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A COMPARATIVE STUDY ON FARMERS' INCOME

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Preface

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Maija Puurunen
Agricultural Economics Research Insitute
Luutnantintie 13
SF-00410 Helsinki

Abstract. The aim of this study has been to examine the starting points for the income comparison concerning the farm population, the determination of the incomes of the different comparison groups, and the ways in which they can be made comparable with each other. At the same time, an attempt has been made to develop methods for income comparisons between the different farmer groups, as well as for comparing the incomes of the farm population with those of wage earners and small-scale entrepreneurs, based on the existing data. In this study the incomes have mainly been examined for the part of individual farm and farmer groups. The main characteristics of the income study and comparisons concerning the farm population in Finland as well as in the Nordic Countries and in the EC have been presented. The definition and measuring of incomes has been examined on the basis of literature and from the viewpoint of the calculations and practical statistical solutions. In addition to the income concepts, the establishment of the income earner groups to be compared has been essential in preparing income comparisons. The results of the income comparisons mainly deal with the early part of the 80s and they have been presented as applications of the methods for income comparisons. The income concepts and delimitation of the comparison groups are partly tied to the groupings available in the existing statistics. The structure of the income statistics has been illustrated within the framework of the present changes in preparing the statistics.

Contents

1. Introduction

One characteristic feature of the democracy in western countries and especially in the Nordic Countries is the decrease of the income disparities between different population groups. However, powerful trade unions are defending their members' interests as wage earners, which has led to a competition between different wage earner groups. In the entrepreneurial sector it is possible to compensate for the increase in wages through rationalization and raising prices. Agricultural production and the livelihood of the farm population as small-scale entrepreneurs involve many special features, which restrict or prevent the application of similar measures in agriculture. The pricing of agricultural products is regulated in order to guarantee a reasonable income level for the farm population. In the northern conditions the self-sufficiency in basic food stuffs, which aims at securing the food supply in different kinds of crises, has required protectionism in foreign trade. Traditionally, farm population has been located in the peripheries, which has made state support to agriculture necessary.

In the industrialized countries agriculture has for some time been a decreasing sector with regard to the number of farmers. The overall increase in the wage level has caused, not only the hired labor, but also farmers and their families to move from the agricultural sector to the other sectors, and thus in part accelerated the development and application of agricultural technology. As a result of the higher efficiency in agricultural production, it has been possible for the farm population to enjoy the overall increase in the welfare in the society. Increase in the productivity of labor has lead to a vast overproduction in agriculture in many western countries. This has in part impeded the income development of farm population in relation to other population groups. In many countries attempts have been made to achieve an equal livelihood for the farm population in relation to other population groups through negotiation systems that are prescribed by law.

In most western countries studies related to income disparities between different population groups have been carried out for several decades. In the case of the farm population, the incomes of wage earner groups determined as an alternative to the incomes of the farm population have formed the standard of comparison, and in recent studies comparisons between the incomes of farmers and other small-scale entrepreneurs have been on the increase. Income disparities between different farmer groups also form a separate field within the income studies.

The aim of this study has been to examine the starting points of income comparisons concerning the farm population, the determination of the incomes of the different comparison groups, and the possibilities for making these comparable with each other. At the same time methods for income comparisons between farmer groups, between the farm population and wage earners, as well as between farmers and other small-scale entrepreneurs have been developed on the basis of the existing data. This study concerns mainly the incomes of individual farm and farmer groups. In examining the factors affecting the income level, income disparities between farmers have been studied separately in a way that takes the production line, region, farm size and part-time/full-time farming into account. No detailed cause-effect study has been carried

out in this connection, although in some earlier publications of the author this has also been dealt with to some extent (e.g. PUURUNEN 1989, p. 15, 23, 35). From the viewpoint of the agricultural sector or the national economy as a whole the question of farmers' income has been examined only to the extent that this has been regarded as inevitable in this connection.

The present study has been carried out in connection with the study of the income level that has been underway for several years in the Agricultural Economics Research Institute. At the same time it forms an extended final report, including an estimate of the possibilities for further studies in this field. Results of the study have been published in many different connections (e.g. TOLVANEN[1]1985, PUURUNEN[1] 1987b, 1989).

In the present study, first of all, a summary of the income study concerning the farm population as well as income comparisons in agriculture in the Nordic Countries and in the EC is presented, mainly on the basis of an earlier publication by the author (PUURUNEN 1987b). In the earlier publications the special features of the incomes in agriculture and the determination of incomes in income comparisons concerning different population groups have mainly been dealt with from the viewpoint of practical, statistical applications. In this connection the theoretical examinations related to the measuring of incomes have been added into the study. Also, the delimitations concerning the different comparison groups as income earner groups have been studied more extensively than in earlier publications.

The results of the income comparisons concerning the farm population have been presented in the publication that dealt with the development of the incomes of the farm population in the 1980s (PUURUNEN 1989). In the present study the results have been examined briefly mainly as applications of the methods for income comparisons. Continuous follow-up of incomes requires developing the existing data, which have mainly been dealt with within the framework of the known statistical methods. As a result of the development in statistics, the data needed in the income comparisons concerning the farm population and the concept of income become more accurate, and the possibilities for grouping income earners increase.

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[1] The same author

2. Income study concerning the farm population

The low income level of the farm population in relation to the income level reached in other sectors has been a quite general concern in both agricultural and industrialized societies. Increase of incomes within agriculture is reflected to the livelihood of many population groups in the society, and the increases often find more opposition than support. In western wealthy societies it has been possible for farmers to influence their income level through increasing the productivity of agriculture. In countries that have a high cost level this has lead to problems in marketing and to overproduction, which for its part has made it more difficult to find solutions to the problems related to the income level of the farm population. In developing countries the overall scarcity of resources is strongly reflected in food prices, farmers' income level and, at the same time, in the slow development of the productivity of agriculture. The little increase in the productivity of agriculture has often been spent on meeting the needs of the growing farm population, and the incomes and livelihood of the farm population have remained behind the income level reached in other sectors. In socialist countries an attempt has been made to secure the same consumption possibilities for everybody, and it is possible to regulate the development of the income level of the farm population through the wages paid for farm work. Consequently, the income level in agriculture is not tied to the development of productivity, which is the case in those countries in which agriculture is based on private entrepreneurship.

Comparative studies related to the income level of the farm population in Finland and in some selected western countries, in which the problems connected with farmers' income level as well as the income objectives are similar to those in Finland, will be examined in this chapter. Income comparisons carried out in Sweden and Norway are of special interest due to the similarities in agriculture in the Nordic Countries. Also, income study concerning the farm population in these countries is both advanced and extensive. Instead, in income comparisons of agriculture applied in EC countries it has been necessary to find solutions to comparing incomes of very different kinds of farms in different countries with each other. In these countries the overall income objective for farm population, according to which farm population should be guaranteed an income level which is comparable to that of other population groups, has been the starting point for the study of incomes. Even if the income objectives are basically the same, income studies related to them have taken different forms in these countries.

This chapter presents an account of the income objectives concerning the farm population as the starting point for a study of incomes, as well as the organization of the study and the decisions made in this connection in different countries. A more detailed account of the income concepts applied in the comparisons is presented in Chapter 3.4., and the problems related to the formation of the groups to be compared are examined in Chapter 4. In connection with the concepts of income, special attention has been paid to applications carried out in Sweden, and, in the case of the comparability of different kinds of farms, to the comparisons of agricultural income in EC countries.

2.1. Starting points for the income study concerning the farm population

In Finland an equal income development for the farm population with other population groups has been pursued by law since the 1950s. In a 1952 government decision on the determination of the prices of agricultural products, which was passed in the parliament in 1953, the proportion of agricultural income was tied to the changes in the overall wage level (ANON. 1952). This was mainly based on a total calculation of the return and costs and on agricultural income calculated as the difference between the two, which was being applied in Sweden (JURÉEN and HOLMSTRÖM 1951, Kom.miet. 1951:13, p. 135-160). In the beginning the application of the price system was hampered by the disputes related to determining the overall wage level, abolishing the price control after the war, as well as by the need for consolidating the overall wage and price levels (SAULI 1987, p. 34-52).

Since then the price settlements in agriculture have mainly been based on various Price Acts, which have remained in force for two or three years, and which have aimed at securing the income development of agriculture. Variations in the contents of the Price Acts have for the most part concerned the relation between the development of the income level of the farm population and that of other population groups. The calculation of the change in costs as well as its compensation to agriculture has been determined in the same way in different price acts. Apart from income compensation, developing the income level of the farm population has also been tied to the development of the productivity of agriculture. The ways in which productivity is taken into account varies in different Price Acts. Since the 1970s the raise of agricultural income has been agreed on in the negotiations between the state and the organizations of agricultural producers, because in the 1968 consolidation agreement the development of agricultural income was tied to the general settlements in income policy (SAULI 1987).

Price settlements in agriculture are part of the so called high price system, which means that foreign influence is excluded almost completely, and price formation is a result of domestic factors. In this situation the producer prices of most products needed to reach the income objectives of agriculture have been higher than the balance prices based on supply and demand (KETTUNEN 1981a, HASSINEN 1985). As a result of the increase in the income level of wage earners, as well as attempts to secure domestic supply and employment, the overall cost level has also risen. In agriculture cost level is necessarily high due to e.g. Finland's location in the north. Because the development of producer prices is regulated, increasing productivity and production has been almost the only way for agriculture to improve the income development. This is one of the reasons why dairy production has exceeded the consumption since the end of the 1950s, the production of some other livestock products since the 1960s, and crop production since the 1970s. The surpluses have been exported by means of export subsidies paid by the state, and, more recently, also by agriculture (TORVELA 1985, SAULI 1987).

The compensation for the rise of costs and the raise of agricultural income are realized through increases in target prices and in price policy support. There are two phases in the negotiations between the state and the organizations of agricultural

producers. In the first phase, the Agricultural Price Council prepares a total calculation of the returns and expenditure of agriculture, based on the average amounts of the last three calendar years. The prices used here are the current prices, as well as those of the last settlement. According to the Farm Income Act (e.g. ANON. 1982a), the farmers receive a full compensation for the rise in costs through a rise in the target prices and in the prise policy support to the extent that the increase in the total return corresponds to the rise in costs. The target prices should be realized completely. In the spring settlement a calculation is made showing deviations from the target prices. The following year this correction is returned to the prices. At the next stage the parties negotiate on the increase of agricultural income. Finally, the division of the total increase to farmers through target prices as well as various subsidies and benefits is determined. Among other things the market situation of agricultural products and the development of the production costs of different products are taken into account in the distribution. In the fall price settlement, the change of costs due to the changes in the prices of production inputs is determined, and target prices are corrected correspondingly. The fall settlement is much more limited than the spring settlement. Incomes are not negotiated at all, and the change in capital costs is taken into account only once a year, in the spring settlement (KETTUNEN 1989, p. 17-20).

In addition to the total calculation of the Price Council, the changes in production costs are being followed in different farm groups. These production cost calculations at the farm level are partly based on farm models, which have been developed through data from the bookkeeping farms, and through norm figures and test results. The farm models represent the conditions in the southern Finland, and their efficiency is above the average (IKONEN 1987). The distribution of the total increase to farmers is a result of various factors, and it is not possible to determine to what extent the stipulations of the Agricultural Income Act have affected it. Accounts of the income policy in agriculture, price systems and their realization have been presented in various connections (e.g. IHAMUOTILA 1978, 1979, HEMILÄ 1980, KETTUNEN 1980, 1989, SILTANEN & ALA-MANTILA 1989).

According to the Agricultural Income Acts in the 1980s (ANON. 1982a, 1984b, 1986c and 1989d), the income development of industrial workers has to be taken into account in developing the incomes of the farm population as follows:

> The annual income from agriculture on rationally managed farms requiring full-time employment of the farm family and that of a skilled industrial worker as well as their development must be taken into account in the negotiations.

In the earlier acts it has been required that the income development of various comparison groups be taken into account, but the 1982 Agricultural Income Act implies determining the income levels of the comparison groups. This is one of the reasons why studies of income disparities between the farm population and wage earners, including the present study, were launched in the early 1980s. In addition, it was required that a follow-up system of the income formation on different kinds of farms be developed. In the 1980s the development of agricultural income in different production lines and regions has been followed through the results from the farm groups based on the bookkeeping farms. The calculations are based on the average results of

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the last three statistical years, and the income development after that is estimated on the basis of various price indices (IKONEN 1988, ALA-MANTILA 1989).

Foundations for the present agricultural policy in Sweden were laid in a 1947 parliament resolution, in which objectives concerning the incomes, production and efficiency in agriculture were set. Thus Sweden is probably the first country in the Western Europe in which centralized agricultural policy has been established in order adjust agriculture to the economic development of the society. For the most part the agricultural acts of 1967 and 1977 are based on that of 1947, although the changes in the conditions in Sweden and in the world have affected the formulation of the objectives (ANON. 1984a, PUURUNEN 1987b, p. 19-22).

In 1984 the Swedish parliament determined the securing of the food supply in both peace time and crisis or war conditions as the main objective of food policy. Farmers should be equal to the comparable population groups in terms of their economic and social position. The income objectives concern in the first place rationally managed family farms that provide full-time employment for the farm family. An attempt has been made to keep the consumer prices at a reasonable level and, at the same time, to help achieve the income objective in agriculture through rationalization policy. It is required that the distribution of incomes within the farm population between young farmers and those who have been engaged in agriculture for a longer time should be based more on solidarity (ANON. 1989c).

In Norway the first Storting (parliament) resolution concerning the objectives and guidelines of agriculture dates from 1955. In the following decision in 1965, the social function of agriculture has been defined as the production of food for the population and the inhabitation of most parts of the country. At the same time, objectives concerning overall economic growth in the society and increase of the welfare of all population groups have been included in agricultural policy. Agricultural income from a modern and rationally managed farm that employs one annual worker has to be at least at the same level as the average wage income reached in rationally managed industry. In 1975 the deadline for reaching the income objective was set to 1982. However, later the income objective was based more on negotiations and on the objectives set in connection with the comparisons of the standard of living.

According to a 1976 Storting resolution, the comparisons must be based on other factors besides the income from work measured as money (ANON. 1976, p. 75-84). Following the income objective, agricultural policy has to guarantee similar economic and social conditions to farmers as those of industrial wage earners. The starting point for the 1985 agricultural income negotiations was that farmers must reach the same income level and, apart from the effects of taxation, the same standard of living as those of industrial workers (ANON. 1985c, p. 5). In the case of the factors related to the standard of living, reference is made to an extensive study (ANON. 1985g), which has formed the basis for deciding on the amount of the benefits to farmers due to factors related to the standard of living (ANON. 1985c, p. 55).

Problems connected with the income level of farm population are central in agricultural policy in the European Communities as well. Article 39 of the charter of foundation of the EC includes as one objective the securing of a reasonable income level to agricultural communities, especially by increasing the personal incomes of those engaged in agriculture. In addition to the overall economic situation, world

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market situation and the market situation within the EC, factors related to the income level in agriculture are the most central ones to be taken into account by the European Commission in determining the recommendations for prices in agriculture (FENNELL 1989, p. 115).

One basis for the factors affecting the income level in agriculture is a modern and efficient farm, which provides equal income as is reached in full-time employment outside agriculture in the same region. Another precondition for the income objective are producer prices that make it possible to reach the income objective when the changes in costs, increase in the productivity of agriculture and the development of the income level in general are taken into account. Due to the problems of overproduction in agriculture, in the 1980s the European Commission has laid more emphasis on factors related to the market situation of agriculture rather than the income objective in its price recommendations. In addition to the recommendations by the Commission, various political and national factors affect the final decisions on prices made by the Council of Ministers (FENNELL 1979, KAARLEHTO 1986, ANON. 1987e, AALTONEN 1988).

2.2. Income comparisons concerning the farm population

In Finland, like in the other Scandinavian countries, the laws and acts concerning the incomes in agriculture have been the starting point for the study of the incomes of the farm population. Most Finnish income comparisons concerning the farm population have been prepared in committees (PUURUNEN 1987b, p. 8-14). In the 1960s and 1970s income comparisons were mainly prepared according to principles presented in the report of the Income Level Committee. In addition to the principles used in the comparisons between the farm population and wage earners, the Income Level Committee (Kom.miet. 1966:B 94) examined the possibilities for preparing income comparisons between the farm population and wage earners on the basis of the statistics available at that time.

In addition to the committee reports, income comparisons have been prepared by individual researchers. SAULI (1951) has examined the standard of living of the farm population and wage earners on the basis of income and consumption levels in the early 1950s. Comparisons of the standard of living by VIITA (1964) consist mainly of comparisons of disposable incomes. IHAMUOTILA (1968) has determined the level of farmers' labor income on the bookkeeping farms in 1956-1965 and compared this with the wage income of industrial workers in rural areas. Income disparities within the farm population and income formation have been examined mainly on the basis of the book-keeping farms in several connections (e.g. TORVELA & JÄRVELÄ 1973, TORVELA & ALA-MANTILA 1987, PUURUNEN 1987c).

The extension of the statistical basis in the 1970s and 1980s has facilitated the follow-up of incomes and preparing income comparisons considerably. On the basis of the data on the taxation of agriculture and forestry, since the statistical year 1973 the Central Statistical Office has published Enterprise and Income Statistics of Agriculture and Forestry (ANON. 1988g and 1989f), which has made it possible to examine the taxable income and average income level of the farm population in different farm groups (e.g. AALTONEN 1981). Income Distribution Statistics published since the

statistical year 1977 (ANON. 1987f) have for their part increased the possibilities of comparing the incomes of the farm population with those of other population groups. According to the 1982 Agricultural Income Act (ANON 1982a), in addition to the income development, the income levels of the comparison groups must also be taken into account in the negotiations on agricultural income. Related to this act, a study of income disparities between the farm population and wage earners has been underway since 1982 in the Agricultural Economics Research Institute, in co-operation with the Pellervo Economic Research Institute, the Central Statistical Office of Finland, and the Labour Institute for Economic Research. Results of this study have been published in various connections (e.g. TOLVANEN 1985, -& TORVELA 1985, -& TORVELA 1986, TORVELA & PUURUNEN 1987, -& PUURUNEN 1988, PUURUNEN 1987a, 1987b, 1989).

The objectives of the income studies concerning the farm population are basically the same in the Scandinavian countries and in the EC, i.e. examining income dispari-ties within the farm population on the one hand, and comparing the incomes of the farm population with other population groups on the other. However, the study of the incomes of the farm population has taken different forms in different countries, mainly as a result of differences in, for example, the starting points for the study, resources, the structure of statistics, and general decisions concerning the studies.

In Sweden the income studies concerning the farm population have long traditions, and at present income comparisons are made by means of an extensive statistical basis and using different kinds of income concepts. In the 1980s an attempt was made to develop income comparisons more towards a study of the standard of living. Accord-ing to the income objective of agriculture, farmers should have the same economic and social position with comparable population groups. Because farmers are private entrepreneurs, other entrepreneur groups comparable to farmers have been chosen as the comparison group. Traditionally farmers' incomes have also been compared to those of wage earners because the statistical data concerning small-scale entrepreneurs required in income comparisons has been insufficient. Within wage earner groups, industrial workers have been the main standard of comparison for the income develop-ment of the farm population.

In the income comparisons prepared by the Committee for the Standard of Living (Levnadsstandardgruppen) in the early 1980s (ANON. 1980, 1983a), in addition to the nominal incomes so called real incomes have been taken into account, as well as the changes in the value of money in the course of time and their effects on the income concepts. As a concept, the standard of living is much more complex and extensive than income. In addition to the economic elements and, in general, elements which can be estimated in terms of their monetary value, the standard of living can be regarded as consisting of many components that depend on value judgements. The Committee for the Standard of Living has concentrated on comparisons of material conditions, especially economic resources. Comparisons of the standard of living of the farm population, as well as other income comparisons based on the principles examined by the committee are at present carried out in the so called Committee for the Follow-up of Incomes (Inkomst-gruppen) (ANON. 1983b, 1984c, 1986b, 1989c). On the other hand, studies concerning the standard of living of the farm population are also made in the Central Statistical Office of Sweden (Statistiska centralbyrån), but

these are mainly based on different statistics than in the Committee for the Follow-up of Incomes (ANON. 1985b).

In Norway, according to the 1965 Storting resolution, the income development of industrial workers forms the starting point for income comparisons in agriculture, i.e. agricultural work should provide the same income level as industrial work. Comparisons are made on the basis of the average results and farm models developed in the Agricultural Economics Research Institute of Norway. For the part of agriculture, income comparisons are tied to the farm models, which have been corrected according to the requirement for efficiency. Efficiency norms must be varied so that they are in accordance with the current development of agricultural production, and, on the other hand, new farm models, especially for small farms, must be developed (ANON. 1976).

According to the 1976/-78 income agreement, comparisons between farmers and industrial workers must be based on other factors besides the income from work measured in money. The Storting notice (ANON. 1979) prepared on the basis of the report of the Standard of Living Committee (ANON. 1978), presents the main principles for the calculations concerning the standard of living. The starting point in the comparisons of the standard of living is the calculation of the annual income on the basis of the farm models, using the more precisely defined efficiency level (ANON. 1985c, p. 12-17, 1985e). Then the differences in the factors affecting the standard of living of the comparison groups are estimated, using information from various sources. Certain factors concerning capital must be taken into account as a component of the standard of living estimated in money (ANON. 1985c, p. 7, 1985e).

As a result of the traditional connections between the Nordic Countries and the similarities in agriculture, the starting points for the income comparisons concerning the farm population are very much the same. In practice, differences are greater in the preparing of the income comparisons than in determining the objectives. The methods of the income comparisons in Norway are based on model calculations, whereas in Sweden they are based on the data on incomes directly available in the existing statistics. In Norway the factors related to the standard of living have been estimated as a comparison income, which means that it has been possible to compare the farmers' income directly with the income of industrial workers, which is calculated in the same way. In Sweden the real incomes of households in different groups are presented in the calculations, and these cannot be compared directly unless, besides the comparison income, background factors like working conditions, own capital and other economic and social conditions are taken into account (ANON. 1980, p.25).

In income comparisons in the EC, the comparability of incomes within each member state as well as between the different states is taken into account. The conditions for agriculture and the statistics vary a great deal in the different member states. In order to examine the results of agriculture, a sample of about 40,000 farms has been collected from ten member states, which forms a so called Farm Accountancy Data Network (ANON. 1986e, 1988h), through which the incomes of the farm family from agriculture can be accounted for on a uniform basis in the whole EC. To make it possible to compare the economic results from very different farms in terms of the farm size and production line in different countries with each other, it has been necessary to make decisions for measuring the farm size on the one hand, and for making the different exchange rates compatible with each other on the other (ANON.

1985f, POPPE & ZACHARIASSE 1987, AALTONEN 1988). In addition, the possible differences in the price level must be taken into account in income comparisons between different economic regions, and especially between different countries (e.g. IHAMUOTILA 1968, p. 51-53, 123-125, UUSITALO 1975, p. 85). However, taking the differences in the price level and the different kinds of consumption models into account has proven very problematic both in theory and in practice, and, consequently, this has been excluded from the income comparisons in the present study.

3. Income concepts

3.1. Foundations of income concepts

The foundations of the concept of income have perhaps been most clearly laid down by Irving Fisher (1906) in his definition: ''A stock of wealth existing at a given instant of time is called capital; a flow of benefits from wealth through a period of time is called income''. As Lindahl (1933) further suggests, according to this, income consists of certain benefits which arise from the employment of wealth, whereas legacies, gifts, and the like are considered as falling outside the concept of income. Lindahl emphasizes that it is best to distinguish between anticipated income, which refers to a certain period forward in time, and income obtained, which is reckoned after the termination of the period in question. Income as interest is anticipated income and may be taken as referring to the continuous appreciation of capital goods owing to the time-factor. Income as interest can be said to correspond to the total sum of the consumption and the saving expected to take place during a certain period, the element of saving being expressed in the increase in value of the capital, exclusive of gains and losses. Income as earnings and produce are income obtained. If the future could be completely foreseen, income as earnings (actual consumption plus appreciation of capital stock) would correspond to income as interest (anticipated consumption plus saving). Income as produce is defined analogously to the concept of production. Net income becomes identifiable with the net value which the owners of the factors of production receive as remuneration for their contributions to the productive process (Ref. PARKER et al. 1986, p. 82-90).

Simons (1938) (Ref. PARKER et al. 1986, p. 92) presents four different meanings in which the concept of income has been used in the economic theory. Income from things may be conceived in terms of services derived from things or, quantitatively, in terms of the market value of uses. Thus, we speak commonly of income from land, from produced instruments, or from consumers' capital. The term is also frequently used to denote income from transactions or trading profit. Social or national income denotes, broadly, a measure of the net results of economic activity in a community during a specified period of time. Social income is merely a welfare conception. Personal income means, broadly, the exercise of control over the use of society's scarce resources. Personal income implies an estimate of consumption and accumulation. The measurement of income implies allocation of consumption and accumulation to specified periods. Earlier Haig (1921) has expressed income as the money value of the net accretion to one's economic power between two points of time (Ref. HIBBERT 1983, p. 12). Later on these two definitions have been known as Haig-Simons's income concept.

HICKS (1946, p. 171-181) proposes that the purpose of income calculations in practice is to give people an indication of the amount that they can consume without impoverishing themselves. Taking account of the changes in interest rates and prices, Hicks gives the definition of income as

the maximum amount of money which the individual can spend this week, and still expect to be able to spend the same amount in real terms in each ensuing week.

When a person saves, he plans to be better off in the future,   when he lives beyond his income, he plans to be worse off. If some part of his expenditure is spent on durable consumption goods, already bought in the past, this tends to make consumption exceed expenditure. It is only if the acquisition of new consumption goods just matches the use up of old ones that we can equate consumption to spending. That is why saving is not the difference between income and consumption. If interest rates or prices are expected to change, the individual must expect to be more or less well off at the end of the week than he is at the beginning.

