animals, mutton, lamb and wool valued at about £8.5m. A headage grant of say £3 per ewe would therefore cost about £5.7m and give an export return of only about £1.5 per £1 subsidy. This is less than the export return per £1 direct subsidy from system (1) in Table 4 and so makes little economic sense.

From the economic point of view a subsidy on extra ewes would be the ideal way to support sheep production but unfortunately such a payment programme would be almost impossible to administer because of the difficulty of counting sheep. Accordingly any worthwhile subsidy on sheep will have to be made in the form of guaranteed prices and deficiency payments for light fat lambs suitable for the export trade. Though the deficiency payment would have to be made on home consumed as well as exported lambs the costs of the scheme would not be prohibitive because the number of such lambs consumed on the home market is small and would not necessarily be increased by the scheme. The guaranteed prices should be carefully arranged on a seasonal basis along with supplements and abatements to discourage the sale of lambs during the glut autumn period. A scheme such as this would have the effect of increasing sheep numbers for which the market outlook is not unfavourable particularly for the numbers we are likely to produce.

A further suggestion which might be considered by policy makers would be to pay a subsidy on lambs from 1 year old hoggets. At the present time 7 or 8 months old ewe lambs are being sold off at very high prices, thus depleting further the potential breeding stock. The author has been informed by technical experts that these lambs could be put to the ram and so could be used to increase sheep stocks fairly rapidly. Furthermore hoggets of this kind with lambs at foot are easily identifiable so that it would be possible to administer subsidy scheme for such lambs. With any of these schemes however administrators would have to ensure that increased sheep do not make further inroads into the already depleted tillage area.

CONTRIBUTION OF PRESENT POLICIES TO INCOME REDISTRIBUTION

Because of the hazards involved in comparing incomes of agricultural workers with those of any other group, the author is unwilling to produce in this paper a set of figures purporting to show the magnitude of the so-called income gap. Perusal of the relevant statistics however shows that despite the increase in subsidies in recent years, average incomes in agriculture tend to remain considerably below average earnings of all workers in transportable goods industries. Hence on the basis of the available figures it would appear that present policies have not succeeded in closing the income gap. We would hasten to add however, that it is doubtful if any realistic policy can do this. It is the author's opinion that to obtain complete parity of average agricultural incomes with industrial earnings over time, would require a vast exodus of workers out of farming, particularly of the very small non-viable farmers. Many people would agree of course that in comparing incomes the latter group should be excluded from the agricultural sector proper and the comparison made between the so-called "commercial" farmers and other groups. This is a reasonable argument and there is a case therefore for providing separate statistics for the "commercial" farmers, although the author is fully aware of the difficulties involved in getting an agreed definition of this group.

In order to study the effects of the schemes under review on income redistribution within agriculture we examine first the distribution of a number of important subsidies as between different regions of the country. These figures which were kindly supplied by the Department of Agriculture and Fisheries relate to the year 1966 and are given in Table 6.

This table shows that Munster farmers who made up 32 per cent of the farmers in the State in 1966 received almost 50 per cent of the subsidies listed, while Leinster farmers who made up about 23 per cent of the total received about 25 per cent. Connacht and Ulster farmers on the other hand though making up 45 per cent of all farmers in the State received only 25 per cent of the payments. This is not to say of course that present policies have no income redistribution effect. Many of them particularly the agricultural grant have such an effect but in the writer's opinion it is very inadequate.

Munster farmers did best because they happened to be in milk production which is the most heavily subsidised farm enterprise. Leinster farmers did better than their showing here because a high proportion of them produce liquid milk which is supported by home consumers. Connacht and Ulster farmers did worst of all but their poor showing stems mainly from the fact that they were unable to avail of the milk price supports to any great extent. Their position however is even worse than that shown here because in addition to receiving a very small amount of the milk subsidy they could share to a very limited extent also in the protection afforded to wheat, barley and liquid milk. Not alone this, but it has been argued that farmers in these regions are even disadvantaged by present cereal policies in so far as they have to pay very high prices for feed, despite the subsidisation of grain transport to remote areas by An Bord Grain.¹³

TABLE 6
PROVINCIAL DISTRIBUTION OF CERTAIN AGRICULTURAL SUBSIDIES
AND OF FARMERS IN 1966

| Subsidy (a) | Munster | Leinster | Connacht | Ulster 3 Co's | Total |
|---|---------|----------|----------|------------------|---------|
| | £000 | | | | |
| Milk subsidy | 9,898 | 1,447 | 1,071 | 1,110 | 13,526 |
| Calved heifer scheme | 764 | 601 | 339 | 186 | 1,890 |
| Bacon export subsidy | 546 | 349 | 126 | 180 | 1,201 |
| Agricultural grant | 4,663 | 4,089 | 3,100 | 1,463 | 13,315 |
| Land Project (section A and fert cr) | 676 | 837 | 372 | 236 | 2,121 |
| Farm building scheme | 842 | 622 | 343 | 180 | 1,987 |
| Fertiliser subsidy | 1,398 | 1,432 | 472 | 298 | 3,600 |
| Lime subsidy | 519 | 335 | 136 | 78 | 1,068 |
| Water supplies scheme | 164 | 86 | 40 | 30 | 320 |
| Total | 19,470 | 9,798 | 5,999 | 3,761 | 39,028 |
| Percentage of subsidies | 49.9 | 25.1 | 15.4 | 9.6 | 100.0 |
| No. of farmers (b) | 63,991 | 45,108 | 62,736 | 27,272 | 199,107 |
| Percentage of farmers | 32.1 | 22.7 | 31.5 | 13.7 | 100.0 |

SOURCE (a) Department of Agriculture and Fisheries

(b) Census of Population 1966, Vol. IV Occupations—C.S.O.

Having said this however it is only fair to say, that there are in all regions, but particularly in the North and West, a large group of very small farmers who cannot be helped in any realistic way by ordinary agricultural subsidies. These need special treatment in the form of off-farm employment, social welfare payments, retiral pensions etc., leaving the agricultural

¹³ In 1968 this (transport) subsidy was approximately £1.7 per ton or a total of about £79,000.

subsidies proper for what might be termed the "commercial" farmers. This again raises the question of providing separate statistics for the latter group.

It has been stated from time to time that if farmers in Connacht and Ulster were as energetic as those in Munster and Leinster they would be able to avail of their share of any subsidies going. This of course is a facile argument. Because of climatic conditions, tillage cannot be widely undertaken in the West and North. Milk production for the liquid market is limited by the absence of urbanisation, while up to very recently, particularly in Connacht, manufacturing milk production was limited by the absence of creameries. When creameries were introduced farmers found difficulty in acquiring the proper skills so that at present technical performance is weak. In addition many creameries are small and milk collection costs are high resulting in low prices for milk and low incomes for dairy farmers. As matters stand, therefore dairy farming is not the complete answer to the western farmer's problems and if we are concerned with a more equitable distribution of compensation among farmers, and with providing equal opportunity for people in all regions, extra special policies should be introduced for "commercial" farmers in the underdeveloped areas. Sheep production is the obvious enterprise for support in the western part of the country since the outlook for lamb exports is not unfavourable and the farmers are traditionally good sheep producers. Indeed it is a great pity that more vigorous support for this enterprise with a regional bias has not been undertaken to date.

We turn next to consider distribution of subsidies as between different producers. Because of the method of payment, most of the subsidies for beef and milk go to the larger farmers. In this connection the distribution of the milk subsidy is by far the most important since its magnitude is so great compared with any of the others. Figures for 1968 kindly supplied by the Department of Agriculture and Fisheries enable us to estimate roughly the amount of State expenditure going to the different milk producers in that year. These estimates are given in Table 7.

As can be seen from this table about 17 per cent of the suppliers produced over 50 per cent of the milk. Each of these received on average about £681 in milk subsidies while the remaining 83 per cent of producers received on average only about £130 each in subsidy. Indeed, over 18,000 suppliers received an average of only £30 each in milk subsidy while at the other end of the scale almost 2,500 suppliers received an average of £1,300 each, some of the larger ones receiving considerably more.

In addition to the milk subsidy dairy farmers also received a proportion of the carcase beef subsidy which goes back to them in the form of higher prices for calves. This occurs because there is a strong correlation between the prices of finished cattle and those of calves. Hence any support for beef is reflected in the value of dropped calves which accounts for a significant share of dairy farmers' income.

The distribution of milk subsidies as shown in Table 7 is difficult to justify on economic efficiency grounds or on grounds of equity. If it were a case that we were just producing sufficient milk to clear the market at

reasonable prices (i.e. filling the British market quota and supplying other fairly high price markets) then one could argue in favour of a subsidy distribution somewhat similar to that shown. Since however we are now producing a large surplus which must be sold at very low prices there is no good economic argument in favour of the pattern of milk subsidy payments in 1968. If we use economic criteria in favour of subsidies, it is difficult to justify the continued subsidisation of surplus production, surplus being understood to mean, amounts, which taking one year with another cannot be exported at some reasonable price. If on the other hand we consider that part of the subsidy is a type of so called "social welfare" payment then it should go to the people who need it most or who are "disadvantaged" to the greatest extent by economic progress. These are hardly the large farmers who have considerable investments in lands and stock.

