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No 2

The Structural transformation
in Swedish agriculture and migration 1750-1970

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The structural transformation in Swedish
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by

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Stockholm 1959

Industriens Utredningsinstitut

Swedish agriculture finds itself in a precarious situation

During the last decade the changes in the outer structure of Swedish agriculture have grown in significance. The rationalization of farm production has placed a considerable section of agriculture in a position necessitating the demolition of actual farm structure in order to permit a continuing adjustment to the economic development. The level of costs, particularly labour costs, is being forced up, while at the same time the level of income is being held back by the limited availability of markets and low export prices. Formerly the farms have been able to adapt themselves, especially through savings effected in employed labour. The fact that this adjustment has become more difficult in recent years is evident from the surplus situation that arose at the end of the 1940s and has persisted ever since. The position is such that so large a number of farms have become one-man enterprises that any additional saving of labour involves the closing-down of farms on an extensive scale. It is probably, therefore, no exaggeration to assert that it is the farm structure that today constitutes the main problem in Swedish agriculture. It is in the light of the above facts that a survey will be given here of the structural problem facing Swedish agriculture, and the questions of migration connected therewith. This survey is based partly on an investigation, a report of which was published in 1957 by the Institute¹⁾, and partly on subsequent material obtained by the Royal Central Bureau of Statistics and the Agricultural Research Institute. The problem of the small farms is an international phenomenon, so that the analysis that will be presented here is likely, on a number of points, to be of general application. On the other hand, the issues involved are characterized by specifically Swedish features in regard to the social and economic environment. Accordingly, some summary data will be given by way of introduction to serve as a guide to the foreign reader. According to the census

1) Gulbrandsen Odd: Strukturomvandlingen i jordbruket, Industriens Utredningsinstitut, Stockholm 1957.

of 1950 (the latest to be carried out) the total Swedish population was 7 millions; of this number the agricultural population with its ancillary occupations, gardening, forestry and fishing) amounted to 1.6 millions. During the period 1940-55 about 700 000 persons are estimated to have migrated from agriculture and its ancillary occupations. The number of those mainly employed in agriculture totalled in 1950 about 500 000 persons, of whom about 320 000 were proprietors, about 90 000 assisting members of the family and about 90 000 hired labourers. The figures broken down into various farm sizes and the arable land cultivated by those units will be seen from the following table:

Acreage of the farms in hectares of arable land	Employers 1000s	Employees 1000s	Hectares of arable land 1000s
under 2	35	5	100
2 - 10	180	55	1000
10 - 30	85	50	1300
over 30	<u>20</u>	<u>70</u>	<u>1200</u>
Total	320	180	3600

The chief production of the farms is fodder, which is mainly used for the production of milk. Fodder is cultivated on approximately 3/4 of the arable land and about one-half of the farms' total earnings is derived from milk and by-products in the form of beef associated with that production. The production of milk is concentrated within the smaller farms, on which it amounted in 1955 to 1300 kilogrammes of milk per hectare ($2\frac{1}{2}$ acres) of arable land, compared with 750 kg of milk per hectare of arable land on larger farms (with an acreage of over 30 hectares of arable land). In addition, a characteristic feature of Swedish farming is its combination with forestry. About three-quarters of the farms own forest-land. As it is mainly the small holdings that are situated in the forest areas, they have the most abundant supply of timber. The farms that are in the hands of private owners (this applies to 90 % of the area under cultivation) possess about 5 hectares of forest per hectare of arable land. The following are, on an average, the areas of forest per hectare of arable land:

hectares of arable land	hectares of forest per hectare of arable land
under 10	9
10 - 30	2
over 30	1

That is to say, the main occupations of the Swedish small farmer are milk production and forestry.

What does the structural transformation in agriculture imply?