According to Kaldor's findings (Ref. PARKER et al.1986, p. 122- 125) the difficulties surrounding the notion of capital and of "maintaining capital intact" must imply a corresponding limitation in the income concept, but these difficulties cannot be disposed of by defining the maintenance of capital simply in terms of the maintenance of income. Capital appreciation represents a genuine gain whenever it secures for the recipient an increased command over both consumption goods and income-yielding resources, i.e. an increase in the purchasing power of his wealth in terms of commodities, viewed as either a stock or as a flow. When a general fall in interest rates or times of inflation are taken into account it follows that the ideal definition of income, as a measure of taxable capacity, is to be thought of as

consumption plus real capital accumulation, where the term "real capital accumulation" is to be understood as actual capital accumulation subjected to a double series of corrections: first, for the change in the general level of prices (of consumer goods), and second, for the change in the general level of interest rates.

The correction for the change in the general level of prices could be regarded as an 'index-number problem', but, as for the true change in interest rates, it is not something that can be inferred from market data. When the general level of share values goes up, it is not possible to say how far the rise represents increased expectations of profits, and how far it represents increased confidence resulting in a lower rate at which the expected profits are discounted. Thus the problem of defining individual income, quite apart from any problem of practical measurement, appears in principle insoluble.

A somewhat different concept of income and capital maintenance, also identified by Hicks, and described elsewhere (Scott 1976) as the "standard stream concept", is

the amount which can be consumed during a given period without affecting the ability of the income-generating assets to yield the same real income in all future periods

(HIBBERT 1983, p. 12). This concept of income would have the advantage of being less liable to irregular fluctuations than the concepts of Haig and Hicks, since a large "windfall" gain or loss would have much less immediate impact, mainly affecting future rather than current income. Real holding gains and losses on assets and liabili-

ties denominated in money terms, arising from inflation, would be taken into account (through expected rather than actual inflation). One might envisage a reasonable approximation to this concept as the current definition of income, adjusted only for the inflationary gains or losses on financial assets and liabilities denominated in money terms. It would be assumed that holding gains or losses on tangible assets and equities do not affect the ''standard stream income''.

In all aforementioned definitions income is regarded as a flow of goods from the assets that is measured as money in the course of time. At the same time these definitions include a hypothesis of the initial value of assets, formulated in different ways, and the change in the value of assets during the period under consideration is considered income. The net accretion of economic power during a time period is expressed in the definition known as Haig-Simons' income concept, the Hicksian definition includes a hypothesis of the constancy of the consumption potential, which has later on been specified by Scott through the constancy of the ability of assets to produce income. Consequently, income is related to a certain period of time, whereas assets indicate the income reserve, i.e. capital, at a certain point of time. If there was no consumption, and no changes occurred in the price and interest levels, the amount of capital would increase by the amount of income during the period. Consumption reduces savings and, through this, the formation of capital. Changes in the price and interest levels, for their part, affect both consumption and the value of assets.

3.2. Determining of Incomes

3.2.1. Measuring of Incomes

Solomons (1961) (Ref. PARKER et al. 1986, p. 153-166) states that if we take Hicks' definition of income as applied even to an individual, income in Hicks' sense and income as the accountant measures it will only by accident ever be the same thing. The difficulty about the definition is in determining what we mean by 'being as well off' at one date as at another. If we accept constancy of money capital as representing constancy of well-offness, then income in Hicks' sense becomes the amount by which the individual's net worth has increased during the period, due allowance being made for the value of what he has consumed or given away during that time.

To use Hicks' definition for the income of a business entity, we need to modify it only slightly: the income of the business is the amount by which its net worth has increased during the period, due allowance being made for any new capital contributed by its owners, or for any distributions made by the business to its owners. Net accounting income is the figure which links the net worth of the business as shown by its balance-sheet at the beginning of the accounting period with its net worth as shown by its balance-sheet at the end of the period. Hicksian income demands that in evaluating net worth we capitalize expected future net receipts, while accounting income only requires that we evaluate net assets on the basis of their unexpired cost. We may sum up the relationship between these two different concepts of increase in net worth, economic income and accounting income, by starting with accounting income and arriving at economic income as follows:

Accounting income

+ Unrealized changes in the value of tangible assets which took place during the period, over and above value changes recognized as depreciation of fixed assets and inventory markdowns,

− Amounts realized during this period with respect to value changes in tangible assets which took place in previous periods and were not recognized in those periods,

+ Changes in the value of intangible assets during the period, hereafter to be referred to as changes in the value of goodwill

= Economic income = Variable income + Unexpected gain

$$V_{1a} - V_{0a} + R_a = (V_{1e} - V_{0a} + R_a) + (V_{1a} - V_{1e})$$

(V = the value of the asset, R = the net receipts, a = actual, e = expected amounts)

The concept of "variable income" attempts to eliminate the effect of a change in expectations from the measure of economic income. In the case of the variable income of a business enterprise, Ra is the change in net tangible assets during the period, all assets being valued at cost. This is equal to accounting net income before charging depreciation or providing for inventory mark-downs. The second element, $V_{1e} - V_{0a}$, is the change in the ex-dividend value of the enterprise during the year that can be predicted with more or less certainty at the beginning of the year. This predictable change in value is, as Solomons suggests, what we ought to be measuring when we account for depreciation. This depreciation is based more on the expected loss of market value through use of obsolescence of assets rather than on allocations of historical cost.

As the third element we must include in variable income any change in the value of the enterprise which is the result of managerial activity during the year over the predictable change. Such change may take the form of a change in the value of tangible assets or a change in the value of goodwill. In measuring variable income we have two problems, one of valuation and one of attribution. We can rarely separate the results of good luck and good judgement, and that is why we cannot hope to make a distinction between those value changes which are to be included in variable income and those which are to be included in unexpected gain. As Solomons suggests, variable income is a valuable idea in clarifying our thinking about what an income concept should give us and in recognizing the limitations of accounting income.

As Beaver & Demski (1979) (Ref. PARKER et al. 1986, p. 176-177) express in regime of incomplete markets, income measurement in a fundamental sense does not describe what accountants do. A condition for fundamental measurement may be missing in cases where we would commit scarce resources to production of accounting numbers. Matching of costs and revenues, for example, is not an underlying notion here. Rather, the case for income rests on the assumption of aggregating more informative but also more costly data so that a cost-effective communication mechanism is obtained. However, this assumption is problematic, and one challenge to accounting

theorists is to address the primitive question of the propriety of the accrual concept of income.

SÖDERSTRÖM's (1977) starting point for defining the concept of income is basically the same as Hicks', except that he defines income through consumption potential. Consequently, everything measured as money or any goods and services that have money value and that can be used are considered income. Factors affecting the consumption potential of an income earner are own production, services, borrowing, exchanges, income transfers and value changes. In the first four the income is a result of the income earner's own actions, and in the last two of actions of others that affect the consumption potential of the income earner. By value changes Söderström refers to the relative value changes in property goods when price development is non-uniform. Instead, if all prices change at the same pace, property as such does not produce income. The decrease in the value of assets used in the production process has to be subtracted from the rise of the value of these assets.

ANDERSSON & BENGTSSON (1984) have examined the ways in which capital gains and losses can be treated in the measurement of income in agricultural enter-prises and in the measurement of farmers' disposable income. The study concentrates on comparing different measures of income, in which capital gains and losses are taken into consideration. The conventional method is the traditional one used in accounting, made up on the basis of the laws of bookkeeping. In the other methods assets are claimed to be valued at replacement costs, which in comparison to the conventional method leads to the concepts of realized and unrealized changes in asset values. In nominal income of the substance-value-method, both realized and unreal-ized changes are considered in the income statement. Real income is made up from nominal one by excluding the effect of inflation on the purchasing power of the owners equity. In the dividend-method we are concerned with the possibilities the farmer has to withdraw money from his enterprise without introducing further produc-tion possibilities. In the dividend-method the unrealized changes are excluded from the income statement. This concerns the realized changes that are financed with borrowed money, too.

The methods were studied with various types of model farms to find out if the conclusions are dependent upon the type of farm. The simulations concerning the economic results of the farms with the different methods indicated that it is not possible to give any general proposal of method. The method is related to the aim of the measurement. Andersson & Bengtsson bring up three different levels of aims for the methods:

1) The average farmer in the agricultural sector in comparison with other sectors
2) A group of farmers in the agricultural sector compared to another group
3) The individual farmers' possibility to use the method in judging the result of his enterprise

The conclusions of the study reveal that it is necessary to look upon the capital gains and losses over a quite long period of time when judging the income figures for the average farmer (aim 1). This points to the substance-value-method with the unrealized changes spread out evenly over a period of time as the proper method, especially

concerning real income. The above mentioned conclusions also stand for groups of farmers (aim 2). For this aim it would also be useful to apply other methods to find out whether it could be stated that the unrealized changes are going to have a substantial importance for the internal conditions in agriculture. The individual farmer (aim 3) is primarily interested in the dividend-method, since he is concerned about judging the farm's profitability, and therefore he is not interested in taking the unrealized changes into account.

3.2.2. Income calculation and statistics

In the course of time, income calculation has assumed various forms, depending on what kind of calculation systems have been considered the most appropriate in different connections. Like economic calculations in general, at present income calculations are made more than ever before, and the need for finding new calculation methods and developing the old ones is continuously on the increase as the society and its functions change and become more and more complex. At the level of macroeconomics, calculations concerning the national economy and the incomes of the different sectors form a typical field of application. At the level of microeconomics, the most central income calculations traditionally concern the realization of taxation and the distribution of the subsidies from the society to the citizens in an appropriate way, the study of the profitability of enterprises, as well as examining the consumption potential of households.

One common feature in all income calculations is the calculation of the difference between the returns determined in money and the sacrifices made to produce the returns, i.e. the share of nominal income without taking the changes in the value of assets into account. It should be noted that in the study the concept of real income always includes the changes in the value of the means of production and other assets, determined in one form or the other. Instead, the nominal income presented at the price and cost level of a certain year, which is sometimes also called real income, has in the study been called deflated nominal income. The accounting of returns and the corresponding costs and, in consequence, income calculations are based on the cash receipts and payments during the accounting period, which are supplemented and corrected in ways that are appropriate in different cases. Consequently, income calculations made in different connections are usually based on different methods, and their results are often not comparable with each other.

Taxation forms an extensive source of data on incomes between individual citizens, corporations and enterprises on the one hand, and the public sector on the other, which can be used, apart from indicating the tax-paying ability of income earner units, for directing social subsidies and other income transfers. In the case of individual citizens and corporations that can be regarded as so called legal persons, the income calculation is formulated according to the stipulations of personal taxation (e.g. ANON. 1986a), based on the Act on Taxation of Income and Property (ANON. 1974). For the part of enterprises and persons carrying on a trade, the result of industrial activity is confirmed on the basis of the 1968 Act on Taxation of Income from Industries (EVL) (ANON. 1968). Those engaged in trade and entrepreneurial activities have a duty to keep books, except for the non-corporate public sector and those engaged in agricul-

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ture and forestry (ANON. 1973). The stipulations on the taxation of agriculture and forestry are stated in the Act on Taxation of Income from Agriculture and Forestry (ANON. 1967). Those engaged in agriculture and forestry have a duty only to take notes. The extent to which other trade and entrepreneurial activities can be included in the taxation of agriculture and forestry depends on the nature of the activity as well as, in part, on the extent of agriculture on the farm.

The calculation of the results of enterprises according to the Act on Taxation of Income from Industries has been intended to form a basis for the distribution of the result as taxes, dividends, as well as for financing the activity of the enterprise (KET-TUNEN P. et al. 1980, p. 44). Separate concepts and a calculation system, which is being applied in the calculations of the result of agriculture on the bookkeeping farms, have been developed for examining the profitability of agricultural enterprises (ANON. 1989h). In addition, the agricultural advisory organizations prepare special calculations for surveying production. In the case of wage earners, incomes are included in the bookkeeping of enterprises as wage expenditure, and the wage earner organizations of different fields also prepare calculations of the standard wage rates and the development of wages. The concepts of economic result in agriculture and in the bookkeeping of enterprises, as well as the income concepts in taxation and the various wage income concepts have all been developed for different purposes, and there are many problems involved in comparing them with each other. In this study an attempt has been made to make the different income concepts more compatible with each other, against the background of the recommendation for income distribution statistics.

In the international recommendation for income distribution statistics by the UN from 1977 (ANON. 1977), uniform concepts for examining different income earner groups and their incomes from different sources have been developed. In Finland this international recommendation for statistics has been applied, for example, in the Income Distribution Statistics (ANON. 1987f), and, for the part of background information, in the Household Survey, too (ANON. 1988c). Available income, which indicates the consumption potential of households, is the central concept in statistics based on the recommendation for income distribution statistics (Figure 1.). A more detailed account of the income concepts based on the recommendation is presented in the publications the present study is based on (TOLVANEN 1985, p. 6-9, PUURUNEN 1987b, p. 85-89).

The central statistics with regard to data on the incomes of the farm population are the Enterprise and Income Statistics of Agriculture and Forestry, which are based on data on taxation (ANON. 1988g and 1989f), the results of the bookkeeping farms in the Profitability Study of Agriculture (ANON. 1989a, 1989h), and the Income Distribution Statistics (ANON. 1987f), which concern all population groups. The Income Distribution Statistics are also based on the income data of taxation, even if these have been corrected through data from various registers and interviews so that they are more in accordance with the recommendation for income distribution statistics. Information concerning the incomes of wage earners is available also in the Industrial Statistics (ANON. 1987c) and, for the part of the standard wage rate, in the various wage statistics (e.g. ANON. 1987d). In income comparisons based on the Agricultural Income Acts in the 1980s, use of data on the labor input of the different comparison
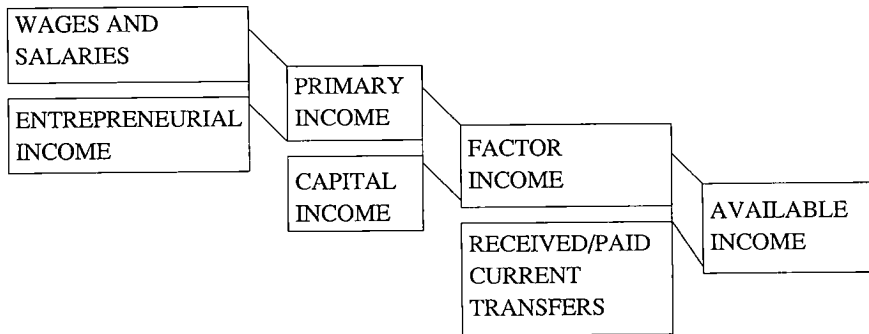
Figure 1. Income concepts based on the recommendation for income distribution statistics.

groups is also required. In the case of industrial workers these are included in the Industrial Statistics, and for the part of agricultural population they are available in the Labor Input Statistics (ANON. 1988e) and from the bookkeeping farms.

Data on the incomes of small-scale entrepreneurs, who can be regarded as most clearly comparable with farmers in various connections, are available only in the Income Distribution Statistics. The income data of taxation also forms the background for the Population Census made at certain intervals, which concerns all population groups (ANON. 1982b), and for studies on the living conditions, which describe the welfare level (ANON. 1989b). The statistics concerning the farm population and the comparison groups and their principles have been examined more in detail in the earlier studies of the author (TOLVANEN 1985, PUURUNEN 1987b).

The aforementioned statistics and sources are concerned with nominal income, which means that changes in the price level, which in the case of entrepreneurial and property incomes are quite problematic, are not taken into consideration. For the part of wage income, similar problems do not arise from changes in the price level. In entrepreneurial income changes in the price level emerge in the first place in depreciations. In performance-based calculations of the economic results, the costs for purchasing the means of production that are in use for a long time have been divided between the years of use through depreciations in the same proportion as the real value of property decreases due to age, use and wearing (RYYNÄNEN & PÖLKKI 1987, p. 47).

According to Blohm and Gripenberg, it should be possible to finance new corresponding means of production through the depreciations (Ref. KORHONEN 1977, p. 22). Solomons (Ref. PARKER et al. 1986, p. 163) also emphasizes the predictable decrease in the market value of the means of production due to their age as the basis for depreciations. -However, Laur & Howald point out that, in examining depreciations, a distinction should be made between the quantitative and qualitative decrease in the value of property on the one hand, and the fact that entrepreneurs aim at saving

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part of their income for purchases to be made later on the other (Ref. KORHONEN 1977, p. 22).

The latter conception has gained ground in economic sciences, and in performance-based calculations in practice an attempt has been made to take only the quantitative and qualitative decrease in the value of property into account through depreciations. The methods applied in calculating depreciations vary in different connections. In taxation the decrease in the value of goods that are used for a longer time are taken into account as various percentage shares from the total of the undepreciated acquisition cost (ANON. 1986d, p. 66). In this case, however, the depreciations do not necessarily correspond to the wearing of goods or, especially during periods of high inflation, their real purchase prices (KORHONEN 1977, p. 47-61, ALA-MANTILA 1987, p. 19, PYYKKÖNEN 1989, p. 72).

In the case of liquid assets, especially deposits and debts lose their real value due to inflation, unless they are tied to the overall development of prices (SÖDER 1984, p. 68). On the other hand, in capital intensive enterprises, like agriculture, it is necessary to tie own capital, which is thus not available for purposes that might be more profitable. In agriculture it is possible to regard capital gains and opportunity costs as affecting partly in opposite directions. As a result of the uncertain factors related to the definition of capital, it is likely that no exact estimates of the capital gains and losses have been presented in Finland.

Consequently, for the part of the Hicksian definition of income "as consumption plus changes in the level of real wealth", income data remain inadequate for the changes in the level of real assets. However, in many cases changes in the real assets are difficult to estimate for a period of one year or less usually used in the calculations. The total assets of an individual, further complicated by the joint ownership typical of households, becomes in practice very rarely subject to a sale or an estimate as a whole. Even if the general value of a piece of property and the change in the price level related to it could be estimated through, for example, the transactions made, it would be necessary to estimate its individual value from various starting points, and it can take many different forms (RYYNÄNEN 1967, p. 41).

The determination of the general value of farm land is made more difficult by the fact that sales of whole farms occur very rarely (ANON. 1987a). Most of the sales of farms take place between relatives, in which case the sale price is often lower than would be the case between strangers. On the other hand, the price of additional arable land is usually higher than in sales concerning whole farms (RYYNÄNEN 1978, p. 46, -1983, p. 83, 97, HOLMSTEN & MYHRBERG 1986, p. 7). The sale price of farms and parts of farms is also partly determined on the basis of their intended use by the purchaser, i.e. whether the land is to be used for roads, electric wiring, etc., recreational purposes, as building site, or whether the purchaser intends to continue cultivation on the farm. When the change in the value of agricultural land on farms where production is continued is calculated, it would be necessary to take account of only the changes in the sale prices of farms that were purchased for agricultural production. Sales like this are quite infrequent in Finland, and most of them take place between relatives.

Compared with other small-scale enterprises or wage earners' households, agriculture is a very capital intensive industry, in which the changes in the value of assets can

play an important role, as indicated by Swedish studies (ANON. 1983a, p. 69-80, 1986b, p. 81-84, 1989c, p. 65-67). However, estimating the changes in the value of real assets has proven very difficult in practice. In general, the property is realized only in the case of a transfer of a farm to a descendant, in which the price of the farm is determined according to its productive value or the transaction between relatives rather than its potential market value (IHAMUOTILA & LEHTINEN 1980, RYYNÄNEN 1983 p. 90).

If production is continued and the farm family does not intend to sell the farm, the changes in the value of assets do not have any major impact as far as the livelihood of the farm family is concerned. Rise in the value of the farm may in the long run have some effect as a security for debt, but few farms are so deep in debt that it would be necessary to estimate the total potential sale value of the farm for security. The decrease in nominal value debts and in the value of the capital reserve to be depreciated during periods of inflation, which affect the results of agriculture and forestry, are the most concrete effects from farmers' point of view. Decrease in the value of debts and in interest liability to nominal value debts benefit the farmers. However, decrease in the value of depreciations causes apparent increase in results, which causes unprofitable effects to farmers in the following taxation.

3.2.3. Income study as part of the study of the standard of living

Income study refers mainly to examining the consumption possibilities that can be measured in money. The concept income level depends a great deal on the viewpoint chosen for the income study. Attention can be directed to incomes as compensation for the factors of production by examining the period when the income is earned on the one hand, or to incomes from the viewpoint of their use and welfare on the other (IHAMUOTILA 1968, p. 21). In the first case incomes must be calculated on the basis of a kind of earning unit, and in the latter, correspondingly, based on a unit of income use. Both viewpoints can be included in the income study proper because they are both concerned with incomes before any actual decisions on the consumption. Typical examples of the two are the primary income per economically active person, and the available income per consumption unit, calculated in the Income Distribution Statistics (ANON. 1987f).

In studies related to the income level, the average incomes of certain groups are being examined. Instead, in studies of income distribution the point of view is mainly the distribution of incomes within a group. Depending on the formulation of the question, both viewpoints are included in the far-reaching study of the income level. The distribution of incomes in different population groups has earlier been described in Household Surveys, and at present mainly in the Income Distribution Statistics. Based on the Household Surveys, UUSITALO (1988) has examined the change in the distribution of incomes in different population groups that occurred after the mid-1960s. For the part of the farm population, income distribution has been examined, for example, in studies by NEVALA (1988) and YLISIPPOLA (1989). Based on the Enterprise and Income Statistics of Agriculture and Forestry, Nevala has examined the distribution of incomes of agriculture in different farm groups, and Ylisippola the distribution of available incomes on the basis of the Income Distribution Statistics.

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The main purpose of the consumption studies is to examine how available income has been spent on, for example, food, housing and savings, i.e. they concentrate on the use of money in households after the consumption decisions have been made. At present the Household Survey represents a typical consumption study, in which disposable income forms a framework for the use of incomes, examined both in money and on the basis of data on the quantities of consumer goods.

In addition to incomes and consumption, studies of the standard of living also include other factors affecting people's lives, which may be factors measurable in money, or other components of welfare determined in some other way. More or less extensive lists of the factors of the standard of living have been presented in different studies (e.g. Johansson, Ref. UUSITALO 1975, p. 42, ANON. 1978a, p. 25). Swedish studies of the standard of living (ANON. 1983a, p. 5) include economic conditions, working conditions, consumption of goods and services, housing, other material factors, factors related to health, and education. In Swedish studies concerning the standard of living of the farm population, comparisons have been made related to the consumption potential based on income and assets on the one hand, and to other factors measured as various other units on the other (ANON. 1983a, 1985b). Instead, in Norway all components of the standard of living have been estimated in money (ANON. 1978a, p. 25).

According to the Wrightian conception, welfare consists of a continuous flow of good and bad things in people's lives, thus including factors to be examined both subjectively and objectively (UUSITALO 1975, p. 2-9 and 249). Studies concerning the living conditions have started to examine, besides the factors related to the standard of living that can be measured objectively, also factors that are experienced subjectively. Measuring well-being solely as money or through other economic terms, as in the welfare studies in economic sciences, has no place in the studies of the living conditions. Studies of the living conditions aim at describing the simultaneous realization of the welfare components at the level of an individual. For example, in the latest study of the living conditions in Finland (ANON. 1989b), e.g. the occurrences in the lives of the subject persons, subjective well-being, free-time and human relations, examined against the background of socio-economic and economic factors, formed the central fields of study.

3.3. Special features in income study concerning the farm population

Agriculture is entrepreneurial activity, and on many farms entrepreneurial income forms the main source of living of the farm family. In addition, nowadays the livelihood of more and more farm families consists of very different sources (TORVELA & JUVONEN 1984, PUURUNEN 1987b, 1989). According to the Farm Register (ANON. 1989e), in 1986 and 1987 58 % of owners of farms reported agriculture as their principal occupation, and 18 % of owners reported some other occupation. About 20 % of farmers were retired. In 1980 66 % of owners practiced agriculture as their main occupation, and there were 15 % of both part-time farmers and pensioners. Also, the development of the numbers of farms run on a part-time or full-time basis, based on the composition of gross incomes according to the Enterprise and Income Statistics of

Agriculture and Forestry (ANON. 1988g, 1989f), indicates that part-time agriculture is on the increase. In 1980 about 50 % of farmers received more than 75 % of their income from agriculture, whereas in 1986 this was the case with only 35 % of farmers.

It is characteristic to the incomes in agriculture that they are subject to variation due to production conditions. Weather conditions cause fluctuation in the annual income, although an attempt has been made to alleviate this through compensations for crop failures paid from the state funds and by agriculture (KETTUNEN 1989, PUURUNEN & TORVELA 1989). According to a study of the annual income variation on the bookkeeping farms in the 1980s (PUURUNEN & JÄRVELÄ 1990, p. 24-26), on farms that have been involved in the bookkeeping the whole researh period the income variation in relation to the average income was most notable on farms enaged in crop production and smallest on livestock farms. On the other hand, income variation is greater the more specific the income concept in question is. As the returns of agriculture may vary, apart from parallel to costs, in different directions as well, the variation in the resulting income is proportionally more notable than the variation in returns and costs.

Variation in production conditions between farms is considerable due to the northern location of Finland and variable terrain alone. The income disparities between different regions due to production conditions have been balanced through, for example, regional subsidies (GRANBERG et al. 1982, GRANBERG 1989, KETTUNEN 1989). Also, the adaptation of agriculture so that mainly cattle production is practiced in the least favorable areas has for its part balanced the income disparities within agriculture. In Finland the producer prices of the most central agricultural products are regulated, and they follow, for example, the changes in the prices of the production inputs, which means that they do not cause any major variations in the annual income (TORVELA 1978, ALA-MANTILA 1989).

