Odd Gulbrandsen and Assar Lindbeck: Swedish Agricultural Policy in an International Perspective

The postwar period has witnessed the gradual liberalization of world trade in industrial products. Parallel with this development, trade in agricultural products has been characterized by growing protectionism. This is particularly true of Western Europe. In the majority of West European countries agriculture is nowadays effectively protected from international competition, so that the non-European producers are to a large extent shut out of the West European market.

The level of price support in Western Europe

However, the form of protection applied varies significantly from country to country, depending on the weight attached in each individual country to tariffs, import duties, import licensing, market controls, deficiency payments and other subsidies to farmers. This makes it difficult to identify with any degree of exactness the size and importance of protection in the various countries. However, the protective measures are principally designed to keep up producer prices, irrespective of whether this is done through some form of protection at the border or through price subsidies to the farmers via the Budget. A relatively realistic measure of the level of protection can therefore be obtained through a comparison of the actual producer prices with the prices that would prevail if world market prices were used as a basis for pricing.[1] However, since world market prices would rise if domestic price support were removed in the whole of Western Europe, these figures give a somewhat exaggerated picture of the extent of the support. But as regards the development of the support over time, and the level of the support in one country in relation to other countries, this complication is of less importance.

Table 1 represents an attempt to give a rough idea of the level of price support in various highly developed countries in the world. The figures set out in the table refer to the years 1956—57 and 1963—64 and cover the major agricultural products (columns 1 and 2). According to these calculations, the price support applied in Western Europe as a whole would at present be of the order of 50 per cent, as against about 40 per cent in the middle of the 1950's. Two countries seem to have appreciably lower price

Table 1. Price support in certain countries
(percentages)

Country	Price support to agricultural products 1956—57	1963—64	Industrial tariffs 1960—62	Relative support to agriculture
Benelux	25	41	13	25
France	34	44	19	21
Western Germany	40	60	8	48
Italy	44	63	20	36
EEC	36	52	15	32
UK	47	31	19	10
Denmark	9	14	7	6
Norway	50	58	13	40
Sweden	40	60	8	48
Switzerland	76	84	9	69
Austria	30	27	18	8
Portugal	30	38	30	6
EFTA	40	36		
Finland	97	75		
Ireland	6	9		
Spain	40	36		
Greece	44	42		
Western Europe	38	47		
USA	21	18	21	— 2
Canada	25	12	16	— 3
Australia		0	20 à 40	—20 à 40
New Zealand		0	10 à 30	—10 à 30

Sources and methods of calculation: Price support for agricultural products refers to the average for wheat, sugar, milk, beef, pork and eggs and has been calculated on the basis of data on the producer price level in Western Europe (*Jordbruksekonomiska meddelanden* 7—8 1965, p. 241). As regards Sweden, the price support has been calculated at 40 per cent in 1956—57 and 60 per cent in 1963—64. For the USA, Canada, Australia and New Zealand the calculations have been based on data from national statistical sources. As weights, we have for West European countries used Western Europe's total production of the respective products and, as regards other countries, domestic production volumes. Industrial tariffs refer to the unweighted average for tariffs in 14 important commodity areas, covering chemicals, leather, rubber, timber and paper, textiles, stone and jewellery, machinery, building materials, clothes and instruments, according to Political and Economic Planning, *Atlantic Tariffs and Trade*, London 1962.

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[1] This measure of protection does not, however, include subsidies towards costs and special social welfare benefits (e.g., farmers' pensions). Such forms of support are of somewhat less importance in Sweden than in certain other West European countries (such as the EEC countries).

support than other West European countries, i.e., Ireland and Denmark, with price support in the range of 10—15 per cent. Sweden appears to be one of the countries with the highest level of support as well as with the fastest increase in the support. The UK is to be found among the few countries that have reduced agricultural price support somewhat since the middle of the 1950's. The new EEC policy can be expected to lead to some increase in the price level in 1968 for the EEC countries on average. However, Sweden can also be expected to register a rise in agricultural prices of at least the same size (nominally) up to 1968.

As regards the allocation of resources in the economy it is not the absolute level of price support that is important but its size in relation to the price support enjoyed by other industries. It is the relative rather than the absolute prices that steer the use of resources in a market economy. We have therefore included in the table tariffs on industrial products, referring to the period 1960—62. According to these rather approximate estimates, which should be used with great caution, the relative price support for agriculture (agricultural price support in relation to tariffs on industrial goods) would be of the order of 30 per cent for Western Europe as a whole. As industrial tariffs have been lowered since 1960—62, particularly *within* the trading blocs, more up-to-date figures would show a still higher relative price support for agricultural products.

According to the table, Switzerland, Western Germany and Sweden have the highest relative level of price support, while Denmark, Austria, Portugal and the UK have a low level. It is also interesting to note that the relative price support for agricultural produce in the USA and Canada, which has been included in the table for comparative purposes, seems to be zero per cent — perhaps even negative.

As regards the other major exporters of agricultural products, Australia and New Zealand, the relative support to agriculture is clearly negative. This is also true of a number of less developed countries with a large volume of agricultural exports.

Effects of West European protectionism on world trade

The main consequence of the highly protectionist policies practised in Western Europe is, of course, a restriction of international trade in agricultural products, which impedes an effective international division of labour. In the absence of these policies, the degree of self-sufficiency in Western Europe would no doubt have fallen significantly. Instead, it has risen somewhat.[1] As concerns food from agriculture we can estimate the present degree of self-sufficiency in Western Europe to be in the league of 90 per cent.[2] Since the 1930's Western Europe's net imports of agricultural products have virtually stood still, while total world trade in agricultural products has roughly doubled. The result has been that Western Europe's net imports as a percentage of world trade in agricultural products has dropped from 45 per cent in the 1930's to its present level of 25 per cent. (See Table 2.)