Contribution Towards Stability

Though instability in prices and incomes can lead to inefficiency in the allocation of resources, it does not follow from this that absolute price stability is a desirable objective either. In theory policies designed to improve stability should attempt to iron out severe price fluctuation rather than aim at freezing prices at some relatively high level. Indeed in the absence of a quota system absolute price stability removes any connection between supply and demand, diverts resources into unwanted production and creates open ended subsidy commitments which can easily reach prohibitive levels. This has happened in the case of milk where the price is maintained at a relatively high stable level over the years. There is a case, therefore, on economic efficiency grounds for removing some of the absolute stability out of milk production, either by the introduction of quotas or by some other means.

The part of dairy farmers' incomes coming from calves, however, is not nearly as stable as that from milk and it would be desirable to bring some degree of stability into the calf market if this could be done. Calf prices have fluctuated violently over the years and declines in the prices of these animals are always accompanied by pressure for increased milk prices to offset the reduced revenue from calves. Instability of calf prices is therefore of fairly serious import both for farmers and financial authorities but unfortunately there is very little that can be done about it since it stems from fluctuations in prices of finished cattle which are notoriously variable. A guaranteed price for calves is not workable since these animals are an important input of store and fat cattle producers.

A headage payment on good quality yearling cattle, as recommended by the store cattle study group¹⁴ could have some effect on stabilising calf prices, but as there is no provision in this scheme for the feeding of milk to calves, it would likely have the effect of increasing surplus milk production further. For this reason the author would be reluctant to suggest its implementation for stabilisation.

¹⁴ Op cit, pp 187-88

TABLE 7

DISTRIBUTION OF MILK SUPPLIERS AND SUBSIDIES BY TIER IN 1968*

| Distribution of deliveries (gallons) | Suppliers | | Supplies | | Subsidy | |
|--------------------------------------|-----------|-------|----------|-------|------------|----------------|
| | No | % | gals | % | Total £000 | Per Supplier £ |
| Less than 1,000 | 18,374 | 16.4 | 11,355 | 2.2 | 554 | 30 |
| 1,000- 2,000 | 24,165 | 21.6 | 32,916 | 6.5 | 1,605 | 66 |
| 2,000- 3,000 | 16,122 | 14.4 | 38,474 | 7.6 | 1,876 | 116 |
| 3,000- 4,000 | 11,013 | 9.8 | 37,711 | 7.4 | 1,838 | 167 |
| 4,000- 5,000 | 8,108 | 7.3 | 34,977 | 6.9 | 1,705 | 210 |
| 5,000- 6,000 | 6,134 | 5.5 | 33,018 | 6.5 | 1,614 | 263 |
| 6,000- 7,000 | 4,974 | 4.5 | 31,526 | 6.2 | 1,537 | 309 |
| 7,000- 8,000 | 3,853 | 3.5 | 28,440 | 5.6 | 1,386 | 359 |
| 8,000- 9,000 | 3,213 | 2.9 | 26,571 | 5.2 | 1,295 | 403 |
| 9,000-10,000 | 2,736 | 2.4 | 25,604 | 5.1 | 1,248 | 456 |
| 10,000-12,000 | 3,880 | 3.5 | 41,800 | 8.3 | 2,038 | 525 |
| 12,000-15,000 | 3,566 | 3.2 | 46,697 | 9.2 | 2,276 | 638 |
| 15,000-20,000 | 3,157 | 2.8 | 51,548 | 10.2 | 2,513 | 796 |
| 20,000 and over | 2,460 | 2.2 | 66,263 | 13.1 | 3,230 | 1,313 |
| All Suppliers | 111,760 | 100.0 | 506,900 | 100.0 | 24,715 | 221 |

* Calendar year data for registered creameries. Excludes surplus milk from liquid milk farms and Wexford creamery.

SOURCE: Department of Agriculture and Fisheries.

Some degree of stabilisation of calf prices could be obtained through stabilisation of prices for finished cattle but this solution is difficult to attain also because of the nature of the world cattle trade and of the magnitude of this industry in our economy. South American production dominates the world trade in beef but exports from this region tend to be highly erratic due to political, weather and disease conditions. Such a trading pattern causes extreme cattle price fluctuations throughout the world making it almost impossible for us to maintain a stable level of prices from year to year.

The present export subsidy on carcass beef has no doubt brought some stability into the cattle trade but prices can still be very variable as evidenced by the Autumn 1966 situation when prices dropped very low despite the subsidy. A deficiency payment could be used to stabilise Irish cattle prices within certain ranges but it would have to be accompanied by a system of abatements, (as in Britain), in order to keep cattle off the market in times of very depressed prices. This scheme has one drawback for us. The deficiency payment would have to be made on all cattle achieving a certain grading standard and so would involve payment for home consumed cattle as well as for exports. This would make it expensive to operate. It might, also, have to be accompanied by some subsidy for meat factories since without a subsidy these would have difficulty in competing with the live fat trade.

ALTERNATIVE POLICIES WHICH MIGHT BE CONSIDERED

Some alternatives to present policies for beef and milk are discussed briefly below, but before commencing this discussion it is useful to summarise the findings as to the extent to which present policies are achieving for the agricultural sector, the policy goals outlined initially namely, growth, efficiency, equitable distribution of income and stability. As regards stability, present policies are fairly adequate, particularly the milk price supports which in the absence of quotas may be too stable. The beef export subsidy has not achieved the same degree of stability for cattle producers but in view of the nature of the cattle trade it is doubtful if any feasible policy could be introduced which would give cattle producers the same degree of stability as dairy farmers.

With regard to economic growth within the sector it is doubtful if present policies are as successful as they should be. Though real income arising in agriculture per person employed, increased substantially between 1960 and 1969 the absolute level of real income has remained almost static. Hence, it is felt that we could and should have done better despite the very bad weather throughout most of the decade. It would appear that the decline in tillage accompanied by increased imports of feeding stuffs has been one of the main causes of many of our problems. Despite our comparative advantage for grass production the generality of Irish farmers are still very inefficient producers of this crop and if we can judge from recent increases in imported feeds the decline in tillage has probably resulted in a reduction in the total national production of starch equivalent. Indeed preliminary results from another study¹⁵ indicate that in view of our very inefficient methods of grass production arguments in favour of the importation of cheap cereals are not well founded.

As regards economic efficiency and income re-distribution there can be little doubt as to the effects of present policies. The milk policy which dominates all others is inimical to both of these goals and the author feels that it should be drastically overhauled despite our pending EEC entry. Piecemeal tinkering with it through multi price arrangements is no real solution because while prices remain at present levels compared with those of other commodities, unsaleable surpluses will continue to grow and our agricultural existence will be completely dependent on two products, milk and beef. Inside or outside the Common Market, this situation is not desirable. In an uncertain world, national specialisation is dangerous. We should keep open as many options as possible.

One suggestion which should be considered, would be to freeze the milk subsidy at about 500 m gallons, allowing any excess production to be sold at unsupported prices. If this suggestion were adopted prices from all markets would have to be pooled so as to provide a common price for all manufacturing milk. In such circumstances a large excess production would reduce the average price considerably. Hence some suitable alter-

¹⁵ HENRY, E. W. and O'CONNOR, R. Irish Agricultural and Associated Industries. Effects of Various Cereal Policies, *ESRI Seminar Paper*, November 1969.

natives would need to be provided for those who might wish to change out of milk, and notice of all changes should be announced well in advance of implementation. If this were done excess production should be small and there should be little reduction, if any in present price levels. Since however, any price reduction would probably hit the smaller farmers harder than the larger there might be a case for fixing a guaranteed price for the first 5,000 gallons of every farmer's production with a pooled price for amounts in excess of this. The author would not press the latter idea too strongly however. The guarantee of 5,000 gallons for every producer would cover over 60 per cent of deliveries leaving less than 40 per cent to be pooled. In this case a small excess production would cause a fairly large reduction on the pooled price and might hurt some of the larger farmers unduly. As indicated later this would not be desirable and unless there were strong evidence that the scheme was penalising small farmers greatly it would be better to have a common pool price for all producers.

The above type quota system would need to be accompanied by a headage grant for beef cows similar to the present beef cow scheme but with an increased level of grant. If the present scheme succeeds in increasing beef cows, this increase is likely to come about at the expense of sheep and tillage and not by reducing dairying. Accordingly, it is felt that the present grant should be raised possibly to £20 per cow but certainly not higher, in case it might shift too many people out of dairying resulting in our losing the present British quota. This would be most undesirable, because even though the price for butter in Britain is not as good as we would like, it offers much more stability in exports than does the beef market which as we have shown can be highly erratic. But even if it did not reduce the overall level of milk production too much, this type of subsidy might have the effect of shifting too many large farmers out of dairying which would not be good either. In the modern world dairying has become a highly mechanised, highly capitalised enterprise and if and when we enter the Common Market we will need as many as possible of the large well-organised dairy farmers. Hence, though we have argued throughout this paper for a more equitable distribution of state funds in favour of the smaller and more vulnerable producers we would not wish at the same time to suggest any scheme which would discourage the larger and more technically efficient dairy farmers, many of whom have borrowed heavily to get to their present level of organisation and who are faced with large capital and interest payments. Indeed to encourage these people as much as possible, the introduction of a new headage scheme to cover beef breeds on dairy farms (as in Northern Ireland) should be considered.

