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NILS WESTERMARCK

*Postwar Trends in Income Distribution and Dispersion in
Profitability among Different Farm Groups*

Problems involved in income distribution among farmers can be examined from various aspects. Without any doubt we are faced by a wide spectrum of intricate and politically sensitive governmental actions but simultaneously the problems are intimately connected to natural conditions, progress in research, advisory services, human ability, educational level of the farmers and so on, and of course also to the implementation of land reforms. In order to make it possible to deal with the topic in a tolerable way I consciously confine my paper to developed countries only. My reasons for doing so are first the lack of empirical figures from developing countries for a long enough period and, secondly, the disturbing impact of more or less successfully implemented land reforms in the Third World which does not enable time period comparisons to be made. In short it exceeds my capacity to reproduce a global picture.

My main interest focuses around the problem whether, and if so to what extent, a trend towards a widening income gap between better-off and less well off groups of farmers has arisen within the decades since World War II. There exist in this respect at least two conflicting forces or phenomena, namely on one hand the research and technological development which logically has favoured farmers with better education, farmers provided with higher mental ability and larger amounts of economic resources, farmers operating farms situated in more fortunate natural regions, and so forth, versus farmers belonging to opposite categories. On the other hand, governments in many welfare countries have, particularly in the 1960s and 1970s, taken measures to level out the social and economic differences between the two categories.

An established element in the welfare policy of many developed countries is to support the low income groups of citizens with social and economic measures in order to bridge the gap between the poor and the well-to-do as well as to level regional disparities. Such a policy is in my opinion quite in conformity with endeavours towards equity and to warrant all citizens a satisfactory standard of living. Such a policy cannot, however, imply parity or equality such as to attain a similar income and welfare level for all people. Such a state of affairs is an utopian one and would certainly

completely spoil the enterprising spirit of human beings, especially that of the entrepreneurs.

The aim with regional policy matters as to agriculture is at least in principle to bring forth an internal levelling of incomes between small and large farms and a geographical one between climatic zones, lowland and highland settlement, and so on. Since a considerable proportion of the activities in less-developed regions in welfare nations is related to agriculture and forestry, the population in those regions usually has a level of income falling below the national average income per caput.

The role of regional policy in general economic and social policy naturally varies from one country to another but the bases of regional development policy are similar: to promote a distribution of economic resources that is conducive to full employment and growth and which enables people living in different parts of the country to share in the general progress of the nation. The economic and social policy measures to remedy drawbacks may for instance imply subsidies for interest payments on loans for financing investment, transportation subsidies, higher prices for some products, state subsidized prices for purchased means of production, and so forth. It is a generally known phenomenon that research and development since the war have made tremendous achievements. Technological progress is always intimately related to the level of human knowledge and skill and to the degree of enthusiasm and belief in the future that inspires individuals but also to their physical capacity. The chief objective is that 'agricultural policy should be shaped so as to contribute to the realization of the general aims of the regional policy'. This means that agriculture must deliberately be guided in such a way as to alleviate the task of maintaining settlement especially in the least favoured areas; that is areas suffering from stagnation, depopulation, diminishing employment and with a low income level. The governments in many European high income countries have also taken action in order to stabilize the number of people involved in farming, including forestry, in the least favourable areas by stimulating investment increases first and foremost there. Referring to Leagans (1979, p. 50) of Cornell University, his compilation of data indicates that smallholders remain low income producers more because they lack the requisite means of production than because they are unwilling to make technical innovations when they first become available or profitable.

During the last three decades I have carried out three long series of research, partly in Finland and partly in Sweden, with the purpose of finding out the influence of the farmer's mental ability, his vocational theoretical education and his age on the economic results, as well as the effect of intensified advisory services and individual farm planning (Westermarck, 1974). The results from my Swedish study were, briefly, that in all size groups the net farm income, as well as the total net income, for the subgroup of farmers with at least agricultural vocational secondary school was higher than that of farmers with only formal primary school education.