The exporting countries that have been hit hardest by the West European protectionism are partly advanced transoceanic countries (such as the USA, Canada, New

Table 2. World trade in agricultural products and Western Europe's import share

Commodity	Value of world exports in 1958—62 prices Billion dollars				Western Europe's net import share of world market Percentages			
	1934—38	1948—52	1958—62	1964—65	1934—38	1948—52	1958—62	1964—65
Wheat, rice and potatoes	2.1	2.2	2.9	4.2	40	43	24	12
Sugar and edible oils	2.1	2.1	3.1	3.3	44	47	40	39
Feed grain and oil cakes	0.8	0.6	1.4	2.1	91	76	71	56
Milk products	0.7	0.7	1.1	1.3	31	18	—2	0
Meat, pork and eggs	1.0	0.9	1.5	1.9	33	24	0	12
Total	6.7	6.5	10.0	12.8	45	42	29	25

Source: Quantities according to FAO (The State of Food and Agriculture 1965) have been multiplied by prices representing the averages of 1958—62 prices according to the same source.

[1] According to FAO, the degree of self-sufficiency (in value) for food from agriculture and horticulture has risen from almost 80 per cent in the middle of the 1950's to close on 85 per cent today. FAO, *The State of Food and Agriculture 1965*, Rome 1965, p. 32.

[2] Calculated on the basis of FAO's statistics. In international prices, Western Europe's consumption of agricultural products can be estimated to amount to $35 billion, while the value of net imports is about $3.5 billion (1964).

Zealand and Australia), and partly a large number of less developed countries, primarily in Latin America, Africa and South-East Asia. Not only have these countries' export volumes been curbed, but world market prices have also been squeezed. This applies with particular emphasis to the less developed countries. According to FAO estimates, the (nominal) price fall for the export products of these countries between 1952—54 and 1962—64, for instance, was in the range of 20 per cent; in relation to industrial products, the price fall is around 30 per cent. In order to shelter the West European agriculture from the sag in agricultural commodity prices, protection has been increased, which has reinforced the price drop on the world market. Sweden is perhaps the best example in this context of how a country can operate its domestic price policy: here, index rules have been introduced which automatically trigger increases in border protection as soon as world market prices dip in relation to the domestic price level.

The protectionist agricultural policies that have been pursued by the majority of West European countries are one of the reasons for the growth in the gap between the income standard of the industrialized countries and that of the less developed countries. The less developed countries have been frustrated in their efforts to participate in international trade in accordance with their comparative advantages. This has restricted their foreign exchange incomes and thus also their possibilities of carrying out industrial and social expansion programmes with the aid of imported capital goods. Agricultural products (including tropical products) can be estimated to account for roughly three-quarters of the developing countries' total export value (excluding fuels, which are of importance for only a few less developed countries), as compared with just over one-quarter for the rest of the world.[1]

The increased aid to the less developed countries has thus been counteracted by West European agricultural protectionism. For instance, the total flow of foreign exchange for aid purposes from Western Europe to the less developed countries is in the league of $2 billion (including loans).[2] By way of comparison it can be mentioned that, with unchanged world market prices, the less developed countries would receive foreign exchange incomes of the same magnitude if they could lift their share of Western Europe's consumption of agricultural products by 6 percentage units. In practice, it would suffice with a much smaller increase since a higher demand for imports by Western Europe would lead to a strengthening of world market prices. The products which the less developed countries are primarily interested in exporting are sugar, edible fats and beef.[3]

The West European agricultural protectionism, through its negative effect on income in the less developed countries, has also contributed to conserve the low level of foodstuffs consumption in these countries (the world famine). If the effective demand for food from the less developed countries were to increase, world market prices and thus also the production of agricultural products would increase, both in the highly developed exporting countries and in certain of the less developed countries. A development towards a higher standard of consumption in these latter countries can be further bolstered up by Western Europe helping the less developed countries in two ways. One is to assist them to make their own production and distribution of foodstuffs more effective. The other way is to finance part of the less developed countries' imports of certain foodstuffs. That would mean that a number of less developed countries would be exporters of some agricultural products, such as sugar and edible oils, and importers of other agricultural products, such as grain. However, if such

[1] FAO, *Trade in Agricultural Commodities in the United Nations Development Decade*. Vol. I, Part I, Rome 1964, p. 3.

[2] OECD, *The Flow of Financial Resources to Less-Developed Countries*, Section IV, Paris 1964. If private capital movements are included, the flow of capital from Western Europe is in the amount of $4 billion.

[3] The extent to which the less developed countries' export receipts would increase under conditions of free trade in Western Europe depends, *inter alia*, on how far world market prices would rise as a result of the subsequent rise in demand for agricultural products by Western Europe.

A study made by R. H. Snape suggests that the price rise for, e.g., sugar would be between 33 and 50 per cent for the world market price not bound by contract, i.e., about 15—20 per cent for the average export price. (R. H. Snape, Some Effects of Protection in World Sugar Industry, *Economica*, Vol. XXX (1963), p. 63—73.) If Western Europe abolished the support to the domestic sugar industry and all beet production in Western Europe were discontinued, it can be estimated that — with the above-mentioned price increases — the less developed countries' total export receipts from sugar would rise by about $1—1.5 billion.