Because of the high costs which might be involved in some years the author hesitates to suggest a deficiency payment for beef cattle, but in order to preserve some stability in the beef market the present export subsidy on carcass beef should be continued. Also in order to maintain balance in the economy some level of support for sheep production on the

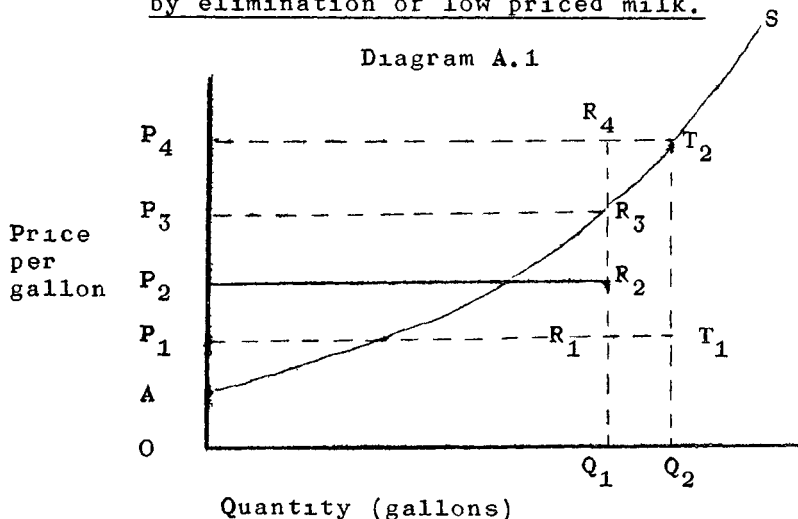
¹⁶ In view of what has been said in the introduction a so-called "social" payment of this kind has an important economic content in the Irish situation

lines of that suggested earlier should be considered along with the above changes. In addition a headage payment of about £1 per ewe dipped would be a useful "social"¹⁶ payment in the underdeveloped regions.

Along with the revised sheep, milk and cow schemes some scheme for tillage would also need to be introduced in order to maintain a balanced economy. A consideration of such schemes is outside the scope of this paper but one might mention that incentives for tillage should preferably come in the form of acreage payments rather than price increases, because of the resulting effects of further price increases on the dependent industries. Indeed an acreage payment of £5 per acre for the growing of up to 2 acres of oats or barley (first acre to be excluded) in the underdeveloped regions would be a useful "social" payment and would help to keep food prices at reasonable levels in those districts. The headage grant on ewes and the acreage payment on tillage in these regions would cost about £2m. In addition the other grants suggested above are likely to be more costly in the short-run than the present programme, but in the long run they should turn out much cheaper.

Technical Note

Diagrammatical representation of subsidy saving by elimination of low priced milk.



In Diagram A.1 AS is a hypothetical supply curve for milk and P₄ is the present price per gallon received by farmers. At this price the quantity Q₂ is sold. Let us suppose that the marketing Board can obtain an unsubsidised price of P₂ for Q₁ gallons and a price of P₁ for the remaining (Q₂-Q₁) gallons. The amount of subsidy which must be paid is therefore represented by the rectangles (P₂R₂R₄P₄) and (R₁T₁T₂R₄). If now the government decides to reduce sales to Q₁ gallons, it can obtain this quantity for a farmer's price of P₃ per gallon. The subsidy required would therefore be represented by the rectangle (P₂R₂R₃P₃), representing a saving in subsidy on the marginal milk of (R₁T₁T₂R₄) plus a saving of (P₃R₃R₄P₄) on the remainder of the milk. Hence the saving

in subsidy by elimination of the low priced milk is greater than the direct subsidy paid on this milk. The amount of the saving will depend on the shape of the supply curve. If supply is very elastic the saving will be small, but if it is rather inelastic, particularly at higher levels of production, the saving may be considerable.

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It should be emphasised however, that any errors, omissions and misinterpretations are entirely the responsibility of the author.

DISCUSSION

Dr S Sheehy I am honoured to be asked by the Society to propose a vote of thanks to Professor O'Connor for presenting to us this massive paper on such a topical subject. Indeed, we have got two papers in one, because the first and last sections of the paper which deal with the principles of agricultural policy would make a separate paper, apart from the quantitative analysis of current beef-milk policies which constitutes the main body of the paper.

The author set himself a very difficult task in attempting this dual treatment. While his quantitative analysis is thorough and convincing, I have some reservations about his treatment of the principles. Yet policy can only be meaningfully evaluated in light of the aims of society, and the paper is better to the extent that it succeeds in accomplishing this.

I said that the subject of this paper is topical. Everyone knows that there are long-term economic forces of demand pulling the two products, beef and milk, apart. This is not a new trend nor is it a temporary phenomenon. It means that over time the production of one will have to be increasingly separated from the other. If they continue to be produced as joint products, somebody will have to pay for the unwanted milk that is produced as a by-product of beef production. The solution to this problem can only be found in the development of pure beef herds. The Americans already have this situation so the problem does not arise for them, the Europeans are making the first efforts towards achieving it through a temporary scheme of paying conversion premiums of £83 per cow to any farmer who changes from dairying to beef production. The U.K. has been paying a hill subsidy—currently at £17 5s 0d per cow, and a lowland subsidy—

currently at £10 0s 0d per cow, on beef cows for some years now. In Ireland we have also taken the first steps in this direction in the form of the Beef Cattle Incentive Scheme. It is interesting to reflect at this stage that only two years ago it was considered heresy in the Irish agricultural world to even think aloud on such policies.

One reason for this was the prospect of EEC membership which might enable us to stay with dual-purpose herds, while others would go for pure beef production. EEC membership is still very relevant to the conclusions of this paper. EEC prospects should increase the willingness of the Government to stick with milk even in the current adverse market situation. We can expect the Europeans to carry much of the burden of support which is now our national concern. If progress towards Europe maintains its current pace, our Government can afford to be less worried about the mounting bill for dairy farmers, and the drastic surgery suggested by Dr O'Connor of a limit to the quantity of milk to be supported may at least be delayed. Many people find it hard to believe that the Europeans would be so generous as to accept our dairy surplus as their load. But this is exactly what a competitive market should do, because the drop-outs from dairy production in such a market would be more likely to be high-cost European farmers than Irish farmers. It must be emphasised again that someone will have to turn to pure beef production in a European market. This would not appear to be a serious problem for Irish farmers, because such a swing is more likely to be achieved by payment rather than by pressure. Any Irish farmers who would turn to pure beef would therefore do so in response to acceptable incentives, rather than because of some restrictive measures.

Turning to the main body of Dr O'Connor's paper, *viz*, the comparison of the alternatives to the production of 50 m gallons of milk for marginal markets, I have little to offer but praise—praise for such a thorough and comprehensive job. It is only when all aspects of the alternatives are spelled out that one gets a full appreciation of the gross imbalance of our present farming economy. It is possible to demonstrate with artificial levels of management that single or multiple suckling can yield returns that are competitive with dairying. I believe that Dr O'Connor's comparisons are in general realistic, though other speakers may question some technicalities. It is worth noting that the 50m gallon problem is likely to be a 100m gallon problem this year, which would at least double most of the magnitudes in the present exercise.

Another interesting aspect of the problem that is shown up by the analysis is the interrelationship of the different enterprises, so that one cannot emphasise one without creating imbalance among the lot. Therefore, not only beef but also sheep and tillage have to be adjusted to restore the balance already disrupted by the dairy supports. I fully accept that competition exists between sheep, beef and dairying, but I am not so sure that these grassland enterprises compete very much with tillage. The analysis suggests clearly that the present £12 per beef cow is not an adequate incentive to secure a significant swing to beef. I agree with the author that the attack on the present dairy problem should involve a

combination of policies to make alternatives to dairying more attractive while making dairying less attractive, but my blend would contain more of the former and less of the latter than the author's

The final topic I will comment on is the distribution aspect of State supports. It seems to me that Dr O'Connor pulled his punches on this issue. The issue of distribution has taken on new significance with the publication of the Third Programme, with the October revolution in milk prices, and with the recent statement of the Minister that he has his staff studying further forms of price manipulation.

This new emphasis has been publicly debated as if it were a new principle. But the distribution of income is as old as the welfare state. We have come to accept that incomes should be redistributed from more favoured sectors in the economy to underprivileged sectors such as farming, that incomes should be redistributed within sectors from the rich to the poor, and that incomes should be redistributed among regions in favour of depressed areas. Therefore, there is no question of a new principle. The legitimate questions relate to the extent and form of the redistribution.

Considering first the extent of redistribution either among sectors, within sectors or among regions, this is predominantly a political issue in which the role of the economist is a limited one. What the optimum allocation of State aid to the farming sector is, what the optimum distribution of aid within farming is, what the optimum distribution among regions is, are questions largely beyond the scope of the economist with his limited arsenal of analytical tools. Dr O'Connor's paper is a good example however, of how the economist can contribute towards answering such questions by quantifying various alternatives for the guidance of the policy makers. But this analysis does not and cannot in any way help to answer the question as to whether the extent of redistribution among farmers is too little or too much. The author's opinion is that there is not sufficient distribution, but this is purely his value judgement, as he clearly acknowledges. Each and every citizen in the community is equally entitled to an opinion on this issue, and undoubtedly there will be differing views expressed in the discussion to follow.