Later on, two research projects of mine were carried out in Finland with the aim of elucidating the influence of intensified individual advisory

services and farm planning on management and economic success on Finnish family farms. The research lasted fifteen years. For reasons of comparison, control farm groups located in the same region and belonging to similar size groups but without the same services had to be chosen. An examination of economic progress, whether on a basis of the total net income, the net farm income or the so-called coefficient of profitability, revealed that a marked successive improvement of profitability had taken place in the study farm groups but no corresponding development was seen in the control farm groups.

In a Norwegian investigation (1969) it was found out that farmers with agricultural school education carry on their farming operations more profitably than farmers without the corresponding education. It was, however, pointed out that other factors also exercise an influence on the results obtained.

The researches here mentioned are of course not the only ones carried out as regards the influence of education and mental ability on technological progress and income level. They have to be taken only as examples. My conclusion from the findings with relevance to this paper is, nevertheless, that intensified advisory services directed towards particular target groups as well as differences in the educational level and mental ability between groups contribute *ceteris paribus* to widen the income gap. We may also recall that in areas characterized as economically weak there is often a relatively low level of general and vocational training, especially among the older farm people.

Although the area of arable land is an incomplete expression of the size of a farm business unit it is nevertheless commonly used in official statistics. In proceeding further I also shall use this magnitude. In doing so the following question arises: to what extent do there exist differences as to the vocational educational level of farmers, mental ability, and economic resources between different size groups and particularly is it possible to establish that any trend has taken place during the postwar period either in one direction or another? Unfortunately the statistics on Finland are a very imperfect means of indicating a possible trend. We are therefore committed to one year only, namely 1976. The statistical figures comprising 320,000 farmers and farmers' wives show the following picture:

Size Group	Farmers and farmers' wives with vocational theoretical education in per cent of total
< 10 hectares	5.5
10-30 hectares	16.0
> 30 hectares	33.2
Total	10.9

The figures clearly indicate that farm couples operating larger family farms possess a higher vocational theoretical level than farm couples on medium sized or small farms. Without any doubt we may state that this has also been the case previously. The wives have been included because they play a very significant role as partners in farming in Finland. Several investigations and surveys carried out in different countries indicate that a positive correlation exists between the use of advisory services and the farm size in hectares (Vainio-Mattila and Tauriainen, 1969; Hoiberg and Swope, 1979; Westermarck, H. 1973). As well as in vocational education so also in involvement in farm advisory services it is therefore obvious that the small farmers have been in an inferior situation. Disequilibrium as regards educational level and involvement in advisory services must, however, not *a priori* express differences in inherited mental ability. A chance to obtain education may very well depend simply on, for example, the existence of some private fortune or be insisted on by parents or other close associates.

Unfortunately I have, in spite of determined attempts, failed to receive any empirical material to elucidate the most interesting question as to the inherited mental ability of farmers operating farms of various size. Nevertheless, however, we may be able to accept the hypothesis that both theoretical vocational education practice outside the home farm and involvement in advisory services enrich the farmers' knowledge and capacities, provide new impulses, widen their views, and therefore provide a stimulus from an early stage to create higher potential capacities in the farmer as an entrepreneur and his willingness to accept benefits in research and new technology.

A very pessimistic opinion upon the situation prevailing among low-income farmers (individual gross sales under \$10,000) as to their attitudes to extension's responsibility is expressed in the US report of the Extension Committee on Organization and Policy (1967). Some quotations from the report are elucidative: 'Low farm income stems from many causes. Without sufficient resources, and management skills to take advantage of modern agricultural technology, these farm families slip further and further into debt and despair. But in contrast to larger farm operators many understand neither the causes nor the possible solution to their farming problems. Moreover, they are generally not inclined to seek help from educational and government agencies. They also fail to understand that their net incomes will decline if they cease to improve their farming operations.'