This calculation is based on the following assumptions: Western Europe's sugar production — 8,000 million kg.; present world exports — 15,000 million kg.; world market price — 12 cents per kg. prior to the removal of protection.

help is to be as effective as possible in relation to the effort made, it is necessary that the countries participating in the financing of this activity are willing to let the purchases of the foodstuffs be made in those countries that can produce them most cheaply. As a rule, these are not West European countries, and certainly not countries with such high production costs as in Sweden. From this viewpoint, it is of course entirely rational that shipments of foodstuffs to the developing countries should, as has been the case hitherto, mainly consist of grain from the USA. On the other hand, it is far from self-evident that the USA should continue to bear the costs of this production alone.

It is often argued in defence of protectionism in Western Europe that such measures are necessary on account of the dumping character of the world market. However, if we look at actual conditions, we find that this description of the world market for agricultural products mainly refers to the practices of West European countries on this market. To some extent, the USA has also been a dumping exporter, particularly at the beginning of the 1950's. However, with a view to reducing surplus stocks, the USA has in recent years shown a growing tendency to bring its domestic price level into line with world market prices, particularly as regards its most important export products such as grain. As has been pointed out earlier, it can nowadays hardly be said that agriculture in the USA and Canada enjoys any special support in comparison with other industries (Table 1). With regard to the other major exporters, for the most part transoceanic countries, these have in the main had to base their domestic production planning on the world market prices. As can be seen in Table 3, the transoceanic countries account for the largest share of world exports of edible oils, wheat, sugar, fodder grain, beef and butter; together, these products comprise more than 80 per cent of world trade in agricultural foodstuffs (excluding tropical products and fruit). Moreover, as regards the first three products, world trade represents a substantial part of world production (20—30 per cent).

The conclusion to be drawn is that the world market is not, as is often claimed, composed of small dumping shipments. It is characterized by large volumes that are chiefly sold by countries other than those which, from time to time, "throw out" dumping lots that have resulted from the domestic production support being excessively high in relation to domestic demand.

Sweden's place on the world market

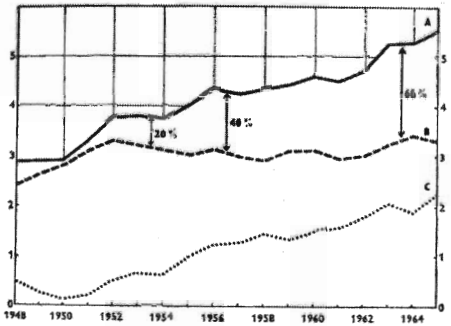
As we have seen, Sweden is an exponent of the far-reaching protectionism widely practised in Western Europe. Sweden's position as a distinctly protectionist country comes particularly to the fore when comparing with its, in other respects, liberal trading policy (Table 1). Through the policy of agricultural protection, the price development for Swedish farm products has deviated markedly from the development of world market prices. From a level of about 20 per cent at the beginning of the 1950's, protection at the border has gradually been raised to its present 60 per cent. The extra cost of not buying the agricultural products on the world market has thus become increasingly high. While this additional cost was roughly Kr. 500 million at the beginning of the 1950's, it today amounts to about Kr. 2,000 million.[1] (See Chart 1).

Despite this high protective wall around Swedish agriculture, output has by and large remained at an unchanged level since the beginning of the 1950's; this is in contrast to the situation in all other West European countries, where production has shown appreciable increases. This is not mainly due to any conscious action on the part of the Swedish authorities to restrict production. One of the reasons is instead that the availability of well-paid employment in other industries have been good during the whole of the postwar period, and this has stimulated the movement of labour out of agriculture. In spite of the heavy price support, profitability (compensation per factor input) in agriculture is now on average slightly less than half of that noted by other industries. Expressing this phenomenon in another way, we can say that the relatively rapid transfer of productive resources from agriculture to other industries has increased the possibilities of pursuing a protectionist agricultural policy. If the alternative work possibilities for the factors of production had been fewer, the efforts to raise price protection would have called forth an increase in production which would have had to be sold on the world market, and would thus have necessitated the exercise of restraint in respect to price support. The degree of self-sufficiency (in value) has also been mainly unchanged, and has at any rate not fallen; it is at present

[1] Since world market prices for certain products might go up somewhat if Sweden purchased the whole of its consumption of agricultural products abroad, these figures rather overestimate the extra cost.

Chart 1. Extra cost (at the wholesale price level) for the consumption of agricultural products on account of border protection
(Kr. billion)

A = domestic consumption in Swedish prices
B = » » in world market prices
C = A — B = extra cost of domestic consumption



Sources and methods of calculation: A: Wholesale prices according to the Agricultural Marketing Board. B: World market prices according to FAO. Values calculated in 1964 quantities.

about 90 per cent of the consumption value of agricultural products.[1]

For a small country like Sweden, the world market must be accepted as a given fact for our domestic agricultural policy. This is especially the case with products such as wheat, sugar and edible oils (see Table 3). For such products, even drastic changes in Swedish imports would have virtually no effect on the world market situation, although Swedish imports might be quite important for individual exporting countries. For instance, certain less developed countries could sell more sugar and edible oils to us if Swedish production of sugar beet and edible fats (butter) were cut back.[2] For other products such as pork, eggs and potatoes, there might be some price increases on the world market if we purchased a high proportion of our consumption abroad.

[1] Calculated as the value of domestic production divided by net imports plus the value of domestic production, all measurements in world market prices.