By the structure of agriculture we mean here how the industry is built up of large and small enterprises. A structural transformation implies a change in the number of enterprises and in the grouping according to size. The area of land and the number of persons employed on it will be used as a measure of the size of the enterprises. Why does the structure of agriculture change? In principle, the answer to this question is simple. The changes in size reflect an adjustment to altered conditions affecting the profit-earning capacity. They are a form of rationalization. However, we propose to justify this statement in ampler terms. As in all other forms of production, there are some basic rules that should govern rational agricultural production. Manpower, the soil, machines and other factors of production are to be utilized in farming only so long as a more profitable use cannot be found for them in some other field of production. Further, the factors of production must be combined in such a manner as will make the production as profitable as possible. If these requirements are fulfilled and a shift subsequently occurs in the conditions governing the earning capacity as between agriculture and other production, then a change should be effected in agriculture. The same applies if the price ratios between the factors of production are changed. But should the price conditions change, an adjustment is necessary if the farm's earning capacity is to be maintained. It is a well-known fact that changes have been constantly going on in agriculture dictated by reasons of earning capacity. For instance, a steady increase has been going on in the land and capital investments in proportion to the labour investment. The other aspect of this development is that manpower has been transferred to other occupations and has been given employment, inter alia, in the production and distribution of those goods which have rendered the increased capital investments possible. When in the latter half of the 19th century the cultivation of pasturage began to replace haymaking on meadows, bogs and outlying land and also forest grazing and shielings (summer pasturage in the mountains), this reflected progress in the field of agricultural technique. It saved a great deal of the labour that was formerly expended on transport, cattle-tending etc. A larger quantity and a more regular output of milk were obtained thanks to

the more abundant and qualitatively better hay from the pastureland. Manpower was also saved when farm horses were substituted for draughtoxen, as the pastureland was thus easier to plough. At the same time a considerable amount of labour migrated to other occupations. Some of the farm workers perhaps went over to making the ploughs and land-clearance implements which were needed prior to cultivating the ground. A further change during the same epoch was the transition from flail to threshing-machine, which also entailed a substantial saving of labour, besides which, part of the labour force in the engineering industry had to be employed in manufacturing the threshing-machines. Subsequent links in the chain of development have been the tractor taking the place of the horse and the transition from treshers to combines. The aim of the efforts made to increase the harvest yield by adding commercial fertilizer to the soil and by sowing improved seed has been to make a better use of the soil and of labour and thus to raise the farm's earning capacity. This has of course called for the large-scale manufacture of commercial fertilizer and for research, and also the improving of seed for sowing; all this has made demands on industrial labour and other forms of employment. The conveyance of milk and other products having been increasingly taken over by special transport firms, it has been possible to economize in farm labour, while at the same time the level of productivity has been raised in an other branch of industry. It is thus possible to count up a whole range of fields of agricultural production itself in which there have been considerable shifts between manpower, land and capital with a view to increasing the earning capacity. In this, the rationalization of agriculture has proceeded hand in hand with the expansion of the industrial and service sectors. The improvement in earning capacity thanks to the economies effected in labour may be said to be one aspect of a development of which the other aspect has yielded gains in productivity through the transfer of the labour force to other forms of employment. This development entails a specialization of the functions of labour within the community. This process of specialization has not been confined to agricultural production proper; for at the beginning of the 19th century it was not only food that was produced by the farms, but the manufacture of clothes, furniture, implements and other objects also comprised a very large part of their production. Seeing that the bulk of the population lived on the farms, housing construction was also a natural function of labour to be performed by the agricultural section. These functions have progressively been passed

on to industry. Various processes in the production of good, e.g. butter and cheese making, have likewise been taken over by a separate industry. This development is a further instance of rationalization carried out in conjunction with a transfer of labour. Processes of this kind are, of course, not only a well-known phenomenon but are indeed self-evident to most people. Obviously, the rationalization of agriculture can be expressed in many forms besides changes in relative sizes - which is the object of our particular interest here. The increase in labour wages compared with the capital costs has latterly acquired particular significance as effecting the process of rationalization by size. Farms with an unchanged acreage or with unchanged fixed and operating capital have therefore found that it pays to reduce the labour force. And, vice versa, the effects may be expressed thus: farming enterprises with an unchanged labour force must be allowed to acquire more land and capital in the form of buildings and machines if their earning capacity is to be maintained. Construed in terms of size, rationalization would have the result of reducing the size of farms measured by the number of employees and/or increasing their size expressed in total acreage.

The structure of farming enterprises at long range

Sweden was for a long time a markedly agricultural society. The development during the past 200 years has been highly revolutionary. It was during the 18th century that the population began to grow apace. Nevertheless, agriculture retained its relative importance in the commercial and industrial life of the country. Both in 1760 and in 1870 over 70 per cent of the population were engaged in farming and its ancillary occupations. After 1870 the agricultural population began to decline alike in relative significance and in absolute numbers. Especially as a result of industrialization Sweden's "business sector" began to assume a more diversified character. According to the 1950 census 23 per cent of the population were engaged in farming and its ancillary occupations, and at present (1958) this proportion is estimated at 17 per cent. Thus, right up to the latter half of the 19th century agriculture had to provide supplies to the bulk of the additional population. This could be done either within the existing scope of agriculture or by reconstituting the farming industry. The growing need for supplies demanded an intensification of farm production on the former tilled acreage and, when did not prove sufficient, the cultivation of new land.