Farmers' education level and personal abilities as entrepreneurs in agriculture and forestry as well as their willingness to take risks cause variation in incomes between farms when agriculture is practiced as entrepreneurial activity (BOEHLJE & EIDMAN 1984, p. 223, 443, TURKKI 1988). In 1985 the share of those engaged in agriculture, forestry or fishing who had occupationally differentiated education or training was about 37 % in Finland, whereas in 1970 the corresponding figure was only 13 % (ANON. 1989i). As the transfers of farms to descendants are delayed, the young farmer has often had time for education or training on some other field, and possibly also for a work experience of several years (IHAMUOTILA & LEHTINEN 1980). This fact, which has become more common in the last decade, has probably increased part-time agriculture, as well as stimulated industrial activities in the countryside.

In addition to the entrepreneurial income from agriculture, farmers often have entrepreneurial income from forestry and possibly from other enterprises on or outside the farm. Traditionally, agriculture has involved helping ones neighbors, either on an exchange basis or for pay, and, for example, the capacity reserved for handling grain may be built with possibilities for additional income in mind so that it meets the needs of several farms. Taxation has stipulations concerning the inclusion of the whole primary income in the income from agriculture and forestry and its division into compensation for use of machines and equipment and personal wage income (ANON. 1986d, p. 35). In practice, however, much of the income from lease harvesting, drying,

etc. is included completely in income from agriculture and forestry in taxation.

In Finland the economics and problems of agriculture and forestry are usually considered separately from each other. From farmers' point of view, however, agriculture and forestry form an indivisible whole as a farm enterprise, and forestry often complements in a remarkable way the livelihood from agriculture and possible ancillary activities. It should be noted that in Finland 90 % of farms with more than two hectares arable land have at least five hectares forest (ANON. 1989e). The separation of agriculture and forestry is reflected in, for example, the legislation, tax stipulations and statistics concerning farmers' incomes, as well as in education, research, advisory and other organizations, and through these, in the whole sector of agriculture and forestry.

Forestry has traditionally occupied farmers in winter, outside the work seasons of agriculture. For its part, forest has also functioned as a financial source for agricultural investments and as security for debt. In southern Ostrobothnia and in northern Finland there is less income from forest, but it has been possible to substitute for this to some extent through other entrepreneurial incomes and wage income. Examining of forest income is more problematic than in the case of agricultural income because the production period in timber production is much longer, and consequently, practicing forestry is more long-term activity than agriculture. In forestry, area taxation based on assessment of quality is being applied, which means that pure income from forestry in taxation mainly indicates the average possibilities for forest sales in the area. Data on the annual income from forest sales is available in the Income Distribution Statistics (ANON. 1987f) and from the bookkeeping farms of the Profitability Study of Agriculture (ANON. 1989h). It has been noted that, in the long run, money income from forestry clearly has a balancing effect on incomes of agriculture and forestry (TORVELA & JUVONEN 1984, p. 32, 43, PUURUNEN & TORVELA 1989, p. 33).

Not very much statistical data is available of the ancillary activities of agriculture, like horticulture, fur farming, horse husbandry or accommodation services, and of their impact on the income formation of the farm population. However, recently more attention has been directed to the ancillary activities, for example, in connection with the reform of the legislation related to agriculture and forestry (Kom.miet. 1989:40). In the taxation of agriculture and forestry, ancillary activities are to some extent included in agriculture (ANON. 1986b, p. 15-17), although it is not always possible to differentiate them in the data on taxation. Ancillary activities practiced in a larger scale are included in the taxation of income from industries (EVL) (ANON. 1968).

In connection with the fact that agriculture is practiced more and more on a part-time basis, various degrees of overlap of entrepreneurial income and wage income has become a characteristic feature in the livelihood of farm families. In the mid-1970s more than half of farmers received most of their income from agriculture and forestry, whereas ten years later the share of full-time farmers was about 35 %. At the same time the share of farmers on whose livelihood the income from agriculture and forestry has only little effect has risen from 20 % to 35 % of all farmers (ANON. 1989f). Family members may work regularly, periodically or occasionally outside the farm, and some are engaged in other entrepreneurial activities on or outside the farm. All these persons may in addition do actual farm work, and, consequently, they also have their share in the result of agriculture. In income studies, a somewhat categorical

approach, as well as accounting for the income earners mainly on the basis of classifications from various statistical sources, has always been necessary with regard to the distribution of incomes within the farm family.

The farm families' possibilities for income earning vary a great deal at different stages of their lives. When we consider the period of time between two transfers of a farm to descendants, the labor supply alone varies a lot at different times. Especially if there is nobody to take over the farm, the farmers innovative and working capacity needed for developing the farm and maintaining production are on the decrease as the farmer grows older. The incomes of wage earners usually increase with their age until the retirement, but the incomes of farmers often decrease as a result of the decrease in the working capacity (NIEMI 1983, p. 88-93). However, in this study (PUURUNEN 1989, p. 34) it has been noted that the economic result and the profitability of agriculture can in the case of pensionable farmers seem ostensibly good for a few years, and the incomes of the farmer and spouse, including pensions, may be above the average. Similar results have been achieved by KNUUTI (1981) in his study on the living conditions of farmers who receive old age pension. The lack of a descendant willing to take over the farm and the inadequate pension security for entrepreneurs have been the main reasons for practicing agriculture after reaching the retirement age. In the last few years an attempt has been made to restrict farming by pensionable farmers because of overproduction (ANON. 1987g), and to make retirement easier through various pension systems (ANON. 1987b, p. 169-187, TOLVANEN, 1983).

According to a study by IHAMUOTILA and LEHTINEN (1980), in Finland a farm that remains independent changes ownership, on the average, every 30 years. In 60 % of cases transfer of a farm to a descendant is realized when both parents are still alive. In the other cases the transfer also involves the distribution of the estate, which for its part prolongs and complicates the transfer. Thus about 15 % of farms have been run by heirs for the average of more than 11 years. At the time of the transfer the average age of farmers has been 65 years and that of the descendants 32 years, although 15 % of the descendants are over 40 years old. In the transfers of farms to descendants the sale prices of the farms are usually below the current price level. The sale price forms only part of the obligations created by the transfer, which in more than 75 % of cases also includes life annuity. On about 25 % of farms the descendants have to give part of the property, usually forest and lakeshore or other sites, to the other heirs. According to Järveläinen, in the last few years the average of about 1.5-2.0 % of privately owned forest area has annually shifted from farmers to other population groups (Ref. IHALAINEN 1990, p. 31). In 1971 about 76 % of owners of private forests were farmers, and they owned 79 % of the forest area. In 1983 the corresponding figures were 53 % and 59 %.

Transfers of farms to descendants are usually financed through borrowed capital; on about 60 % of the farms the debts accounted for at least 45 %, and on less than 25 % for more than 85 % of the assets (IHAMUOTILA & LEHTINEN 1980, p. 79). In addition to the purchase of the farm and other obligations resulting from the transfer, the beginning farmers also have to take care of investments necessary for maintaining and developing the production capacity of the farm, which may have been neglected for a long time. Indebtedness may also be a result of the aspirations to expand production on the farm. It has been noted that on farms that have been classified as

having aspirations for growth on the basis of incomes the indebtedness level is considerably higher than on static farms (RYYNÄNEN & PYYKKÖNEN 1988, p. 60-65). An attempt has been made to make the position of beginning and especially young farmers easier mainly through various support measures related to low-interest loans (ANON. 1989j, Kom.miet. 1989:40). The indebtedness of the beginning farmers also comes out in the present study in connection with examining the income level of young farmers (PUURUNEN 1987a, 1987b, p. 128-133, 1989, p. 32-35).

3.4. Concepts applied in income comparisons concerning the farm population

3.4.1. Income comparisons in Sweden

In Sweden income studies concerning the farm population are very advanced, and the income objectives also make extensive examination concerning different population groups necessary. Income comparisons within the farm population are mainly based on the Taxation Statistics of Agriculture (Deklarationsundersökningen för jordbrukare, DU) (ANON. 1985a) and the Profitability Study of Agriculture (Jordbruksekonomiska undersökningen, JEU), in which concepts have been developed for examining real incomes as well, partly based on a study by ANDERSSON & BENGTSSON (1984). In Sweden the tax bookkeeping of agriculture and forestry is based on performance, and the taxation of forest incomes is realized on the basis of the sales income. The tax stipulations in force in Sweden differ from those in Finland in several other respects, too. Among the most central income concepts in the Taxation Statistics of Agriculture (DU) are net income and total income of agriculture and forestry, which includes, besides net income, primary and property incomes, too (ANON. 1989c, p. 83).

In recent years an attempt has been made to develop the Profitability Study of Agriculture (JEU) in order to account for the changes in the value of money by calculating, in addition to the traditional nominal result, a so called realized real result as well as real result that includes the unrealized value changes (ANON. 1984c, p. 29, 1989c, p. 31-40). The realized real result describes the income from the enterprise that a farmer can use for consumption and saving without changing the physical capacity and solidity of the enterprise. In the first phase of the calculation, incomes and costs, including depreciations, are taken into account at their current value. In calculating the realized real value, the changes in the value of only those products and goods sold or used during the accounting year are taken into consideration. In order to account for the decrease in the real value of debts due to inflation, a so called correction of the debt share, which describes the changes in the value of debts realized during the year, is made to the result of the first phase of the calculation.

The starting point for the correction of the debt share is the fact that, for the part of the use of resources financed by borrowed funds, real income can be calculated by means of costs determined according to their purchase price. Decrease in the real value of debts is included in farmers' income by taking into account the depreciations based on the purchase prices, instead of real depreciations. This kind of correction of the debt share is made in those enterprises in which debts exceed liquid assets. In enterprises in which liquid assets are greater than debts the decrease in the net liquid

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assets caused by inflation is taken into account as a loss in the result of the enterprise.

In the case of real income, which describes the economic result on a more long-term basis, the value changes are calculated as the difference between the nominal value changes of the different property shares of the farm and the loss of the purchasing power of own capital. This calculation is also based on the returns and costs at their current value. The loss of the purchasing power is calculated by means of the change in the consumer price index from the value of own capital in the beginning of the year. Corresponding corrections concerning assets and debts are made by means of the respective indices. The changes in the real value calculated through this procedure vary from one year to another, depending on the effects of inflation on the different parts of the property. For the part of the real estates in agriculture, the value changes are calculated through sale price coefficients. The sale price coefficient (köpeskillingskoefficient) is calculated by the Central Statistical Office (Statistiska centralbyrån), and it refers to the relationship between the market values and tax values, which in this case is based on the sales of agricultural real estates, and for the part of which the variations in the price are balanced for the period of time corresponding to the ownership of the farm. Consequently, the changes in the value of assets depend a great deal on how accurate the indices and sale price coefficient are in the case of different farms and farm groups. Value changes, incomes and costs related to residential property are completely excluded from the calculations of the Profitability Study of Agriculture (JEU).

Nominal result as well as both real results indicate the compensation the farm family gets for its labor and own capital invested in agriculture. Nominal incomes have been clearly higher than the corresponding real results, due to, for example, the different basis for calculating depreciations and the differences in compensating for the labor of relatives and other assisting workers. Nominal result includes only real wage expenditure, but in the real result a calculatory compensation to the aforementioned workers has been deducted as wage expenditure. When value changes are taken into account, the real results have come closer to the nominal result. For example, in 1987 on farms with 30-50 hectares arable land the average nominal income per farm was 77,900 kr, the realized real income 37,300 kr, and including the unrealized value changes 44,900 kr (ANON. 1989c, p. 38).

In Sweden an attempt has been made to base income comparisons between population groups on a definition according to which the incomes in a certain period are the same as the consumption that can take place during the same period without any changes in the level of real assets. Consequently, an attempt has been made to take the 'Hicksian' starting points as well as the income concept known as Haig-Simons' one into account at the level of practice. The Committee for the Standard of Living (Levnadsstandardgruppen), which studied this matter at the beginning of the 1980s, prepared the foundations for these comparisons of real incomes, which have later on been made in the Committee for Follow-up of Incomes (Inkomstgruppen). Comparisons concerning real incomes have required developing the existing data. In addition to the economic resources, an attempt has been made to pay attention to other factors affecting the standard of living, too (ANON. 1983a, p. 7-8, 1985b).

The starting point for the income comparisons in Sweden is either nominal income or real income, depending on how the effects of inflation have been taken into consid-

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eration. In calculating real income the incomes and costs have been evaluated at the price level of the time of the calculation, and the changes in the value of assets and debts due to inflation have been taken into account. The differences between nominal and real comparison incomes lie in calculating entrepreneurial income, capital income and income from residential property. Even if the calculation of nominal income is not in accordance with the aforementioned definition of income, it has been regarded as necessary because incomes in general (e.g. in taxation) are mostly understood as nominal income (ANON. 1983a, p. 16-17).

Income comparisons concerning farmers prepared by the Committee for the Standard of Living are based on available income, according to the Income Distribution Statistics (Inkomstfördelningsundersökningen, HINK), which has been called the comparison income. In the case of wage earners, available income indicates quite well the amount of money available for consumption and saving, which can in the short run be increased through borrowing, but which in the long run decreases by the corresponding amount when the interests and liquidations are taken into account. For entrepreneurs the concept of available income does not have the same concrete significance, mainly as a result of depreciations and the relationship between the private household and the enterprise. In the case of the comparison incomes of farmers' households, additional corrections are necessary due to tax stipulations. Consequently, two separate comparison incomes are calculated for farmers, one as small-scale entrepreneurs and the other for comparisons concerning wage earners. The best indication of the consumption level of the farm population is the comparison income used in comparisons between farmers and wage earners.

In calculating the real comparison income, the effects of inflation have been taken into account by adding the market value changes in the value of assets and debts to the nominal comparison income, and, in the case of farmers, by taking account of the difference between the depreciations determined by the repurchase price and the purchase price used in taxation. Because the value added of assets realized through sales is taxable income in Sweden, further corrections required by the tax stipulations are made to the comparison income that has been adjusted to inflation. Real income includes the possible changes in the value of assets, even if these are not sold or realized in any other way during the period under consideration, and in this case the value added is accounted for as savings. Consequently, the real result includes the share of the period under consideration in the long-term real result that, for example, in an agricultural enterprise, can be expected to accumulate during one generation of entrepreneurs. The value added to assets can be seen as increasing the risk security and financing capacity of the enterprise (ANON. 1983a, p.17).

In the case of the farm population, most of the changes in the real value are related to the agricultural real estates and the debts of agriculture and forestry. Due to the lack of the necessary statistical data, it has been possible to examine the changes in the value of business capital only for farmers. On the other hand, the amount of assets wage earners have tied to business is very small, and most of the changes concern the value and debts of housing. In the last ten accounting years the average changes in the real values concerning assets and debts have been calculated on the basis of the changes in the sale price coefficients and consumer price indices prepared by the Central Statistical Office of Sweden (Statistiska centralbyrån). It has been noted that

the changes in the real value are very much dependent on the period of time used in the follow-up of the development of the real estate prices. It has been possible to estimate the assets and debts separately for each comparison group. However, in the case of small-scale entrepreneurs, it has not been possible to estimate the effects of tax stipulations on the result. Consequently, for their part it has been necessary to compare only nominal incomes in which the effects of tax stipulations have not been taken into account adequately (ANON. 1983a, p. 19-23, 1989c, p. 48-67).

3.4.2. Income comparisons in the EC

In the EC the incomes of the farm population are followed on a uniform basis for calculation by means of the results of farms included in the Farm Accountancy Data Network (FADN). In addition, the member states have their own income statistics and comparisons concerning the farm population, based on their own national starting points. The concept of individual farm income used in FADN is farm net value added (FNVA) per annual work unit (AWU). Farm net value added is obtained by deducting from total output (plus grants and subsidies) the intermediate use of goods and services, taxes linked to production and inputs and, finally, depreciations for machinery, equipment and farm buildings. This income remunerates labor, capital and management, and it is an indicator of the economic performance of all assets that have contributed to the formation of agricultural production. This microeconomic indicator is fairly close to the macroeconomic concept of net value added at factor cost. In order to make aggregation possible at Community level and establish comparisons between the member states, the results are calculated in European Currency Units (ECU) at current prices and exchange rates (ANON. 1984d, 1986e, 1987e, 1988g).

Wages, rent and financial charges are included in FNVA, and they are deducted only when calculating family farm income. However, both of these income concepts relate exclusively to earnings derived from agricultural activity. The returns corresponding to these concepts can also be calculated from the bookkeeping farms of the Profitability Study of Agriculture in Finland and, with certain amendments, from the data on taxation of agriculture. In the business result concepts applied in agriculture (MÄKI 1964, p. 78), the farm net value added corresponds roughly to the so called national economy income, and family farm income to agricultural income.

Changes to the common agricultural policy (CAP) during the last few years have highlighted the need to know more about the total income situation of agricultural households in the member states. EUROSTAT's Farm Structure Survey indicates that about a third of Community farmers are engaged in some other gainful activity. To meet the anticipated demand for information, EUROSTAT commissioned a study (ANON. 1988i) on the sources of data available during the development of a Community system to measure the total disposable income of agricultural households in the member states. These include family budget surveys, taxation data, farm accountancy results and macroeconomic sources. The aim is to make measurements of aggregate total disposable income available to CAP policy-makers on a uniform basis in the early 1990s.

3.4.3. Income concepts applied in this study

In this study income comparisons concerning the farm population are based on nominal income. The study is tied to the existing statistics and the data on incomes available in them with regard to the application of income concepts. Income comparisons between different farmer groups are mainly based on data on taxation of agriculture and forestry and personal taxation, which has made it possible to classify the farm population, for example, according to the farm size, production line and region. In addition to income comparisons within the farm population, farmers' incomes have also been compared with those of industrial workers and small-scale entrepreneurs. These comparisons are mainly based on the Income Distribution Statistics, which provides income data of different population groups through concepts that corresponds to those of the international recommendation for income distribution statistics. In this case the income concepts are more extensive and more detailed than in comparisons within the farm population, but the possibilities for further classification of the population groups to be compared are more limited.

3.4.3.1. Income comparisons between farmer groups

Data on taxation provides the most extensive basis for examining income disparities between farmer groups. In this study, like in the earlier studies by the author, (e.g. TOLVANEN 1985, PUURUNEN 1987b, 1989) income comparisons between different farmer groups are mainly based on the Enterprise and Income Statistics of Agriculture (ANON. 1989f), the extensive sample of which makes a versatile classification of farms possible. In a separate study concerning the years 1980-1986, the data on the personal taxation of farmer and spouse on the sample farms have been added to the taxation data on agriculture and forestry. On the basis of the resulting data on incomes, it is possible to achieve, roughly, factor incomes that are in accordance with the recommendation for income distribution statistics (ANON. 1977) (cf. Figure 1. in Chapter 3.2.2.). In addition, of the income transfers paid the income data includes taxes, and of the income transfers received the taxable pensions. Even if the concept of available income cannot be completely achieved through this data that is based on the Enterprise and Income Statistics of Agriculture and Forestry, it still forms the most versatile and extensive data for examining income disparities within the farm population.

In this chapter the income concepts applied in this study and their contents have been examined more in detail. On the whole, income comparisons within the farm population are based on the following structure of concepts concerning nominal incomes:

> Agricultural income
> + Income from forestry
> + Other entrepreneurial income
> + Wages and salaries
> = Primary income

+ Property income
= Factor income
+ Pensions
= Total income
− Taxes
= Total net income

Entrepreneurial income from agriculture, which in this connection has also been called agricultural income, indicates the compensation the farm family receives for its labor and own capital invested in agriculture. Because the value of the investment labor of the farm family has not been taken into account in the basis for depreciations in taxation (ANON. 1986d, p. 66-72), the agricultural income calculated on the basis of the study can be regarded as a compensation, not only for the farm labor proper, but also for the investment labor. In this connection agricultural income has not been divided further into labor and capital income because capital and labor are factors of production that partly substitute each other, and there are no unambiguous foundations for a division between the two kinds of income. Even if it would be possible to make the division through some conventional methods (IHAMUOTILA 1968, p. 34-46), determining the share of capital so that it corresponds to the income data of taxation applied in this study is a problematic statistical decision because, for example, part of the production property remains outside the capital values of taxation, and, consequently, outside the statistics based on data on taxation (PUURUNEN 1988b).

In order to calculate the agricultural income, the tax-free hectarage subsidies and the use of own products in the private household of the farm family have been added to the pure agricultural income based on taxation, and the share of agriculture in the interest expenditure has been deducted.

Pure income from agriculture
+ Hectarage subsidies (+ tax share)
+ Use of own products
− Share of agriculture in the interests on debt
= Agricultural income

As a concept, the agricultural income calculated in the study is close to the result according to the total calculation of agriculture, which forms the basis for the agricultural income negotiations (KETTUNEN 1989). However, the agricultural income of the total calculation is in a way more simplified than the income calculated in this study on the basis of taxation data because in taxation other production activities on the farm that cannot be considered a separate business are to some extent included in agriculture (ANON. 1986d, p. 16). In the total calculation depreciations are calculated according to the practices applied in the accounting of the national economy, which means that the investment labor for agriculture of the farm family is taken into account in the depreciations (TOLVANEN 1985, p. 72-77). The hectarage subsidies of 1984 have been studied separately on the sample farms of the Enterprise and Income Statistics of Agriculture and Forestry, and since then they have been altered on the basis of the data on debiting. Earlier they were based on the so called support model

(GRANBERG et al. 1982). Because hectarage subsidies are in fact net income, a tax share, based on the average tax percentage in different farm groups, has been added to them, considering mainly the income comparisons between different population groups. The use of own products in different farm groups has been studied on the bookkeeping farms in 1981 and 1984, and kept up-to-date through corresponding data on the average quantities of the bookkeeping farms.

The share of agriculture in the interest expenditure can only be estimated at the total level as the relationship between the agricultural interest expenditure proper in the accounting of the national economy, and since 1985 the interest expenditure according to the total calculation of agriculture, on the one hand, and the interest expenditure of agriculture and forestry according to the Enterprise and Income Statistics on the other. In 1983 investment reserves became possible in the taxation of agriculture, too (ANON. 1986d, p. 103). However, these have not been taken into consideration in the income calculations, but they have been regarded as savings related to the use of incomes.

Incomes from forestry are calculatory regional return figures used in taxation, which are based on the quality of the forest land, average growth and timber prices, and in which the usual maintenance and administrative costs and value decreases have in principle been taken into account (ANON. 1986d, p. 72). Although as a concept pure income generally refers to the return on capital (MÄKI 1964, p. 80), in the case of agricultural and forestry taxation it should be noted that this also includes the labor of the farm family. In addition, forestry income includes the value of felling by owner exceeding the tax-free share, and the corresponding expenditure according to taxation is taken into account. The calculation of the pure forest income in a certain stumpage price region can be roughly illustrated by the following chart:

Forest area of the farm, tax-m³ }   x   Money value of tax-m³, FIM
− Tax free areas, tax-m³   }
= Pure return, FIM
− Tax relief on regeneration areas, FIM
+ Value of felling by owner (for the part exceeding 150 m ³), FIM
− Forestry charges, FIM
− Costs due to the Forestry Plan, FIM
− Depreciations for the costs of road building, FIM
− Interest on the loans of forestry (unless connected with agriculture), FIM
= Pure income from forestry, FIM

Other entrepreneurial income includes that part of business and trade income that has emerged in personal taxation. Part of business and trade income is included in the taxation of agriculture, and thus in this study in agricultural income. In studies based on the Income Distribution Statistics (ANON. 1987f), the calculatory value of the labor of the members of the household for the part of residential and other buildings is also included in other entrepreneurial income.

Wages and salaries consist of the taxable wages of the farmer and spouse, although part of these can also be included in agricultural income (e.g. freight work done with farm machines). Primary income includes the aforementioned entrepreneurial and

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wage incomes. It should be noted that in taxation primary income refers to a completely different income concept related to the taxation practices (ANON. 1986d, p. 227, 274). Property income includes the incomes from real estates and housing, except in agriculture and forestry, rent income and other taxable interest and property incomes that are included in state taxation. In addition, in the Income Distribution Statistics a calculatory net rent for owned residential property has been included in property income.

Factor income consist of primary and property incomes. Since 1983 most pensions have been taxable income, which means that the corresponding data is included in personal taxation. From the income transfers received, for example, veteran's pensions, some other pensions based on social considerations, and family subsidies remain outside taxation (ANON. 1986d, p. 88, 102). The sum of pensions and factor income has been called total income in this study. When taxes are subtracted from total income, we arrive at a concept that is closest to the available income reached in separate calculations on the basis of the Enterprise and Income Statistics of Agriculture and Forestry. In this connection this has been called total net income to distinguish it from the more specifically calculated available income based on the Income Distribution Statistics.

In the taxation of agriculture, incomes and expenditure are, apart from certain calculatory amounts, cash based. In a cash based income calculation the incomes and expenditure of the accounting period do not necessarily correspond to each other. In practice, the everyday livelihood and consumption potential of the farm family consist of the currently disposable net money income, on which savings and borrowing can have an additional impact. On the other hand, the timing of cash incomes varies on farms of various types, and this may distort the income comparisons between different production lines. Distortions caused by the timing of incomes can be partly avoided by using the results of as big farm groups as possible as the basis for comparison, and by taking the results of several years into account.

3.4.3.2. Income comparisons between population groups

In income comparisons concerning different population groups in this study, the incomes of the farmer and wage earner groups mentioned in the Agricultural Income Acts in the 1980s are examined first. In addition to the agricultural income of farmers and the wage income of industrial workers, the primary incomes and the disposable incomes of these comparison groups as well as their formation have been examined as extensively as possible (e.g. TOLVANEN 1985, p. 72-148, 197-239, PUURUNEN 1987b, p. 111-148, 1989, p. 48-71). The primary income and disposable income of the farm population have also been compared with the corresponding incomes of small-scale entrepreneurs (PUURUNEN 1987b, p. 149-153, 1989, p. 71-75).