Table 3. Breakdown of world trade for selected agricultural products, 1964[1]

Commodity	Exports from transoceanic countries and less developed countries (percentage of world trade)	Sweden's consumption	World trade as a percentage of world production
Edible oils	94	2	27
Wheat	91	1	22
Sugar	90	2	24
Feed grain	85	10	8
Meat	67	8	7
Butter	63	11	..
Pork	40	21	3
Cheese	30	11	..
Potatoes	29	27	..
Eggs	22	40	2

[1] Excluding China.

Sources: FAO, *The State of Food and Agriculture 1965*, Annex Tables, Rome 1965. *Jordbruksekonomiska meddelanden 1965*, Stockholm 1965.

Postwar agricultural policy in Sweden[3]

As in other West European countries, it is primarily incomes policy and supply policy considerations that have underlain the high and rising protection in the agricultural sector. As far as Sweden is concerned, the aim of agricultural policy has been to guarantee the farmers "income parity" with other groups of society. Ever since 1947 the objective has been to operate government price support so as to give the factors of production, labour and capital, the same return in agriculture as in other industries. In practice, this income objective has been formulated in such a way that the so-called "base farmers", flat-land farmers with holdings of 10—20 hectares, should receive the same *labour income* (i.e., income after deduction of the required return on capital) as industrial workers (in the cheaper cost-of-living localities). Since the farmers' labour income is less than half of the total family income from farming

[2] The discontinuation of Swedish sugar production would increase the foreign exchange incomes of sugar exporters by about Kr. 150 million, with the international prices which (on average) have prevailed over the past fifteen years. This amount is between one-third and one-half of Sweden's total aid to the less developed countries (1966).

[3] For a detailed discussion of the problems of agricultural policy, see Odd Gulbrandsen and Assar Lindbeck, *Jordbrukspolitiken, mål och medel* (Goals and Means in Agricultural Policy), Stockholm 1966.

this income target cannot primarily be considered to be a socially justified objective for the living standards of the agricultural population, but rather as a sort of objective for the factor return of the farm business: "government-guaranteed profitability".

If this target in respect to labour income had been achieved, the standard-of-living of the "base farmers" would have been considerably higher than that of industrial workers, since the latter's income from capital is negligible. In practice, however, this objective has never been fully realized, except possibly during a short period at the beginning of the 1950's. Over the past decade the difference between the industrial worker's income from work and the farmer's estimated income from work has, in fact, successively increased so that an "incomes gap" in the league of Kr. 6—9,000 ($ 1,200—1,700) has gradually arisen. (See Chart 2.)

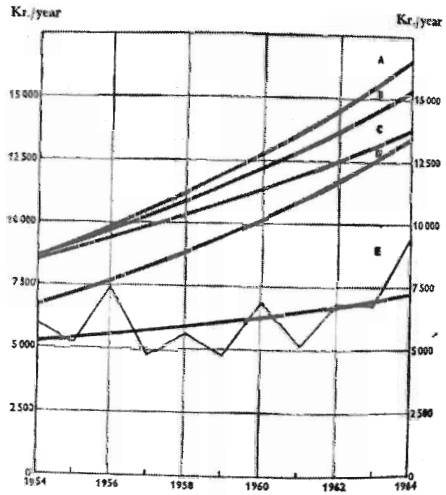
This expanded gap between the labour *income* from work of the "base farmer" and the industrial worker is chiefly due to the fact that a growing proportion of the farm business's total incomes is, in the official income comparisons, classified as labour *income* from work for the family members and income from capital for the farmer.[1] As can be seen in Chart 2, the total incomes of the "base farmers" (curves A and C) have developed roughly parallel with the wage incomes of industrial workers (curve B), despite the fact that the estimated labour income for farmers has lagged behind. Nor is there, according to available statistics, any marked difference between the standards of consumption enjoyed by the "base farmer" and the industrial worker.

In summary, it can be said of the results of the agricultural incomes policy that the incomes target, formulated as a factor return target, has not been attained by a long

Chart 2. Income development, 1954—1964

A = "base farmer's" income including capital gains
B = industrial worker's wage income
C = "base farmer's" income excluding capital gains
D = farm worker's wage income
E = "base farmer's" income from work

= trend
= observed income



Sources: Swedish farm accounts, *Lantbrukstyrelsens meddelanden*, B series. Industrial and farm worker wages according to *Löner*, SOS.
The data for farmers refer to the plains of southern and central Sweden. The trend and capital gains calculations have been made by the authors.

chalk; nonetheless, the "base farmer's" total income and standard of consumption are roughly on the same level as the industrial worker's. The price support has naturally also meant a great deal for incomes on the majority of farms that have been below the level of the "base farm". The agricultural policy pursued has thereby prevented a "proletarization" of rural Sweden. This aspect of the policy was particularly important earlier, when there were limited possibilities of obtaining alternative employment in other industries.

[1] This is partly because the labour income of the family members have been calculated on the basis of farm labourer wages, which have risen relatively steeply, and partly because of an increase in the yield requirements on the farmer's capital used in the calculations. The latter is a result of the successive increases in the interest level and an increase in the wealth of farmers. It can be mentioned that while the labour income of the "base farmer" has risen from Kr. 5,000 to Kr. 7,000 between 1954 and 1964 (trend-wise), both the estimated labour income of the family members and the farmer's estimated income from capital have increased from Kr. 3,500 to Kr. 8,500. The farmer's net wealth at market prices has risen over the same period from Kr. 77,000 to Kr. 121,000.