If no such land was available within the vicinity of the farms, entirely new areas had to be taken into use. One of the ways in which this necessity found expression was the colonization of Norrland, a process that has still been going on during the past decade. On the other hand, if ground suitable for tillage existed on the outskirts of the existing farms, two courses could be followed. Either the young members of farming families stayed in their parental homes, thereby ensuring that the demand for food supplies would be met through fresh cultivation without households and farms being split up, or else the farms were parcelled into lots when the time came for the young people to found families of their own, in which case the creation of new families was for the most part accompanied by the breaking of fresh ground for cultivation. The fact that the latter alternative was frequently chosen may have been due to the need for independence or to conditions that did not favour the breaking-up of the parental households. But insofar as the opportunities for obtaining jobs outside farming increased and in that way the labour force was offered better earnings, place could be found elsewhere for the surplus population due to the higher birthrate by way of emigration or taking employment in other branches of industry. This might result in a decline in new tillage or even in its being abandoned altogether. The fact that such tendencies were already arising during the latter half of the 19th century may be gathered from a close study of the population statistics. In the earlier population statistics a distinction was drawn between the various classes of folk engaged in farming, which included the farmer, the crofter and the cotter classes.¹⁾ Each of these classes consisted of a number of families, the leading members of which were called in the statistics "head persons". Each family owned a farm, which gave it a higher or a lower degree of selfsufficiency. A farm with a high degree of self-sufficiency was a community in itself, in which most of the work was done and several occupations were represented by one and the same person.

1) Farmers: owners or tenants of farmstead.

Crofter: had house and ground at his disposal subject to some liability to perform day jobs and guarantee of employment on the main farm.

Cotter: has house and a small plot of land at his disposal without guarantee of employment on the main farm.

It had very little in common with a modern agricultural enterprise, in which the production is confined to certain specific foods or to raw materials for their manufacture, and where the bulk of the family's consumption consists of necessaries coming from outside. Nevertheless, the head persons belonging to the farming classes must be said to be the predecessors of those who are today described as agricultural entrepreneurs. If we draw up a table comprising the head man in earlier times and the male agricultural entrepreneurs in more recent times we find that the number of male farmers rose from about 225 000 in 1750 to about 385 000 in 1880. After that the trend was reversed, and since then the number has been on the decline. In 1950, for instance, the number was approximately 300 000 and may at the present time (1958) be estimated at about 260 000.

Part of the heavy excess of births was relieved by emigration. From the middle of the 19th century there was no longer any increase in the numbers of family workers and other employees - from whose ranks the migratory outflow primarily took place. Seeing that the head men were also recruited from the same ranks, this development was bound gradually to affect the number of head men. How far this was so cannot now be determined. Considering the slow succession of one generation of head men after another, there must have been some time lag before the results became apparent. It need only be stated here that the increase in the number of head men did not slow down until around 1880. When the emigration in the 1850s and the industrialization that took place somewhat later began to relieve the excess of births, the effects of this trend were noticeable principally in West Sweden: most of the emigration took place from there, moreover the work of breaking fresh ground for farming soon stopped in that area. There had never been any very great need for draining off excess population in East Sweden, and in Norrland the possibilities of breaking fresh ground were favourable. The distinction drawn here between different parts of the country in the period up to the latest turn of the century underwent a change when the "flight from the land" shifted from emigration to America in favour of removal to the built-up areas at home. The vicinity of an urban district came to play a more important part in the interchange of occupations and consequently, at long range, in the structure of businesses as well. During the early decades of the 20th century Stockholm and other industrial centres in the Mälars Valley, and also the immediate environs of Gothenburg and Malmö, absorbed the population

living in the adjacent rural districts, whereas in other parts of the country, e.g. in South-east Sweden and in Norrland, the agricultural population either increased or showed only a slight decline. This process of gravitation to the towns, which is still apparently going on, has resulted in a considerably greater disproportion between young and old manpower and between the sexes in the rural districts in the close vicinity of densely populated areas than in the more distant ones. A further consequence has been a more rapid structural transformation in the former than in the latter.

