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GROUP A

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Horizontal Integration and Amalgamation

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Introduction

Intentions

THIS is an introductory paper aimed at starting off a discussion. It will therefore insist on what seems most controversial and be over provocative rather than too neutral. To save space, several sections and the bibliography will be strongly abridged.

The problems—definitions

Our theme concerns the dynamics of the agricultural production units—in brief, farms—with particular reference to:

(*a*) growth processes, especially those which involve amalgamation (called, in industrial fields, acquisition and merger);
(*b*) horizontal links between units, particularly all forms of co-operation or group farming. The consequences and limits of the progress made in those two fields—which are not unrelated—should, of course, be appraised.

Among the many aspects of change relating to farm units, a few elements, such as spatial growth and horizontal links, are thus singled out and studied in more detail. Those aspects are, however, closely linked to many others. Changes in technology, changes in factor markets, pressures from supplying or marketing firms and agricultural policy measures all affect the structure of farms—and what we are studying is a structural problem. It is often difficult to isolate spatial growth and horizontal links from other aspects of structural change.

In fact the subject we wish to study is not only 'What size of farms shall we, and should we, have in given circumstances and what will, and should, be the links between them?' It is 'What will and should our farms be with regard to size *and* socio-economic type?' By socio-economic type we mean mainly: sources of factors of production, particularly labour

(will it be family or salaried labour?); types of production processes (will they be industrial, i.e. closely controlled and with reduced variability, or natural, market oriented or not?); motivations of the farmer, particularly his attitudes to profit, investments, security, risk, independence. We will not stress those inter-farm differences which pertain to the relative importance of the various crops and livestock enterprises except in so far as they are more or less suited to 'industrialization'.

In short, we wish to open a debate on large farms or small farms, family farms or 'factories in the fields', individual units or group farming —and this list of alternatives and combinations of alternatives is not complete.

After briefly attempting to present the nature of the problems which must be solved to modernize and enlarge the farm units, we will compare development strategies; the family farm way, group farming, large-scale farms.

Scope

The problem is very broad and we will attempt to narrow it by giving *emphasis to developed countries* which have not got centrally planned socialist economies and where all the available land is already settled. We therefore exclude the creation of new farms and the problems of choosing the size of units in schemes involving opening up of new lands or large reclamation projects.

Our aim is discussion not description. In fact we have no time and space to present statistics. We hope the discussion will dwell on doctrinal or methodological aspects.

I. *Size of Farms—An Ever-recurring Problem*

This is one of the oldest and most debated questions in the field of agricultural economics. It is doubtful whether anything new can be brought up on that subject.

We will not devote much time to the problem of measurement of size. By size we obviously refer to a complex and synthetic concept, to something which could be called socio-economic importance. It is hard to measure this concept with just one figure. Input data are partial, gross production neglects inputs. Value added is much more satisfactory but may be influenced by short-term price movements. For short-term or static comparisons, in a given area, and if one excludes non land based productions (like poultry), land area measurements may be acceptable in many cases.

Economies of scale—do they exist?

We could fairly easily quote conflicting views of prominent specialists on whether economies of scale exist. One reason for these differences of opinion is the problem of measurement. The fact that some small units get 'good' results is no proof of the absence of (true) economies of scale.

It just shows that by hard work, better management, special productions and marketing methods (which are only valid if they remain exceptional) a good farmer can overcome the handicaps of small size. Conversely, data showing that a large unit (or an average of such units) produces a given commodity at very high cost (compared with small farms) do not disprove the existence of economies of scale. It may well be that this unit is poorly managed, that its workers have no incentives to work, that it is not organized to reap all the advantages of scale but is just formed of contiguous small-scale operations—like the early manufactures described by Marx.

In brief, internal economies of scale exist in agriculture, as elsewhere, in the production processes which involve indivisible (lumpy) inputs. In spite of various efforts made to manufacture minimachines, it is evident that big machines in big fields are cheaper than garden tractors. Who would consider producing wheat without combines? It also appears that techniques which involve lumpy capital goods cover a broadening range of enterprises. Many types of vegetables and fruits are—or soon will be—harvested with machines. Mechanization is affecting several intensive animal productions, and, in the more extensive types, large herds and flocks can greatly reduce labour costs.