My personal view is that there is not excessive redistribution—even with the new milk pricing arrangements—but if such policies are reinforced that there is a real danger of excessive redistribution. Excessive orientation of general policy towards small-scale producers is based on the false philosophy that such manipulation can solve the problems of the non-viable farmer. It cannot. His problems can only be solved by outright welfare or by policies of off-farm employment. It seems to me that these are the best policies in the long-term to achieve our national goals. Having said this, I see no reason why the principles of redistribution that apply in other sectors should not apply in farming. However, my views, the author's views, and the views of the other speakers that will be expressed here, are only relevant to the extent that we represent the community. The essential fact is that the Government has embarked on a course of redistribution, and we either change that by political pressure or attempt to guide it by analysing the alternatives.

Dr O'Connor's paper makes a contribution in this regard by, for example, pointing to sheep as a more suitable enterprise to carry a re-distribution element than dairying. The broader question as to whether price manipulation still is the most suitable approach towards helping the poor is not broached. In the non-farming sectors the main method of redistribution is income tax. Income tax is anathema to farmers but it is an alternative to multiple pricing systems. By and large, income tax would be more equitable because it would bring all types of farmers into the net and not necessarily those producing a particular commodity. It would also allow for circumstances of business and family that multiple pricing cannot take into account. Probably the pricing arrangements are not yet sufficiently discriminatory to change the attitudes of farmers towards income tax, but unless EEC membership comes our way it is likely to become worse before it gets better.

Finally, let me again congratulate the author for what is probably the most comprehensive analytical paper on policy ever presented to this Society.

Professor L. P. Smith Professor O'Connor is to be congratulated on opening the subject of farm subsidy to quantitative measurement and to analysis.

The paper makes the distinction of social and economic subsidies but does not, I believe, push this argument far enough. Social subsidies should be in inverse proportion to income and to production per head, economic subsidies should be proportionate to production. It is not possible to base a consistent subsidy policy on the price of produce with these two objectives.

In particular a device such as the two tier system of pricing for milk cannot distinguish between the large farmer who has a small milk enterprise, and so receives the maximum subsidy, or the part-time farmer who already receives an adequate factory worker's wage and the poor man who requires a re-distribution of income in his favour.

I would fault the analysis of Professor O'Connor when he takes only Exchequer payments (however controversially estimated). The State assists producers of various commodities and effects a re-distribution of income within the community when it raises prices above the level which they would otherwise reach. Industrial production is protected effectively by a tariff even when it receives no cash subsidy. Similarly, the dairy farmer receives on the home market a price substantially higher than he would do were government action withdrawn. As marginal importers we could satisfy our requirements of dairy produce by imports at a lower price than that paid to us on the British market. The level of such assistance given to the beef market is small.

I do not argue that this should be our national policy, furthermore one must consider future prices, but it is necessary to use such a standard in measuring the effects of our policy.

Secondly, Professor O'Connor uses as the price to be obtained for extra butter production the average of a number of non-British market prices.

Some of these prices were quite good, others very low. The meaning of the word marginal is that we take the worst of these prices, presuming that all other markets have been filled first. Therefore the marginal value of milk is substantially lower than that stated, perhaps negative at farm gate. The marginal cost of manufacture should also be estimated. In the case of an existing creamery area in which there is surplus capacity this may be negligible, in the case of the West of Ireland where creameries have been built in recent times the cost is above the average for the country as a whole.

Presumably also there is some elasticity of demand for Irish stores and meat in the United Kingdom market, if we were to increase supply there.

There is a clear difference of interest between the individual farmer or his adviser and that of the country at large. The individual sees an average price on which his production can have no visible impact. The country must look at the marginal return on this product. Such schemes as the limitation of the milk subsidy to 500m gallons and the selling of any excess production at unsupported prices by some averaging system, necessarily lead to an over production—because average price is higher than marginal. The farmer in so far as he is influenced by price in this way concentrates on the average price i.e. the one which he receives.

I have pleasure in seconding the vote of thanks proposed to Professor O'Connor.

Mr J Bruton The diffidence an ordinary farmer should feel in addressing a meeting of this Society is far outweighed by the interest found in hearing the valuable paper from Professor O'Connor and, the pleasure it gave me to see the basic figures for farming enterprises stripped of their subsidised finery. As a producer of beef it is some consolation to me to hear that we are earning a real £7 per acre while the Dairy men return £6.9.

The calculations in this paper are based on recently existing standards of efficiency which are capable of considerable improvement and on marketing conditions which should be radically changed by entry into the Common Market.

Professor O'Connor indicates the problem involved in striking a balance between competitive efficiency and the Social aspects of giving a living to small farmers. If we lived in an enclosed economy this would be a simple matter. Even in a wider market we could carry the social problem if we could persuade other countries to equally show efficiency. Let us take milk-production as an example.

In Britain efficient operators like Ekberg and Patterson operate in units of 100 cows run by one man alone with some help at silage-making etc. In New Zealand the ratio is even higher than 100:1, but work like fencing is done by contractor. In these examples the pattern is for the milker to change to a lighter job on reaching middle-age. In Ireland the pattern follows the family farm so we might envisage a father-son type of unit with provision thereby for continuity and gradual succession.

Such a unit would find 100 high-yielding cows well within its capacity.

This would indicate an output well in the top-twenty of the present standard of suppliers, yet as a specialising unit it would seem uncompetitive to envisage anything smaller

We read and hear of much larger units in the European countries where the cow enters a turn-table like a factory production-line to be milked. This is the kind of competition we must envisage, and where would the "Woman of three cows agraph" figure in that gallery? This example takes no cognisance of the energetic elite who see no limit to their ambitions or of the big farmer with multiple units

Let me point out in passing that ambition has been noticeably scarce in Irish farming up to now. The young man has usually been content to set his sights on inheriting the farm and by the time he does so, he is too old for ambition. The scene is changing. There are young men coming up who are in a hurry and will not wait to inherit. They know what they want and how to set about it. They will either get busy or emigrate. We must reckon with them. They will give production figures in any enterprise, very different to those in the tables shown here.

Professor O'Connor has examined three main alternatives to milk. I believe there is a place for each of them. Single suckling is well suited to marginal land. On good pasture it can be wasteful and there is a tendency in practice for the cow to get over-fat. Double suckling or multiple suckling would suit good pasture land and be nationally profitable.

Another alternative that I would love to see Professor O'Connor examine would be a combination of once-calved heifers and good quality cows. Perhaps for the uninitiated, if there are any present, I should briefly explain the once-calved heifer.

Each year we kill or export 0.2 million maiden heifers. They die as the lawyers say "without issue"—some or all of them could with extra trouble leave a young calf behind and still be fit to butcher at approximately the same age and weight as envisaged by Professor O'Connor in his alternative system No. 4. They would yield meat of equal quality and quantity to the maiden heifer.

The exercise I have in mind would envisage say 80% heifers and 20% cows with the heifers early-weaned and fattened off, while the cows multiple-suckle all the calves.

Since the system is self-contained and self-perpetuating—subject to some inter-change with the National pool of calves it can be envisaged on any scale down to the single farm-unit.

According to the curve in Diagram A 1 of Professor O'Connor's paper any additional milk to present output would in present market conditions be about worth the cost of delivery to the creamery in unsubsidised terms. Therefore it has a minus value in the cow. Wouldn't it be nice to be rearing calves on milk costing a negative figure. I feel such an exercise might prove very encouraging, and I also think my ratio of 80 heifers to 20 cows would be conservative.

Now we come to the problem of inducing the farmer to change his enterprise. I will ignore the older man who would settle for an easier life and a smaller income.

We are asking the existing or prospective dairyman to give up his monthly cheque which is as assured and almost as regular as a salary. We are also asking him to give up a return per acre which is higher than in any of the existing alternatives. We may also be asking him to write-off expensive machinery and buildings and to re-invest in others.

Clearly if we are to induce him to switch to a beef enterprise we must be realistic and consistent. He must be confident we will not offer him a subsidy system by way of encouragement and then water it down when he has become involved. It takes 3 years to produce a beef animal so we must have reasonable assurance that we are producing the right article and that the price will be right. Professor O'Connor quotes Kaldor as saying "A guaranteed price announced prior to the time producers make their production plans can greatly reduce price uncertainty and this reduction can contribute to a more efficient use of agricultural resources".

As Professor O'Connor shows, the beef business is very risky. Now risks are acceptable if they are offset by extra profits. Far from getting danger-money the profit-margin on beef is the lowest of all the enterprises. The case calls for radical measures.

The task before us is either to reduce the risks in these enterprises or increase the pay-off or both. Entry into the EEC will cushion us from the effects of South American fluctuations. It will also increase the pay-off in both meat and milk. In the meantime we must rely on the British guarantee system and the degree to which our own Government is prepared to stay with it. This is an area in which our confidence could do with a little reinforcement in view of recent events. Perhaps the greatest single factor in immediate security is provision of winter fodder. Without fodder we lack the ability to hold cattle over the bad patches. Even in the disaster year of 1966 it was obvious to everybody that good prices would return in spring. It was just a matter of holding on but we were unprepared and had no option but to sell. We are better prepared now, but not well enough yet to give reasonable security.

I am indeed grateful to Professor O'Connor for his stimulating paper and to you Mr President for an opportunity to air a few of the many ideas it has engendered in my mind.

Professor J Johnston (written contribution) Mr R O'Connor's paper "An analysis of recent policies for beef and milk" confirm my belief that our agricultural problems are in fact insoluble in the framework of a national economy. They are the result of a change in international commercial relationships and are therefore only soluble if the commercial policies of the major external economies are in fact fundamentally modified in such a way as to facilitate the exports of the minor "developing" economies.