The factors of production in agriculture possess high alternative values

If we regard the all-round earning capacity from the production of agricultural commodities we can observe that the alternative value of the productive resources in agriculture is quite high. What we mean by this is that a large proportion of the productive resources in agriculture might be able to find more profitable employment in other industrial sectors. This statement naturally holds good only at long range. Generally speaking, the real capital that consists of farm buildings, agricultural machines etc. cannot be utilized in other sectors. At long range, however, that is to say, when it is a question of putting up new buildings, the manufacture of new kinds of machinery or carrying out major repairs to the old forms of real capital, there is a possibility of choosing the sector in which this capital is to be invested. Again, it should be borne in mind that profit-earning capacity differs widely in respect of different types of farming enterprise; that is to say, it may be profitable to contribute fresh capital to some farming enterprises while in other cases cutting down the capital without any replacement. The high alternative values attaching to the productive resources in agriculture are due primarily to the difficulty of being able to adapt in time the size of the productive resources to the rapid economic development. Had the productive resources been easily transferable, if farm labour, for instance, had been free to move and the life of the buildings had been a matter of only a few years, then no appreciable differences in profit could have arisen between farming and other branches of industry. For as soon as there were any signs of differences of this kind, the resources would be transferred elsewhere and the differences would be evened out. However, some of the productive resources of agri-

culture are, of course, very slow to move. In cultural and political discussion considerable value is frequently attached to this tendency to inertia, which indeed has many interesting sociological aspects, though the economic aspects of low profitability lies behind it all.

The structural change proceeds slowly

The circumstances by which the development of production and of the productive resources in agriculture is governed may be summarized as follows: The scope of income within which Swedish agriculture has to develop its production is limited and may be expected to remain so in future. It is estimated that the domestic market may shrink, and the export price level may be expected to remain low. Since there is a surplus situation prevailing at present, the chances of retaining the existing productive resources in agriculture are small and - in the light of future prospects - may be expected to become still smaller. The slow reaction of the alternative value of the productive resources in agriculture also indicates the existence of powerful forces tending to limit the size of the resources. These circumstances are now combining to bring about a suspension of operations in some farming enterprises, thereby causing a change in their structure. The changes in the price ratios between the various productive resources employed in agriculture have increased the profitability of replacing certain factors of production by others. Thus, manpower has been replaced by machinery on an extremely large scale during the post-war period, and the labour force has also been reduced in proportion to the land (measured in terms of utilized acreage). If the improvement in productivity continues, a further shift may be expected in the price ratios as between manpower and machines. It is also possible that the price of land will change in relation to the prices of other factors of production. Shifts of this kind induce a substitution of some productive resources in agriculture for others. This implies a change in agriculture's structural conditions. However, there are a number of obstacles and retarding factors of various kinds that counteract or delay the structural changes. In this the inertia of the labour force plays a particularly important part. The fact is that at most farms (about two-thirds of the total) only one person is in regular employment. If, then, any adjustment is to be effected to the higher cost of labour, it can only be done by an increase in acreage and capital. The increase

in acreage must be on such a scale as to enable effective cooperation between labour and capital. An adjustment on these lines causes a rise in the volume of the enterprise's production according as the combined resources increase. The effect of shifting prices may also be expressed thus: the difference in earning capacity between the small holdings and the large enterprises has widened. This is due, inter alia, to the poorer conditions under which the small holdings have to try to conduct an efficient labour organization and to "hidden" underemployment there. Farm work is characterized by a number of jobs, so that the time spent on proceeding from one to the other is excessive in proportion to the effective working hours when one or only a few persons have to perform all the jobs. Further, the work of cultivating crops is marked by a very pronounced seasonal variation with high labour peaks interspersed between periods with a small burden of work. On the other hand, the manpower is available in approximately equal proportions each day. On the larger farms the labour peaks are levelled off by mechanical aids at a far lower price than on the small holdings, on which the fields are small and the time during which machines are in use represents only a few hours annually, so that mechanical equipment becomes too expensive and the saving in labour which the use of machines might have entailed is altogether lost. Instead, an effort is made on the small holdings to fill up the intermediate periods by giving the farm hands less essential jobs to do. This frequently involves under-employment (which is "hidden" because it is regarded as working time). When the price of labour rises in proportion to that of the agricultural machines, the disadvantage to the small holdings which these circumstances entail is all the greater.