However, when the supply of labour is very rigid—low opportunity cost, no alternative employment—*potential economies of scale will not materialize* and the small unit may well produce at prices which will discourage large farms which have to pay in full for their inputs. Also, in economies with very little capital and simple technology, internal economies of scale just do not exist. Ten labourers with hoes produce at the same unit cost as one.

It is also true that economies of scale, though they exist and tend to grow in importance in agriculture, have completely different aspects in farming and in, say, the fertilizer or automobile industries. The type of business needed to take advantage of the lower cost associated, under proper management, with certain sizes, remains very tiny in terms of labour used, capital invested, and value added. Economies of scale in agriculture do not lead, as in industry, to the formation of oligopolies or monopolies. They may bring lower cost, they do not normally create market power.

The need for growth

We strongly believe that the great majority of farms in Western Europe are, at present, well below the size above which economies of scale tend to be slight. A tremendous task of enlargement must thus be performed. More important still, we must get used to looking at the problem of size of farms in a dynamic way. Determining an optimum size of farm, of a given kind in given static circumstances, is possible but probably not as useful as finding ways of enabling farms to grow in size. To this problem we may now turn.

II. *Growth by Amalgamation—A Difficult Task in the Family Farm Context*

Growth of output is needed to reap the advantages of economies of scale, and to maintain value added which is constantly eroded by the increased use of purchased inputs. Growth of output by intensification is limited by the nature of the market for, say, poultry or strawberries which is far from indefinitely expandable. Growth of output by spatial extension on new land has been excluded from our analysis. There remains only one solution: spatial growth by acquisition of control over land previously farmed by other units which often disappear entirely or may become part-time or subsistence units—which we will not study here.

This is a painful process which is slowed down by population pressure combined with the almost incredible capacity of small peasants to cling to their land and resist elimination. In other words, as mentioned above, amalgamation is retarded by the low opportunity cost of labour on the small overpopulated farms.

It will, of course, be facilitated by outmigration and therefore depends on such essential elements as: rate of job creation in non-agricultural activities; educational facilities for farm youths; city housing and programmes to make city life more acceptable. Those aspects are essential and confirm the well-known rule that there is no purely agricultural solution to farm problems, but we will leave them aside, since they are not strictly part of our theme, and turn to some internal difficulties.

Amalgamation and land-ownership patterns

Free sales of land seldom ensure efficient amalgamation. In theory, the neighbour best suited to make good use of the piece of land being put up for sale should outbid other prospective buyers. In practice, the man who happens to have funds at the time of the sale outbids the others but he may not be the most logically located. Over a long period of time this illogical pattern of land ownership may correct itself but in our times we cannot afford to rely on slow adjustments of this type and the tendency is for various public agencies to intervene in order to substitute logical planning to haphazard market mechanisms. In a few instances, in some tightly knit communities, French farmers have acted monopolistically at auction sales so that the most deserving farmer could purchase a piece of land. This is exceptional and, on the whole, orderly allocation of land is not obtained. The difficulties relating to capital are, however, much more important.

Financing—a crucial problem

Throughout the developed capitalist world, agriculture is a more or less depressed sector. Its ability to finance out of profits the tremendous requirements of both modernization and growth of farm firms only exist in exceptional times of scarcity and high prices. A flow of capital from other sectors into agriculture must be organized. In part it only counter-balances a flow of capital out of agriculture through inheritance settlements paid

to heirs of farmers who have taken up non-agricultural jobs and through costs of rearing children for other sectors.

This is probably at its worst in some parts of Western Europe where the farm sizes are quite inadequate and where capital formation is much below what would be required, except possibly on the largest farms. There is thus a tendency for increased inequality between a minority of modernized farms which can continuously adopt innovations and, if needed, borrow, and a mass of capital-starved small farms. The former may even leave the 'family' group and join the large-scale category.