I am appalled at the enormous expenditure by the taxpayer on our agriculture (£79m of which £30m goes in direct product subsidies to farmers). The final result is that there is no substantial increase in our net agricultural product but fewer workers are producing it and there is a gain

in "productivity" per worker. On our agricultural treadmill we have to walk very fast in order to stay in the same place and those who fall off the treadmill have, for the most part, no alternative to emigration.

I foresaw much of this happening when as a member of the post-emergency agricultural policy committee in 1945 I managed to get included in paragraph 65 of the majority report a statement that "the export price of our principal agricultural products is much less than the price plus subsidy obtained by the producers of similar products in the U.K. Consequently lower prices for our agricultural exports than are in fact commanded by producers of exactly similar products in the U.K. tend to promote the export of agricultural labourers to G.B. instead of agricultural products."

I admire the industry and skill with which Mr. O'Connor has given statistical form to our major agricultural problems. His suggestions for a more rational use of political authority in the national effort to solve them are entirely praiseworthy but they are in fact insoluble in a purely national framework.

Mr. Colin Clark, in the current number of *Lloyd's Bank Review*, points out that "developing" countries have been increasing their exports of food and raw materials at an average rate of 2.5 per cent per year but owing to the artificially induced exports of similar products by the "developed" countries they have experienced steadily worsening terms of trade.

Compared to the millions of pounds which the taxpayer is now spending on all sorts of economic development the old Congested Districts Board (1894-1923), which up to 1910 never had more than £86,250 pounds per annum to spend on subsidies, achieved miracles. The fundamental reason for its success was that the international economy at that time favoured an increase in the production and export of the products which the small farmer was best fitted to produce. The human population of Belmullet Rural District actually *increased* between 1901 and 1911 and so too did its pig population and its poultry population.

I can see no hope for the future of our agriculture—apart from beef—unless there is a profound change in the international economic climate.

Professor O'Connor I wish to thank all those who attended my lecture and in particular those who took part in the discussion. Dr. Sheehy has some reservations about my treatment of the policy criteria but as he did not specify his reservations there is nothing I can say on this point.

Professor Smith faults my analyses on the grounds that I have taken only Exchequer payments, and have omitted the effects of protection like quotas, tariffs etc. I omitted the latter effects since it is impossible to determine satisfactory criteria for quantifying them and I feel that if Professor Smith were writing this paper he would likely have done the same. If he did not, and if he were adventurous enough to impute figures for the effects of such policies I expect he would have a lively time justifying his results. I prefer the quieter life, particularly as I believe that the exclusion of these effects does not influence in any way the conclusions to be drawn from the type of analyses I have undertaken.

As regards the so called marginal milk the decision as to the amount to be included in the input-output model was quite arbitrary. Professor Smith is correct in saying that some of the prices obtained for the milk included were good by present standards. What he failed to say, however, was that the quantities involved at these prices were rather small. The highest price obtained for creamery butter exported to non-British markets was £18 10s per cwt for 6 tons sent to South Yemen. This works out at a gross price of 17d per gallon of milk equivalent or at about 15d per gallon net of manufacturing costs. Similar small quantities went to other such markets at net prices ranging from 10d to 14d per gallon but the great bulk of the milk going as butter to non-British foreign markets fetched less than 7d per gallon. In the circumstances I feel justified in including in the model the quantities used. I am fully aware that the use of the word marginal to describe this milk is technically not correct but as it is a handy word to convey the idea I have in mind, I make no apology for using it in this context.

STATE EXPENDITURE IN RELATION TO AGRICULTURE IN SELECTED YEARS 1938-39—1968-69 (£000)

| | 1938-39 | 1950-51 | 1955-56 | 1957-58 | 1958-59 | 1961-62 | 1963-64 | 1966-67 | 1967-68 | 1968-69 |
|---|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <i>Product Subsidies</i> | | | | | | | | | | |
| Butter and other milk products | 145 | 2,833 | 2,199 | 3,210 | 2,025 | 4,698 | 6,038 | 13,781 | 19,295 | 25,380 |
| Wheat | — | — | — | 641 | 1,859 | 1,150 | 600 | — | — | 1,000 |
| Bacon | 100 | — | — | 787 | 400 | 1,850 | 1,400 | 1,200 | 1,418 | 2,600 |
| Carcase Beef and Lamb | — | — | — | — | — | — | — | 923 | 4,644 | 1,532 |
| Fat Cattle | — | — | — | — | — | — | — | 656 | — | — |
| Other | 303 | — | — | — | — | — | — | — | — | — |
| Total Product Subsidies | 548 | 2,833 | 2,199 | 4,638 | 4,284 | 7,698 | 8,038 | 16,560 | 26,000 | 30,280 |
| <i>Subsidies to Reduce Production Costs</i> | | | | | | | | | | |
| Fertilizers and Lime | 37 | — | 694 | 866 | 1,166 | 3,211 | 4,176 | 4,897 | 5,874 | 6,963 |
| Other | — | 28 | 40 | 40 | 40 | 36 | — | — | — | — |
| <i>Livestock Headage Grants</i> | | | | | | | | | | |
| Calved Heifer Scheme | — | — | — | — | — | — | — | 1,999 | 1,233 | 900 |
| Sow Headage & Mountain Sheep | — | — | — | — | — | — | — | 330 | 450 | 615 |
| Incentive Bonus Scheme | — | — | — | — | — | — | — | — | — | 150 |
| <i>Drainage and Improvements</i> | | | | | | | | | | |
| Arterial Drainage | 18 | 445 | 748 | 629 | 719 | 1,083 | 1,795 | 1,165 | 1,230 | 1,464 |
| Land Project | — | 569 | 2,697 | 2,466 | 2,361 | 2,064 | 2,214 | 2,729 | 3,442 | 3,500 |
| Other Improvement Schemes | 703 | 681 | 1,142 | 1,455 | 1,381 | 1,282 | 1,470 | 1,284 | 1,411 | 1,963 |
| <i>Elimination of Disease etc</i> | | | | | | | | | | |
| Bovine T B | 5 | 6 | 161 | 645 | 1,530 | 9,009 | 4,660 | 1,946 | 2,100 | 2,470 |
| Brucellosis | — | — | — | — | — | — | — | 219 | 344 | 432 |
| Other and Administration | 142 | 483 | 335 | 349 | 241 | 282 | 392 | 671 | 910 | 980 |
| Grants towards Buildings etc | — | 513 | 885 | 841 | 786 | 1,071 | 1,461 | 2,610 | 2,757 | 3,264 |
| Education and Research etc | 268 | 604 | 827 | 1,099 | 1,099 | 1,683 | 3,248 | 3,715 | 4,193 | 4,829 |
| Land Annuities | 722 | 758 | 801 | 824 | 839 | 883 | 957 | 1,078 | 1,113 | 1,170 |
| Agricultural Grant | 1,871 | 3,935 | 5,266 | 5,507 | 5,520 | 5,839 | 8,955 | 13,333 | 15,625 | 17,330 |
| Other | 1 | 63 | 212 | 73 | 1,053 | 2,668 | 2,150 | 2,241 | 2,286 | 2,749 |
| Total | 4,315 | 10,918 | 16,007 | 19,342 | 21,019 | 36,809 | 38,516 | 54,777 | 68,325 | 79,291 |

SOURCE Budget Tables issued annually by Department of Finance

TABLE A2

INDEX NUMBERS OF CERTAIN AGRICULTURAL PRICES* (1960=100)

| | Unit | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|--------------------------------|------------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Store Cattle, Dublin Auctions† | Liveweight | 100 | 99.4 | 105.3 | 102.3 | 114.8 | 119.4 | 109.7 | 112.3 | 133.4 |
| Sheep and Lambs | " | 100 | 94.6 | 91.8 | 99.3 | 107.0 | 108.5 | 100.7 | 111.2 | 128.1 |
| Bacon Pigs | Deadweight | 100 | 100.7 | 99.4 | 100.0 | 102.9 | 104.5 | 110.2 | 114.9 | 118.8 |
| Wheat | per cwt | 100 | 101.8 | 98.0 | 105.3 | 111.8 | 102.5 | 130.9 | 124.6 | 131.2 |
| Oats | " " | 100 | 100.8 | 95.7 | 94.6 | 98.1 | 106.2 | 104.3 | 101.9 | 106.6 |
| Feeding Barley | " " | 100 | 100.8 | 96.6 | 96.2 | 104.0 | 114.8 | 118.3 | 115.2 | 117.0 |
| Potatoes | " " | 100 | 147.2 | 153.5 | 110.7 | 129.8 | 194.3 | 169.1 | 149.7 | 134.9 |
| Sugar Beet‡ | per ton | 100 | 101.0 | 106.1 | 107.7 | 120.6 | 122.6 | 130.9 | 128.6 | 126.9 |
| Hen Eggs | 120 | 100 | 100.3 | 109.1 | 112.1 | 106.2 | 115.0 | 106.0 | 106.2 | 126.9 |
| Turkeys | each | 100 | 91.2 | 103.7 | 112.3 | 135.3 | 128.2 | 135.3 | 132.4 | 116.5 |
| Milk sold to Creameries | gallon | 100 | 101.0 | 100.8 | 104.5 | 113.8 | 115.4 | 122.2 | 129.2 | 132.3 |
| AGRICULTURAL PRICE INDEX | | 100 | 100.4 | 102.1 | 102.6 | 113.5 | 118.1 | 116.3 | 118.7 | 131.1 |
| Livestock | | 100 | 98.5 | 101.1 | 101.3 | 115.5 | 120.2 | 114.1 | 116.0 | 135.9 |
| Livestock Products | | 100 | 101.2 | 101.5 | 104.9 | 111.5 | 112.3 | 116.4 | 121.8 | 125.4 |
| Crops | | 100 | 106.0 | 106.4 | 102.8 | 108.5 | 120.8 | 124.0 | 122.3 | 122.0 |