In income comparisons related to the Agricultural Income Act (Chapter 6.1.1.), the average wage income of skilled industrial workers has been calculated by means of the standard wage rate and the realized working hours, which means that they have come close to the average paid wages according to the Industrial Statistics (ANON. 1987c) (Appendix 1). In the case of the farm population, income comparison is based on the agricultural income in different farm groups established in the income compari-

sons between them (Chapter 5). In order to apply the same income earner unit in calculating the incomes of both comparison groups, the agricultural income based on taxation has been divided equally between the farmer and spouse.

In addition, the primary incomes of the farm population calculated on the basis of, not only the Enterprise and Income Statistics of Agriculture and Forestry, but also the Income Distribution Statistics, have been compared with the primary incomes of industrial workers, which are based on the latter (Chapter 6.1.2.). Differences between the two statistics have been examined in various connections (e.g. TOLVANEN 1985, p. 126-128, PUURUNEN 1987b, p. 145-147, 1989, p. 62-67). Available income indicates the consumption potential of households, and it is arrived at when income transfers received are added to primary income and income transfers paid are subtracted. The following chart describes the formation of available income (Chapter 3.2.2., Figure 1). Available incomes can only be compared on the basis of the Income Distribution Statistics (Chapter 6.1.3.).

> Entrepreneurial income
> + Wages and salaries
> = Primary income
>
> + Property income
> = Factor income
>
> + Income transfers received
> − Income transfers paid
> = Available income

For the part of income concepts and comparison groups, the comparison between farmers and small-scale entrepreneurs (Chapter 6.2.) is restricted to the applications made possible by the Income Distribution Statistics. Private enterprises with less than five workers, the entrepreneur included, have in this connection been considered small-scale enterprises. The calculation of entrepreneurial income in the Income Distribution Statistics is also based on data on taxation, and, consequently, it is tied to the respective tax stipulations, which can be partly corrected through interviews. However, the most essential parts of the differences due to the different taxation of agriculture and forestry, those engaged in a trade or profession, and enterprises are present in the income data based on the Income Distribution Statistics (PUURUNEN 1987b, p. 85-91, 101-103). YLISIPPOLA (1989) has examined the incomes of farmers and small-scale entrepreneurs in 1986 more in detail on the basis of the Income Distribution Statistics. For example, she has compared the incomes of farmer and small-scale entrepreneur households that have been divided into fractions according to their incomes with each other.

4. Establishment of comparison groups

Apart from the income concepts and their content, the establishment of the income earner groups to be compared is another essential factor in preparing income comparisons. The structural change in agriculture obviously causes changes in the distributions and time series describing the economic results of farms. Income development is very different in different farm groups and examined on the basis of the average results of farms. On the other hand, the heterogeneity of agricultural enterprises with respect to the nature of the entrepreneurial activity and the sources of income makes the determination of a population representative of the farm population and a comparison group more difficult. As is the case with income concepts, the choice of comparison groups is partly tied to the existing statistics.

4.1. Farm population

At present, the farm population is usually understood as referring to persons who earn at least part of their living from agriculture by cultivating land or raising livestock. GRANBERG (1989, p. 17-31) has examined the characteristic features of farmers and noted that they have changed along with the development in agriculture and in the society in general from characteristics related to the life style to those emphasizing entrepreneurship. Productive activity in agriculture is tied to biological processes and, ultimately, to land, and this is what distinguishes farmers from other small-scale entrepreneurs. Consequently, the definition of a farmer is closely linked with defining the characteristics of a farm.

In practice, defining the characteristics of farmers comes up, for example, in connection with Census and the Farm Register, as well as in statistics concerning agriculture and different population groups. In the 1980 Census concerning population and housing (ANON. 1983c, p. 11), a farmer refers to a person who according to the Farm Register of the National Board of Agriculture (e.g. ANON. 1989e) owns a farm with at least one hectare arable land, or who is in possession of such a farm either alone or as a member of a concern or the heirs. All families who have a member included in the Farm Register are regarded as farm families. In addition, those over 15 years old persons who during the period under consideration were employed and/or unemployed in the sector in question for at least 6 months are included in the population engaged in agriculture.

The definitions of the Farm Register are based on the definitions prepared in connection with Agricultural Cencus, concerning the inclusion of farms, and, consequently, of farmers, in different registers. The 1990 Agricultural Census covers farms, forestry estates, horticultural enterprises, other agricultural enterprises and fur farms (Kom.miet. 1988:18, p. 4). All those engaged in these types of enterprises share some characteristics of a farmer, because they are all concerned with a production process based on regenerating natural resources. The characteristics of a farmer are clearest in the case of owners of farms. Farms with the minimum of one hectare arable land and/ or garden are included in the Farm Register. The person who has the most working

hours on the farm is registered as the farmer. If the farm has no arable land, but it has the minimum of two hectares forest, it is included in the forest register. The definitions of the populations in different registers are not mutually exclusive, but a farm may also be included in enterprises practicing horticulture or fur farming.

In the classification according to the socio-economic position made in the Central Statistical Office, farmers are included in entrepreneurs, and, with regard to their professional status, in the main group "Agriculture, Forestry and Fishing". Classification according to the socio-economic position includes all people, whereas classification according to the professional status concerns only economically active people (ANON. 1989g, p. 14). Besides individual persons, it is also possible to determine the socio-economic position of households, which is done, for example, in the Income Distribution Statistics of the Central Statistical Office (1987f), Household Survey (1988c) and Census (1983c). As a starting point, the socio-economic position of each person in the household is determined, and after that the position of the household as a whole is determined according to the person who, on the basis of certain criteria, is chosen as the reference person or the head of the household.

In this study the farm population has been defined through the income statistics of agriculture. In studies based on the Enterprise and Income Statistics of Agriculture and Forestry, those subject to taxation who are engaged in agriculture and forestry on farms that are owned by natural persons, and that have at least two hectares arable land are regarded as farmers. Because the sample of the Enterprise and Income Statistics is based on the Farm Register the farm population has thus been determined from among the owners of farms included in the Farm Register. However, the incomes and income development of agriculture have also been examined for the part of the whole population of the Enterprise and Income Statistics of Agriculture (TOLVANEN 1985, p. 84-86 and 90-98, PUURUNEN 1989, p. 13-19). In this case farms owned by heirs, tax concerns, communities, etc. are also included in the study, besides those owned by natural persons. The incomes of heirs and concerns have been examined separately on the basis of a study made in the Pellervo Economic Research Institute (SURVO & ISOSAARI 1988), and they have been compared with the incomes of agriculture and forestry received on farms owned by natural persons (PUURUNEN 1989, p. 43-48). In studies based on the Income Distribution Statistics, households in which the head has mainly worked as an agricultural entrepreneur and farmer for more than six months a year, or five months under certain preconditions, are considered farm households.

4.2. Establishment of comparison groups in income comparisons between farmer groups

4.2.1. Criteria for the classification of farms

The most central characteristics of the classification criteria applied in statistics are that they are capable of making distinctions with regard to as many factors as possible, and, from the viewpoint of time series analyses, that they remain constant. In examining the classification requirements of agricultural statistics, KETTUNEN (1981b) has presented four different hierarchical levels :

1) the development line of the farm,
2) division according to region,
3) division according to production line and
4) size of the enterprise.

By development line Kettunen refers to, for example, the distinction between farms that are being cultivated actively and passive farms, and, on the other hand, the distinction between part-time and full-time farming. Regional division should be made in a way that takes the natural conditions for agriculture into account.

According to Kettunen, the practices applied in other western countries should be taken into consideration when making the division according to the production line. The easiest way of determining the production line is to use the composition of gross income as a basis: the limit for the production line would be 50 % and that of specialized production 75 % of gross income. In Enterprise and Income Statistics of Agriculture and Forestry the limit for the production line has been set to 60 % and that of specialized production to 80 % of the taxable gross income of agriculture. The division of the book-keeping farms into production lines is also different. In general, determination of the production lines is made more difficult by the fact that there are too few specialized farms, when they are further examined according to the region and farm size class (TORVELA & JÄRVELÄ 1973, TOLVANEN, 1985, p. 60-66, PUURUNEN 1989, p. 36).

In examining the classification factors related to the size of the enterprise, Kettunen has noted that the application of the turnover is problematic if, for example, a lot of purchased inputs are being used in the enterprise. Also, turnover does not indicate the efficiency of the enterprise, and for this part the classification must be based on other factors. However, the application of several different classification factors makes it more difficult to compare different types of enterprises with each other. Kettunen suggests that the increase in the value added produced by the enterprise could be a suitable factor for classifying enterprises of different sizes, if this can be calculated relatively easily in different cases (KETTUNEN 1981b, p.64). Farm size classifications based on gross return, turnover, etc. are not used much in the publications of agricultural statistics. Turnover is used mainly in the case of the largest farms. Calculations of the value added have earlier been made from the bookkeeping farms in order to examine, for example, the value of unmarketable feed (TORVELA 1970). At present corresponding calculations are prepared as model calculations for certain products (calculations according to the so-called gross margin method), mainly for the needs of the agricultural advisory services (ANON. 1988c).

It has been noted that the income variation due to the production line is considerably smaller in farm size classes that are based on gross return than in those based on the farm size. As an income concept, gross return is more extensive than turnover. In a study prepared on the basis of the bookkeeping farms (PUURUNEN 1988a), in the three smallest farm size classes according to gross return agricultural income has been slightly higher on dairy farms than in other production lines, and in the biggest fourth class the income has been highest on crop producing farms. When the farm size classification is based on arable land area, in all farm size classes incomes have been highest on pig farms, and lowest on grain producing farms. Incomes are much more

dependent on gross return than on arable land area.

However, the variation from one year to another, which is typical for agriculture, makes the application of gross return as an indicator of the size of the enterprise more difficult. Consequently, when the results of a year of a crop failure are compared with those of a normal year within the same production line, arable land area is the obvious indicator of the farm size. Yet, on the basis of gross return, farms with different production lines can be made better comparable with each other. Gross return or turnover, which is close to it, are also better indicators of the size of the enterprise in comparisons between the results of agriculture and the corresponding results of enterprises in other sectors.

In income comparisons made in the EC on the basis of the Farm Accountancy Data Network (FADN), an attempt has been made to solve the problems related to comparing very different types of farms in terms of their size and production line by measuring the farm size through a so called Standard Gross Margin (SGM). In a way, this farm size classification is based on the value added. SGM is calculated by subtracting the variable costs per hectare in crop production and per animal in livestock production from gross return. Gross production is calculated by multiplying production per unit (less any losses) by the farm-gate price, Value Added Tax (VAT) not included. The specific costs are determined on the basis of the delivered-to-farm prices, VAT not included, minus any subsidies linked to the components of these costs (ANON. 1985d, p. 5). The variable costs of feed crops are deducted when calculating the SGMs of grazing livestock. When applying the Community typology, the SGMs of feed crops are therefore as a rule treated as being equal to zero. SGM is standardized for regions and products.

The farm size is indicated by European Size Unit (ESU), which is based on the value of 1,000 ECU of total Standard Gross Margin of the holding for the 1980 reference period. For subsequent reference periods for renewing and updating SGMs, the value of 1 000 ECU are multiplied by a coefficient to take account, in monetary terms, of global agro-economic trends in the Community as a whole (ANON. 1985d). The latest 1985/86 FADN calculations are based on the average Gross Margins derived from the years 1981-1983, and their results have been calculated on the basis of the reformed SGMs so that 1 ESU = 1 100 ECU (ANON. 1988h). ESU is calculated with the help of SGM's which are fixed on a regional level. That means that two arable farms with the same Net Value Added (NVA) per farm and per hectare and the same cropping pattern, but in regions with a different SGM for e.g. wheat, show a difference in NVA/ESU. This is not to be interpreted as one farm being better than the other one, but as one farm being relatively better in its region than the other farm in its own region (POPPE 1987).

The FADN-sample covers only commercial farms, in 1984/85-1985/86 about 43 000 farms, which represent about 3 million commercial farms out of a total of 6 million farms in the member states of EC, except Spain and Portugal (EUR10), and more than 80 % of the final output. The sample is stratified by region, farm type and farm size. The thresholds used are different in member states, according to the variation of farm structures: e.g. holdings of 2 ESU for Greece, Ireland and Italy, over 8 ESU for Germany, France and United Kingdom, over 12 ESU for Belgium and over 16 ESU for The Netherlands. In the statistical publications of the FADN the farm size classifi-

cation has been applied, for example, as follows: very small holdings 0-4 ESU, small 4-8 ESU, medium low 8-16 ESU, medium high 16-40 ESU, large 40-100 ESU and very large more than 100 ESU (ANON. 1988h).

Classification of agricultural holdings by type of farming is determined by the relative contribution of different enterprises to its total Standard Gross Margin. Depending on the amount of detail required, the types of farming are divided into general, principal, particular and subdivisions of certain particular types of farming (ANON. 1985d). The thresholds determining the class limits are expressed as fractions of the total SGM of the holding. The fraction used is mainly 2/3 and in mixed holdings 1/3 of the total SGM. In the FADN reports the farm population is divided into 9 types of farming groups. These are aggregations of the original 17 principal types of farming in the Community farm classification (ANON. 1986e).

In Sweden the classification of farms according to the farm size and production line, which is applied in the Farm Register and in statistics based on samples from it, is made on the basis of a calculatory labor input. The use of arable land and the number of animals are taken into account when calculating the labor input indicated through norm figures. The farm size is given as so called standard hours (standardtimmar). For example, in the Taxation Statistics of Agriculture (Deklarationsundersökningen, DU), the farm classification according to the Farm Register has been applied since the statistical year 1984. This classification has altogether nine farm size groups and ten production line groups. The production line is determined according to the production that accounts for the minimum of 67 % (2/3) of the calculatory labor input on the farm. In addition, small farms, to which the classification cannot be applied, form their own group (ANON. 1985a). Correspondingly, the standard hour system will start to be applied in the Profitability Study of Agriculture (Jordbruksekonomiska undersökningen, JEU) during the statistical years 1986-1988 (ANON. 1989c, p. 30).

Making different types of farms comparable with each other with regard to the farm size has been realized in different ways in different connections. The comparison of gross return or turnover is made more difficult by the unequal proportional share of purchased inputs on farms. In farm size classifications based on the Standard Gross Margin applied in the calculations in the FADN the problem is, like in classifications based on the economic result in general, the constancy of the classification in time series analyses. Changes in the value of money and, on the other hand, taking the overall development related to agriculture into account make it more difficult to prepare a farm size classification that would remain constant over a longer period of time.

In the farm size classification applied in Sweden, which is based on the calculatory labor input of agriculture, arable land area, its use, and the number of animals are all taken into account, which makes it possible to compare farms with different production lines with each other. Classification is also quite constant with regard to time series analysis, except that the foundations for calculating the work norms need to be checked from time to time to account for the development in technology. The proportional share of purchased inputs cannot be taken into consideration in this classification, either. The relation between labor and capital, which compensate for each other, can in the standard hour system be taken into account only at a certain average level. In reality, the labor input on farms may differ a great deal from the norm figures. It is

obvious that classifications based on the economic result and those based on the calculatory labor input result in very different farm groupings. Farm groupings based on the economic result describe better the real production capacity of the farms, whereas those based on work norms mainly indicate the production potential when the conditions described by the norm figures are present on the farm.

Definitions concerning the part-time basis of agriculture are usually based on the distribution of the working hours or incomes of the farm family between work on and outside the farm. The definitions of part-time and full-time farming differ in the statistics of different countries. The incomes and working hours of the farmer, farmer and spouse, or the whole farm family are taken into account in the definitions. In some OECD countries the off-farm income or labor input of a full-time farmer can constitute only 10% of his total income or labor input, or, on the other hand, a maximum number of days for off-farm work has been determined (ANON. 1978b, ASHEIM 1986). Side by side with the full-time farmers a large variety of dual jobholders exist with different degrees of off-farm occupations ranging from very little off-farm work to almost exclusive off-farm employment. In several countries a useful although somewhat arbitrary distinction is made between dual jobholders who mainly depend on the farm for a living and those who are mainly dependent on off-farm occupations. The former are called part-time main income farmers and the latter supplementary income farmers.

HOLMSTRÖM & SÄFVESTAD (1978, p. 47-49) have emphasized the distinction between a part-time farmer and a part-time farm. A part-time farmer works 200 hours a year or more outside the farm, but the need for labor on a part-time farm is less than 1,800 hours a year. Farms that meet both conditions are part-time farms proper. Correspondingly, in another connection in Sweden (ANON. 1988a, p. 37) a classification of farms that distinguishes free-time farms and part-time farms of various sizes from each other has been arrived at by means of a cross-tabulation of the income data concerning the farm family and the labor input data concerning the farm. Farms on which the farmer has income only from agriculture are full-time farms of various sizes. In addition, farms owned by pensionable farmers form a separate group. The study is based on the Taxation Statistics of Agriculture and Forestry (DU), in which the farm size has been determined according to the standard hour system.

In Finland, too, the part-time basis for agriculture has been defined in different ways in different connections. In the Farm Register (ANON. 1989e) farms have been divided into full-time farms, part-time farms and farms owned by pensioners on the basis of the main occupation reported by the owner. For example, in 1986 among all privately owned farms with more than one hectare arable land there were full-time farms 59 %, part-time farms 18 % and farms owned by pensioners 20 %. On about 3 % of farms it has not been possible to determine the main occupation of the farmer.

In the Enterprise and Income Statistics of Agriculture and Forestry, farms owned by natural persons have been classified according to the share of the net income from agriculture and forestry in the total income of the farmer and spouse, and, separately, in the total income of the farmer (ANON. 1988g, p. 16 and 1989f, p. 45). The Enterprise and Income Statistics include farms with more than two hectares that have taxable income from agriculture. Classification has been prepared on the basis of the total data that results from the combination of the Farm Register and the Taxation

Register of the National Board of Taxation. The Taxation Register includes the data on personal taxation, which also indicate the net incomes from agriculture and forestry. On the basis of income distribution, farms have been classified into four groups, which can be characterized as follows:

	Income share from agriculture and forestry, %	Share of all farms, %
Free-time farms	0.0 - 24.9	34.9
Part-time farms	25.0 - 49.9	15.5
Subsidiary farms	50.0 - 74.9	14.4
Full-time farms	75.0 - 100.0	35.2

In 1986 the share of farms on which the income share from agriculture and forestry accounted for less than 25 % of the total income of the farmer and spouse was about 35 % of farms owned by natural persons. In the last few years the proportional share of these farms, which in this connection have been called free-time farms, has been on the increase, whereas the share of part-time and secondary income farms has remained about the same. Both the proportional and absolute share of full-time farms have been on the decrease. On the basis of the income distribution of the farmer and spouse, in 1986 about 35 % of farms were full-time farms, and based on the income distribution of the farmer alone, the corresponding figure was 43 %.

Within the framework of the classification based on the income data of taxation it is possible to examine the part-time basis for agriculture on a uniform basis backwards until the year 1983, when the basic old-age pension became taxable income. Earlier some of the farms on which pensions formed the source of livelihood were included in full-time farms. In the taxation of agriculture and forestry, forestry incomes are calculatory for the part of the return of forest, and they indicate mainly the average significance of forest as a source of income in the area. However, this fact should not cause any major shortcomings in the classification of part-time/full-time farms applied in the Enterprise and Income Statistics of Agriculture and Forestry.

4.2.2. Comparison groups in this study

In this study concerning the incomes of the farm population it has been necessary to take the farm groupings available in the statistics on agriculture into account. Separate statistics have been prepared from the Enterprise and Income Statistics of Agriculture and Forestry, in which farms have been classified in a way that takes the part-time/full-time basis of agriculture and forestry and farmer's age into account, besides the administrative regional division, the farm size measured as arable land area, and the production line division based on agricultural gross income. Within the framework of the four main regions of the Profitability Study of Agriculture it has for the most part been possible to take the differences in production conditions into account. In this study

the regional division of the advisory organization has been applied to the administrative division in the Enterprise and Income Statistics of Agriculture and Forestry as follows:

Southern Finland	The Provinces of	Uusimaa
		Turku and Pori
		Häme
		Kymi
	The autonomous Area of	Ahvenanmaa
Central Finland	The Provinces of	St. Michael
		North Karelia
		Kuopio
		Central Finland
Southern Ostrobothnia	The Province of	Vaasa
Northern Finland	The Provinces of	Oulu
		Lapland

In studies based on the Enterprise and Income Statistics of Agriculture and Forestry in this connection, the specialization level of 60% of the taxable gross income from agriculture has been applied as the criterion for division according to the production line. Division based on incomes is sensitive to the fluctuations in the annual incomes due to variation in the production conditions for agriculture. In bad years for crop production, some crop producing farms have been included mainly to farms engaged in versatile production. Instead, in the groups of livestock farms the division based on incomes has proven more stable with regard to annual variation. The division according to the production line in the Enterprise and Income Statistics of Agriculture and Forestry, which has been revised since 1986, includes 10 different farm groups, and this can be regarded as a quite adequate classification with regard to the size of the sample and the structure of agriculture in Finland (PUURUNEN 1989, p. 36-42). However, over a longer period of time it is possible to examine the results of the different production lines on the basis of the following classification of farms:

Cattle farms	Grain farms
Pig farms	Special crop production farms
Poultry farms	Other farms

So far it has been possible to examine the part-time and full-time basis of agriculture and forestry only on the basis of the data on incomes and the distribution of the total income of the farmer and spouse. In order to calculate the total income, the data on the personal taxation of the farmer and spouse have been added to the sample concerning the taxation data of agriculture and forestry. In this study farms have been classified into part-time, subsidiary and full-time farms so that the shares of the net income from agriculture and forestry in the total income of the farmer and spouse in different groups are as follows:

Part-time farms   0.0 - 49.9 %
Subsidiary farms 50.0 - 74.9 %
Full-time farms   75.0 -100.0 %

In 1986 the population concerning farms owned by natural persons was 4% bigger when estimated on the basis of the sample than the total data resulting from the combination of the Farm Register and Taxation Register. On the basis of the sample data, the proportional share of full-time farms is a few percentage points bigger, and, correspondingly, the share of part-time farms is smaller than in the total data presented in the previous chapter. The difference is partly caused by the lack or inaccuracy of the indices needed in combining the data on farms that is based on the Farm Register and the income data of taxation. In the total data information from the Farm Register has been combined with the register data on personal taxation. The data used in this study is concerned with the combination of the data on sample farms picked out from the Farm Register with the corresponding taxation data on agriculture and forestry collected from the Internal Revenue Offices, and the data on personal taxation picked out from the Taxation Register.

As a classification factor, farmers' age mainly distinguishes factors related to the control of the farm, organization of production, and, consequently, to the possibilities for income earning. Aging of the farmer who is responsible for the management of the farm leads to a decrease in the production capacity, especially if there is no one to take over the farm. It has been possible to present several interesting features related to the income disparities within the farm population through the, as such very simple, classification based on farmers' age

Young farmers   Under 30 years
Established   30-49 years
Older farmers   50-64 years
Pensionable farmers   65 years and over

(PUURUNEN 1987a, 1987b, p. 128-133, 1989, p. 32-35). In the Enterprise and Income Statistics of Agriculture and Forestry farms have been grouped in a slightly different way into eight groups on the basis of the farmer's age. The application of such a detailed grouping, for example, according to the production line and region is problematic, mainly due to the small number of farms owned by the youngest and oldest farmers. However, in the age classification applied in this study, too, the number of farms owned by young farmers has remained small (about 5 % of farms), and it might be necessary to move the limit to 35 years.

4.3. Establishment of comparison groups in income comparisons between different population groups

In this connection, income comparisons between the farm population and other population groups refer to comparisons between the incomes of farm families, wage earners and small-scale entrepreneurs. Establishment of the comparison groups means

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the delimitation of the population groups to be included in the comparison, as well as of the unit for comparison. In the Agricultural Income Acts in the 1980s (ANON. 1982a, 1984b, 1986c, 1989d) reference is made to rationally managed farms that provide full employment for the farm family, and, in the case of wage earners, to skilled industrial workers. Consequently, Agricultural Income Acts refer to agriculture based on family farms, which is typical in Finland (on the concept family farm see e.g. TORVELA & MÄKI 1974 and HEIKKILÄ 1984). In this study family farms mainly refer to farms owned by natural persons, the incomes of which can be determined on the basis of the income data of agriculture and forestry (TOLVANEN 1985, p. 197-231, PUURUNEN 1987b, p. 133-143, 1989, p. 48-62).

Farm groups in which the agricultural labor input of the farm family corresponds to full employment of the farmer and spouse, according to the annual 1860 working hours, are considered farms that provide full employment for the farm family (TOLVANEN 1985, p. 175-183, PUURUNEN 1987b, p. 133-137, 1989, p. 48-51). It has been possible to delimit farms providing full employment from the Enterprise and Income Statistics of Agriculture and Forestry by means of the Agricultural Labor Input Statistics (ANON. 1988e) only according to the region and the farm size class. In order to determine the labor input of the farm family in different production lines, statistical studies concerning various sources of data have been made (TOLVANEN 1985, p. 41-49, 55-59, PUURUNEN 1986). According to the production line, farms providing full employment have been determined by means of the joint lists of samples used in the Enterprise and Income Statistics of Agriculture and Forestry and in the Labor Input Statistics, as well as of the data on labor input from the bookkeeping farms. These separate studies have been made concerning the years 1981 and 1984. Most crop producing farms have been excluded from the comparison groups established on the basis of full employment.

Another approach for income comparisons based on the Agricultural Income Acts is provided by farms on which, according to the data on the incomes of the farmer and spouse, agriculture and forestry form the principal source of living, defined as the minimum of 75 % of the total income of the farmer and spouse. In the 1980s about 40 % of farms owned by natural persons have been counted to this category of full-time farms, which includes crop producing farms, too (TOLVANEN 1985, p. 184-191, PUURUNEN 1987b, p. 138-143, 1989, p. 51-62).