The part played by agricultural policy

Another of the circumstances that may lessen the mobility of the factors of production is the legal regulations that are sometimes laid down for the very purpose of reducing mobility. This applies primarily to the rules designed to regulate real property and to control prices. Considerable importance has been attached in public discussion on agricultural policy to Government measures having these aims. However, we examine the effects of these measures on the rate at which the structural change takes place, some caution might be exercised in forming an opinion. Space does not permit here of our offering any exhaustive justification

for this view. The fact is, briefly, that on most points the data available indicate a fairly limited influence alike in the direction of retardation and of acceleration. The measures of agricultural policy, each severally, may conceivably have had some effect both in the one and in the other direction. The structural change, for instance, may have been hastened by the Government's intervention action on the agriculture property market having changed the direction of the demand for property. Its farm price policy, with the aim of bringing about equality of incomes, may have raised the cost of labour, which on a small holding, owing to its labour force being indivisible, may have necessitated the closing-down of operations. On the other hand, the structural change may have been retarded by the Government's having offered favourable terms for the occupancy of rationalized properties and by its price policy having, through the levelling out of incomes and price differentiation, counteracted the decline in the supply of labour. On account of the converse tendencies the net effect of both the property policy and the price policy may be judged to be but slight; the net effects of certain special laws, the so-called Limitation of Procurement Act and the Neglected Cultivation Act, are also manifestly slight owing to the possibilities of applying them being in certain respects limited. If, then, an attempt is made to sum up the effects of all the measures of agricultural policy touched upon here, the net result will be found to be, on the whole, a somewhat weak, and possibly a retarding, effect on the structural change that is taking place in agriculture.

The small holders' mobility determines the rate of change

In the main, then, we may disregard the effect of the Government's agricultural policy when trying to find out what are the factors of inertia that have retarded the adjustment of agriculture to the shifts in price and cost ratios. Let us revert instead to the point in our argument at which we found that the earning capacity of the small holding has deteriorated compared with that of the larger farm owing to the difficulties in the way of going over to mechanization. This deterioration in earning capacity should per se compel a more rapid realignment of the productive resources. But the fact is that, for instance, the labour force on small holdings has been reduced at the same rate as or at a slower pace than on the larger farms. There must exist, then, special factors of inertia that cause the adjustment of the small holdings to the new conditions to proceed so slowly despite their, on an average, low and declining earning

capacity. Looking at the prevailing conditions more closely, we find that the turnover is far slower and the mobility of the productive resources lower on the small holding. This applies particularly to the manpower, which on the small holding consists mainly of a single person, the farmer himself. His mobility is limited in two respects: in his capacity of entrepreneur and by the fact of his being the sole worker. The turnover in the farming business is thus low. The average age of those who start farming on their own is about 30 and the age of retirement is about 65. The possibility of changing occupation probably diminishes comparatively rapidly and is negligible by the time the farmer reaches the age of 50 or thereabouts. He is thus more or less bound to his profession for a long time. Moreover, it apparently seldom happens that owner-farmers change from one holding to another, owing partly to the fact that the farms are often hereditary estates and partly to the investments not infrequently being of such a nature that it takes a long time before they yield any profit. These circumstances apply not only to farms run by the owners. To a certain extent it is members of the family who lease hereditary estates; furthermore the tenants are relatively well safeguarded from being given short notice to quit, thanks to the social legislation governing tenancies. As sole worker on his farm the smallholder is faced with the difficulty of altering the proportions between his own working contribution and the contributions made by land and capital when shifts in prices make such an alteration profitable. If he is to be able to raise his earnings keeping pace with the rises in wages which render the utilization of land and capital cheaper, he has three alternatives from which to choose. The first is to reduce the time spent on farm work and to devote the hours thus made available to some other activity. The openings for more incidental employment are, however, becoming rarer, for the reason that the other industries are being rationalized, and for that purpose they are adopting the system of providing jobs all the year round. Nor it is easy for the farmer to augment the working hours in his own forest at the same rate as he saves work in farming. So that path becomes narrower. The second alternative is for him to increase his area under cultivation. But most farms - with the exception of those in certain districts of Norrland - are surrounded by others. If, then, he is to increase his acreage he must obtain land from other farms, for instance in conjunction with farmers going out of business. The third way open to him is to increase his capital.