The Nobel Prize winner Schultz (1978, p. 47) is very resolute in proclaiming his opinion as to the role of governmental policy measures and the influence of mental ability upon economic disequilibrium:

The value of the ability to deal with disequilibria is high in a dynamic economy. In my opinion, two important inferences can be derived from the economic dynamics of agricultural modernization. First, economic disequilibria are inevitable. They cannot be prevented by law, by public policy, and surely not by rhetoric. Second, the function of farm entrepreneurs in perceiving, interpreting and responding to new and better opportunities cannot be performed efficiently by governments.

Taking into account what I have already here mentioned and bearing in mind the remarkable technological postwar development, it is logical to assume that technological development has favoured the already better-off and widened the economic disequilibrium. However, on the other hand we have to consider the contradictory aspects, namely the governmental policy measures executed to level the disparities. How successful have these actions been and what is the final outcome of the phenomena? In tackling this complicated question I requested and also received empirical data and information from some developed countries which have taken measures to level the disparities. I wish to start with Finland.

In *Finland*, like in many other European countries, farm records are kept based on book-keeping. However, we have to recall that figures obtained from book-keeping farms do not constitute a statistically random sample of the great mass of farms because farm account activity is carried out by voluntary efforts. Consequently the participants must be considered on average somewhat more alert and prosperous than the great mass of farmers. This is of course a weakness which we, however, cannot keep away from in a free society. I am not speaking of accounts compulsorily kept for taxation purposes which are not applicable for representing the truly existing situation.

In order to illustrate the postwar development I have selected a rather homogenous and typical Finnish region, namely Central Finland, where almost all the farms regardless of size are family farms and the principal agricultural income is produced from livestock, mainly milk cattle husbandry.

<i>Size group < 10 ha</i>	1959-61	1969-71	1977-79
Number of farms	120	55	22
Net farm income, mk per ha	552	656	2804
Ditto per lu ¹	2306	3087	14023
Coefficient of profitability	0.72	0.43	0.48
 <i>Size group > 30 ha</i>			
Number of farms	24	19	37
Net farm income, mk per ha	274	495	1618
Ditto per lu ¹	2158	6886	28253
Coefficient of profitability	0.88	1.14	0.93

¹ lu = one labour unit corresponding to 2000 work hours in agriculture per year

In comparing the figures for the two size groups the number of small farms during the last period unfortunately has considerably declined, due to several reasons, but mainly because of a shift over the part-time farming with lesser interest in agriculture proper or they have enlarged the acreage to exceed 10 ha. This diminishes to some extent the significance of a comparison in time. Nevertheless the tendency for a widened gap between

the two groups in favour of the group with larger farms is clear. The coefficient of profitability is calculated by dividing the net farm income by an amount made up of an interest claim of five per cent for invested capital plus the value of the labour input of the farm entrepreneur and his family calculated at the normal wage rate for hired labour.

What measures then has the Finnish government executed to level the income gap? First, we may say that price policy has during the postwar period favoured livestock producers, who are predominantly small and medium-sized farmers. If we thus commence from a weighted index figure of 100 for all livestock producers during the first three-year-period of 1959-1961, the corresponding figure for the second period rises to 174 and for the last period to 449, and for milk separately to as high as 824. The corresponding rise in the nominal price index for food grains has simultaneously been as low as from 100 to 194. In spite of these facts we, therefore, have to conclude that the price policy measures have not been able to narrow the gap. We must, however, take into consideration the fact that the comparison includes only agriculture proper and not income from forestry or other sources. On the whole my paper deals with agriculture only because to take into account other sources of earnings also and to penetrate the influence of technological development in agriculture on incomes from forestry and so forth within the frame of empirical figures appears to me to be too complicated a topic. We may, therefore, say only that observations from many countries indicate that during the postwar decades small farmers are likely to earn more extras in addition to income from agriculture proper.