The Agricultural Income Acts comprise also a reference to rationally managed farms. As a concept, rational management of a farm is the sum of several factors that partly have to be evaluated subjectively (TOLVANEN 1985, p. 169-174). In this study it has been possible to take rational management into account in establishing the comparison groups only indirectly, by means of data on labor input, farm size, turnover, etc. In the comparison groups it has been possible to take rationality into account by comparing their results with the corresponding results on the bookkeeping farms of the Profitability Study of Agriculture (PUURUNEN 1987b, p. 141-143, 1989, p. 52-55). In this study full-time farms owned by farmers over 65 years of age as well as groups of small farms that, due to the average number of animals and production technology typical of their size, cannot provide full employment or the main source of income for the farmer and spouse are excluded from the income comparison. An attempt has been made to apply as uniform criteria as possible for making delimita-

tions concerning both crop and livestock producing farms. The subjectivity that is necessarily involved in the delimitations has been avoided by making several income comparisons in the case of some critical farm groups (PUURUNEN 1989, p. 55-62).

Agricultural Income Acts in Sweden and Norway also refer to the rational management of farms. In Sweden income comparisons concerning different population groups are mainly based on the Swedish Income Distribution Statistics (Inkomstfördelningsundersökningen, HINK), and they include all farms with 20-100 hectares arable land and all farmers who are 20-64 years of age. The income studies within the farm population based on the data on taxation (Deklarationsundersökningen, DU) and on the Profitability Study (Jordbruksekonomiska undersökningen, JEU) also concern farms with 20-100 hectares arable land for the part of the farm size classifications according to arable land area (e.g. ANON. 1989c, p. 22, 30, 50). In income comparisons in Norway the rational management of agriculture has been taken into account in preparing the farm models that form the basis for the comparison (ANON. 1979, 1985c). In Agricultural Income Acts in Sweden and Norway, more emphasis is laid on examining the standard of living, whereas in the income concepts under comparison, based on the Agricultural Income Acts in Finland, are more narrow, and, indirectly, the comparison groups are determined more accurately.

Another comparison group in this study are skilled industrial workers, determined mainly on the basis of statistics on the standard wage rate. In the Wage Statistics (ANON. 1987d), full-time and part-time workers, except for trainees and students, are included in industrial workers. Delimitations and income variations concerning industrial workers have been examined more in detail in the earlier studies (e.g. TOLVANEN 1985, p. 135-145 and 195-196). In income comparison concerning agriculture, the farmer and spouse on the one hand, and a single industrial worker on the other, form an income earner unit. Income comparisons concern incomes calculated per person, which means that the agricultural income per farm has been divided equally by the average number of farmers and spouses in the farm group.

In this study the primary income and available income of the farm population have also been compared with the corresponding incomes of small-scale entrepreneurs, in addition to those of industrial workers (TOLVANEN 1985, p. 232-239, PUURUNEN 1987b, p. 144-152, 1989, p. 67-75). In these income comparisons it has been possible to delimit the comparison groups more freely, although in this case, too, the delimitation is tied to the groupings available in the statistics. In the comparison based on the Income Distribution Statistics, a household forms an income earner unit. In this case comparison groups have been delimited on the basis of the profession or trade of the head of the household. The size and composition of households are central in income comparisons. In this study the size of households has been taken into account in the comparisons of primary incomes by calculating incomes per economically active person, and in the comparisons of disposable incomes by calculating incomes per consumer unit.

5. Income disparities between farmer groups

In this study income disparities between farmer groups have mainly been examined on the basis of the taxation data according to the Enterprise and Income Statistics of Agriculture and Forestry. Farms with at least two hectares arable land or garden under cultivation that are taxed according to the Income Tax Act of Agriculture and Forestry (ANON. 1967) form the basic population of these statistics. The results of these statistics concerning the taxation of agriculture and forestry are published by the Central Statistical Office under the heading Enterprise and Income Statistics of Agriculture and Forestry (ANON. 1989f), and the corresponding data on the personal taxation of natural persons under the heading Income and Taxation Data of Agriculture and Forestry (ANON. 1988g).

The sample frame of the Enterprise and Income Statistics of Agriculture and Forestry is formed from the farms included in the Farm Register of the National Board of Agriculture. In the 1980s the size of the sample was about 16,000 farms, and it has been divided according to the farm size and province. Besides the whole basic population, the data on the income and property of agriculture and forestry on farms owned by so called natural persons are examined separately in the Enterprise and Income Statistics of Agriculture and Forestry. In this case, farms owned by heirs, companies, trusts and congregations, as well as by the state and counties, are excluded. In this study farms owned by heirs and concerns have been studied on the basis of a more extensive separate study in the Pellervo Economic Research Institute (SURVO & ISOSAARI, 1988), and their incomes have been compared with those on farms owned by natural persons (PUURUNEN 1989, p. 43-48).

This study is based on a separate output of the Enterprise and Income Statistics of Agriculture and Forestry, which includes the income data of farms owned by natural persons. In addition to the taxation data of agriculture and forestry, the data on the personal taxation of the farmer and spouse on the sample farms of the statistics have also been examined. In this phase the latest separate output concerning farms owned by natural persons dates from 1986, and, consequently, the income comparisons in this study are based on the results of the years 1980-1986. In 1986 data on the taxation of agriculture and forestry and personal taxation, combined by means of the social security number, was obtained from 11,235 sample farms, which corresponds to a basic population of 133,200 farms. The average arable land area of these farms is 14.4 hectares, and they have, on the average, about 38 hectares productive forest (Table 1). The average area of rented land is 1.7 hectares, i.e. 11.8 % of the area under cultivation. According to the Farm Register (ANON. 1989e, p. 34) about 17 % of farms had rented arable land. Usually renting land is directed to parts of farms, and only rarely a whole farm is rented. In the study farms have been classified in a way that takes the arable land area, production line, region, part-time/full-time basis for agriculture and farmer's age into account. The most central ratios indicating the number of farms and farm size in different regions and production lines are presented in the following table.

In 1985-1987 the Central Statistical Office and the National Board of Agriculture started to use a joint sample for the sample-based statistics on agriculture. Because of the problems resulting from the combination of samples it has been necessary to make

Table 1. The number of farms, their distribution and the average farm size of the basic population of the study in different regions and production lines in 1986.

	Number of farms		Arable land area, ha/farm	Forest area, ha/farm
		%		
Southern Finland	52 559	39.5	17.47	28.43
Central Finland	34 207	25.7	11.57	45.28
Southern Ostrobothnia	25 587	19.2	14.09	27.44
Northern Finland	20 821	15.6	11.78	62.50
Whole country	133 174	100.0	14.41	37.89
Cattle farms	60 123	45.1	14.91	43.83
Pig farms	5 565	4.2	23.82	37.55
Poultry farms	2 380	1.8	15.86	28.93
Grain farms	16 416	12.3	17.20	28.51
Special crop farms	6 998	5.3	10.00	31.50
Other farms	41 692	31.3	12.01	34.66

corrections in the results of 1986 later on. In this study it has been possible to take the corrections into account in the classifications according to the farm size, production line and region. Instead, in the outputs concerning part-time farming and farmer's age it has been necessary to rely partly on the results from the previous years. The corrections have mainly concerned the results of the smallest farms, which means that the error has only little effect on the results of full-time farms.

5.1. Income disparities due to farm size, production line and region

In studies based on the Enterprise and Income Statistics of Agriculture and Forestry, the incomes concern the farmer and spouse. The smallest farms and crop producing farms are more commonly than the average owned by the farmer alone. In order to take the number of income earners into account, comparison incomes in different farm groups have in the following been calculated per person. The most extensive net income concept, according to the recommendation for income distribution statistics, which can be calculated on the basis of the taxation data concerning the farm population, is primary income plus taxable property income and pensions, which have in this connection been called the total income. The total net income refers to the total income from which the direct taxes have been deducted. As noted in chapter 3.4.3., in calculating the agricultural income, in this study the data on taxation has been supplemented by other data. In taxation forestry incomes are calculatory, and they indicate mainly, under certain conditions, the average potential forest sales in the area.

In 1986 the average agricultural income on farms owned by natural persons was about FIM 50,400/farm and FIM 27,400/person. In different farm size groups the agricultural income in 1986 was almost the same as in 1983, when the changes in the price level are taken into account. In the early 1980s the development of agricultural income was hampered by the crop failure in 1981, and the income development since then reflects mainly the price development of the period. However, when examined on the basis of the calendar year, the timing of incomes may vary in different farm groups, and, for example, the state compensations for the 1981 crop failure were for the most part paid in 1982 (TOLVANEN 1985, p. 85). Estimated on the basis of the total yield (KETTUNEN 1989, p. 10), during the research period the production conditions corresponded at least to the long-term average, apart from 1981, and in 1983 they were clearly above the average.

Based on the yield level of the bookkeeping farms, in terms of agricultural production the years 1985 and 1986 were close to the average of the 1980s in different parts of the country as well as in different production lines (PUURUNEN & TORVELA 1989, p. 7). In the following the income disparities within the farm population have mainly been examined on the basis of the results of 1986, although an attempt has also been made to take the income development in the 1980s into account. The Central Statistical Office has afterwards revised the results of the year 1986 in the Enterprise and Income Statistics of Agriculture and Forestry, and for this part the results presented in this study may in some details deviate from those published in an earlier study (PUURUNEN 1989).

On the average, agricultural income has accounted for about a half of the total income of the farm population, the calculatory forestry income for less than 10 %, other entrepreneurial income for 4 %, and wages and salaries for about 24 %. The farm size is an essential factor affecting the income formation; on the smallest farms the share of agricultural income in the total income is about 15 %, and on the largest farms 70 %. Correspondingly, the share of wages and salaries in the two smallest farm size groups is 30-40 % of the total income. In all farm size groups there is only very little interest, rent, etc. property income. On the smallest farms taxable employee, disability and old age pensions account for a third and on farms with 5-10 hectares for about 20 % of the total income. In the largest farm size groups the share of pensions is less than 10 % of the total income at the most (Figure 2). It should be noted that about 20-30 % of farms with less than 10 hectares and about 5-10 % of farms with more than 10 hectares are owned by farmers over 65 years of age.

In the following the income disparities between the farm size groups have been described through ratios by comparing the primary income per person in the farm group with the corresponding average of all farms (= 100). The ratios concerning the primary incomes in different farm size groups and their variation in 1980-1986 have been presented in Table 2. Annual variations in primary incomes are largely caused by changes in agricultural income. In the 1980s proportionally the biggest increase in agricultural income has occurred on the largest farms (PUURUNEN 1989, p. 20). On the smallest farms primary incomes were in the seven years under consideration about 60% of the corresponding average of all farms. On the largest farms primary incomes were been about 2.3 times the average. The primary incomes on small farms were proportionally highest at the beginning of the decade, whereas those on largest farms
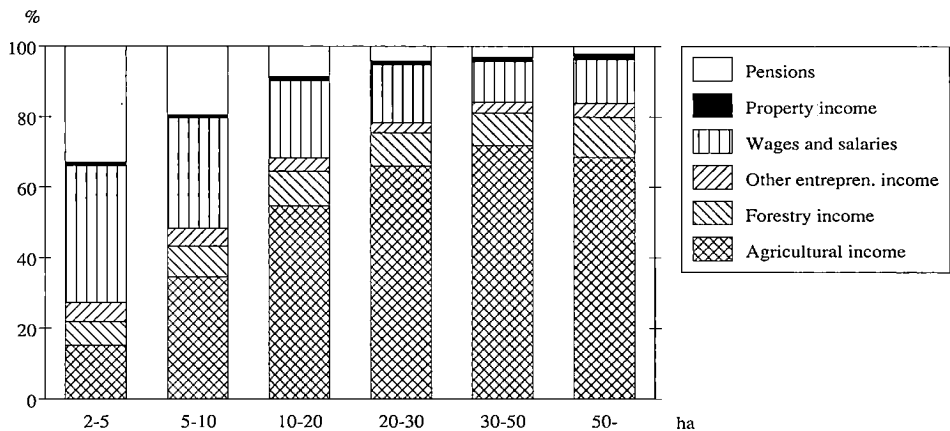
Figure 2. Total income of farmers (%) in different farm size groups in 1986.

were proportinally highest in the last years of the period, which were favorable for crop production. On the cattle farms the effects of the crop failure in 1981 were divided into two years and for the increases of produces prices especially on crop products the failure had relatively little effect on the agricultural income (PUURUNEN 1989, p. 15-22).

Income disparities between the different farm size groups are smaller in the case of total income than in the case of primary income, and they diminish further when taxation is taken into account. The corresponding comparison figures concerning net incomes are 70-80 on the smallest farms, 102-108 on average size farms with 10-20 hectares, and 177-192 on farms with more than 50 hectares. In relation to the incomes of all farms, the net incomes of the smallest farms were highest in 1985, and those of the largest farms in 1983 and 1984 (Figure 3).

Table 2. Primary incomes per person in different farm size groups in relation to the average of all farms (= 100) in 1986 and the variation of ratios in 1980-1986.

	Year 1986	Variation	Average	Worst year	Best year
2 - 5 ha	57	57- 66	61	1986	1981
5 - 10 ha	75	72- 82	76	1983	1981
10 - 20 ha	105	103-106	106	1984	1983
20 - 30 ha	141	136-144	140	1981	1984
30 - 50 ha	177	166-182	173	1981	1984
50 - ha	245	209-260	234	1980	1984

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Ratio
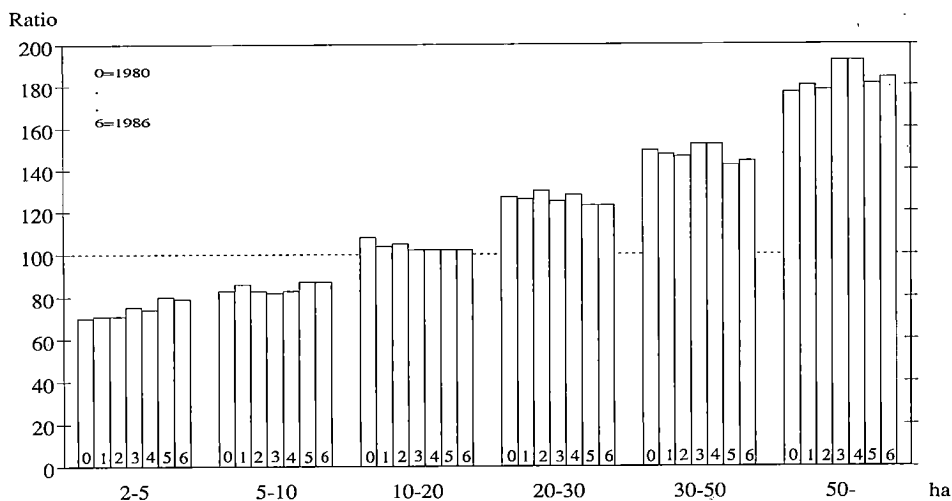
Figure 3. Farmers' net incomes in different farm size groups in relation to incomes of all farmers (= 100) in 1980-1986.

Examined on the basis of the production line, in 1986 incomes from agriculture on pig and poultry producing farms were, on the average, one and a half times the average of all farms (=100). In the case of cattle farms, agricultural income was above the average on dairy and multi-product farms, but on beef producing farms the incomes were about a third below the average. Also, on crop producing farms and farms engaged in versatile production agricultural income remained below the average. The average income disparities in agriculture between different production lines are caused by differences in the farm size, among other things. When the arable land area is taken into account, the incomes from agriculture were again highest on pig and poultry producing farms, the next highest on cattle farms and in special crop production (engaged in oil seeds, sugar beet, potato, etc), and lowest on grain farms and in versatile production. Income disparities between the production lines are proportionally highest in the smallest farm size groups (Table 3).

Table 3. Agricultural income per person in different production lines in relation to the incomes of all farms of corresponding sizes (= 100) in 1986.

	2-5	5-10	10-20	20-30	30-50	50-100	Average
Cattle farms	210	137	113	108	104	104	123
Pig farms	...	201	134	119	120	107	191
Poultry farms	...	157	138	116	113	...	145
Grain farms	78	42	44	60	79	100	127
Special crop farms	46	52	105	111	105	...	63
Other farms	59	62	79	88	97	94	66

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Within the framework of a farm size classification based on the arable land area, comparing the incomes of farms engaged in livestock production and those of crop producing farms is problematic, because arable land area is not an adequate indicator of the farm size. On farms engaged in livestock production, the turnover may be considerably higher than on crop producing farms with the same arable land area. In the study concerning the bookkeeping farms in 1985, farms were classified on the basis of the gross return from agriculture, in which case the income disparities within agriculture decreased, and agricultural income was highest on dairy farms and, in the group of the largest farms, on crop producing farms. Correspondingly, on the basis of a classification according to the arable land area, income disparities between the production lines were bigger, and in all farm size classes agricultural income was highest on pig farms and lowest on grain farms (PUURUNEN 1988a, p. 107).

The income formation of the farm family varies in different production lines. On farms engaged in livestock production, income from agriculture accounts for over 70% of the primary income of the farmer and spouse, whereas on crop producing farms the average share of agriculture in primary income is less than a half, and on small farms even less. As a result of other entrepreneurial income and wage income, the disparities in the primary income between the production lines are smaller than in the case of income from agriculture (Figure 4). On the average, primary income has been highest on pig farms, poultry farms and grain farms, and close to the average on cattle farms and on special crop producing farms. On other farms engaged in versatile production primary income has remained about 10 % below the average (Table 4). In the early 1980s primary incomes from special crop production were 10-15 % above the average. This result may not be quite accurate because farms engaged in special crop production form a quite small farm group in the Enterprise and Income Statistics of Agriculture and Forestry and, as the sample has not been divided in a way that takes
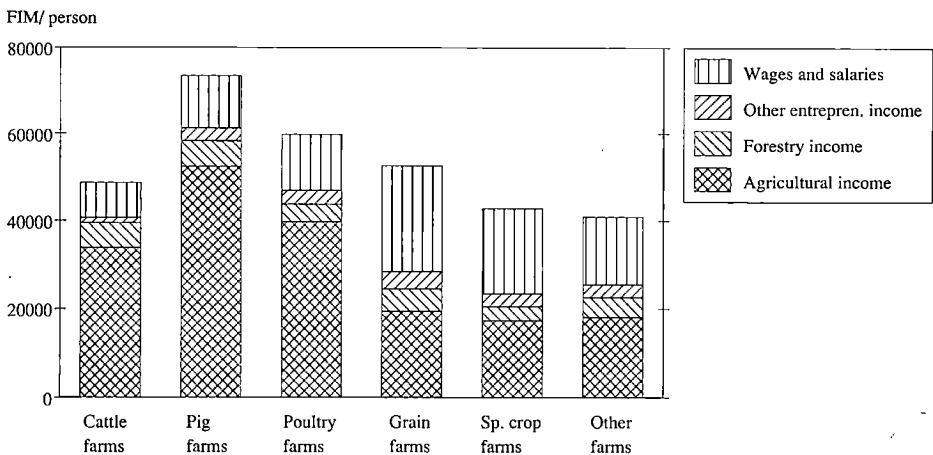
FIM/ person

Figure 4. The average primary incomes of farmers (FIM/person) in different production lines in 1986.

Table 4. Primary income per person in different production lines in relation to the average of all farms (= 100) in 1986 and the variation of ratios in 1980-1986.

	Year 1986	Variation	Average	Worst year	Best year
Cattle farms	101	100-103	101	1983	1980
Pig farms	154	132-154	141	1983	1986
Poultry farms	125	96-125	109	1980	1986
Grain farms	110	108-112	110	1980	1985
Special crop farms	89	74-115	95	1985	1982
Other farms	86	81- 90	87	1980	1984

the production line into consideration, since 1983 smaller farms have been included in this group than earlier. However, primary incomes have also decreased on special crop producing farms of the same size, both in terms of their money value and especially in relation to the incomes of all farms.

When we consider the total income, instead of primary income, income disparities between the production lines decrease, mainly due to pension income, which is above the average on crop producing farms. Further, when taxes are taken into account, the net incomes of pig farms are about 25 % and those of poultry and grain farms about 5 % bigger than the incomes of all farms in the seven years under consideration. On cattle farms and farms engaged in special crop production net incomes are close to the average. Correspondingly, in the group of other farms incomes were about 15 % below the average in the early 1980s, but in the last years they rose close to the average (Figure 5).

In terms of the different parts of the country, agricultural income has, on the average, been highest in southern Finland, forestry income in central Finland, and other entrepreneurial income in southern Ostrobothnia. Income from agriculture is tied to the production lines of the area, on the one hand, and to the farm size, on the other. Forestry income in taxation is largely dependent on, apart from the forest area, the typical return from forest in the region; in northern Finland the forest areas of farms are almost twice those in southern Finland, but the return per farm is considerably smaller. Wages and salaries are highest in southern and western Finland, where crop production is the dominating production line. In most years, primary income in southern Finland has been about 10 % above the average in the whole country, in southern Ostrobothnia it has been close to the average, in central Finland about 5 % and in northern Finland about 20 % below the average in the whole country (Figure 6).

When, in addition to primary incomes, property and pension incomes are taken into account, the regional income disparities decrease. The relation of the net income to the corresponding average in the whole country has varied in different regions as follows:
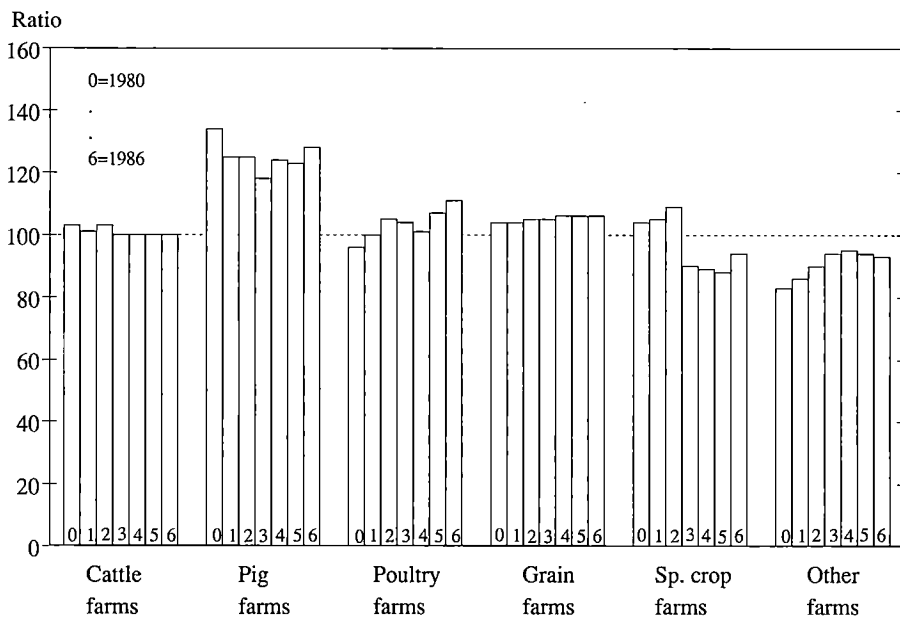
Figure 5. Net incomes of farmers in different production lines in relation to incomes of all farmers (= 100) in 1980-1986.
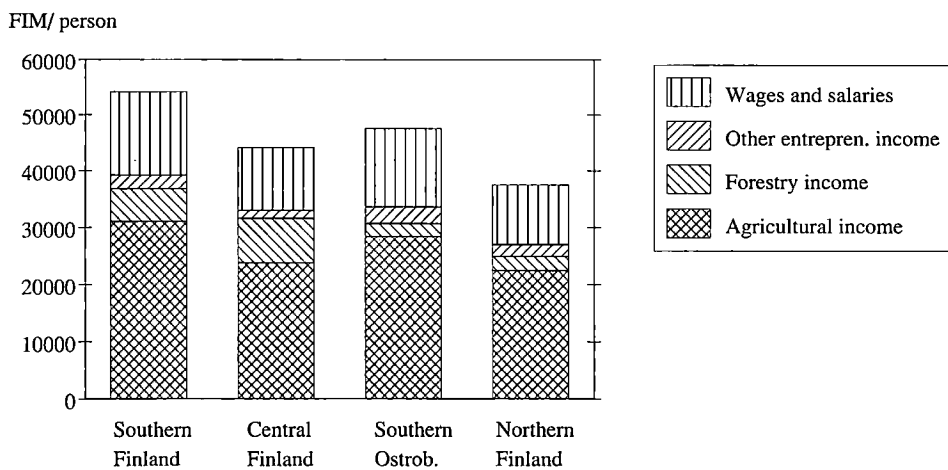
Figure 6. Primary incomes of farmers (FIM/person) in different parts of Finland in 1986.

	Year 1986	Variation	Average
Southern Finland	108	105 - 107	106
Central Finland	94	93 - 98	95
Southern Ostrobothnia	100	98 - 104	101
Northern Finland	91	88 - 104	93

The production conditions of agriculture vary in different parts of the country, and it has been necessary to adapt the production lines to the prevailing conditions. Also, the average farm size has developed differently in different parts of the country. Especially in the different farm size groups of southern Finland the results of crop and livestock farms are weighed so that, in terms of the farm size groups, regional income disparities remain small, although there are considerable differences in the incomes of farms with the same arable land area between different production lines.