It is conceivable, for instance, that he is specializing in commercial gardening, pig-breeding or poultryfarming. All this requires fairly lengthy series, so that specializing in any one of these fields when the scope of the market is limited is a possibility open only to a small number of entrepreneurs. We may state that there are only a certain number of entrepreneurs who, working along these paths are able to adapt themselves to the trend of prices and costs. The recourse of increasing acreage and capital may be available for a large number of entrepreneurs only if their total numbers decline. If neither of these paths can be followed, the entrepreneurs are obliged to close down their business and give up farming to the extent that they wish to adapt themselves to change. Otherwise they are bound to accept the inevitability of a time lag in the growth of their income. It may be asked whether such a time lag cannot be offset by raising the prices of farm produce, but it is doubtful whether this would have the desired effect in the situation described. For if a rise in prices is to have the effect of increasing income, this requires that there shall be no fall at all, or only a slight fall, in the demand for the products on account of the higher prices. Admittedly this no doubt applies to farm produce, though only within moderate limits. If we take, for example, the shifts in price ratios that have occurred during the last two decades (agricultural prices up 300 per cent as compared with wages up 500 per cent, machine prices, on the other hand, only doubled) it is obvious that a farmer would have to raise his prices very steeply if he is to avoid a time lag on his income when the combination labour-land-capital remains unaltered. Had prices been raised to such an extent, there is no doubt that the market would have declined. But even a moderate rise in prices is likely to place the oneman enterprise in a difficult situation, for it is to be presumed that raising prices will be very largely offset by higher payment for labour. In that case the rise in commodity prices involves an increased price tension between labour and capital. It thus becomes more profitable than otherwise to replace manpower by machinery and other aids to production. Large farms avail themselves of this possibility, for there the labour force can be reduced by suitably curtailing the number of employees, and thus a higher income can be earned by the farmer. To enable a one-man enterprise to achieve a corresponding rise in income it is further necessary to change the composition of the

factors on which the farm is run by following one of the alternatives mentioned above. Otherwise the farmer's income will lag behind that of his competitors. What effect such a time lag may have will be gathered from the imaginary case in which a farmer running his farm alone has today the same income that he was earning 25 years ago because he has not procured any machines and other aids to production. The problem of adjustment cannot therefore be circumvented merely by raising prices. In other words, the unassisted farmer must inevitably take some steps to avoid a time lag in the growth of his income. Considering that only a small number of these entrepreneurs have any possibility of expanding their area under tillage, of specializing in independent animal breeding or of increasing their secondary sources of livelihood, the great majority have to give up farming as a business. However, a considerable number of them are forced to remain on the farm and to accept lower earnings than the others because, once having closed down, they would be entirely without an occupation and the possibility of keeping themselves and a family. This applies particularly to the older farmers, who find it difficult to obtain any other livelihood. In fact, a study of the population census figures shows that the smallholder is, on an average, considerably older than his professional colleagues owning bigger farms. According to the 1950 census, for instance, about 60 per cent of the smallholders (with farms of less than 10 hectares of arable land) were over 50 years old, while 47 per cent of those possessing larger farms had reached that age. It may also be noted that the average age of the smallholders is clearly going up, while that of those farming on a larger scale has declined somewhat. This higher degree of senility among the smallholders indicates a falling-off in "new recruits". In the light of what has just been said a thesis may be formulated as to how smallholdings may be adjusted to the changing conditions. This is that the cultivation of the great majority of the small holdings is only given up in conjunction with the growing-up of the new generation. Since the wastage is apparently almost entirely determined by the mortality of the other smallholders and the attainment of pension age, the maximum discontinuance of business would arise if the retiring smallholders had no one at all to succeed them. As we have seen, the business turnover is small. The number of retiring entrepreneurs may be estimated for agriculture as a whole at 10,000 a year. Accordingly, combined with the limited possibilities of any wider scope for secondary occupations or of a transition to farming

with the aid of intensive capital investment, these conditions set a somewhat narrow upper limit to the rate of change and may therefore be regarded as the primary factors of inertia.