Secondly, a pervading phenomenon in Finland during the three last decades has been that several public measures to support agriculture, especially on the geographically less favoured small farms and farming in remote regions, have been strengthened. National budget calculations show that all support measures in total represented 2 per cent of the national gross agricultural income in 1969-61, the corresponding share in 1969-71 was 4 per cent, and in 1977-79 11 per cent. The main part of the support has been directed to the small farms in the remote regions. In order to get a clear picture of the magnitude of all special state support directed to individual farms, three different model farms have been constructed with the same production line, namely, mainly production of milk. The figures below illustrate the trend during the last three decades.

The figures clearly indicate, firstly, that the rate of subsidies has risen and, secondly, that the subsidy measures have particularly been directed to small farms in remote areas, as for instance northern Finland. As a corollary it has to be mentioned that in northern Finland practically no large farms exist. It must in this connection be stated that necessary as the measures to support the less developed areas and the small farms have been, they have brought about a surplus of live-stock products, especially milk, exceeding the domestic consumption. It is, however, not possible here to penetrate the complexity of all intricate matters involved in agricultural policy with subsidies and so on to get rid of the surplus. Each medal has at least two sides.

	The share, in percent, of state subsidies in the gross return from agriculture			
	1950	1960	1970	1980
A small farm of 8 ha in northern Finland	16	19	17	32
A small farm of 8 ha in southern Finland	1	1	5	18
A large farm of 30 ha in southern Finland	0	0	0	9

I now introduce to you findings from *Belgium* where Bublot (1974) and his colleagues have carried out several analyses dealing with the income dispersion on farms keeping accounts. During the period 1966–1970 the average income per labour unit increased yearly at the rate of 10.9 per cent. On a regional basis the annual growth rate varied from 12.5 to 7.4 per cent. The most interesting finding was that within the same region the situation was marked by a growing differentiation among its farmers. The regional distribution curve on income per labour unit was, however, characterized by a flattening trend. This phenomenon was interpreted in such a way that price policy in Belgium has had a marked effect in reducing income dispersion, whilst the changes in the technical conditions of production have had an opposite effect. Another Belgian, Thonon (1977, p. 137), reports as follows: 'Farm incomes fluctuate considerably from year to year, partly because of variations in the prices of inputs and outputs and partly due to changes in their volume. Although 66 per cent of the increase in the volume of production can be attributed to technological advance, it has had only a minor impact on the level of farm income due to the depressing effect of increased output on production prices'.

Sneesens (1979), also from Belgium, has analysed the dynamics of income dispersion between farms from 1962 to 1975 in the Belgian Loamy area. Among the determining factors are mentioned the development of the technical conditions of production and the price policies adopted. The results show that price policy had had a very marked effect in reducing income dispersion, whilst the changes in the technical conditions of production had had an opposite effect. Family income dispersion had overall been reduced by 5.1 per cent, which verifies the equalizing role price policy can play in agriculture. Sneesens emphasizes that the effect of price policy upon internal income distribution between farmers has often been under great criticism and much misgivings have been expressed. He states that public authorities had succeeded in favouring small farms by influencing price relationships. But he continues by mentioning that the use of relative prices to reduce inequalities is limited by the more or less rigid restrictions imposed by the need to maintain market equilibrium. The German von

Witzhe has severely criticized Sneesens' research for methodological reasons but it is not meaningful here to discuss the dispute between the two economists. (See the *European Review of Agricultural Economics*, Vol. 7, no. 1, 1980.)

In information obtained from *Austria* by correspondence it is pointed out that the income gap between the large and the small farms has widened in postwar years. This development is due to the fact that the large-scale farmers are more alert and have better possibilities to take advantage of modern technology. In other words, Austrian governmental measures to even the disparity have not been effective enough. A German investigation reported by Rintelen (1968) indicates that the income disparity in *West Germany* has become more acute, and provided all farms were run at maximum efficiency the disparity would be even greater. The reasons for the rapidly widening disparity are mainly that progress in agricultural engineering, in arable farming and crop cultivation as well as in the food processing industries, favours some particular districts and sizes of farm more than others.