On the other hand, it has been possible to influence the incomes farmers receive from agriculture through agricultural support so that, despite the considerable differences in production conditions, regional income disparities between farms engaged in the same production line remained small in the 1980s. This can be seen, for example, in the results of cattle farms, which are common in all parts of the country (PUURUNEN 1989, p. 19, 25-26). The agricultural and other incomes on cattle farms with 10-20 hectares in different parts of Finland are presented in Figure 7. The average agricultural income in different regions in 1986 varies only by a few percentage points. In 1980-1986 the ratios indicating agricultural income were 95-106 in southern and central parts of the country, and 90-101 in northern parts. Mainly as a result of forestry
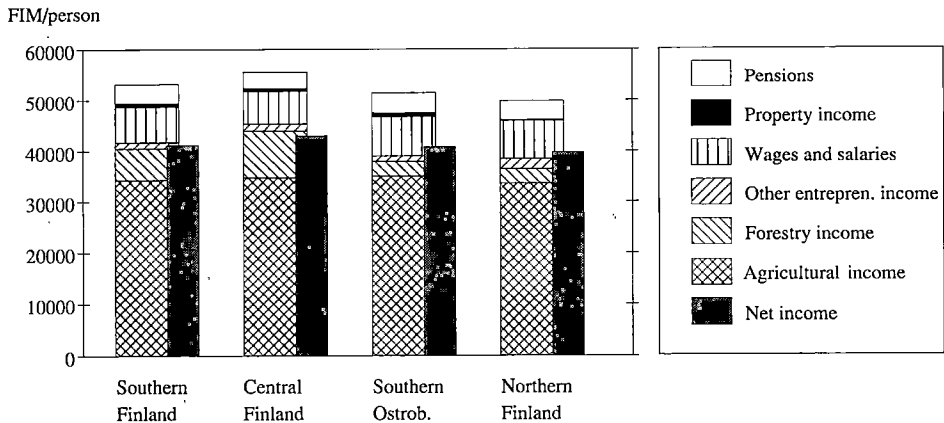
FIM/person

Figure 7. Total income and net income (= total income minus taxes) on cattle farms with 10-20 hectares (FIM/person) in different parts of Finland in 1986.

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income, in central Finland primary incomes were about 5% above the average, and, correspondingly, in southern Ostrobothnia and in northern Finland they were below the average. During the period under consideration, net incomes, in which property and pension incomes as well as taxes are taken into account, were close to the average of the whole country in southern Finland and in southern Ostrobothnia, a few percentage points above the average in central Finland, and 4 % below the average in northern Finland.

HANHILAHTI (1980, p. 57) notes that in the late 1970s, the regional support to agriculture reduced income disparities so that the income from agriculture on cattle farms of the same size was about a fifth lower in northern Finland and slightly lower in eastern Finland than in southern Finland. This study shows that in the 1980s the income disparities continued to decrease. When examining the causes for the regional differences in economic results on the basis of the bookkeeping farms, Hanhilahti (p. 44) states that income disparities were largely caused by differences in the yield level and in the quality of crop. Instead, crop production costs per hectare and, apart from feed, the other costs in livestock production per animal were almost the same in the different parts of Finland.

This study also indicates that the gross incomes of agriculture and feed costs were highest in northern Finland. In 1986 the purchased feed cost per animal in northern Finland was about twice as high as in southern Finland on cattle farms with less than 20 hectares and 1.4 times on farms with over 20 hectares. On the smallest farms fertilizer and pesticide costs were about the same, and on farms with over 10 hectares about 10 % higher in the north than in the south. As a whole, agricultural costs on the smallest cattle farms in northern Finland were about 1.5 times those in the south, and on larger farms the costs were about the same. Correspondingly, the gross income of agriculture on the smallest farms in the north was 1.4 times that in the south, and on the largest farms it was about the same. As a result, agricultural income per person on the smallest farms in northern Finland was about 10 % higher than in southern Finland, on farms with 10-20 hectares it was about the same, and on larger farms about 5-10 % lower than in southern Finland.

5.2. Income disparities related to part-time and full-time farming

On the basis of income data, farms owned by natural persons have been classified into part-time, subsidiary and full-time farms in the study. On part-time farms net income from agriculture and forestry accounts for less than a half of the total income of the farmer and spouse that is liable to state taxation, on subsidiary farms for 50-75 %, and on full-time farms for 75 % of the total income. Besides the farm size, the production line distribution is different on part-time, subsidiary and full-time farms, partly due to their definitions. About 75 % of full-time farms, 63 % of subsidiary farms, and 35 % of part-time farms are engaged in livestock production. Correspondingly, crop production is mainly practiced on part-time farms. In the study the results concerning part-time/full-time farms are presented only from years 1983-1986, and they have been examined more in detail earlier in the publications this study (PUURUNEN 1987, p. 123-128 and 1989, p. 26-31). The choice of the period to be studied has partly been

determined by the fact that in 1983 the national pensions became, for the most part, taxable income (ANON. 1986a, p. 92), and, consequently, they are included in the total income. Earlier farmers who gained their livelihood from e.g. old-age pensions were mainly included in full-time farmers in the Enterprise and Income Statistics of Agriculture and Forestry.

It has not been possible to take account of the corrections of the weigh coefficients of the sample data in the results of 1986 in the Enterprise and Income Statistics of Agriculture and Forestry, made afterwards by the Central Statistical Office, in the results concerning part-time/full-time farms and the farm classification according to the farmer's age in this study. On the basis of the results according to the region, production line and farm size class, it can be noted that the corrections have mainly affected small crop producing farms, and, consequently, mainly part-time farms and farms owned by the oldest farmers. The number of farms estimated on the basis of the sample has increased most in the two smallest farm size classes, whereas in the groups of farms with over 10 hectares the increase has been 2.2 % at the most.

As a result of the correction of the farm distribution, the weigh of the smallest farm size class has increased by over 4 %-points and that of other farm size classes has decreased by 2 %-points at the most. The correction is most notable in the average results of different regions and production lines, whereas in individual farm size classes its effect is smaller. Proportionally the biggest change has occurred in incomes that are small in terms of their money value; in the classes of farms with less than 10 hectares agricultural income decreased by 5-10 %, and on larger farms the change was less than 2 %. The maximum effect of the correction on primary incomes is -1.6 - +0.3 % and on the total income -0.9 - +0.6 %.

Consequently, the results of part-time, subsidiary, and full-time farms are mainly examined on the basis of the years 1983-1985. The most central indicators concerning the numbers of farms and the farm size in 1985 were as follows:

	Number of farms	%	Arable land area ha/farm	Forest area ha/farm
Part-time farms	62 528	47.4	9.63	29.11
Subsidiary farms	20 057	15.2	16.04	38.94
Full-time farms	49 364	37.4	19.62	44.24
All farms	131 949	100.0	14.41	37.89

Due to the smaller farm size, the primary incomes of part-time farms are, on the average, smaller than those of full-time or subsidary farms. Using the ratio 100 for the average primary income per person on all farms, the ratio for part-time farms in 1983-1985 is 83-85, for subsidiary farms 96-98, and for full-time farms 118-120. For the part of agriculture, the period under consideration was more favorable than the average, and, correspondingly, agricultural income was higher. On full-time farms most of the income comes from agriculture, whereas on part-time farms the variation in agricultural income has less effect. Consequently, in this study the disparities in primary incomes between part-time and full-time farms appear bigger than they might be when

examined over a longer period of time.

In different farm size groups, the relation of the primary income per person to the average of all farms of the same size (= 100) during the three years under consideration varied between 95-119 on part-time farms, 88-103 on subsidiary farms, and 96-118 on full-time farms. The primary incomes of full-time farms have deviated most from the incomes of all farms in the smallest farm size group. In other farm size groups the ratios indicating the primary incomes on full-time farms have varied between 97-105. Income formation has been better outside agriculture than has been possible to achieve in agriculture, especially on small farms. On the other hand, in small farm size groups there are more income earners (i.e. income dividers) on part-time and subsidiary farms than on full-time farms, which for its part may have made it easier for small part-time farms to take advantage of the income earning possibilities outside agriculture. On farms with less than 10 hectares the number of persons concerning the farmer and spouse was 1.75-1.85 on part-time and subsidiary farms, and 1.57-1.66 on full-time farms. On large farms the differences in the number of persons are smaller.

In 1983-1985 the net incomes ratios varied between 102-120 on part-time farms with under 50 hectares, and between 125-140 on farms with over 50 hectares (Figure 8). On subsidiary farms the range of ratios concerning the net incomes in different farm size groups is 88-101, and on full-time farms 73-81 in the smallest farm size group and 86-100 in the other groups. Farmers that get their livelihood mainly from pensions are included in part-time farmers in this study. Even if the primary incomes in different farm size groups are about the same on part-time and full-time farms, as a result of pensions net incomes are higher on part-time farms. It is to be noted that, apart from farms with less than 10 hectares, the corresponding uncorrected results from 1986 deviate very little from the results of the earlier years presented here.
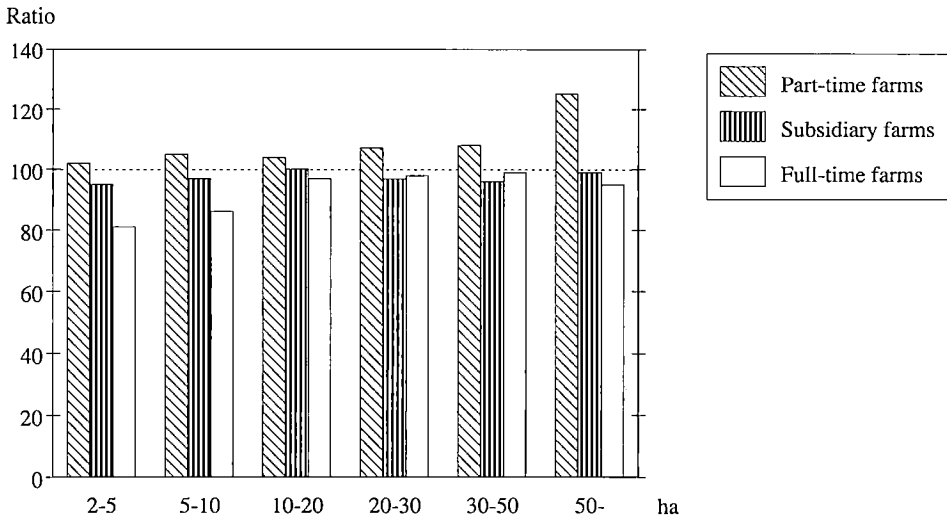
Figure 8. Net incomes of part-time, subsidiary and full-time farmers according to the farm size group in relation to incomes of all farmers (= 100) in 1985.

Table 5. Net incomes per person on part-time, subsidiary and full-time farms in the most central farm groups in 1985.Ratios, income of all farms in the same farm size group = 100.

	5-10	10-20	20-30	30-50	50-100 ha
Cattle farms					
Part-time farms	107	107	108	129	...
Subsidiary farms	101	98	97	90	...
Full-time farms	90	99	100	99	98
Grain farms					
Part-time farms	102	104	113	109	131
Subsidiary farms	...	94	96	99	103
Full-time farms	...	80	85	95	91
Versatile production farms					
Part-time farms	104	99	106	100	122
Subsidiary farms	93	103	98	106	97
Full-time farms	81	99	97	98	95

The numbers of farms in the sample of the Enterprise and Income Statistics of Agriculture and Forestry are sufficient for the study of part-time, subsidiary and full-time farms only for the part of the most central production lines and farm size groups. On cattle farms, grain farms and farms engaged in versatile production, the net incomes of 1985 were highest on part-time farms and lowest on full-time farms in most farm size groups. Income disparities are most notable on grain farms, where the ratios indicating net incomes were 104-131 on part-time farms and 80-91 on full-time farms. On cattle farms and farms engaged in versatile production income disparities between part-time and full-time farms were only slight (Table 5).

Regionally, farms are divided into part-time, subsidiary and full-time farms very much in the same ratio in terms of, besides the number of farms, the farm size as well. The results of these farm groups in different regions are examined from 1984 onwards. From the viewpoint of a sample-based study, there are too few part-time and subsidiary farms with over 20 hectares, except in southern Finland. Also, the number of subsidiary and full-time farms is too small in the two smallest farm size groups. In the most central farm size groups, regional differences in the net incomes of part-time, subsidiary and full-time farms were only slight, except in northern Finland. On part-time farms in the farm size groups of less than 20 hectares the ratios indicating the net incomes of 1985 were 102-105 in southern Finland and 92-97 in northern Finland. On subsidiary farms in the farm size group of 10-30 hectares the corresponding ratios were 98-107 and 83-92. On full-time farms in the farm size groups of 5-50 hectares the range of ratios is 89-108, the smallest ratios indicating the incomes on the smallest farms in southern Ostrobothnia and northern Finland.

5.3. Incomes of farmers of different ages

In the study the income data of taxation has also been examined according to the farmer's age since 1984. In this connection farms have been classified on the basis of the age of a farmer who mainly manages and in the most cases also owns the farm. The income of the spouse, who is often younger than the farmer, is also taken into account in the income study. In the following the results according to the farmer's age are examined on the basis of the years 1984 and 1985. The most central ratios indicating the numbers of farms and farm size of farmers of different ages in 1985 are as follows:

Farmer's age, years	Number of farms	%	Arable land area ha/farm	Forest area ha/farm
Under 30	5 978	4.5	15.99	38.67
30-49	50 529	38.3	17.14	39.53
50-64	53 370	40.5	13.49	36.13
65-	22 071	16.7	9.56	28.48

The composition of incomes varies according to the farmer's age. On farms owned by farmers who are under 50 years old, wages and salaries are notable, besides agricultural income, whereas on farms owned by farmers who are over 65 years old, pensions and, on the largest farms, the forestry income account for almost a half of the total income (Figure 9). Due to the larger farm size, on farms owned by farmers under 50 years of age primary incomes were the average of 25-30% higher than the average of all farms. Also, when the farm size is taken into account, the primary incomes as well as net incomes of the younger farmers were higher than the average of the farms of a corresponding size, especially on the smallest farms. Depending on the farm size, the ratios of primary incomes varied during the period under consideration between 96-178, and the ratios of net incomes between 97-132. On farms owned by 50-64 years old farmers the ratios indicating the primary incomes as well as net incomes varied between 93-109. The primary incomes of pensionable farmers, especially on small farms, were clearly below the average, although due to pensions net incomes have come close to the average of all farms. On farms with less than 50 hectares the ratios of net incomes were 85-96, and on largest farms 98-117.

In all farm groups were farmers are under 65 years old, the relation between part-time/full-time farming is about the same, and income disparities due to the part-time/full-time basis for agriculture and forestry are only slight (Figure 10). 75 % of farms owned by over 65 years old farmers are small part-time farms, where pensions account for about 60 % of the total income. Net incomes on these farms remained relatively small, about 2/3 of the average of all farms. Instead, net incomes on full-time farms owned by over 65 years old farmers were above the average. Compared with other full-time farms, farms owned by pensionable farmers have the same arable land area, but the forest area is larger than the average. Agricultural income on these farms is about the same as on farms owned by farmers who are 30-50 years old, and the

FIM/person

Legend:
- Pensions
- Property income
- Wages and salaries
- Other entrepren.income
- Forestry income
- Agricultural income
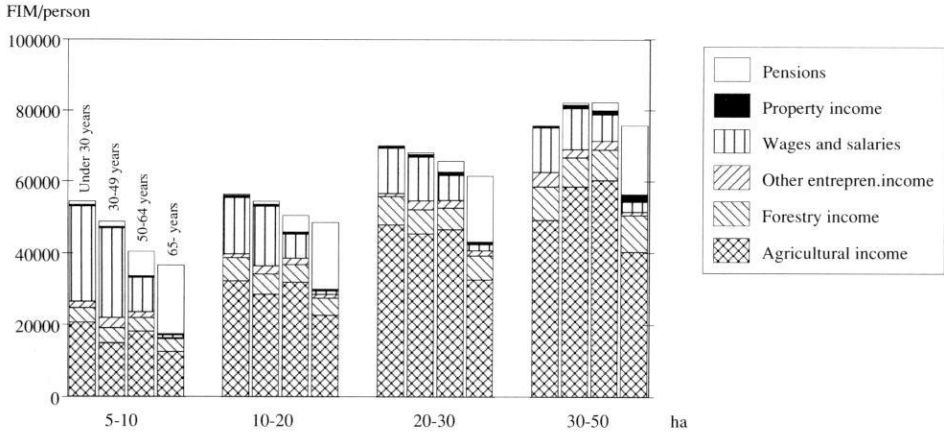
Figure 9. Total incomes (FIM/person) on farms owned by farmers of different ages in 1985.

FIM/person

Legend:
- Taxes
- Net income
- a Part-time farms
- b Subsidiary farms
- c Full-time farms
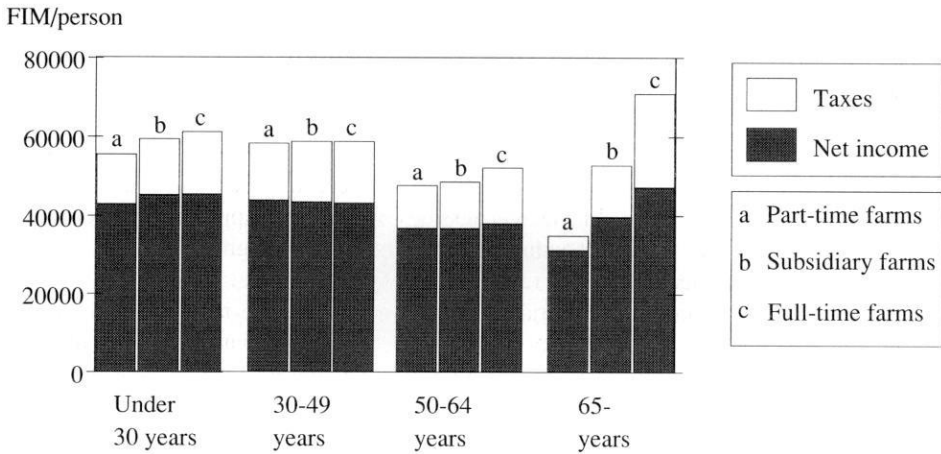
Figure 10. Total incomes and net incomes (FIM/person) according to farmer's age on part-time, subsidiary and full-time farms in 1985.

forestry income in taxation is about a third higher. It is likely that on most of these farms, the transfer of the farm to a descendant has been delayed. Agricultural investments and depreciations are small, and this is one of the reasons why agricultural income was relatively high.

In addition to the amount of investments and the depreciations, farmer's age has an effect on the investments through loans and, consequently, on interest expenditure (RYYNÄNEN & PYYKKÖNEN 1988, PUURUNEN 1989). The incomes of farmers of different ages reflect the wave motion in the intensity and long-term nature of farming in the course of time. On many farms owned by farmers over 50 years of age, production is planned only up to the transfer of the farm to a descendant, and no major investments are made. Because farmers do not want to tie the descendants to earlier settlements, extensive reorganization of production is left to be realized by the descendants themselves. It is in the interest of young farmers that production should continue for several decades in the future. Consequently, young farmers are left with, in addition to the financial burden of purchasing and possibly expanding the farm, the long-term investments neglected by the previous generation.

5.4. Income distribution of the farm population

5.4.1. Study of income distribution as part of the study of the income level

In the comparisons of the income levels of the different population groups, an attempt is made to examine the average incomes, and the differences in them, of the groups established on the basis of various characteristics of income earners. The arithmetical mean is an illustrative way of describing the incomes of the group when the dispersion within the group is small. Instead, if the dispersion of incomes in the group is great or the distribution of variables is skew, income comparisons based on the means of the groups may give a distorted picture of the real income disparities between income earners. Income distribution studies are concerned with the shape of the distribution and income disparities between individual income earners. Examining the income distribution requires a data of income earners that is organized according to incomes and more specialized methods than income studies based on the means of the groups.

There are very few studies or statistics of the income distribution in Finland. On the other hand, study of income distibution has been separated from the traditional income studies based on the means of the groups. However, an extensive study of the income level should include formulation of questions and methods that are in accordance with the study of income distribution, because it should be possible to take the dispersion behind the means of the groups into account in interpreting the results. On the other hand, the shape of the income distribution of a population group under consideration may contribute to the establishment of the comparison groups and, consequently, to calculating the means of the groups. In this study income distribution has mainly been examined in the light of the results of earlier studies concerning the farm population, as well as on the basis of the tables available in the existing income statistics. For the part of the actual data, only the means of the groups have been available.

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The study of income distribution necessarily involves examining the indicators concerning the dispersion and the shape of the distribution. Variable values with a certain percentage share of the total frequency below them are used as indicators of the location and concentration of the distribution. These variable values, called fractiles, can be determined by organizing the observations according to their size and looking for the variable value according to the ordinal determined by the fractile (MATTILA 1970, p. 59). Some rough conclusions can be drawn on the basis of the income distribution by comparing the mean of the incomes of all income earners with the income of the middle income earner, i.e. the so-called median income. One of the most commonly used fractiles is decile distribution, in which the data that is organized according to incomes is divided into ten groups of equal size of the number of income earners.

In addition to the indicators, the central methods of income distribution study indicating the location of the distribution concern the description of dispersion. The difference between the biggest and smallest value, i.e. the range, is mainly used for measuring the dispersion in small samples of a constant size. Correspondingly, the distance between fractiles can also be used as indicators the dispersion. The most commonly used measurement for dispersion is the standard deviation or its square, which is called variance (MATTILA 1970, p. 74-79).

The dimensions of the aforementionad measurements of deviations are of the same kind as the values of the corresponding variable. In comparisons of the dispersion within different kinds of groups in absolute terms, i.e. independently of the unit of measurement, relative indicators of dispersion are required. The coefficient of variation is the percentage share of the standard deviation in the mean, which can also be called the relative dispersion. UUSITALO (1988, p. 29) has applied the square of the coefficient of variation in examining the changes in the income distribution between different population groups and the factors behind them, because this can be divided into variation within and between the groups (additive decomposition). The value of the square of the coefficient of variation indicating a completely even income distribution is zero. The measurement is sensitive especially to changes in the highest incomes of the distribution.

The most general indicator of the dispersion in the whole distribution is the indicator called the mean difference, presented by the Italian C. Gini, which includes the mean of all differences of paired observations (MATTILA 1970, p. 78). As a measurement of the heterogeneity of different population groups and the concentration of income distribution, the mean difference is applied by proportioning it to the mean, which results in the coefficient of concentration, indicating the relative dispersion. This indicator, which is also called the Gini coefficient (G), can be illustrated graphically as the proportional share of the area restricted by the curve of concentration, i.e. the so-called Lorenz curve, from the area of the right-angled triangle indicating an even distribution. In the Lorenz curve, the number of income earners are located on the horizontal axis, ordered according to the amount of incomes, and the cumulative share of income earners in all incomes is presented on the vertical axis (cf. Figures 11 and 12 , p. 73 and 75). The closer the Lorenz curve is to the diagonal of the graph, the more even the income distribution is (UUSITALO 1988, p. 28). Consequently, $G = 0$ indicates an even distribution, and $G = 1$ a maximum concentration, in which all

income comes to the earner of the highest income.

UUSITALO (1988, p. 28) notes that the Gini coefficient is a quite stiff indicator, i.e. it does not react very easily to the changes in income distribution. In his study of the changes in income distribution and the factors behind them, Uusitalo has used, in addition to the Gini coefficient and the square of the coefficient of variation, the Theil entropy indicators, the first of which (T_1) is sensitive to the changes in the highest incomes and the second (T_2), correspondingly, to those in the smallest incomes. The value of an entropy indicator for even income distribution is zero, and the more uneven the income distribution, the more the indicator deviates from 0. The formulas for measuring income distribution have been presented by e.g. NYGÅRD & SANDSTRÖM (1981) in their study of the fundaments of inequality comparisons.

In Finland only a few studies concerning the income distribution within the farm population have been carried out (NEVALA 1988, NEVALA & OJANIEMI 1988). However, income distribution studies concerning the whole population are made from time to time, one of the latest being the aforementioned study by UUSITALO (1988). Farmers are included as a separate population group in the studies concerning the whole population.

At present the most central statistical source for the income distribution of the whole population are the Income Distribution Statistics (ANON. 1987f), in which the distribution of the incomes of the different population groups is described through a decile classification, as well as by classifying the income earners according to growing incomes by a class interval of an even size. The income data concerning the farm population is tabulated in almost the same way in connection with the register data of personal taxation in the Enterprise and Income Statistics of Agriculture and Forestry (ANON. 1988g). For the part of the sample data of the Enterprise and Income Statistics applied in this study, no results from individual farms or data organized according to incomes has been available, which means that it has been possible to examine the income distribution of farmers and the factors involved only on the basis of earlier studies made in other connections and the classifications indicating the income distribution available in the aforementioned statistics.

5.4.2. Results of studies concerning the income distribution of the farm population

Earlier studies of the income distribution of the farm population or income disparities within agriculture in Finland have in the first place been concerned with the variation in the average incomes of different farm groups. Only few studies based on data on income distribution at the farm level or time-series analyses have been carried out. NEVALA & OJANIEMI (1988) have examined the variations in the incomes and profitability of agriculture as well as the shape of the income distribution and changes in it on the basis of the bookkeeping farms. Their study concerns the bookkeeping farms that were included in the Profitability Study in 1976-1983. It has been noted that the distribution of incomes according to agricultural surplus has been skewed to the left in every year of the research period. Thus, the mean income has been higher than the median income, whereas in a normal distribution the mean and median are of equal size. The coefficient of skewness has varied between 0.93-2.59. Values of the coefficient of skewness that are over 1.0 are considered a sign of considerable skewness

in the data (CORDTS et al. 1984, p. 327).

On the basis of the taxation data on agriculture and forestry in 1976 and 1983, NEVALA (1988) has noted that the pure income of agriculture (including the interest on debt) is below the average on 75 % of farms. The skewness of the distribution increased during the research period so that on the deciles with the highest incomes the proportional increase in incomes was above the average. The share of the five highest deciles in the total of pure agricultural income was over 90 % in both years under consideration. Nevala has examined regional differences in income distribution by locating the farms of different parts of Finland in the decile distribution made on the basis of the incomes of all farms. In 1983 about 55 % of farms in southern Finland and about 40 % of farms in northern Finland were located in the five deciles with the highest incomes. According to the production line, the corresponding indicators were 54 % on cattle farms, 77 % on pig farms, and 46 % on grain farms. A kind of polarization is characteristic to the location of grain and pig farms in the income line, because their share in the middle deciles is relatively small.