Problems encountered by postwar agricultural policy

It has proved to be very difficult to tie price policy to a fixed profitability target. One of the reasons for this is that increases in the value of farm property tend to lower the estimated labour income used in the comparisons. This mechanism can be illustrated in the following way. Let us assume that there is a gap between the labour income of the industrial worker and the "base farmer". Should there then be an increase in the value of farm land, e.g., through the expansion of built-up areas, expectations of inflation or some other factor, there will be a rise in the farmer's yield requirements (capital income) used in the official calculations. In the incomes comparison, the amount to be deducted from the farmer's total income (to arrive at the labour income) will thus increase; as a result, the labour income will decrease. As the farmers get richer, the incomes gap will thus widen!

The same phenomenon occurs when the price support is raised with a view to closing a gap in labour income. In this case, the increased price support will gradually be capitalized in the market value of farm properties through people being willing to pay more than before for such properties. This means that the capital income requirement will gradually rise, so that the intended increase in labour income does not materialize. It is therefore easy to understand why it has proved impossible, despite strongly rising price support, to bridge the incomes gap.

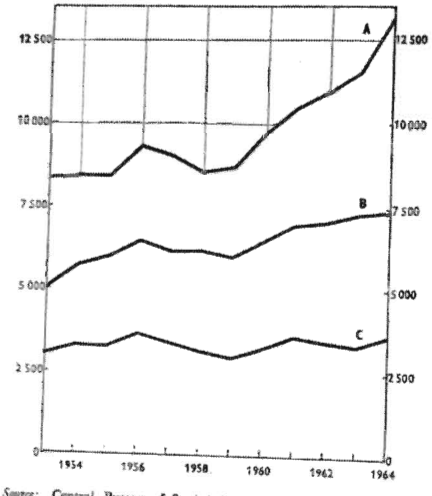
A policy that is primarily designed to maintain farm incomes naturally entails the risk that the contraction of the agricultural sector, and the transformation of the business structure in farming, will be delayed. The authorities were aware of this problem when the 1947 policy was drafted. It was partly because of this that such importance was attached to administrative actions on the part of the Government to rationalize the industry — so-called administrative rationalization through the regional agencies of the Agricultural Board, the methods being government credit assistance, investment allowances, government control of land purchases, etc. The market mechanism was to some extent to be replaced by an administrative process as far as the rationalization of agriculture was concerned.

The fears that the structural changes would be slow were substantiated beyond any doubt, particularly during the first postwar decade. The problem was accentuated by the fact that, in practice, the administrative rationalization measures instituted by the Government worked against the establishment of large farming units. This was because the authorities channelled land to small holdings with a view to creating units of a size of 10—20 hectares. According to available statistics, in the space of twenty years — from 1945 to 1965 — the average farmholding increased by no more than 4 hectares, from 12 to 16 hectares. Although these figures somewhat underestimate actual development on account of a number of unregistered leases, the pace of structural change is hardly impressive.

However, the transformation of the agricultural sector has been accelerated as from the middle of the 1950's, and even more so from the beginning of the 1960's. This must be associated with the authorities' failure in their efforts to give the factors of production in agriculture the same profitability as in other industries. As has already been mentioned, profitability in agriculture started to lag more and more behind other industries as from around the middle of the 1950's. The reasons for this are, firstly, that from this time net productivity did not rise at quite the same pace as earlier in relation to, e.g., industry; secondly, that the domestic price development was less favourable than earlier for agriculture. Despite rising import duties, producer prices for agricultural products rose as from the middle of the 1950's at a somewhat slower rate than the general price level (consumer price index) in the country. (This is in contrast to the immediately preceding decades, when agricultural prices moved up strongly in relation to the consumer price index.) The result of this development was that incomes on small holdings, 2—10 hectares for instance, came to be very low both in relation to the economy as a whole and in relation to farms of other sizes. (See Chart 3.) The small farmers have, however, been able to obtain some compensation for this through doing more work outside the farm business. Since profitability, i.e., the factor compensation per factor input on the "base farms" has also been unable to keep in step with profitability in other industries, the establishment of new farms in this size class, too, has become less attractive than earlier. And this despite the fact that already established farmers with holdings of this size have been able to hold their own relatively well (Chart 2). So far, though, it is mainly farms in the 2—10 hectare group that have been shut down.

Chart 3. Assessed incomes from farming in the smaller size-classes, 1953—1964
(farms on the plaint of southern and central Sweden; kronor a year)

A = all size-classes
B = 5—10 hectare class
C = 2—5 » »



Source: Central Bureau of Statistics' sample survey of farmers' tax returns.

Agricultural policy objectives

Despite rapidly rising price support, the profitability target set up has thus not been attained. The question is how to formulate a more effective agricultural policy. To answer this question, we must first of all identify the aims of agricultural policy. When discussing future agricultural policy in Sweden, we should be able to assume the following three major objectives: (1) the effective use of the available resources in the economy (the efficiency objective); (2) the security of foodstuffs supplies having regard to the risk of a blockade (the production objective); (3) a certain standard-of-living for the agricultural population (the incomes objective).