* Output prices except where stated otherwise

† Hereford Cross Bullock

‡ Includes freight subsidy

SOURCE Central Statistics Office, Dublin

TABLE A3

AREA UNDER CERTAIN CROPS AND NUMBERS OF CERTAIN LIVESTOCK 1960-1968

| Year | Wheat | Oats | Feeding Barley | Pota- toes | Sugar Beet | Total Tillage | Milch Cows | Total Cattle | Sheep | Pigs | Turkeys | Ordinary Fowl |
|-------------|-------|-------|-------------------|---------------|---------------|------------------|---------------|-----------------|--------|--------|---------|------------------|
| ACRES (000) | | | | | | | NUMBERS (000) | | | | | |
| 1960 | 366 3 | 425 8 | 210 0 | 233 8 | 68 3 | 1674 6 | 1283 7 | 4740 5 | 4314 1 | 951 1 | 978 4 | 11171 5 |
| 1961 | 344 8 | 367 8 | 240 6 | 213 1 | 78 8 | 1598 7 | 1290 5 | 4713 3 | 4527 6 | 1056 4 | 978 4 | 11024 2 |
| 1962 | 314 0 | 346 0 | 278 1 | 209 2 | 78 1 | 1587 5 | 1309 3 | 4741 8 | 4760 6 | 1106 6 | 821 7 | 10323 8 |
| 1963 | 232 7 | 331 7 | 308 2 | 204 9 | 88 3 | 1512 5 | 1322 5 | 4860 0 | 4690 8 | 1102 0 | 710 1 | 10517 0 |
| 1964 | 214 4 | 288 6 | 328 6 | 182 3 | 79 8 | 1438 0 | 1399 9 | 4962 4 | 4949 6 | 1108 0 | 633 3 | 10353 1 |
| 1965 | 182 2 | 284 4 | 328 5 | 174 3 | 65 5 | 1394 8 | 1547 4 | 5359 3 | 5013 7 | 1265 9 | 601 5 | 10228 1 |
| 1966 | 131 3 | 242 8 | 326 7 | 167 5 | 53 5 | 1261 9 | 1582 3 | 5590 0 | 4664 2 | 1013 5 | 507 2 | 9813 9 |
| 1967 | 188 8 | 237 9 | 323 8 | 159 6 | 63 9 | 1302 2 | 1567 9 | 5585 8 | 4239 3 | 984 9 | 525 9 | 9633 4 |
| 1968 | 223 6 | 218 3 | 335 5 | 146 5 | 64 1 | 1305 9 | 1607 4 | 5571 8 | 4077 2 | 1063 3 | 566 6 | 9534 5 |

SOURCE Irish Statistical Bulletin—CSO Dublin

TABLE A4
IMPORTS OF CERTAIN CLASSES OF FOOD STUFFS 1960-1968

| | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 |
|---------------|------|-------|-------|---------------|-------|-------|-------|-------|-------|
| Wheat | 2 66 | 5 10 | 2 66 | m cwt 4 54 | 3 34 | 6 46 | 5 79 | 3 90 | 5 07 |
| Barley | 0 25 | 0 01 | 0 01 | 0 00 | 0 01 | 1 58 | 0 16 | 0 13 | 1 01 |
| Oats | 0 00 | 0 12 | 0 24 | 0 02 | 0 08 | 0 30 | 0 28 | 0 18 | 0 16 |
| Maize | 2 75 | 1 68 | 3 63 | 1 66 | 2 14 | 2 34 | 2 40 | 2 27 | 2 67 |
| Milo | 0 01 | 0 01 | 0 01 | 0 01 | 1 72 | 3 07 | 3 05 | 2 19 | 1 16 |
| Corn offals | 1 39 | 2 02 | 2 56 | 2 10 | 2 13 | 2 24 | 1 63 | 1 62 | 1 69 |
| Oil seed cake | 1 07 | 1 13 | 1 30 | 1 30 | 1 23 | 1 78 | 1 85 | 1 68 | 2 04 |
| Fish meal | 0 08 | 2 09 | 0 10 | 0 17 | 0 20 | 0 26 | 0 23 | 0 34 | 0 39 |
| Total | 8 12 | 10 16 | 10 51 | 9 80 | 10 85 | 18 03 | 15 39 | 12 31 | 14 19 |
| Volume index* | 100 | 125 2 | 126 9 | 122 8 | 131 9 | 217 1 | 188 9 | 153 5 | 178 2 |

* 1968 price weights used in compilation

SOURCE Trade Statistics of Ireland, December issues 1960-1968—C S O, Dublin

TABLE A5

VOLUME INDEX NUMBERS OF AGRICULTURAL OUTPUT AND EXPENSES TOGETHER WITH LABOUR FORCE
AND PRODUCTIVITY INDICES (1960=100)

| Year | Gross Output (a) | Expenses (Excluding all Labour) (b) | Net Product (c) | Labour Force (d) | Labour Productivity (e) |
|------|---------------------|--|-----------------------|------------------------|-------------------------------|
| 1960 | 100 | 100 | 100 | 100 | 100 |
| 1961 | 104.4 | 109.4 | 101.0 | 96.9 | 104.2 |
| 1962 | 107.5 | 119.0 | 101.3 | 94.5 | 107.2 |
| 1963 | 107.8 | 123.3 | 99.2 | 92.7 | 107.0 |
| 1964 | 111.9 | 128.3 | 103.3 | 90.3 | 114.4 |
| 1965 | 112.9 | 140.3 | 98.7 | 87.0 | 113.4 |
| 1966 | 112.7 | 139.8 | 98.6 | 85.1 | 115.9 |
| 1967 | 116.2 | 146.2 | 100.7 | 82.3 | 122.4 |

- (a) Including livestock changes and turf at 1953 prices
 (b) Including feed, seed, fertilizers, other expenses and depreciation at 1958 prices
 (c) Gross output at 1953 prices rebased to 1958 prices less expenses as defined at (b)
 (d) Family plus hired labour
 (e) (c) divided by (d)

SOURCE Based on data received from Central Statistics Office

TABLE A 6

SYSTEM (1) INPUT-OUTPUT TABLE FOR 100,000 DAIRY COWS IN 1968 (PRESENT SITUATION) (£000)

| | Inter-Industry | | | | | | | | | Final Demand | | Output | F O B Value of Exports |
|---------------------|----------------|-----------|--------|--------|----------|---------------|------------------|------------------|---------------------|-------------------|----------|--------|------------------------|
| | Cattle | Dairy-ing | Barley | Silage | Pas-ture | Grain Milling | Milk Pro-cessing | Animal Slaughter | Other Inter-mediate | Other Indus-tries | Ex-ports | | |
| Cattle | | | | | | | | 5,651 | 3 | | | 5,654 | |
| Dairying | 1,437 | | | | | | 5,652 | 894 | | | | 7,983 | |
| Barley | | | | | | 830 | | | | | | 830 | |
| Silage | 547 | 602 | | | | | | | | | | 1,149 | |
| Pasture | 325 | 296 | | | | | | | | | | 621 | |
| Grain Milling | 532 | 512 | | | | | | | | | | 1,044 | |
| Milk Processing | | | | | | | | | | | 5,511 | 5,511 | 2,157 |
| Animal Slaughter | | | | | | | | | 931 | | 6,405 | 7,336 | 6,170 |
| Other Intermediate | | | | | | 21 | | | | 630 | 838 | 1,489 | 838 |
| Primary Inputs | 524 | 837 | 396 | 1,241 | 744 | 133 | 1,241 | 731 | 287 | | | 6,134 | |
| Subsidies | | | -38 | -92 | -123 | | -1,796 | -484 | | | | -4,766 | |
| Income Arising | 2,289 | 5,736 | 472 | | | 60 | 414 | 544 | 268 | | -2,233* | 9,783 | |
| Total Inputs | 5,644 | 7,983 | 830 | 1 149 | 621 | 1,044 | 5,511 | 7,336 | 1,489 | 630 | 10,521 | 42,768 | 9,165 |
| Acres (000) | 257 | 248 | 24 | | | | | | | | | 529 | |
| Income per Acre (£) | 8 9 | 23 1 | 19 4 | | | | | | | | | | |

* In addition to the state export subsidy of £2.2 million, an additional subsidy of half this amount was required to export the milk in question. This subsidy was recouped by way of the Bord Baimne levy mentioned on p 9 and therefore represents a redistribution of income within the national dairying sector