In examining the changes in the income distribution in 1976 and 1983, Nevala notes, among other things, that the proportional difference between the mean and median of pure income has increased in all regions. This polarization of income distribution has been most notable in northern Finland. Instead, the income distribution between different production lines has balanced to some extent, especially on pig and grain farms. However, income from agriculture alone is not adequate for indicating the income disparities between farm families and the changes in them. On the basis of the 1986. Income Distribution Statistics, YLISIPPOLA (1989, p. 93) has examined the income distribution of farmer households, on the one hand, and households of other small-scale entrepreneurs, on the other, by means of a quintile classification according the distribution of the available incomes per household. In case of the different income concepts, the Gini coefficients indicating the evenness of income distribution are as follows:

Primary income	0.29
Factor income	0.27
Total income	0.24
Available income	0.22

The households included in different income classes vary in terms of their composition and the number of persons. In the quintile with the lowest income, the number of persons in farmer households was 1.83, and in the quintile with the highest income this figure was 3.35. Ylisippola has taken the differences in the size and composition of households into account by calculating the available incomes per consumer unit, in which case the value of the Gini coefficient is 0.12, i.e. income distribution is more even than when calculated per household. On the basis of the Household Surveys, UUSITALO (1988) has examined the income distribution of different population groups and the change in it during the last 15 years. The Gini coefficients of the distribution of farmers' disposable incomes calculated per the so-called OECD-consumption unit were 0.267 in 1966 and 0.222 in 1981. The Gini coefficient does not react very easily to changes in income distribution. The obvious differences in the Gini coefficients

calculated by Ylisippola in 1986 and Uusitalo in 1981 are caused by, in addition to the different data, in the first place by the different bases for calculation. Ylisippola's study is based on the incomes of farmer households that were already classified into quintiles, whereas in Uusitalo's study the results have been calculated on the basis of the incomes of individual households.

In Uusitalo's study (p. 29, 66) the change of the square of the coefficient of variation (V^2) from 29.7 to 18.0 and the change of the Theil entropy indicator (T_1) from 0.122 to 0.085 also point to balancing of farmers' income distribution. Instead, Theil's other entropy indicator (T_2) has not shown any considerable decrease. In the study the indicators of income distribution have been chosen so that they are sensitive to changes at the different points of the income distribution. T_2 is particularly sensitive to changes in the lowest incomes, whereas T_1 and V^2 are sensitive to changes in the highest incomes. Consequently, the balancing in the income distribution of the farm population has mainly concerned the highest incomes, whereas the changes in the lowest incomes have not been as clear.

In examining the differences in the livelihood within and between socio-economic classes, Uusitalo (p. 63-65) notes that the relative income level and livelihood of agricultural entrepreneurs has risen clearly from the end of the 1960s to the 1980s. In addition to the structural change, the increase in the received income transfers, especially pensions, as well as in the additional wage incomes have contributed to the income development of agricultural entrepreneurs. Instead, the improved livelihood has not been a result of the actual agricultural incomes. The differences between farms of different sizes have decreased, and for the most part, the differences in the livelihood have diminished in all farm size classes. However, the balancing has not been as strong as in the case of wage earner groups. In 1981 the differences in the livelihood within the farm population were greater than in wage earner groups, whereas in 1966 they were almost of equal size. Uusitalo regards the economic situation of the owners of small farms as quite poor; only agricultural and forestry workers and some unemployed groups are in a similar situation. Even if the incomes of small-scale farmers per household are clearly higher than the incomes of some wage earner groups, their incomes per consumer unit are lower than those of other socio-economic groups.

5.4.3. Income distribution of the farm population in the 1980s

In the following, the income distribution of the farm population and the changes in it are examined on the basis of distribution tables published in the Income Distribution Statistics as well as in the Enterprise and Income Statistics of Agriculture and Forestry. In the Income Distribution Statistics income earners are classified into deciles on the basis of the different income concepts. The group of agricultural entrepreneurs includes, in addition to farmers, e.g. commercial gardeners, fur producers and entrepreneurs of forestry and fishery (ANON. 1989g, p. 14). In the study according to primary income earners, decile classification is formed on the basis of the distribution of primary incomes of economically active persons. The decile classification indicating the distribution of available incomes is based on the incomes calculated per household as well as per member of household. The study according to primary income earners mainly indicates the wage incomes and entrepreneurial incomes in

different socio-economic classes, and that based on disposable incomes the livelihood of households and their members.

In 1986 agricultural entrepreneurs included in the five highest deciles received 76 % of the primary incomes per income earner, 67 % of the available incomes of households, and 57 % of the available income per person. Correspondingly, for the part of primary incomes the mean income was about 18 % and for the part of available incomes about 6 % higher than the median income. Proportionally, the mean income deviates most from the median income on small farms. In terms of the mean income and the median, the income distribution of other entrepreneurs is skew in the same way as in the case of agricultural entrepreneurs. Instead, the mean income of wage earners is about the same as the median income, which means that, in relation to the incomes of wage earners, the mean incomes of agricultural entrepreneurs are higher than the median incomes (see also NEVALA & OJANIEMI 1988, p. 112). The Gini coefficient indicating the average equality of the income distribution of all decile groups is 0.37 for primary incomes, 0.24 for available incomes per household, and 0.105 for available incomes per person. Consequently, there are considerable differences in the primary incomes of agricultural entrepreneurs, but when received and paid income transfers as well as the size of the households are taken into account the income disparities decrease. This can also be seen from the location of the corresponding Lorenz curves in relation to the diagonal indicating a completely even income distribution in Figure 11.

The decile classification concerning the income distribution of the comparison groups of this study is presented in the Income Distribution Statistics for the industrial and construction workers, which correspond the most closely to the comparison groups, and for the so-called other entrepreneurs. In 1986 the Gini coefficients indicating the
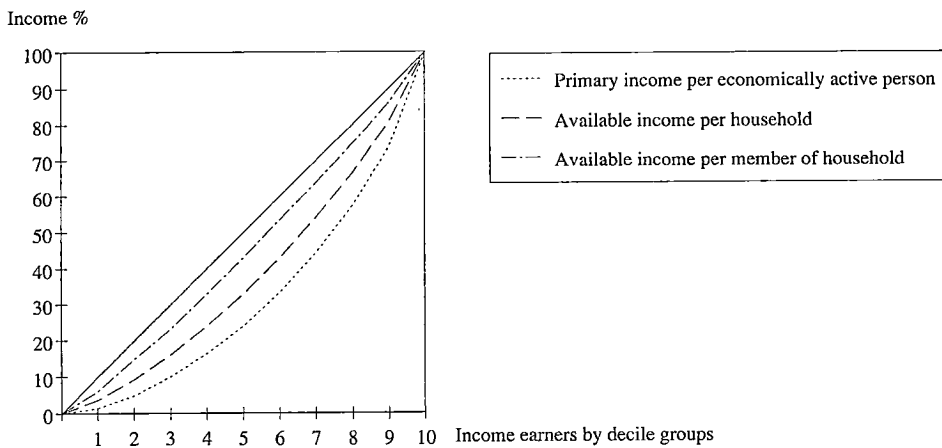
Figure 11. Lorenz curves indicating the equality of the income distribution of agricultural entrepreneurs for the part of primary and available incomes in 1986.

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workers' income distribution were 0.21 for primary incomes and 0.19 for the available incomes per household. The available incomes per person are almost even, and the value of the Gini coefficient indicating them is under one. The corresponding Gini coefficients concerning the income distribution of entrepreneurs are about 0.43 for primary incomes, and 0.27 and 0.14 for available incomes. The decile classification in the Income Distribution Statistics includes, in addition to the enterprises with less than five persons this study is concerned with, larger enterprises as well. On the basis of YLISIPPOLA's (1989, p. 94) results, the income distribution of small-scale entrepreneurs is more unequal than that of farmers, but not as unequal as the income distribution of all entrepreneurs.

It has also been possible to examine certain aspects of the income distribution of the farm population on the basis of the income and taxation data on agriculture and forestry (ANON. 1988g), published in connection with the Enterprise and Income Statistics of Agriculture and Forestry. In the Enterprise and Income Statistics, the data on the personal taxation of all natural persons who have agricultural or forestry income have been tabulated, ordered according to the total income liable to state taxation. 13 income earner groups are included in the table and, because the classification is based on nominal incomes, due to the rise in the income level as well as inflation, income earners shift from the lower income classes to the higher ones, and the classification loses some of its information value. In this study, however, income distribution has been examined over a quite short period of time, i.e. the years 1980-1986. In 1986 altogether 258,700 persons had incomes from agriculture, which is about 14 % less than in 1980.

The indicators of the distribution of the total incomes liable to state taxes as well as net incomes (= total income minus taxes) suggest that the income distribution has balanced in the 1980s. The distribution of agricultural and forestry incomes has remained almost the same, which means that the balancing has mainly occurred for the part of the off-farm incomes. In 1983 and 1984, which were better than average years for agriculture, the mean of the agricultural and forestry incomes was higher in relation to the median than in other years, but this had no effect on the distribution of the total incomes. In 1980 the 50 % of income earners with the highest incomes received 80 % of the total income and 77 % of the net income, in 1986 the corresponding shares were 75 % and 72 %. In the whole research period the 50 % with the highest incomes received about 75 % of the incomes from agriculture and forestry. The decrease in the Gini coefficient (Table 6) as well as the corresponding shift of the Lorenz curve closer to the diagonal indicating an even distribution (Figure 12) also indicate the relative balancing of the income distribution for that part of the total and net incomes.

Among the decile examinations according to the Income Distribution Statistics, which have been presented earlier, examinations per primary income earner are the most closely comparable to the study of the total incomes based on the Enterprise and Income Statistics of Agriculture and Forestry. Despite the different bases for the statistics, in 1986 the aforementioned indicators of the income distribution were the same according to both statistical sources. Instead, in 1980 the figures according to the Enterprise and Income Statistics were a few percentage points higher, and thus they point to a slightly more notable balancing of incomes. Within the framework of the

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Table 6. Indicators of the income distribution of agricultural income earners in 1980-
       1986.

	1980	1981	1982	1983	1984	1985	1986
Mean bigger than median, % Income from agriculture							
and forestry	4.4	4.1	4.7	12.7	12.8	8.2	8.3
Total income	32.9	31.0	28.9	23.7	23.8	18.1	18.4
Net incom	15.6	16.5	14.4	9.8	9.7	6.4	7.2
Share of the 50 % with the highest incomes, % Income from agriculture							
and forestry	75.1	75.4	75.4	74.8	75.6	75.1	74.6
Net income	77.4	77.7	77.2	72.6	71.7	71.6	71.6
Gini coefficient (x100) Income from agriculture							
and forestry	35	35	35	35	36	34	34
Total income	44	44	44	42	39	38	37
Net income	38	39	38	32	32	31	31
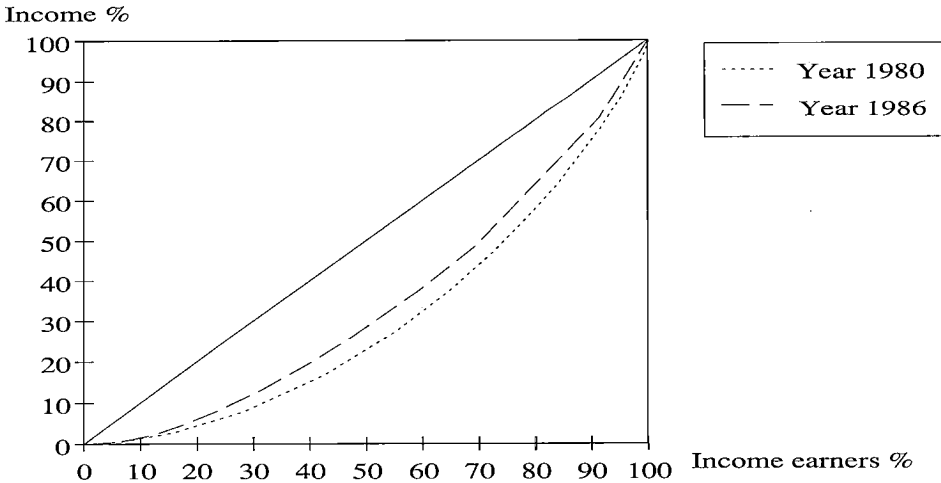
Figure 12. Change in the income distribution of agricultural income earners in 1980-
        1986. The Lorenz curves indicating the net incomes (= total income minus
        taxes).

data used in this study, it has not been possible to examine the income distribution of the farm population or of the comparison groups. However, it has been noted earlier that, when e.g. the farm size and the production line are taken into account, the income disparities between the different farmer groups decrease, and the income distribution is more equal than within the farm population on the average. For the part of the other population groups, the income distribution of wage earners has proven relatively equal on the basis of the Income Distribution Statistics. It has been possible to take the inequality of the income distribution of small-scale entrepreneurs into account in the study by examing, in addition to the average results, the results of the different line of business.

6. Incomes of the farm population in relation to incomes of other population groups

In this chapter, the incomes of the farm population are compared with those of wage earners and small-scale entrepreneurs. From the group of wage earners the study includes, depending on the connection, groups of industrial workers determined in various ways. Income comparison concerning small-scale entrepreneurs includes all enterprises with less than five persons, according to the Income Distribution Statistics. Income concepts applied in this study are based on the Recommendation for Income Distribution Statistics. The incomes of the different parties have been compared through several concepts concerning the nominal income. In the following the ratios are presented mainly from 1986, but the results from several years have also been taken into account in the study. A more detailed account of the income development of the different comparison groups in the 1980s has been presented in earlier publications (e.g. PUURUNEN 1989).

6.1. Incomes of the farm population and industrial workers

The comparison of the incomes of the farm population to those of industrial workers is partly related to the stipulation of the Agricultural Income Acts in the 1980s that the income from agriculture and wage income of industrial workers are to be taken into account in the income negotiations. In the following, an attempt is made to examine the incomes of these comparison groups by applying several different income concepts, on the one hand, and through data from various sources, on the other. Results of the income comparisons between the farm population and industrial workers have also been published earlier in connection with the income study (e.g. TOLVANEN 1985, TOLVANEN & TORVELA 1985, PUURUNEN 1987b, 1989).

6.1.1. Agricultural income in relation to wage income of industrial workers

According to the Agricultural Income Acts in the 1980s, the annual income from agriculture on rationally managed farms that provide full employment to the farm family and annual income of skilled industrial workers have to be taken into account in the agricultural income negotiations (e.g. ANON. 1982a). In this study agricultural income, which is the compensation the farm family receives for its agricultural labor and own capital invested in agriculture, corresponds to the annual income of the farm family from agriculture. The total agricultural income per person in different farm size groups has been compared to the annual wages of industrial workers from their main occupations on the average. It has been possible to take the rational management of the farm into account only indirectly, by means of the results of farm groups providing full employment to the farm family, on the one hand, and results of farms regarded as full-time farms on the basis of income data as well as results of the bookkeeping farms, on the other. The average wage income of a skilled industrial worker has been

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calculated by means of wage statistics and industrial statistics. In 1986 this amounted to FIM 70,626/person, and the corresponding amount of working hours was 1,666 hours/person (Appendix 1).

In order to determine the farms providing full employment to the farm family, farm groups in which the labor input of the farm family has at least corresponded to the full employment of the farmer and spouse, when the annual working hours of 1,860 are being applied, have been delimited on the basis of the labor input data of agriculture. This corresponds to the annual working hours a farmer would have if he became a full-time employee outside the farm (HEIKKILÄ 1984, p. 17). The labor input of agriculture has corresponded to the full employment of the farmer and spouse mainly on farms engaged in livestock production. In the farm groups providing full employment, agricultural income per farm has been divided equally between the farmer and spouse, and the agricultural income per person has been compared with the average wage income of skilled industrial workers.

In 1980-1986 35-40 % of farms owned by natural persons provided full employment to the farmer and spouse. During the period under consideration the agricultural income per person was 50-68 % of the average wage income of a skilled industrial worker. If the groups of smaller livestock farms, which are close to full employment, are included in the comparison, the average income from agriculture is 41-55 % of the comparison income. The corresponding figures in 1986 were 63 % for the part of farm groups providing full employment, and 53 % when the groups of smaller farms were included (Figure 13 and Appendix 2).

Farms owned by people who get their incomes for the most part from their farms form another starting point for the income comparison. 37-41 % of farms owned by
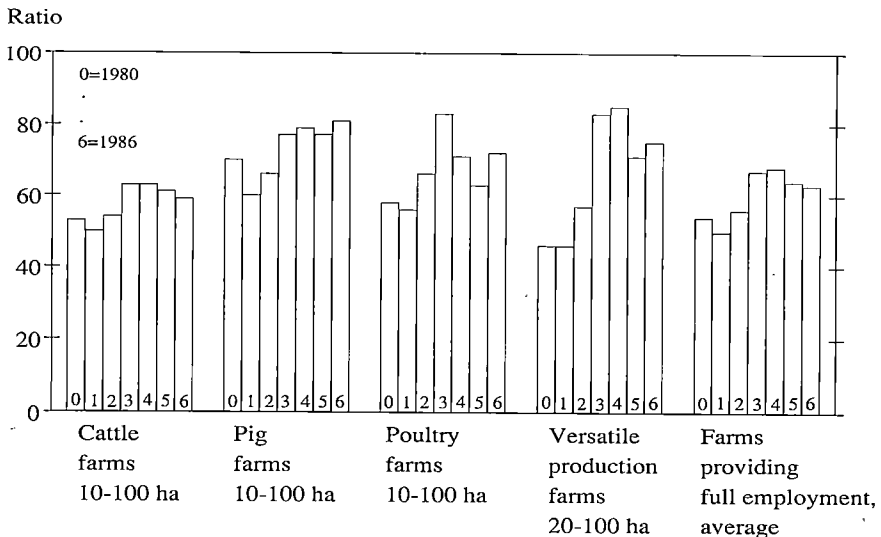
Figure 13. Agricultural income per person in farm groups providing full employment compared with the average wage income of skilled industrial workers in 1980-1986. Ratios, income of industrial workers = 100.

natural persons were the full-time farms, which were examined earlier as well, with the income from agriculture and forestry over 75 % of the total net incomes. This study and income comparison, which is based solely on income data, concerns the years 1983-1986. In terms of the production conditions for agriculture, these years were more favorable than the long-term average (KETTUNEN 1989, p. 10). Full-time farms are larger, they have the average of about 20 hectares arable land, and they are more often engaged in livestock production than all farms on the average. Crop producing farms, on which agriculture is the principal source of livelihood, are also included in the income comparison in this connection. It has not been possible to take the corrections in the weigh coefficients made by the Central Statistical Office into account in the results of the part-time/full-time farms. Because the corrections have mainly affected the results of farms with less than 5 hectares their effect on the average results of full-time farms is very small.

In the research period, the average agricultural income of full-time farms, wage income of skilled industrial workers (=100) and their ratios were as follows:

	1983	1984	1985	1986
Agricultural income, FIM/person	39 382	43 143	45 768	50 479
Wage income of industrial workers, FIM/person	55 552	61 494	66 201	70 626
Ratio	71	70	69	71

In 1983-1986 the average agricultural income on full-time farms was 69-71 % of the average wage income of a skilled industrial worker. On full-time farms with less than 10 hectares the ratios varied between 31-46, on farms with 10-20 hectares between 61-62, and on farms with 20-30 hectares between 83-88 during the period under consideration. The comparison income was generally achieved on full-time farms with over 30 hectares (Figure 14). On farms with 30-50 hectares the ratios varied between 104-111, and on farms with 50-100 hectares between 136-147. On farms with over 100 hectares the corresponding ratios were 168-197.

Distinguishing the rationally managed farms referred to in the Agricultural Income Acts in different farm groups has not been possible within the framework of the statistical data. In the study it has been possible to take some factors related to rationality, mainly the efficiency of production, into account. For the part of the farm groups included in the income comparison, an attempt has been made to examine rationality by comparing the results of these farms with the results of the bookkeeping farms of the Profitability Study,as well as through a more detailed study of the delimitations of the smallest full-time farms in terms of the farm size. Agriculture is more dominating on the bookkeeping farms, although it has not been possible to delimit the full-time farms in the same way as from the Enterprise and Income Statistics of Agriculture and Forestry on the basis of taxation data. Also, because the economic results of the bookkeeping farms are being followed year by year, the management of these farms can be expected to be better and more efficient than the average.

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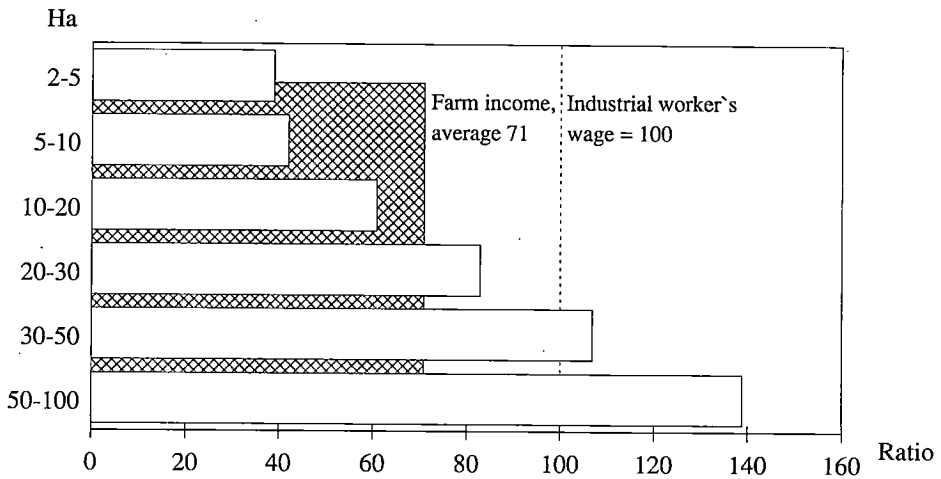
Figure 14. Agricultural income per person on full-time farms on he average and
according to the farm size, compared   with the average wage income of
skilled industrial   workers in 1986. Ratios, wage income of an industrial
worker = 100.

In 1986 the agricultural income per person on the bookkeeping farms amounted to
the average of 78 % of the average wage income of a skilled industrial worker. In this
connection it has been assumed that the number of persons on the bookkeeping farms
is the same as on full-time farms. The corresponding ratio on farms that form the main
source of income is the aforementioned 71, and in farm groups providing full employ-
ment 63 (Table 7). Results of the bookkeeping farms in 1987 are also available, and in
this case the ratio is 55. 1987 was an exceptionally bad year in terms of the production
conditions. The effects of the crop failure have been examined in various connections
for the part of the bookkeeping farms (PUURUNEN & TORVELA 1989) and the
whole agriculture (KETTUNEN 1988, 1989).

The differences in the average comparison results are mainly caused by the fact
that the bookkeeping farms are about 10 hectares larger than full-time farms and farms

Table 7. Agricultural income per person in farm groups providing full employment, on
farms forming the main source of income, and on bookkeeping farms compared
with the average wage income of skilled industrial workers in 1980-1986.
Ratios, wage income of industrial workers = 100.

	1980	1981	1982	1983	1984	1985	1986
Full employment	54	50	56	67	68	64	63
Main source of income	..	..	..	71	70	69	71
Bookkeeping farms	78	60	87	100	86	76	78

providing full employment. When examined according to the farm size, agricultural income has in the last few years been higher on the full-time farms than on the bookkeeping farms. Compared with the full-time farms, the production on bookkeeping farms is more intensive and the number of animals is bigger. Also, the total return from agriculture as well as costs are higher on bookkeeping farms than on full-time farms. For this part, the data varies most in the smallest farm size groups. Farm groups providing full employment represent average efficiency in the production lines and farm size groups in question. Agricultural incomes on these farms were 20-30 % smaller than in the corresponding groups of full-time farms.

In the following the full-time farms have been examined more in detail and farm groups that do not necessarily fulfil some of the requirements set for agricultural production practiced actively as the main occupation have been exeluded. Because a study of the results of individual farms has not been possible within the framework of the Enterprise and Income Statistics of Agricultureand Forestry or the existing resources for income study, the delimitations concerning full-time farms have in this conection been made according to the revised production line classification in the Enterprise and Income Statistics by including or excluding whole farm groups. All full-time farms owned by farmers over 65 of age and groups of small farms that cannot be considered the principal source of livelihood for the farmer and spouse on the basis of e.g. gross incomes, as well as farm groups in which the number of sample farms has remained too small for estimating the results of an individual farm group have been excluded from the income comparison. These delimitations have been explained more in detail in an earlier publication concerning the income development of the farm population (PUURUNEN 1989, p. 55-62). In addition, some specifications have been made to the results in this study. In order to avoid the subjectivity necessarily involved in this kind of study, the average comparison results have been presented in several different farm group combinations.

The incomes in the groups of full-time farms selected for the income comparison, including small farms engaged in beef, crop and versatile production, amounted to the average of 79 % of the average wage income of industrial workers (Income Comparison a, Table 8). This comparison includes about 80 % of the full-time farms examined, i.e. less than a third of all farms owned by natural persons. If the aforementioned groups of small farms are excluded, the incomes of full-time farms are the average of 81 % of the wage income of industrial workers (Income Comparison b). In this case the comparison includes about 70 % of full-time farms, i.e. about 25 % of all farms owned by natural persons. Achieving the average wage income of a industrial worker requires, on the average, a farm size of over 30 hectares. The corresponding income comparison from 1985, based on the earlier production line classification in the Enterprise and Income Statistics, gives almost the same ratios in both groups of comparison farms.