The production objective can be regarded as a restriction on the efficiency objective. It is a question of to what extent factors of production need to be kept in agriculture so that the supply of foodstuffs can be sustained in the event of a blockade. The answer to such a question will naturally be largely contingent on the type of blockade that might be expected. It is generally assumed that we should plan for a blockade extending over a period of several years — an alternative entailing a relatively high level of emergency foodstuff supplies. Calculating on the basis of a three-year blockade, for instance, we find that an arable area of about 2 million hectares, against today's 3.2 million hectares, would be sufficient to cover emergency supplies.[1]

The next question relates to the structure of the agricultural sector under the assumption of a sector of this size. For rather efficient production, it is today necessary for farms to be sized within the range of 100—200 hectares as far as vegetable produce is concerned. If we then aim at an arable area of 2 million hectares, and at farms averaging 100 hectares of cultivated land, 20,000 farm units — as against the present number of 150—200,000 (with more than 2 hectares of arable land) — would thus be sufficient to cover the emergency supply situation. This would mean that almost nine out of ten of today's farms would have to disappear as independent units. Since three workers per farm are sufficient with the aforementioned size of farms, the supply of labour to the agricultural industry would have to be in the range of 60,000 workers, as against 200—250,000 today.[2] It can be estimated that domestic production in peacetime with this input of resources would correspond to 65—70 per cent of peacetime consumption of agricultural products (in terms of value), as compared with today's figure of more than 90 per cent.[1] And this production would thus be sufficient to meet an emergency situation, due to emergency stocks and changes in the composition of output in the case of a blockade.

A central question is whether the present development tendencies in the agricultural sector will lead to such an industrial structure in agriculture within the foreseeable future. If we, for instance, wish to attain such a target within a decade, this would require a reduction in the total area of arable land by about 120,000 hectares per year, and in the number of farmers by roughly 13—18,000 a year. This can be compared with the figures noted in the past few years of about 50,000 hectares and about 10,000 farmers annually. With this rate, the arable area would after a decade, i.e., in 1976, still be around 2.8 million hectares and the number of farm units 50—100,000; the average size of a farmholding would thus be 30—50 hectares. Even with this rate, which is roughly twice as high as that noted for the postwar period as a whole,[2] the objectives discussed would thus be a long way from fulfilment in the middle of the 1970's. There would still be considerable overcapacity and the structure of the industry would hardly be effective.

On the other hand, the rate at which workers have hitherto left the agricultural sector, 20,000 a year, is sufficient to bring down the labour force within a decade to what is required for an effective "emergency-oriented" agriculture. However, a problem is that it can be difficult to maintain the rate hitherto recorded for the number of workers leaving the agricultural sector. In a few years manpower in agriculture will primarily consist of the farmers themselves. This means that the further withdrawal of labour from this sector will be determined by the number of farmers leaving the industry. If the present rate of decrease in the agricultural labour force is to be maintained in the future, a significant increase will be necessary in the number of farmers leaving their holdings — and consequently an accelerated closure of farming units.

[1] If no assumption is made regarding a substantial increase in the yield per hectare, sizeable emergency stocks will be necessary in this case. In our calculations we have assumed that half the requirements of grain and the total requirements of sugar will be stored, which — with today's prices — is very favourable economically. With the higher yield per hectare that could be possible with the optimal use of known techniques, 2 million hectares would suffice even without any marked increase in emergency stocks. (This naturally means that, with the optimal use of known techniques *and* increased stocks, less than 2 million hectares would be technically sufficient to cover emergency supplies.)

[2] In addition, it would be necessary to have a stock of capital (excluding land) in the amount of Kr. 12 billion. It is extremely difficult to estimate the value of the present stock of capital; based on replacement values, it is probably in the neighbourhood of Kr. 30 billion.

[1] The report of the government committee on agricultural policy, published in the spring of 1966, has proposed a lowering of the degree of self-sufficiency, expressed in calories, from the present figure of about 95 per cent to 80 per cent before the end of the 1970's. *Den framtida jordbrukspolitiken*, SOU 1966: 30 and 31, Stockholm 1966.

[2] During the postwar period as a whole about 20,000 hectares a year have been taken out of cultivation, and about 5,000 farms have been shut down annually.

Agricultural policy means

There are three primary means available to future agricultural policy: (1) price policy; (2) measures to stimulate the mobility of the factors of production; (3) administrative rationalization activities on the part of the Government. Since, in the long run, it is incomes and profitability that steer development in agriculture, as in other industries, it is first of all of interest to ascertain the price level that would be required in order to bring about a certain desirable contraction of production and structural transformation in the agricultural sector. However, the possibilities of identifying that price level are very limited. Consequently, as in other areas of economic policy, the trial and error method must be applied in practice. Besides, the price policy required will be contingent on the other measures that are concurrently being adopted. The more the mobility of the factors of production can be increased, e.g., through labour market policy actions and government rationalization measures, the smaller the price reduction required to bring about a certain structural change or contraction of productive capacity in the agricultural sector.

The effects on agricultural incomes of a reduction in real prices (i.e., prices on agricultural products in relation to the general consumer price index) will depend upon, among other things, how productivity in agriculture develops in the future. A reduction in real prices of, say, 1 or 2 per cent a year would certainly be compatible with a continued rise in the incomes of the agricultural population, this on account of the possible future increases in productivity. An incomes lag would arise, however, in relation to other groups in the economy. The farther such a price reduction is carried, the greater will be the number of farmers — particularly those operating small and weak holdings — who fall below the income level necessary for them to be willing to stay in the industry. The accelerated closure of farms that would subsequently arise would lead to an increase in the supply of land and thus have a depressive effect on land prices. This is of central importance for the structural development of agriculture, since the movement towards bigger units generally requires that existing farms release land, which is of course a bottleneck in the amalgamation process.