Switzerland is, in Europe, traditionally considered the founder of introducing and pursuing farm accounting among farmers. The activity was commenced already in 1901 and has been ever since continued on a broad and systematically well developed basis. Simultaneously Switzerland is one of the most developed countries which has long traditions regarding the levelling off of regional income disparities in farming and rural areas, with substantial financial and social state support also in order to maintain settlement in remote mountain areas. The Secretariat of the Swiss Farmers Union has, at my request, put together for my disposal numerous valuable empirical figures from Swiss book-keeping farms for the period of 1946–79. It is neither possible nor relevant to give a comprehensive account of the report forwarded to me but it is of great value to give a summary. It indicates the interesting phenomenon that between farms of various sizes during the early postwar years the differences strongly grew but later on a tendency in a smoothing direction has come about. Two main causes for the latter phenomenon are stated, namely:

- a more intensive line of production on the small farms, with an increase in the number of livestock and cultivation of fruit, vegetables, and vineyards.
- the disappearance of numerous low income and less profitable small farms resulting in the survival of only the most progressive and profitable ones.

To what extent, however, is this phenomenon also due to governmental policy actions? In order to bridge the income gap between regions, or at least reduce it, the Federal Swiss Government supports agriculture at a high level. That the subsidies spent on the benefit of farming are very significant is clear when mentioning that in an investigation from 1976 around 25 per cent of the net farm income of the book-keeping farms located in the valley districts consisted of subsidies in one form or another, the corresponding

figure for the book-keeping farms in the mountain districts was around 38 per cent. A policy along those lines must notwithstanding produce an effect; but how many countries can afford and are willing to sacrifice so much for agriculture and rural development?

The development in *Norwegian* agriculture is characterized by a somewhat similar trend as that in Switzerland with the exception of the northernmost and most unfavourable region of Norway where the gap throughout has widened. Thus in the more favourable districts the farm income per farm was on average for the group below 10 hectares 60 per cent of the corresponding income for the farm groups with 20-30 hectares in 1958-60, in 1968-70 it was 46 per cent, and in the period 1978-80, 55 per cent. Norwegian agricultural policy has during a long period of years endeavoured to prevent too strong a disparity and as far as possible to create equality and has thus partly succeeded. This was particularly the case in the 1970s.

From a very recent *Japanese* report ('The State of Japan's Agriculture', 1980) I cite the following statement:

The number of small-scale farmers leasing their land to others has increased, strengthening their image as lenders of agricultural land. On the other hand large-scale farmers are renting more land, expanding their scale by this means. These trends can be attributed to the aging of the labor force, the widening of the gap in profitability by scale of the operation, and the gap between small-scale farms and large-scale ones has widened. This is a reflection of an increase in profitability of the greater mechanization and integration of rice cultivation under way in larger farms.

What conclusions may we then draw from the material collected and the statements received from the seven developed countries discussed here? Has the income gap between the better-off and the worse-off groups of farmers increased within the decades since World War II or not? Within the frame of findings from the countries referred to, the reports from four countries denote that technological development has been conducive to widening the gap. Public measures have not managed to mitigate this cleft. Only in Switzerland and partly in Norway and perhaps also in Belgium have governmental actions to support small farmers and farmers in remote regions, in order to smooth the gap, borne fruit. Such an achievement has, however, been possible only because government has during a long period of time with considerable and single-minded action supported the worse-off groups of farmers.

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DISCUSSION OPENING – G. BUBLÖT

I shall open the discussion with seven comments which I will try to present very briefly.

1 It is difficult to *establish* in a rigorous way the dispersion of farm income and its trend over time. The economist has access to accounting data from a very limited number of farms constituting a sample which is hardly ever drawn up according to the requirements of statistical analysis.