Even in North America where the size distribution was always more adequate and where capital formation can thus take place at a rather rapid rate, there are grave rigidities in the capital structure of the farms and investment mistakes are frequent. Professor Glenn Johnson has elaborated on that point in several instances and we will suppose that his theories—which, of course, apply outside his country—are known.

Grave doubts may therefore justifiably be expressed about the ability of family farmers to refinance their farm at each generation and accumulate capital for its modernization.[1]

Of course some solutions can be found without changing the fundamental nature of the farm unit (i.e. without fully separating ownership from operation and relying predominantly on salaried labour) but each of them has its limits.

Unequal inheritance is disliked by many people. Leasing of equipment is difficult to generalize. Rise of indebtedness will lead to unpleasant control by the lender. Family corporations are only attractive as long as profits remain satisfactory and have only met with success in the case of large farms in good areas like the Paris basin. Finally, the most important solution seems to be tenancy.

Generalized tenancy and land-ownership corporations

In spite of its secular decreasing importance as a factor of production, land still represents the major element of the total assets engaged in agriculture (often of the order of two-thirds of the total). If the burden of the non-reproducible capital can be borne by others than the operating farmers a great share of the problem will be solved. This fundamental advantage of a good system of tenancy is of course well known. But there are several difficulties.

A minor one concerns the tenant's borrowing capacity. It is smaller than that of owners who can mortgage their land. And the less security the lender has, the more he will want to control decisions.

More important is the question of attracting wealth ('capitalists') into land ownership without giving the landlord economic power to interfere with farming operations and exploit the farmer. We want others than farmers to own the land but we must provide material incentives since the

[1] These hesitations are confirmed by the recent excellent paper by J. R. Brake, 'Impact of structural changes on capital and credit needs', *Journal of Farm Economics*, vol. xlviii, no. 5 (Dec. 1966), pp. 1536–45.

non-material ones (prestige) are dwindling and we do not want to give power to the landlord. The tenant, on the other hand, must have security —though not too much, of course. These needs are not easy to combine.

In several cases, particularly in France, rents are fixed at a fairly low level and the landlords do not get a fair annual return. They only keep their interest in the land because of the increase in land values (capital gains—which are unfortunately untaxed in France). This is an unhealthy situation. We do not think that global increases in land values are a satisfactory phenomenon since they do not enhance the general efficiency of the economy. Capitalists must be attracted into land ownership by income not by anticipations of capital gains.

Following various authors, we believe that land ownership corporations could provide an answer to several of those problems. They could appeal to large numbers of potential investors, they would give security to the better farmers and could probably provide for some flexibility in farm sizes.[1]

It appears that one of the most useful points for discussion by this group would be the possibilities and limitations of the various methods and institutions which could help to solve these financial problems of modern, i.e. rather large, farms.

Family farms and leisure

Even if those land and financing difficulties could be solved there remain several problems relating to the labour force of the modern family farms. We submit that, in the case of livestock farming (and most of us seem to like diets with quite a lot of animal protein!), the coming generations of farmers will feel at a disadvantage compared with other social groups regarding leisure.

If this is agreed upon, the problem of minimal size of farms necessary to reap the advantages of low costs (in other words, the size above which the long-term average-cost curve ceases to decline significantly) will be determined not by indivisibility of equipment or buildings but by the size of the work team necessary to enable its members to take turns in the work.

In conclusion, several types of difficulties seem to stand in the way of amalgamation of farms. It will therefore not be easy to obtain a farming structure based upon modern family farms and maladjustment between the existing structure and the one which would be necessary to reap the advantages of modern technology will persist. If those difficulties are overcome in certain countries or if in others, non-family based structures can develop efficiently, sharp competition and tensions may arise. We must now turn to an examination of some other solutions.