When trying to identify the effects on the incomes of the farmer's family, it is necessary to take into account wages

Table 4. The effect of price reductions on income development in agricultural enterprises of varying sizes (after deduction of remuneration to hired labour). A numerical example
(annual percentage change)

Arable land, hectares	Net productivity of labour[1]	Hourly income of farmer's family if annual price reduction of 0.5 %	1.0 %	1.5 %
2—5	1.3	0.6	—0.2	—1.1
5—10	3.0	2.6	1.6	0.5
10—20	2.8	2.0	0.6	—1.0
20—30	3.2	1.5	0.0	—1.8
30—50	3.9	2.0	0.4	—1.4
50—100	5.6	4.2	2.4	0.4
more than 100	7.0	7.7	5.3	2.3
Average with assumed structural change	6.8	5.7	4.1	2.4

[1] Value added per labour input after deducting depreciation of machinery.

Source and methods of calculation: Data from the Central Bureau of Statistics' sample survey of tax returns submitted by farmers operating on the plains of southern and central Sweden. Assumptions: the same development in each size-group as during the 1954—64 period for the volume of production, input of labour, factor return at constant prices and for prices of consumable and capital goods (a decrease in real prices of 0.5 per cent a year). The input of borrowed capital has been assumed to increase at the same rate per decreased labour input as during the past ten-year period. The process of structural change in agriculture (farms moving up into large size-groups) has been assumed to advance at the same pace as during the past five-year period. The assumed increase in real wages for agricultural workers is 3 per cent, the assumed real interest rate on debts 5 per cent.

to labour hired by the farmer. Some light is thrown on this question in Table 4, showing the effects on the incomes of the farmer's family of a decrease in real prices in combination with a continued rise in productivity following the same trend as in previous years. (Real wages to labour employed by the farmer have been assumed to rise by 3 per cent a year.) The table is based on the assumption that the farmer has not been able to pass on to his employed manpower any part of the reduction in real prices. Nor has any account been taken of the farmer's possibilities of obtaining compensation for the price reduction when buying land at lower land prices. (Earlier established farmers will of course be hit by capital losses.) To the extent this occurs, the table underestimates the possibilities that the growing farms have of increasing incomes, since these units use proportionally more hired labour and land than small units. However, even if the price reduction cannot be passed on to hired labour and land, the large farms would — according to the table — hold their position relatively well in comparison with smaller farms due to the possibilities of a faster rise in productivity.[1] Although the table should be interpreted with a good deal of reservation, it can give some idea of the relationship between the development of real prices and incomes for farmer's families at farms of various sizes. Farmers who move from a smaller to a bigger farm can naturally experience a more favourable income development than that indicated for the various size-classes.[2]

If a sterner line is followed, with much sharper reductions in real prices, then the structural changes will indisputably be further accelerated. In such a case, however, these developments will be accompanied by falling incomes and capital losses for the larger units, too. In extreme cases, it is conceivable that there might be a good number of bankruptcies, after which the farms would have to be financially reconstructed by new owners and at lower capital values.

A steep reduction in real prices, designed to contract the agricultural sector and accelerate the structural transformation of the industry, would of course gradually accentuate the social income problems already existing today, especially as regards small farmers in debt. However, if we do not wish to abandon the efforts to step up effectivity, it will be necessary to rely heavily on methods other than price policy to maintain the standard-of-living for these groups: labour market policy in order to help young and middle-aged workers move into other industries, and social policy to help older farmers.

[1] This tendency will naturally be more pronounced if wages to hired labour are not deducted.

[2] The income development for large farms computed in the table is a good deal more favourable than that registered over the past decade. This is no doubt chiefly due to three factors: (1) real wages for agricultural workers have risen at a much faster rate than 3 per cent a year over the past decade; (2) the volume of labour was considerably greater during the past decade than will be the case in the coming decade; (3) prices showed a relatively unfavourable development over the past decade for those products produced by large farms.

Gains from reduced productive capacity and structural changes

What real prices are required then, with the above-discussed degree of effectivity, to keep productive capacity in the long run at the level needed to meet an emergency situation? One way of probing this question is to try to estimate the alternative value of the factors of production needed to realize the production goal (i.e., the value of these factors in other sectors). We have estimated this value at roughly Kr. 3,000 million. The sum of Kr. 2,200 million has been estimated to be the cost of importing those agricultural products that would no longer be produced domestically if the aforementioned factors were moved into other industries. Assume that in the long run the alternative value of the factors is equal to the factor return that induces the required amount of factors of production to stay in agriculture. In this case, the price support would, according to our calculations, need to be in the neighbourhood of 40 per cent in an effectively organized agricultural sector. This would involve a price reduction of just over 15 per cent, which could be effected over about 15 years through a decrease in real prices of 1 per cent a year, provided that price relationships otherwise do not change.

The difference between the above alternative value of the factors of production (Kr. 3,000 million) and the cost of imports (Kr. 2,200 million) provides, together with the cost of emergency stocks, a measure of the costs to the economy of an "emergency-oriented" agricultural sector. Our calculations assume the heavy storage of sugar and grain, as well as some stocks of edible oils and fertilizers, at a total annual cost of about Kr. 300 million. Altogether, therefore, the costs to the economy of such a programme would be in the amount of Kr. 1,000 million (3,000 — 2,200 + 300 million) in an effectively organized agricultural industry.

This figure of Kr. 1,000 million should be compared with the costs of present agricultural production. These costs are very much higher. In order to be able to estimate the costs to the economy of the current agricultural policy, it is first of all necessary to assess the extent to which agricultural output would fall off if protection were removed. With the aid of estimated long-run supply functions for the agricultural sector, we have calculated that 2—2.5 million hectares (of the present 3.2 million) and 4/5ths of the agricultural labour force (200—250,000 workers today) would in the long run be released if protection were withdrawn completely.