TABLE A 7

SYSTEM (2) INPUT-OUTPUT TABLE FOR SINGLE SUCKLING COWS (£000)

| | Inter-Industry | | | | | | | Final Demand | | Output | F O B Value of Exports |
|---------------------|----------------|--------------|--------------|------------|------------------|---------------------|----------------------------|--------------------------|--------------|---------------|---------------------------------|
| | Cattle | Barley | Silage | Pasture | Grain Milling | Animal Slaughter | Other Inter- mediate | Other Indus- tries | Exports | | |
| Cattle | | | | | | 8,713 | 4 | | | 8,717 | |
| Barley | | | | | 1,595 | | | | | 1,595 | |
| Silage | 1,428 | | | | | | | | | 1,428 | |
| Pasture | 507 | | | | | | | | | 507 | |
| Grain Milling | 1,805 | | | | | | | | | 1,805 | |
| Animal Slaughter | | | | | | | 1,285 | | 8,749 | 10,034 | 8,817 |
| Other Intermediate | | | | | | | | 883 | 1,173 | 2,056 | 1,173 |
| Primary Inputs | 1,263 | 761 | 1,543 | 607 | 119 | 1,043 | 395 | | 68 | 5,799 | |
| Subsidies | | -73 | -115 | -100 | | -219 | | | | -507 | |
| Income Arising | 3,714 | 907 | | | 91 | 497 | 372 | | | 5,581 | |
| Total Inputs | 8,717 | 1,595 | 1,428 | 507 | 1,805 | 10,034 | 2,056 | 883 | 9,990 | 37,015 | 9,990 |
| Acres (000) | 482 | 47 | | | | | | | | 529 | |
| Income per Acre (£) | 7.7 | 19.4 | | | | | | | | | |

TABLE A 8

SYSTEM (3) INPUT-OUTPUT TABLE FOR DOUBLE SUCKLING WITH DAIRYING CATTLE SOLD, MARCH-APRIL (£000)

| | Inter-Industry | | | | | | | | | Final Demand | | Output | F O B Value of Exports |
|--------------------|----------------|---------------|--------|--------|---------|------------------|-------------------------|--------------------------|----------------------------|--------------------------|--------------|--------|---------------------------------|
| | Cattle | Dairy- ing | Barley | Silage | Pasture | Grain Milling | Milk Pro- cessing | Animal Slaugh- ter | Other Inter- mediate | Other Indus- tries | Ex- ports | | |
| Cattle | | | | | | | | 7,323 | 4 | | | 7,327 | |
| Dairying | 764 | | | | | | 4,380 | 647 | | | | 5,791 | |
| Barley | | | | | | 1,789 | | | | | | 1,789 | |
| Silage | 854 | 435 | | | | | | | | | | 1,289 | |
| Pasture | 319 | 214 | | | | | | | | | | 533 | |
| Grain Milling | 1,808 | 380 | | | | | | | | | | 2,188 | |
| Milk Processing | | | | | | | | | | | 4,477 | 4,477 | 1,892 |
| Animal Slaughter | | | | | | | | | 1,204 | | 8,014 | 9,218 | 8,085 |
| Other Intermediate | | | | | | 29 | | | | 800 | 1,098 | 1,927 | 1,098 |
| Primary Inputs | 851 | 606 | 854 | 1,393 | 638 | 236 | 1,068 | 967 | 371 | | 71 | 7,055 | |
| Subsidies | | | -82 | -104 | -105 | | -1,342 | -204 | | | -1,724* | -3,561 | |
| Income Arising | 2,731 | 4,156 | 1,017 | | | 134 | 371 | 485 | 348 | | | 9,242 | |
| Total Inputs | 7,327 | 5,791 | 1,789 | 1,289 | 533 | 2,188 | 4,477 | 9,218 | 1,927 | 800 | 11,936 | 47,275 | 11,075 |
| Acres (000) | 297 | 180 | 52 | | | | | | | | | 529 | |
| Income per Ac (£) | 9 2 | 23 1 | 19 4 | | | | | | | | | | |

* See footnote to Table A 6

TABLE A 9

SYSTEM (4) INPUT-OUTPUT TABLE FOR DOUBLE SUCKLING WITH DAIRYING CATTLE SOLD JUNE-JULY (£000)

| | Inter-Industry | | | | | | | | | Final Demand | | Output | F O B Value of Exports |
|--------------------|----------------|---------------|--------|--------|---------|------------------|-------------------------|--------------------------|----------------------------|--------------------------|--------------|--------|---------------------------------|
| | Cattle | Dairy- ing | Barley | Silage | Pasture | Grain Milling | Milk Pro- cessing | Animal Slaugh- ter | Other Inter- mediate | Other Indus- tries | Ex- ports | | |
| Cattle | 710 | | | | | | 4,068 | 7,292 600 | 3 | | | 7,295 | |
| Dairying | | | | | | | | | | | | 5,378 | |
| Barley | | | | | | 986 | | | | | | 986 | |
| Silage | 880 | 404 | | | | | | | | | | 1,284 | |
| Pasture | 379 | 199 | | | | | | | | | | 578 | |
| Grain Milling | 905 | 350 | | | | | | | | | | 1,255 | |
| Milk Processing | | | | | | | | | | | 4,160 | 4,160 | 1,758 |
| Animal Slaughter | | | | | | | | | 1,117 | | 7,722 | 8,839 | 7,502 |
| Other Intermediate | | | | | | 27 | | | | 745 | 1,022 | 1,794 | 1,022 |
| Primary Inputs | 691 | 563 | 471 | 1,387 | 692 | 182 | 992 | 893 | 348 | | 80 | 6,299 | |
| Susidies | | | -45 | -103 | -114 | | -1,246 | -503 | | | -1,600* | -3,611 | |
| Income Arising | 3,730 | 3,862 | 560 | | | 60 | 346 | 557 | 326 | | | 9,441 | |
| Total Inputs | 7,295 | 5,378 | 986 | 1,284 | 578 | 1,255 | 4,160 | 8,839 | 1,794 | 745 | 11,384 | 43,698 | 10,282 |
| Acres (000) | 333 | 167 | 29 | | | | | | | | | 529 | |
| Income per Ac (£) | 11 2 | 23 1 | 19 4 | | | | | | | | | | |

* See footnote to Table A 6

TABLE A 10
SYSTEM (5) INPUT-OUTPUT TABLE FOR SHEEP (£000)

| | Inter-Industry | | | | | | | Final Demand | | Output | F O B Value |
|---------------------|----------------|------------|------------|------------|---------------|------------------|--------------------|------------------|--------------|---------------|--------------|
| | Sheep | Barley | Hay | Pasture | Grain Milling | Animal Slaughter | Other Intermediate | Other Industries | Exports | | |
| Sheep | | | | | | 7,869 | | | 1,244 | 9,113 | 1,252 |
| Barley | | | | | 578 | | | | | 578 | |
| Hay | 297 | | | | | | | | | 297 | |
| Pasture | 826 | | | | | | | | | 826 | |
| Grain Milling | 656 | | | | | | | | | 656 | |
| Animal Slaughter | | | | | | | 1,734 | | 6,869 | 8,603 | 6,869 |
| Other Intermediate | | | | | | | | 1,193 | 1,582 | 2,775 | 1,582 |
| Primary Inputs | 790 | 276 | 318 | 989 | 50 | 617 | 538 | | 8 | 3,586 | |
| Subsidies | | -26 | -21 | -163 | | -520 | | | | -730 | |
| Income Arising | 6,544 | 328 | | | 28 | 637 | 503 | | | 8,040 | |
| Total Inputs | 9,113 | 578 | 297 | 826 | 656 | 8,603 | 2,775 | 1,193 | 9,703 | 33,744 | 9,703 |
| Acres (000) | 512 | 17 | | | | | | | | 529 | |
| Income per Ac (£) | 12.8 | 19.4 | | | | | | | | | |

NOTES ON INPUT OUTPUT TABLES

TABLE A 6 SYSTEM (1)—100,000 COWS IN 1968 (PRESENT SYSTEM)

Using 1968 yields it is estimated that the amount of very low priced milk exported in 1968 (49.5 million gallons) would be produced by about 100,000 cows and that these cows and their followers, including dry cattle for slaughter, would require about 529,000 acres of average land. The stocking rate worked out at about 2 acres per livestock unit. The financial flows for this system are set out in Table A 6 and the different sectors are described below commencing with the dairying sector.

Dairying Sector

After allowing for mortality of all cattle, cows and calves, it was estimated that 100,000 cows produce 85,000 cattle, either for replacement of the dairy herd or for sale as beef. Of these surviving cattle 69,000 are sold as fresh beef at the age of 2½ to 3 years and 16,000 replace a similar number of cows and bulls which are sold for dead meat also. The calves which ultimately go for dead meat are sold by the dairying sector to the cattle sector at an average price of £15 each. No value is placed on the calves retained in the dairying sector for replacements. These are netted out of the system.

The 100,000 dairy cows produce 53 million gallons of milk of which 3.5 million gallons are used for feeding calves and the remaining 49.5 million gallons are sold to the milk processing sector at 25.7d per gallon. Of the whole milk fed to calves 0.7 million gallons are used for replacement calves and is not valued. The remaining 2.8 million gallons are used for the beef calves and are valued at the sale price at 25.7d per gallon. This milk is assumed to be sold from the dairying sector to the cattle sector.

Milk processing returns 8.6 million gallons of skim milk to the dairying sector and retains the balance of some 40 million gallons. It pays the dairying sector for 31 million gallons at the rate of 2.75d per gallon and in accordance with traditional usage keeps the remainder free. Of the skim milk returned from the creamery 1.8 million gallons are fed to replacement calves and are not valued, while the remaining 6.8 million gallons are sold to the cattle sector at the creamery price of 2.75d per gallon.