The studies cited by Professor N. Westermarck show a remarkable number of similarities. In the European countries to which the cited works refer, as well as in Japan, it is observed that there is a clear trend towards a wider dispersion of farm incomes over time.

2 The latter, difficult to establish, is yet more difficult to *interpret*, because it is the result of many causes, among which are the region, the main production activities of the farms and their size, the level of farm education and management. Moreover, they operate together, that is in an indissociable and simultaneous way, which makes it difficult to identify their individual effects and, as a consequence, to know exactly where the cause of the observed phenomenon lies.

3 The formulation of the problem implies that at any time, *farm incomes are subject to some dispersion*. This is a manifestation of the

persisting extreme diversity in the conditions of agricultural production and comes from the fact that the greatest share of this – soil, fertility, situation, size, aptitude, and so on – accrues to the farmer.

4 Professor Westermarck strongly emphasizes the *importance of the human factor* as an explanatory element of the differences between farm incomes. It is often observed in the countries of Western Europe that the oldest farmers have the smallest farms, the worst education and the lowest incomes. But the opportunity cost of their labour is similarly the lowest and the differences between incomes would be much less if these were expressed, not in absolute terms, but in comparison with the real opportunity cost of the farmer's labour.

The same may be said so far as the regions are concerned: the farmers' incomes are often lowest in the regions which are less developed in economic terms. The regional differences between incomes would be less if the latter were expressed in terms of the opportunity cost of labour in the regions being compared.

5 In most of the studies cited, *mechanical progress* is considered to be an important cause of the increasing dispersion of farmers' incomes. The most efficient techniques are adopted at a greater rate than that at which the outdated ones are removed. The adoption of a high yielding machine is not accompanied by the immediate disappearance of machines with lower performances. As a result a growing dispersion in the capacity of the machines being used is observed and, as a consequence, an increasing dispersion of working times required by the different production activities and, ultimately, of output and income per man. Now, other things being equal, especially the region and the production activity, the material costs per hectare are no greater in the large farms than in the small ones. The former thus benefit, at no greater cost, from the enormous possibilities of mechanization, which would then explain to a great extent the increase in income dispersion.

6 From a broader point of view, this is only one facet of the *increasing differentiation between farms*, a process by which they become more and more different, not only as regards materials used and revenues received, but also regarding the choice of types of production. The investments are becoming so heavy and so specific, that farms can no longer equip themselves for a wide range of production activities; they therefore reduce their range of activities, specialize, and, as a result, see the level of their income and its evolution over time conditioned by factors specific to each activity.

7 The increasing dispersion of incomes is full of implications for *agricultural policy*. Some measures tend to reduce it, such as assistance to small farmers and to less favoured regions; also the growth of progressive taxation, in countries where it is observed. But the impact of price policy is more controversial. It is a matter of fact that the fundamental option of agricultural policy is a choice of the best compromise between attaining income parity and the efficient allocation of resources. But whatever form they take, agricultural policy measures

should be based upon a clear definition of the objectives to be achieved which probably requires a clearer notion of equity. I express here a personal opinion that the present conference has not adequately defined this concept. Doubtless economists hesitate to define and to clarify a concept presenting many facets which are not purely of an *economic* nature, like social ethics, distributive justice, welfare and so forth.

In conclusion, the dispersion of incomes irresistibly bring to mind the image of athletes engaged in an unending competition which increasingly accentuates the differences between the positions of each of them, notwithstanding the continuous elimination of those at the rear.

The attention paid to income dispersion in the developed countries has its roots in the fast and irreversible transformation of peasant agriculture into farm businesses and the pre-eminence of income considerations which this involves. It seems also that income dispersion is increasing in the developing countries; but farmers there are less sensitive to income, and conditions are less conducive to perceiving and measuring it.

As with many works, the excellent essay of synthesis of Professor Westermark's asks more questions than it answers. By this fact it must enrich discussion and open the way to further research.