[1] Several authors have produced very interesting ideas on this subject, particularly P. Dorner, 'The Farm Problem: A Challenge to Social Invention', *Journal of Farm Economics*, vol. xlii, no. 4 (Nov. 1960), pp. 811–26; L. Estrangin, 'Nouvelles formes de la propriéte agricole en France', *Revue de l'Action Populaire*, no. 159 (June 1962), pp. 697–707.

III. *Group Farming or Non-family Farms*

The idea of farming corporations with salaried workers, often referred to as 'factories in the fields' or 'capitalist agriculture', does not appeal to many independent farmers who have tried to survive through co-operation, horizontal integration, or eventually joint farming. These various actions may be called group farming and will be studied first.

Extracting one or several processes from the farm's activities

If the farm units are relatively small and a given process involves indivisibilities, the only alternative to high cost execution of the process by the farm's own powers is to extract the process from the batch of activities which, in a way constitute the farm and entrust another decision centre with the responsibility for carrying out that process on the farm and on other farms. This is, in essence, horizontal integration limited to one process. It occurs whether the decision centre now having authority over the process is a group of farmers (co-operative) or a private firm of a family nature (usually one farmer who will rent equipment for a given fee) or a capitalistic firm. It often happens that the decision centre also has control of other processes (preceding or following the one we have considered in the vertical chain of processes). In that case there is also some element of vertical integration.

This extraction of processes from the usual or past bundle of processes of a given farm is just a case of changes in the division of labour. Its consequence is more dependence and its main requirement the need for reliability, e.g. reduction in variability, adequate flows of information. In some extreme cases, as when Mr. Colin Clark says that, in New Zealand, one can farm with a desk and a telephone, this may lead to the abolition of farming which would be replaced by a number of service or factor supplying firms or persons. In most cases it will not change the nature of farming and has many advantages since it replaces the purchase of, say, a big machine by the rental of machine services.

The problems are: reliability, cost (price formation for the rental charge), loss of employment by the farmer (in cases where there is over-population and lack of alternative use for the farmer's time).

In some cases 'labour and equipment banks' have been set up by groups of farmers. They establish prices (rental charges) and serve as clearing houses for computing the credit and debit balance of each member who only pays the balance of plus and minus accounts.

Those service co-ops or other arrangements seem of the utmost importance in developing countries in order to make the best use of scarce capital. This solution seems more efficient than miniaturization.

Joint farming or complete horizontal integration

This is much more extensive than the previously examined changes and implies complete merger of two or more family farms in a new unit where division of labour may exist but where decision-taking responsibilities

are shared and value added is divided among participants in a fair way.

This is definitely different from collective farming ventures like *auto-gestion* in Algeria where people who were not farm operators but salaried workers took over large farms. The participants are entrepreneurs who realize that they are too small to obtain good results and who cannot increase the size of their farm by hiring labour and borrowing capital, and sometimes do not wish to do so for ideological reasons.

In France, at least, a small number (about 500) of these joint farming groups operate and seem to survive. Admittedly the mortality rate is high but so is the birth-rate. And even if a group does dissolve after a while, the concentration process obtained may well be less painful than more direct forms of amalgamation. It is important to note that more than half of the groups are composed of relatives (brothers, fathers and sons) and two-thirds comprise only two or three members. They cover an average of 130 hectares which shows that the participants' farms were well above average size before they merged.

The advantages are: economies of scale, a greater investment and borrowing potential, a big reduction in the amount of farm labour done by the farmers' wives, continued participation by one member of the group in farmer's organization. A fairly high proportion of young farm leaders have entered into group arrangements precisely in order to be able to retain these activities.

The most essential requirements are the following. There must be unity of outlook of both members of the various couples, who must be in agreement on all major problems and able to understand them. An excellent accounting system accessible to all is essential. There must be complementarity of members (which may lead one member to devote more time to management but should never exclude the others from decision taking for the important cases). A sufficient land base is vital—grouping three overpopulated farms cannot usually provide adequate income for all. The last point is critical because joint farming does not change the man–land ratio. Many groups have failed through poverty, excessive indebtedness, and consequently low distributions of income for family expenses. This fact seems now to be recognized and, as indicated above, most groups are formed by farmers whose holdings are well above average size.