The structural change in recent years

It was shown in the historical section that from the very beginning of the 19th century a decline could be traced in the number of farming entrepreneurs. Up to the year 1940, however, this decline, calculated in numbers per annum, was quite small, on an average less than 1000 a year. The deficit in recruiting was thus not particularly heavy. From about the year 1940, however, the decline has been increasingly steep. It should be remarked here that this point of time was not common to all parts of the country; in the Mälär Valley, for instance, the process of closing down farming operations had already been accelerated during the first world war, whereas in Norrland it did not start until the close of the 1940s. Both the farm census and the population census throw light on the rate of decline. Without going into the question in this context of why the two statistical series give partly different results, we propose to offer some data from them side by side. As table 1 indicates, the change had already rapidly been accelerated during the latter part of the 1940s; it may be estimated that the total number of farms in that period declined by 5000 - 6000 holdings per annum. However, the great majority of those that disappeared were very small; the number of farms with more than 2 hectares of arable land fell by only 2000 - 3000 holdings a year. For illustrating the rate of change in the 1940s only the farm censuses are available to us; moreover, only data in respect of the farms with over 2 hectares of arable land are accessible. However, they give evidence of a further accelerated pace, which indicates that the total change may now account for 6000 - 7000 holdings per annum and that it has begun to affect increasingly large farms.

Table 1. The structural transformation in 1937-1956

Farming entrepreneurs according to population censuses

31 Dec. year	Total no.	Change p.a.	Number over 2 ha	Change p.a.
1940	370 336		329 645	
		-3 677		-5 706
1945	351 949		301 113	
		-5 615		-3 352
1950	323 876		284 354	

Holdings according to farm censuses (ha=hectares)

15 Sept. year	Number over 0.26 ha	Change p.a.	Number over 2 ha	Change p.a.
1937	418 644		307 319	
		-700		-1 685
1944	413 741		295 527	
		-5 092		-1 906
1951	378 095		282 187	
			-2 817
1956		268 101	

Some glimpses into the future

On the basis of the demonstrable fact that the succession of one generation by the next determines the rate of change it is possible within fairly narrow limits to calculate the future closing-down of the smallholdings. As mentioned above, the number of retiring farmers is of the order of 10 000 a year. This rate of retirement may be estimated to become gradually slower when the number of entrepreneurs who reach pension age diminishes. The question then arises: On what scale is the recruitment likely to be? This depends, of course, very closely on the rate of migration. As we have seen, the labour force has declined very rapidly during the post-war period; in the case of members of families and the other labour employed in agriculture - the entrepreneurs' main source of recruitment - the decline has been of the order of 7.5 % per annum. Assuming that this migration will continue at about the same rate as hitherto and that those who remain on the land become entrepreneurs on approximately the same scale as hitherto, the recruitment works out at 3000 per annum. It is estimated that the recruitment will also gradually grow smaller as the annual birthrate declines. The difference between

retirement and recruitment works out at about 7000 a year. This scale of decline in the number of entrepreneurs is expected to continue throughout the 1960s. It thus corresponds to a fall by about 100,000 entrepreneurs in 15 years. By 1970 we should have about 200,000 farming entrepreneurs left. This calculation contains, of course, certain margins of error, a fact that has been emphasized by our rounding off the figures, and in Diagram 2 by indicating certain bounds of uncertainty. The recruitment numbers in particular are uncertain. It may be asked, for instance, whether it is not possible for recruitment from other forms of employment to increase, seeing that the agricultural population is not sufficient to fill the vacancies from its own ranks. Moreover, is it likely that the rapid rate of migration, which is a precondition of the tenability of the calculation, can continue? These two questions may be treated as one. It is not particularly common for a person to switch over from employment in a different occupation to running a farm. Besides, the chances of this occurring are likely to become less owing to the fact that the performance of casual jobs, which has been the principal means by which farmers' sons who have left their homes can maintain contact with their ancestral farms, is in the future to be counted as comparatively rare. The transition from one occupation to another will to an increasing extent require a certain period of preparatory work as a member of the family or as an employee - and this implies that there will have to be a growing scale of migration to the farms. Since the migration we have hitherto been speaking of represents the difference between migration from the farm and migration to the farm - these migratory currents are many times greater than the difference between them (the net migration) - an increase in the recruitment of farm proprietors from other occupations is expressed in a reduction in the (net) rate of migration from the farms. Assume that this migration ceased - which would presuppose a serious unemployment crisis or a complete (international) revolution in the ratios of profitability between farming and other occupations; what scale of recruitment would be possible in that case? A calculation on a basis corresponding to the former one indicates that the recruitment would gradually rise to 5000 - 6000 entrepreneurs per annum; so that in this case too we should arrive at a substantial fall in the number of entrepreneurs. To judge from the survey we have made of the future marketing conditions, there is hardly likely to be any essential improvement in profit-earning capacity.