The output value of the dairy herd is given in the dairying row of Table A 6. The figure in (£000) of 1437 in the cattle column of this row represents the value of calves and of whole and skim milk sold by dairying to the cattle sector. The figure of £5,652 in the milk processing column is the value of whole and skim milk sold to creameries, while the figure of £894 in the animal slaughter column is the value of old cows and bulls sold to meat factories. The prices used for the latter are the average prices paid by factories for such animals. All prices were supplied by the Central Statistics Office.

Inputs to the dairying sector are given in the dairying column of the table. The figures of 602 and 296 for silage and pasture respectively are the estimated amounts of these items consumed by cows and replacement calves valued at cost of production prices. The figure of 512 in the grain milling row is the estimated value of meals (at grain millers ex-store prices) consumed by dairy cows and replacements. Distribution margins on these meals are included in other primary inputs in the dairying column. Also included in primary inputs in the dairying column are rates on buildings, veterinary fees and medicines, transport and marketing costs etc. Subsidies are not included in the dairying column as they are not paid directly to farmers. The milk price allowance and quality bonus is included in the milk processing column, while the export subsidy which is paid to Bord Baine is included in the export column of the subsidy row. The figure of 5,736, for income arising in the dairying column, is the difference between total output and all inputs mentioned above.

The entry of 248 in the area row of the dairying column is the acreage of silage and pasture required by the dairy cows and followers. It is estimated that these animals require about 162,000 acres of pasture and 86,000 acres of silage, the latter acreage producing some grazing as well. The income of £23.1 per acre is obtained by dividing the income arising by the acreage of silage and pasture ($5,736/248 = 23.1$).

Cattle Sector

The entry of 5,651 in the animal slaughter column of the cattle row is the value in 69,000 fat cattle sold to animal slaughter, while the entry of 3 in the other intermediate industries column is the value of casualty hides of all animals sold to the fellmongery and tanning industry. Strictly speaking the casualty hides of cows and bulls should have been entered in the dairying row of the other industries column but their entry in the cattle row makes no significant difference to the results.

The inputs to the cattle sector as given in the cattle column are calves plus whole and skim milk purchased from dairying (1,437), silage (547), and pasture (325) valued at cost of production prices, and meals fed to cattle (532) valued at grain millers ex-store prices. The entry of 524 for primary inputs include the same items as for dairying while the entry of 2,289 for income arising is the difference between total output and all the above inputs. It is estimated that cattle required (in thousands of acres) 178 of pasture, 79 of silage and 14 of barley. When the income arising is divided by the area of pasture and silage we obtained the income per acre (i.e. $2,289/257 = 8.9$).

Barley Sector

The total acreage of barley is 24,000 acres. All produce except seed is assumed sold to grain milling. Average 1968 yield and output prices are used in obtaining the value of output. Seed is omitted from output and inputs, but since practically all barley seed is now sold off farms, distribution charges on seed are included as a cost.

Primary inputs of the barley sector include the latter cost together with land annuities, rates of land, fertilisers and other expenses based on data from various sources, mainly Foras Taluntais figures. The entries for land annuities and fertilisers include subsidies which are deducted in the subsidy row. Income arising per acre of barley is estimated at £19.4 per acre.

Silage and Pasture Sectors

It is assumed that each acre of silage yields about 27 cwt of barley equivalent, about 1 ton of this being silage and the remainder grazing. It is assumed that pasture yields just over one ton of barley equivalent per acre. All pasture and silage is used by the cattle and dairying sectors and hence no profits are included for these sectors. Primary inputs to these sectors consist of the same items as for barley, while subsidies are those on land annuities and fertilisers as in the case of barley.

Grain Milling Sector

The output value of 1,044 in the grain milling row is the value of the meals sold by grain milling to cattle and dairying. Inputs to the grain milling sector are, the value of the barley purchased from the barley sector, some minerals and supplements purchased from other industries and primary inputs, which include some imported soya bean meal. The magnitudes of the primary inputs, other than imports, and income arising in this and all the other non-farming intermediate sectors are based on the technical co-efficients in the O'Connor, Breslin 1964 agricultural input output Model¹.

Milk Processing Sector

The output of milk processing (5,511) is the estimated value of butter and skim milk powder exported to markets other than Britain and Northern Ireland at the prices which the creameries received for these items from Bord Baine. In the milk processing row is also given the f.o.b. export value of these items (2,157) for comparative purposes.

The inputs of milk processing are the values of the milk, whole and skim, purchased from dairying together with primary inputs and subsidies. As stated above these subsidies are the milk price allowance and the quality bonus paid to the creameries.

Animal Slaughter Sector

The output of the animal slaughter sector (7,336) is made up of exports of dead meat (6,405) and hides and offals sold to other intermediate industries (931). These are valued at prices received by the factories, which include subsidies. The subsidies on the dead meat, estimated at 484, are entered in the subsidy row of the animal slaughter column.

Other Intermediate Industries

These are an unspecified group of industries including fellmongery, tanning, fats and oils which purchase hides, skins, fats and offals from animal slaughter and sell products to exports and to other industries, not included in the intermediate sector of the table (mainly leather footwear). All the entries in the row and column of this sector are based on the 1964 input output co-efficients referred to above.

TABLE A.7—SYSTEM (2)—SINGLE SUCKLING

In constructing this and subsequent tables the same principles were adopted as for Table A.6. The land area was kept constant at 529,000 acres. Yields of all crops were taken as being the same, but the crop proportions were changed due to changed feed requirements.

The number of cows carried under System (2) was estimated at 138,000. From these about 100,000 cattle were available for sale as fresh or chilled beef at the age of 2 years, in March and April. The remainder other than mortality were assumed to go for herd replacement. At slaughter, bullocks were assumed to weigh 10-13 cwt. and heifers 8.75 cwt. liveweight.

Data on weights and feed requirements were obtained from Mr. M. Behan of the Department of Applied Agricultural Economics in University College Dublin, who also supplied similar data for double suckling and sheep production.

In making valuations cull cows and bulls were valued at prices paid by factories for such animals in 1953. Corresponding prices were, however, not available for the single sucklers. Fair or livestock mart prices were not very satisfactory either. When the animals were valued at the latter prices the value worked out much higher than the export value of the resulting beef even allowing for offals and subsidies. For this reason mart prices were not used in deriving the output values. Instead it was decided to work back from the f.o.b. export value of the meat, using as far as possible the 1964 input-output coefficients. These coefficients had, however, to be adjusted, particularly that for income arising in animal slaughtering, since meat factory incomes are always rather low in the early part of the year compared with the annual average, to which the 1964 coefficients relate.

In making the adjustments therefore, the income coefficient for animal slaughtering was reduced and that for cattle purchases was increased. This succeeded in bringing the output value of the cattle fairly well, though not fully, into line with valuations based on livestock mart prices.

TABLE A.8—SYSTEM (3)—DOUBLE SUCKLING WITH DAIRYING;
CATTLE SOLD MARCH-APRIL

In this system there were about 72,000 milking cows and about 58,000 suckling cows. All calves were born in March and April. Replacements (about 20,000 in all) were assumed to come from the milking cows and the balance of the surviving calves from these cows (about 46,000), were assumed to be sold for suckling at £15 each. In all about 90,000 double suckled cattle were assumed to be sold to meat factories at the age of 2 years. Of these 56,000 were bullocks and 34,000 were heifers. The double suckled bullocks were assumed to weigh 9.82 cwt. and the heifers 8.53 cwt. liveweight. They were valued in the same way as for the single sucklers, by working from the export values using adjusted 1964 input output coefficients.

TABLE A.9—SYSTEM 4—DOUBLE SUCKLING WITH DAIRYING.
CATTLE SOLD JUNE-JULY.

In this system the cattle were assumed to be born in March and April, and sold in June and July at the age of about 2½ years. Since they were fed for a longer period than in System (3) fewer cattle were carried. The number of milking cows worked out at about 67,000 and the number of double sucklers at about 54,000. The number of

double suckled cattle slaughtered for export was about 83,000 of which 52,000 were bullocks and 31,000 were heifers. They were assumed to be slaughtered at the same weights as those in System (3) but were valued at livestock mart prices, since these fitted in with export prices for fresh beef in those months. Since the cattle from this system were fattened off grass, they consumed much less barley than those sold in March and April, and in this particular case were more profitable than the latter from the individual farmer's point of view. This might not be the case in other years, however, because cattle prices declined much less than normal between March-April and June-July 1968, and could be expected to drop much more in other years.

TABLE A.10—SYSTEM (5)—SHEEP

In deriving the figures in this table it was assumed that 4 ewes and their lambs up to time of sale in summer were equivalent to one dairy cow.

Replacement sheep of different ages were on average taken to be equal to one-sixth of a dairy cow.^a Using these equivalents the number of ewes carried on 529,000 acres was estimated at about 883,000 and from these were sold 883,000 lambs and 221,000 cull ewes. The output value of lambs was taken at £7.79 each and of ewes £4. It was assumed that all the lambs and ewes would be exported in carcass form to Britain. The value of the lambs was obtained by working back from 1968 f.o.b. prices using carcass weights of about 44 lb. The price for cull ewes was worked out on the basis of information kindly supplied by Mr. P. Nolan, Dublin Meat Packers Ltd., Ballymun. The average price for wool was obtained from the Central Statistics Office and was taken as applying to long woolled breeds. Shorn wool was assumed to be exported directly by the sheep sector, but skin wool (wool on skins of slaughtered animals) was exported by other intermediate industries (i.e. fellmongery and tanning).