Among some of the causes of failure or difficulties one may note: lack of criteria for division of value added, difficulties in valuation of land and capital inputs, tension among members particularly when new persons are brought in, for instance, when one member marries. More generally, a rather high level of intellectual sophistication seems to be necessary in order to prevent exploitation of one or more members by one or several others. In some exceptional cases, salaried workers have been elevated to the status of members.

The joint farming movement, in France at least, is not statistically important. It may be significant ideologically as a means of obtaining

economies of scale without forming a class of salaried workers. It seems most important not to extrapolate from this experience to underdeveloped countries where economies of scale hardly exist and the economic and cultural equality needed to prevent exploitation are not present. Group farming may exist in poor countries but will be, in our opinion, of a very different nature. It will be based not on democratic consensus but on rigid military discipline. This opinion might lead to a useful discussion on the proper use of compulsion in development processes.

Large-scale farms with relatively many workers

Obviously, many farm processes can be industrialized, i.e. characterized by: substitution of capital for labour; substitution of purchased inputs for self-supplied ones; reduced variability of input–output relationships; increased size; increased links with marketing and processing activities.

Many processes can be organized along industrial lines with strict supervision, definite rules given to subordinate decision centres, elaborate systems of wage determination, etc. However, experience seems to show, in developed countries where the State has not encouraged or created these large units, that their development has, up to now, been limited. This arises from several reasons.

(*a*) Low rates of profit. Unless the industrial way of production is definitely more efficient than the craftsman's (which in turn depends on technology) there is no incentive to entry by large firms and the craftsmen supply the market with low returns for their trapped inputs. The more efficient the family farmers, the less incentive there is for capitalists.

(*b*) Inadequate control over the processes (erratic input–output relationships) which make management difficult and requires: much delegation of authority to lower echelons, excellent information channels, and, finally, brings about costly administration and labour difficulties.

(*c*) Rigidity of the land market or legal prohibitions which make acquisition of control over large tracts of land a difficult operation.

In brief, it appears that, while many relatively easy types of production can be accessible to large-scale production—particularly in cases where the above difficulties can be overcome and/or a vast supply of docile hand labour is available at sub-standard rates of pay—these large-scale farms have not been very successful for the more difficult types of farming involving a complex series of crop and livestock activities. The mere fact that there is such an abundant literature (judging by the titles in W.A.E.R.S.A.) on work incentives in the Soviet large farms proves that their problems are not yet solved.

However, from a purely technical point of view, as seen by, say, the management consultant, there seems no reason why the efficiency of the large unit could not be enhanced and devices found to get the workers to work hard and well. Will those methods be acceptable, how fast will they be adopted, will they be sufficient to overcome the barrier of low rates of return which are general in agriculture? These seem to be the important points for discussion.

Conclusion

In this introductory paper we have briefly studied the problems of adjusting the farm structure, which is the result of history—often far-reaching historical trends—and institutions (and therefore men) to rapidly changing technology. Being pessimistic, we have emphasized the difficulties. Maybe we have underestimated the resourcefulness of men and the diversity of their motivations.

In agriculture, as in the civil service, inefficiency is not lethal. Many types of farms can coexist under conditions of unequal competition without one of the types disappearing. J. K. Galbraith has written some admirable lines on the willingness of small entrepreneurs to lose their fortune and generously supply their labour for the satisfaction of the consumers.

Many types of farms will thus probably coexist in the future making it particularly difficult to organize simple marketing schemes and policies. It is a challenge to the policy makers and creators of new institutions. They will have to think hard so that there is continuing adoption of new technology, better income, greater equality of opportunity, more stability, less investment mistakes, more leisure and happiness for the farmers, cheaper food for the consumer, and all the rest.

GROUP A. REPORT

DR. BERGMANN had stated in his paper that economies of scale do exist within agriculture in developed countries and that growth of farms is generally needed in Western European agriculture. Figures given by one discussant from the U.S. indicated that it also holds for that country. The group seemed to be in general agreement with the statements. It was, however, stressed that managerial problems in farms which are growing give important diseconomics of scale, which may hamper farm growth.