The next step in the analysis is to try to estimate how much the national income could be raised through transferring the released factors of production into other industries. A very rough estimate suggests that an increase in the national income of Kr. 4,000 millon would be feasible. The very schematic method of calculation we have used here has simply been to multiply the number of transferred workers by the difference in the value added per worker between agriculture and other industries, measured in international prices.[1] Measured in domestic prices, the productivity of labour in agriculture is about half as high as in other industries; in international prices, about a quarter as high.

This figure of Kr. 4 billion is larger than the previously mentioned "extra cost" (Chart 1) of not buying the agricultural products on the world market (Kr. 2 billion). The reason why this extra cost underestimates the cost to the economy of agricultural protection, is that this figure does not take into account the gains accruing to the economy through the transfer of factors of production from agriculture to other industries at the prices actually prevailing in the country. If these transfer gains are also taken into consideration, we arrive at the figure earlier indicated of about Kr. 4 billion.

If we work out the difference between the present cost to the economy of Kr. 4 billion and the *amount* of Kr. 1 billion which — according to our calculations — would be required for an emergency agricultural programme in a relatively effective farm sector, we arrive at a measure

[1] The productivity of labour, or value added per worker, presently averages around Kr. 33,000 in other industries, as against roughly Kr. 14—18,000 in agriculture. In international prices, which is the relevant price level in an analysis of efficiency, the value added per worker in agriculture is only about Kr. 6—8,000, compared with approximately Kr. 30,000 for other industries. The labour productivity gives a fairly good picture of the difference in productivity between the two sectors since the use of real capital per worker is of roughly the same size in both sectors. The calculations should really refer to marginal productivity instead of average productivity. The difference between agriculture and other industries would then be still greater. On the other hand, as has been mentioned earlier, world market prices would increase somewhat if Sweden satisfied its total agricultural consumption requirements by means of imports.

of the long-term gains to the economy that can be derived from a smaller and more effective emergency agricultural industry. This amount, Kr. 3 billion, is chiefly intended to indicate the magnitude of possible gains. Estimates of this kind must necessarily be very approximate.

It is important to stress that the whole gain can be achieved only in the long run. Owing to the age structure in agriculture, the whole of the theoretical gain can only be realized in connection with a shift in generations in agriculture. However, as there are at present (1966) around 70,000 farmers under 50 years of age, and about 85,000 between 50 and 66 years of age, a considerable transfer of labour can be effected within a relatively short time period. But as regards the roughly 30,000 farmers who are more than 66 years old, and a substantial number of those in the age-group of 50—66 years, we cannot expect the theoretical transfer gains to be completely realized other than in connection with the retirement of the old generation, naturally under the assumption that the establishment of new farmers is not larger than needed in the long run.

The construction of price support

According to our calculations, it would thus not be possible completely to abolish protectionism for Swedish agriculture in the foreseeable future, and at the same time have an agricultural sector that is prepared to meet an emergency situation. Only if world market prices rose steeply in the long run would it be possible to lower domestic prices to the world market level. As long as this does not occur, we have the problem of how to distribute the price support among different products. If the composition of domestic agricultural production is to be stimulated into the most effective pattern possible, the theoretically optimal policy is to make the price support of the same percentage height for all agricultural products.[1]

From this aspect, price support is today too high for the important world trading products of sugar and wheat, and too low for such products as pork and oil-plants. However, since butter is heavily subsidized with the aid of profits from a high level of price support for other milk products, imports of edible oils are curbed. If uniform price support is to be implemented for agricultural products, it is therefore the price support for sugar, grain and milk that should — in connection with a general decrease in real prices — be reduced in the first place.

As in most West European countries, price support in Sweden has been formulated in accordance with a "high price line": the home market prices are kept above world market prices by means of protection at the border. The alternative is a "low price line", under which the world market prices are accepted domestically, but with the farmers being given price subsidies (via the Budget) on products produced (and/or perhaps other subsidies). One of the consequences of a high price line is that the price support must be applied at the stage of distribution of the agricultural products when they are shipped out into international trade. This means that the proctection at the border must to a large extent be applied to processed products, and not to pure agricultural products produced by agricultural enterprises. As an example, it can be mentioned that price support under a true high price line is not applied to milk delivered from the agricultural enterprises ("producer milk") but to the processed products that are traded internationally, such as butter and cheese. This means that, under a high price line, the price regulations will cover a large part of the foodstuffs industry and not only the agricultural sector, despite the fact that the controls are really intended to apply only to agriculture itself. Consequently, it is not only agriculture that is sheltered from competition, but also a substantial proportion of the food processing industry which has hereby often found itself in a position approaching monopoly. This is avoided through using a low price line, since the support is then given directly to agriculture.

Another effect of the high price line is that the consumer price of foodstuffs climbs steeply in relation to the prices of other products, which is not the case with a low price line. This means that price support to agriculture not only leads to a reduction in real incomes for the consumer, which is also the consequence of a low price line, but also that foodstuffs become much more expensive in relation to other goods. The result will be both a lower consumption standard for foodstuffs (than would be the case under a low price line) and a redistribution of incomes to the detriment of lower income-earners, since the share of this group's total consumption outlays that is spent

[1] However, it is generally not profitable to produce a surplus of a commodity if this surplus, owing to quantitative import restrictions in other countries, is impossible to sell.