Nor, considering the plans now existing to meet any unemployment emergency, does it seem very probable that a serious employment crisis lasting several years will arise. We might therefore regard a reduction by 4000 entrepreneurs a year as a lower limit for the rate of change. What significance, then, has a reduction in the number of entrepreneurs by, say, 7000 a year from the standpoint of production? When considering this question we must bear in mind that it is the very small holdings that are being closed down, most of them less than 5 hectares, and that their land is in great demand among the permanent farms. Accordingly, any appreciable reduction in the area of arable land is hardly to be expected - at the most $\frac{1}{2}$ per cent per annum. Of greater importance is the reorganization of production brought about by the arable land's being transferred to holdings on which cattle breeding is less intensively carried on. The transfer may conceivably mean a decline in milk production by $\frac{1}{2}$ - $\frac{3}{4}$ per cent per annum. If we add to this the effect of putting areas out of milk production, then the fall in the output of milk caused by the change structure in agriculture may possibly amount to as much as 1 per cent per annum. If to these considerations we add the possibility that the productive resources may in many cases be put to better use on the farms to which they are transferred, our impression of the effect of the change is that the decline in production will be very limited. Rather, the most important result will be relatively lower costs of production, possibly of the order of $\frac{1}{2}$ per cent per annum, calculated on an average for agriculture as a whole. Thus the numerically important structural change is of only limited significance when it comes to finding a solution to the problem of a surplus in agriculture. We are obliged to seek other ways by which to arrive at an adjustment to the shrinking market. Here, too, it is the question of manpower that engages our interest. The increasing expense of this factor that is to be expected as the rise in productivity continues in other branches of industry makes a saving in labour costs a matter of special urgency. In that case, mere recourse, as hitherto, to the expedient of mechanization is not sufficient; apparently entirely new paths must be sought. It is conceivable that new forms of organization and business methods will be better able to exploit the advantages offered by specialization and by the service they can render to reduce the demand for farm labour. A development along these lines would then bring about a steady large-scale migration from agriculture in Sweden and more equitable incomes for the farm people.

S U M M A R Y

From 1750 to 1880 the number of farmers in Sweden rose from about 225 000 to roughly 385 000. This meant a splitting up of agriculture land in more holdings, forced by an excess of births in farm population, which could not be relieved by migration to other occupations or by emigration. The better income possibilities caused by the emigration after 1850 and by the industrial evolution some decades later, made a growing number of people to leave the agricultural profession. As a consequence the smallest and least profitable farms (crofts and cottages) closed down at a rate of about one thousand a year. During the full employment period since about 1935, the migration out of agriculture has accelerated very heavily. During the period 1940-1955 about 700.000 persons (35 %) have migrated from agriculture and ancillary occupations, and it is estimated that since the 1950s the employees in agriculture have declined at a rate of 7,5 % per year. This migration has been pulled by the better incomes in other occupations and pushed by the substitutionary forces of mechanization, called forth by new machines and lower machine prices in relation to agricultural wages (machine prices doubled, wages five times higher during the last two decades). As a consequence about two thirds of the farmers have no permanent employees (neither family workers nor hired labour), the rest having as an average $1\frac{1}{2}$ employees. The difficulties for the small holders to make alternative use of the time they themselves spend on their farm and which could be spared by mechanization, have created a fall in their incomes compared with holders of larger farms. The recruitment of smallholders is therefore quite low and their number decreases at an accelerating rate. During the last decade the decrease has been 5-6000 holders per year. To 1970 it is calculated an annual decrease of about 7000 holders ($2\frac{1}{2}$ %). The effect on the agricultural production by the fall in the number of holders might be small. It is felt that the decrease in farmers will be too limited in order to meet the shrinking national market for agricultural products and the low agricultural prices on the international market. But the possibilities to speed up the structural changes are restricted as two thirds of the smallholders are more than 50 years old. People in such ages meet certain difficulties in getting employment on the present labour market. This is the dilemma out of which the agricultural subsistence policy problem arises.

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1) Studies published prior to 1950 are not included. A complete list will
be sent on request.

2) With an English Summary.

3) Available in English and German.