The point made by Dr. Bergmann that there are differences in the economics of scale between agriculture and industry was questioned. Examples from the broiler industry indicated that economies of scale in agriculture were so large that oligopoly and even monopoly might well arise. Dr. Bergmann doubted whether monopoly would arise out of internal economies of scale in any agricultural product.

Amalgamation of farms includes transfer of land from suppliers to demanders. This process includes change in ownership and/or tenancy pattern and is affected by, for example, land prices and farming incomes. The analysis given was extended in discussion by stressing that the increase of farm size through amalgamation is greatly favoured if the number of persons in agriculture can be reduced, thus decreasing the demand for agricultural land.

It was stressed that the 'illogical' pattern of land ownership—i.e. the fact that land tends to be acquired by the buyer who has liquid funds rather than by the neighbours best suited to farm the land—is logical in

the sense that liquidity is a basic factor that governs the growth of any firm. Only institutional regulation (land consolidation schemes) can change this pattern.

The financial difficulties when amalgamating farms were particularly stressed, especially in view of the low income which farmers as a rule experience. On this point some discussants stressed that an important part of farmers' incomes are capital gains. These gains ease the problems of acquiring land to increase farm size. The fact that these gains seldom show up in official farm accounts obscures the analytical picture of the problem discussed. There were differences of opinions as to the rationale of taxing away these gains as was proposed by Dr. Bergmann.

The opening paper stated that land ownership corporation could provide a solution to the problems of financing the modern rather large farms, but it was questioned whether capital could be attracted to these corporations in a low-income agriculture. Further it was doubted whether it was possible to have land corporations without substantial government support. If this was not the case the difference between land corporations and land nationalization may be only nominal. These questions remained to be investigated, but the important question was not whom the owner of the land should be but rather what a good tenancy system should look like. The ownership of land and the operating of it might very well be more clearly separated in the future than now.

Dr. Bergmann's rather pessimistic view of the future of owner-operated farming was shared by others. The large gap between capital available on most existing farms and the substantial capital required for optimal farms and the possibly high intellectual capacity needed for their management were severe constraints. Co-operative ownership of farms by 5–6 farmers might be a way ahead.

The discussion on horizontal integration was only taken up for the less-developed countries. It was stressed that the formation of horizontally integrated groups of farms was a sociological problem, closely tied to social and cultural patterns, and not an economic problem. The co-operative features in the societies of some less-developed countries rarely eased the problems encountered when forming new co-operative organizations. Their basic need was to raise the general level of education to increase the understanding of the need for new organizational forms in agriculture. There were, however, some possibilities of introducing new patterns of organization when starting new projects. Farmers joining these projects have to accept the new pattern. Those not willing to accept it stay outside.

Dr. Bergmann indicated that in a less-developed country there is often no need for integration and amalgamation since increasing size does not give any scale economies in an environment where hand labour dominates.

The discussion underlined the urgent need for increased research in the area covered. Knowledge is now lacking about the capital flow out of and into agriculture, on the capital need in this industry, and on the land market and factors affecting land values. The possibilities of land-owning

corporations or co-operatives has not been studied and very little attention has hitherto been paid to how future agricultural firms may best be organized. Dr. Bergmann finally stressed the great potential competing power of Eastern European large-scale farming and ventured to forecast a growing separation between agricultural infra-structure—which could be collectivized—and farm production operations where uncertainty about input–output relationships would justify decentralized decision making.

Among the participants in the discussion in addition to the openers were: J. Horring *Netherlands*, C. B. Baker *U.S.A.*, A. Kamali-Nafar *Iran*, A. Kraal *Netherlands*, M. Bueno *Spain*, A. Weber *Germany*, W. W. Wilcox *U.S.A.*, E. A. Attwood *Ireland*, J. J. Scully *Ireland*, P. von Blanckenburg *Germany*, U. Renborg *Sweden*.