Correspondingly, depending on the production line and the framework for comparison, the incomes of livestock farms were 56-101 % of the comparison income. Two income comparisons have also been prepared for the part of farms engaged in crop or versatile production, the first of which (a) includes the groups of so-called small farms, and the other (b) concerns only the larger farms, and, consequently, more efficient production. In income comparison (a) the incomes were 93-98 % of the

Table 8. Agricultural income in relation to the average wage income of skilled industrial workers in the selected groups of full-time farms in 1986. Ratios, wage income of industrial workers = 100.

		10-20	20-30	30-50	Over 50 ha	Average
Dairy farms	a,b)	60	83	105	145	71
Beef farms	a)	47	63	92	...	56
	b)	-	63	92	...	7
Other cattle farms	a,b)	55	77	102	135	71
Pig farms	a,b)	82	96	123	147	101
Poultry farms	a,b)	77	96	120	...	94
Other livestock farms	a,b)	63	81	106	...	80
Grain farms	a)	-	64	90	137	97
	b)	-	-	90	137	111
Special crop farms	a)	78	113	128	...	98
	b)	-	113	128	...	121
Other crop farms	a)	66	79	96	153	93
	b)	-	79	96	153	103
Versatile production farms	a)	61	82	110	131	81
	b)	-	82	110	131	99
Comparison farms total	a)	62	83	107	142	79
	b)	62	84	107	142	81

comparison income, depending on the production line, and in (b) the comparison income was exceeded by 3-21 percentage points. The incomes on farms engaged in versatile production were, on the average, 81-99 % of the comparison income, depending on the framework for comparison.

Agricultural income was higher or almost the same as the comparison income on the average on pig and poultry farms with over 20 hectares as well as in special crop production. On cattle farms and other farms on which livestock or crop production is the dominating production line as well as on farms engaged in versatile production reaching the comparison income required a farm size of over 30 hectares. Also, on grain farms with over 30 hectares agricultural income was over 90 % of the comparison income. Consequently, the comparison income, or 90 % of it, was reached on altogether about 9,200 farms, i.e. 20 % of full-time farms owned by farmers under 65 of age.

In the study agricultural income has been compared with the incomes of industrial workers by means of various groupings concerning the farm population, ranging from the results of all farms owned by natural persons to the results of a small group of

farms picked out from the full-time farms on the basis of quite subjective considerations. Annual variations in agriculture and the wide dispersion between the different farm groups distort quite easily comparisons based on the results of small and selected farm groups. It is not possible to add any more classification criteria concerning the production lines in the case of full-time farms, because in the smallest production lines and farm groups the number of farms in the sample of the Enterprise and Income Statistics is already too small. On the other hand, for the part of the delimitations concerning the industrial workers, the present Agricultural Income Act refers to a quite extensive income comparison.

6.1.2. Primary income

In addition to the income comparisons determined in the Agricultural Income Act, a comparison of the primary income of the farm population and industrial workers is presented in this chapter, and of the disposable income in Chapter 6.1.3. It is possible to examine the primary income of the farm population on the basis of either taxation data (the Enterprise and Income Statistics of Agriculture and Forestry) or the Income Distribution Statistics, in consideration of the differences in the statistics. The income data of industrial workers are based solely on the Income Distribution Statistics in this connection. In the following comparisons according the Income Distribution Statistics, household forms the statistical unit. Because the size and composition of the households to be compared vary a great deal, the incomes per household have in the comparison been calculated per income earner, i.e. per economically active member of household, per person, or, in order to take the composition of the household into account, per consumer unit.

For the part of the farm population, households in which the head of the family has practiced agriculture as his main occupation for more than six months are included in the study according to the Income Distribution Statistics. In 1986 there were 1,680 households like this in the sample corresponding about 106,400 households in the farm population. Correspondingly, the comparison concerning this year includes 102,200 households in which the occupation of head of the family was industrial worker. In 1986 the average primary income of farmer households was FIM 111,200/household and FIM 50,500/economically active person. Correspondingly, the primary income of households of industrial workers amounted to FIM 117,900/household and FIM 71,500/ economically active person.

If the ratio 100 is used to mark the primary income of the households of industrial workers, the corresponding ratios for farmer households were 89-99 in those years of the 1980s when the Income Distribution Statistics were published. Calculated per economically active person, the primary income of farmer households was 68-77 % of the corresponding income of the comparison group. Farmer households are bigger, the number of economically active persons being 2.20 per household, whereas in the households of industrial workers this figure is 1.65. In those years in the 1980s when the Income Distribution Statistics were published, the primary income per economically active person on the smallest farms was about 40 %, on farms with 5-10 hectares about 50 %, on farms with 10-20 hectares 65-70 %, and on farms with over 20 hectares 90 % of the corresponding income of industrial workers (Table 9).

Table 9. Primary income of farmer households compared with that of the households of industrial workers. Ratios, incomes of the households of industrial workers = 100.

	Year	2-5	5-10	10-20	20- ha	Average
Primary income	1980	55	74	100	131	99
per household	1982	34	67	92	115	89
	1983	36	66	94	130	95
	1984	32	60	85	118	98
	1986	43	62	89	128	94
Primary income	1980	55	60	74	93	76
per economically	1982	39	56	66	84	68
active person	1983	41	56	68	91	72
	1984	33	50	64	89	77
	1986	42	49	67	92	71

If the primary income calculated per the farmer and spouse, according to the Enterprise and Income Statistics of Agriculture and Forestry, is compared with the primary income of the households of industrial workers calculated per economically active person, according to the Income Distribution Statistics, the corresponding ratios in 1983, 1984 and 1986 were, on the average, 67-71. In 1980 and 1982 the corresponding ratios, according to the Enterprise and Income Statistics were 60-62. In the last three statistical years of the Income Distribution Statistics, the primary income on the full-time farms included in the Enterprise and Income Statistics amounted to the average of 83-84 % of the primary income of the households of industrial workers, according to the Income Distribution Statistics.

When examined per household, the entrepreneurial income of agriculture according to the Income Distribution Statistics is smaller, but other primary income is higher than the corresponding incomes per farm in different farm size groups, calculated in the Enterprise and Income Statistics of Agriculture and Forestry. These two statistics differ in the ways they calculate the entrepreneurial income of agriculture, both with regard to income and expenditure. Even if the starting point for entrepreneurial income in both statistics is the pure income in taxation, the Income Distribution Statistics also include, among other things, the value of own investment labor in the income from agriculture, and, on the other hand, fallow premiums and retirement pension insurance payments are included in the income transfers in the Income Distribution Statistics.

Also, in the Income Distribution Statistics the basis for calculating entrepreneurial income from forestry is different and it includes more items of income than in the Enterprise and Income Statistics of Agriculture and Forestry. In the case of wage incomes, the most notable difference is the fact that the Income Distribution Statistics include all household members, whereas in the Enterprise and Income Statistics only the farmer and spouse are taken into account. Consequently, primary income per

person as well as the ratios in different farm size groups are slightly higher on the basis of the Enterprise and Income Statistics than on the basis of the Income Distribution Statistics (cf. Table 9). More detailed accounts of the statistical differences in the Enterprise and Income Statistics of Agriculture and Forestry and the Income Distribution Statistics have been presented in earlier studies (e.g. TOLVANEN 1985, p. 126-131, PUURUNEN 1989, p. 62-67).

6.1.3. Available income

Available income indicates the consumption potential of households, and in this connection it is examined only on the basis of the Income Distribution Statistics. Available income includes primary income, property income as well as received income transfers, and the paid income transfers are deducted from them (Figure 1 in 3.2.2.). In 1986 the average available income of farmer households was about FIM 119,700/household and that of the households of industrial workers FIM 102,200/household. Consequently, the available income of farmer households is about 17 % higher than the corresponding income in the households of industrial workers (Table 10). As was noted earlier, there are more income earners in farmer households.

On the other hand, there are also more persons using the incomes in farmer households, the number of persons being the average of 3.5 persons, whereas in the households of industrial workers the average number of persons is 2.8. In 1986 the

Table 10. Available income of farmer households and households of industrial workers. Ratios, income of households of industrial workers = 100.

	Year	2-5	5-10	10-20	20- ha	Average
Available income/	1980	93	99	121	140	118
household	1982	57	95	110	126	108
	1983	62	93	111	133	110
	1984	76	95	109	125	110
	1986	79	95	117	138	117
Available income/	1980	82	82	90	97	90
person	1982	76	83	88	90	86
	1983	85	90	95	99	94
	1984	86	87	92	95	92
	1986	90	91	92	103	96
Available income/	1980	80	83	95	103	93
consumer unit	1982	70	84	84	96	88
	1983	76	84	96	101	96
	1984	78	85	92	98	92
	1986	83	85	91	106	95

available income per person in farmer households was the average of 96 % of the income of the households of industrial workers. In those years of the 1980s when the Income Distribution Statistics were published, the ratios per household varied, on the average, between 108-118, and the ratios per person between 86-96.

In order to take the composition of households into account, available incomes have also been calculated per consumer unit. In the studies based on the consumer unit applied e.g. in the Household Surveys (ANON. 1988d), the first adult in the household corresponds to 1.0 and the following to 0.7 consumer units. Children under 18 years of age correspond to 0.5 consumer units. Consequently, the number of persons in farmer households corresponds to the average of 2.6 consumer units and in the households of industrial workers to 2.1 consumer units. In 1986 the available income per consumer unit in farmer households was the average of 95 % of the corresponding incomes of the households of the industrial workers. The comparison income was reached, on the average, on farms with over 20 hectares.

6.2. Incomes of the farm population and small-scale entrepreneurs

Because agriculture is entrepreneurial activity it is natural also to compare the incomes of farmers to those of other entrepreneurs. The group most clearly comparable with farmers is small-scale entrepreneurs. However, in practice preparing an income comparison concerning entrepreneurs is problematic. Statistics on the income data of small-scale entrepreneurs are compiled only on the basis of taxation data. Thus, in order to arrive at an objective income comparison, the differences between the comparison groups caused by different tax stipulations, among other things, should be taken into account. Within the framework of the stipulations of the Act on Taxation of Income from Industries (ANON. 1968) it is possible to regulate the result of enterprises much more effectively and in different ways than can be done in the taxation of agriculture and forestry (ANON. 1968, 1986c, HIETALA & LEHTONEN 1979, KETTUNEN, P. et al. 1980, PUURUNEN 1987, YLISIPPOLA 1989).

In the following the income data on farmers and small-scale entrepreneurs has been examined only on the basis of the Income Distribution Statistics. Already in compiling these statistics, an attempt has been made to make the income data concerning different population groups comparable with each other, but for the part of, for example, entrepreneurial income from a business or trade the statistics are based directly on data on personal taxation. Because the Income Distribution Statistics concern mainly households of natural persons, even small enterprises of a corporate form cannot be included, except through the wage and dividend incomes of the families in question. Income data concerning small-scale enterprises with 1-4 employees, including the owner, are directly available in the Income Distribution Statistics. A more detailed account of the income disparities between farmers and small-scale entrepreneurs has been presented in a study by YLISIPPOLA (1989), which is mainly based on the Income Distribution Statistics from 1986.

In 1986 the interview of the Income Distribution Statistics included about 1,160 sample households of small-scale entrepreneurs, in which the main occupation of the head of the household is an entrepreneur (ANON.1989g, p. 14). It was also possible to

take the line of business into account to some extent as a classification criterion. In 1986 the basic population of small-scale entrepreneurs consisted of 82,600 households. In 1986 the numbers of households in the most central lines of business were as follows:

Industry and construction	24,500	households
Trade and accommodation	17,200	"
Transportation	18,400	"
Other services	22,500	"
Small-scale entrepreneurs, total	82,600	"

In 1986 the average entrepreneurial income of the households of small-scale entrepreneurs was FIM 66,900/household. In the 1980s the incomes of entrepreneurs engaged in industry and construction as well as trade and accommodation remained below the average, whereas the entrepreneurial incomes of those engaged in transportation and other services were above the average in most years. In 1986 the average agricultural, forestry and entrepreneurial incomes of farmer households were higher than the corresponding incomes in the households of small-scale entrepreneurs. Instead, wage income in the households of small-scale entrepreneurs was, on the average, twice that in farmer households (Table 11). It seems that it is more usual to pay wages or salaries to family members for their work in the enterprise in entrepreneurial households than in farmer households.

The average primary income of farmers, including entrepreneurial income and wage income, was FIM 111,200/household, and that of entrepreneurs FIM 126,900/ household. Consequently, in 1986 the primary income of farmer households was, on the average, 88 % of the primary income of the households of small-scale entrepreneurs. In farmer households the number of economically active persons was 2.2/ household, and in entrepreneurial households the corresponding figure was, on the

Table 11. Incomes of farmer and entrepreneurial households according to the Income Distribution Statistics in 1986.

	Farmers		Small-scale entrepreneurs	
	FIM/household	%	FIM/household	%
Entrepren. income	84 100	68.6	66 900	49.5
Wage income	27 100	22.1	60 000	44.4
Property income	11 400	9.3	8 900	6.1
Factor income	122 500	100.0	134 800	100.0
Available income	119 700		105 100	

Table 12. Primary income of farmer households per economically active person and available income per consumer unit in relation to the corresponding incomes in the households of small-scale entrepreneurs in 1983-1986. Ratios, income of the households of small-scale entrepreneurs in each year in different lines of business = 100.

	Primary income			Available income		
	1983	1984	1986	1983	1984	1986
Industry and construction	81	78	74	115	102	104
Trade and accommodation	81	80	72	108	97	97
Transportation	59	65	59	88	87	97
Other services	56	62	64	85	80	91
Small-scale entre- preneurs, average	67	69	68	99	90	96

average, 1.7 persons. In 1986 the primary income per economically active person in farmer households was the average of 68 % of the corresponding comparison income of small-scale entrepreneurs (Table 12).

Even if the average primary income of farmer households was smaller than that of entrepreneurial households, almost the same income level was reached for the part of the available income. In the last statistical years of the Income Distribution Statistics, the received income transfers in farmer households amounted to 15-20 % and in entrepreneurial households to 10 % of the total income. The share of various kinds of pensions in the received income transfers was larger in farmer households than in entrepreneurial households. Paid income transfers, both social security expenditure and taxes, were about a third smaller in farmer households. With regard to the different lines of business, in the last years the available income of farmer households was about the same as that of entrepreneurs engaged in trade and accommodation, and slightly higher than of those engaged in industry and construction. However, farmer households have not quite reached the income level of entrepreneurs engaged in transportation and other services.

7. Income comparisons concerning the farm population and the recent development of statistics

In this study the specification and development of the income concepts as well as, on the other hand, the delimitation of the comparison groups in an appropriate way have formed the starting points. In practice, preparing income comparisons is essentially tied to the necessary statistics and changes in them. Income concepts presented in Chapter 3.1. are definitions for available income, which cover, in addition to consumption, the net increase in assets. The interpretations of defining the changes in assets vary, and in practice it has not been possible to calculate them in an unambiguous way. In Sweden, in particular, these real income concepts have been applied in income comparisons between different population groups. The real incomes of comparison groups depend on, for example, the changes in the indices indicating an average price development that are applied in the calculations, whereas in reality estimating the assets in different farm groups may vary case by case (RYYNÄNEN 1967, p. 38-44).

The objectives set for income studies and income comparisons in different countries direct the studies and point out to ways in which the statistics should be developed. The starting point for the income comparisons concerning the farm population has been the follow-up of farmers' incomes and the objectives for the income development and income level of the farm population in relation to the incomes of other population groups, which are prescribed by law. In Sweden and Norway the income objective concerning the farm population is connected with the standard of living, which means that the income studies have also been directed towards the viewpoints presented in connection with the studies of the standard of living. In Finland the income objective of the farm population concerns only the income from agriculture. In addition, the other nominal incomes of the comparison groups have been examined mainly as background information to the income comparisons based on the follow-up of incomes prescribed by law.

In the Scandinavian countries, as well as in many other countries, the statistics on the incomes of different population groups are based on the concepts of the UN Recommendation for Income Distribution Statistics. Also, in the EC countries it has been considered necessary to compile uniform data on incomes in order to calculate the available income of the farm population, because it has been noted that the level and extent of statistics vary in the different member countries (ANON. 1988i). One starting point for this study has also been to examine the need for developing the statistics that are necessary in income comparisons concerning the farm population (e.g. TOLVA-NEN 1985, p. 149-168). Statistics on the income data of the farm population have been compiled in various connections. Instead, in the case of the other comparison groups it has for the most part been necessary to rely on the information available in the Income Distribution Statistics.

7.1. Concepts applied in income comparison

In this study income comparisons have been made on the basis of the nominal incomes of the comparison groups. Farmers' incomes that are based on the Enterprise and Income Statistics of Agriculture and Forestry are, apart from a few individual items of income, income data of taxation, which means that determining the income concepts has been tied to the taxation stipulations and the changes in them. Income data according to the Income Distribution Statistics are also based on taxation data, and they have been revised through interviews in order to make them correspond to the concepts of the recommendation for statistics. In this connection it has been possible to correct only part of the effects of the tax stipulations concerning entrepreneurial income. Entrepreneurial income is formed on the basis of different tax stipulations in the income comparison between farmers and small-scale entrepreneurs. Taxation of agriculture and forestry differs in several respects from the stipulations of the trade tax concerning small-scale entrepreneurs (ANON. 1967 and 1968, PUURUNEN 1987, p. 72-89, YLISIPPOLA 1989, p. 26-28). In the following, certain individual points concerning the concepts applied in the income comparisons in this study that should be specified or calculated in a different way are brought up. In addition to the calculation of certain items of income, the known changes in the statistics will, for their part, have an impact on the possibilities for classifying income earners.

7.1.1. Agricultural income

From the viewpoint of calculating agricultural income, special attention has been paid to the delimitation of agricultural income from other entrepreneurial income, as well as to the contents of individual income and expenditure items. In taxation some other forms of entrepreneurial activity and wage income are to some extent included in agriculture if their impact is relatively small compared with agriculture. These incomes from sales of land materials, fishing, hunting, etc. can be deducted from agriculture, but the corresponding expenditure cannot be itemized. The use of own products in the private household of the farm family is not included in incomes, although the corresponding costs are included in the deductible expenditure of agriculture. In the study the value of own products has been obtained from the bookkeeping farms. In the Income Distribution Statistics farmers are asked about the amounts of own products they use, and their calculatory value is included in the entrepreneurial income from agriculture.

In terms of income comparison, hectarage subsidies form a considerable amount of incomes that remain outside taxation. These became taxable income from the tax year 1989 (AsK 1340/89), after which all data concerning hectarage subsidies will be available in the Enterprise and Income Statistics of Agriculture and Forestry. In the study the last separate accounts of hectarage subsidies from the sample farms of the Enterprise and Income Statistics date from 1984. Exceptionally high incomes from sales of animals as well as acquisition costs can be spread over three years in taxation (ANON. 1986d, p. 25, 26), which can also be regarded as a sensible procedure from the viewpoint of income comparisons. In the taxation of agriculture, 3 % of the taxable value of a house or an apartment exceeding a certain amount is also taken into

account. This small amount of so-called housing income has been included in agricultural income, although it should not be taken into account at all in this form.

More problematic amounts, and more notable in terms of their money value, in applying the income data of the taxation of agriculture are depreciations, as well as distinguishing the share of agriculture in the interest on debt. In taxation depreciations are made, within certain limits, as percentage shares of the rest of nominal value acquisition costs. For the part of machinery and implements the maximum amount of depreciations in the taxation of agriculture and forestry and in trade taxation has been 30 %, and since 1989 25 % in the case of agriculture and forestry (ANON. 1988e). The undepreciated share of the acquisition price loses its value due to inflation. According to the criteria of the acts on bookkeeping and trade taxation, the interest factor related to the different timing of incomes and expenditure as well as technical and economic aging are taken into account in planning the depreciations so that the weight is on the early ones, but the inflation factor is excluded (Kom.miet. 1979:22, p. 16).

Probably the most simple way of taking the effect of inflation on the depreciations of agriculture into account would be by changing the undepreciated acquisition costs by the price index of the capital goods from which the depreciation is made. The correction should be made over a relatively long period of time. After this the question of how accurately the depreciation percentages applied in taxation indicate the two objectives set for them, i.e. the interest factor and the technical and economic aging, would still remain unsolved, especially as in taxation levelling out the income variation in agriculture has been realized through depreciations (PYYKKÖNEN 1989, p. 11). In his study based on the bookkeeping farms, ALA-MANTILA (1987) has calculated the depreciations of the production buildings in 1983 by correcting the undepreciated acquisition costs by the construction cost index since 1968 and by taking account of the economic duration of the buildings in choosing the depreciation percentage. The resulting corrected depreciations of production buildings, based on the real values calculated through this method, were the average of 3.5 times the depreciations of taxation.

Estimating the share of agriculture in the interest on the debts of agriculture and forestry concerns in the first place only the calculation of agricultural income. In the study the share of agriculture in interests in the last statistical years has been estimated only at the total level, based on the debt share of agriculture, as about 90 %. The same relation, calculated on the basis of the Credit Statistics and the Enterprise and Income Statistics of Agriculture and Forestry, is also applied in the total calculations of agriculture. Correspondingly, according to the Enterprise and Income Statistics, the interests of agriculture were, on the average, 95 % of the interests of agriculture and forestry, because it is likely that in taxation the interests concerning the whole agriculture and forestry are in most cases deducted without itemizing them. However, in e.g. central Finland, where forestry is more important, according to the Enterprise and Income Statistics, the share of agriculture in the interest expenditure was, on the average, 91 %, whereas in southern Ostrobothnia and in northern Finland the share of agriculture was 97 %. In estimating the share of agriculture in the interests on the debts of agriculture and forestry, it should be possible to take the variation between different farm groups into account, in addition to determining the average level of the

share in the aforementioned way at the total level, based on the debt shares of agriculture and forestry.

Agricultural income calculated on the basis of the taxation data or the Profitability Study of Agriculture is the compensation the farm family receives for its labor input and own capital invested in agriculture. Consequently, agricultural income includes, apart from the actual agricultural labor of the farm family, investment and land improvement labor, including work done with tractors, etc. These amounts are not taken into account in taxation in determining the value of the property shares in question, nor in calculating the corresponding depreciations. In examining the labor income of farmers on bookkeeping farms, IHAMUOTILA (1968, p. 50) included the value of the investment labor of the farmer, determined on the basis of the opportunity cost, in the value of the capital good. Thus the increase in the income through investment labor as a whole, from which the depreciation made on the share of own labor by the entrepreneur is deducted, represents the interest on the capital value of the investment.

This procedure, which earlier was also applied in the Profitability Study of Agriculture, would be quite explicit from the viewpoint of income comparisons, but as a statistical solution it is difficult at present because the depreciation methods of taxation have been used in the Profitability Study since 1968. The calculatory value of the investment and land improvement labor of the entrepreneurial family are added separately in the entrepreneurial income concept according to the Income Distribution Statistics despite the fact that the depreciations are calculated according to taxation. Consequently, in income studies based on the Income Distribution Statistics the aforementioned calculatory value of the investment labor should be deducted from the entrepreneurial income.

7.1.2. Forestry and other entrepreneurial income

Income from forestry is calculatory in taxation, mainly indicating the average growth and, through this, the potential forest sales in the area. The usual management and administrative costs as well as value deductions must be taken into account in calculating the pure income from forestry, which means that, in principal, it includes a compensation for the forestry labor and investment of capital by the forest owner. Afforestation, land improvement and management can in this connection be included in the forestry work, but felling by owner is excluded. The value of felling by the farm family is tax-free up to 150 cubic meters (ANON. 1986d, p. 76), but taking this into account in calculating the comparison income from forestry on the basis of the Enterprise and Income Statistics is problematic. In income comparisons the share of forestry in the interests on the debts of agriculture and forestry have not been deducted from the pure forestry income, which for its part may compensate for the exclusion of the tax-free share of the value of felling by owner.

Data on incomes from forestry sales are available in the Income Distribution Statistics and from the bookkeeping farms of the Profitability Study. In these statistics the value of felling by owner is included in the income from these sales. On the basis of a separate account from the latest years the Income Distribution Statistics have been published, in the most central farm groups in southern Finland the income from

forest sales remained lower than the forestry income in taxation, whereas in other parts of the country the sales income has for the most part been higher than forestry income in taxation (PUURUNEN 1989, p. 65). However, a few years is a too short period of time for examining the results of forestry. In addition to the sales income, the value of the investment and land improvement labor by the farm family as well as of berries and mushrooms from the forest, among other things, are included as calculatory amounts in the entrepreneurial income from forestry in the Income Distribution Statistics. Income from picking berries, mushrooms, etc. is tax-free, and it may in some cases form a considerable source of additional income. However there is hardly any reason for taking the investment and land improvement labor into account separately because in the course of time they will also be realized as higher income from forest sales.

Agricultural income is usually realized at least once a year, whereas forestry income may be realized only in connection with timber sales every five or ten years or even more, depending on the structure of the forest. From the viewpoint of income studies, postponing forest sales could probably be regarded as comparable to storing up, and excessive felling, which is not allowed according to the forest laws, to indebtedness of the income earner.

In order to determine the real forestry income it should be possible to estimate the annual return from forest and the costs needed to accomplish this. The objective of the forestry income calculations in taxation is largely the same. However, it is not known how well the forestry income of taxation corresponds to the real income formation in different farm groups. For this part, it is inevitable that examining the income concepts of forestry and calculating the economic results has in a way remained secondary to calculating the results from agriculture in this study.

In the study other entrepreneurial income refers to, in the first place, entrepreneurial income included in the data on personal taxation, which remains outside the income from agriculture and forestry. In studies based on the Income Distribution Statistics, the value of the labor of the income earner in building an own house or a summer cottage is included as a calculatory amount in other entrepreneurial income. Because the value of own investment labor is not deducted from the housing depreciations taken into account in connection with property income, this will be included both as a calculatory amount in other entrepreneurial income and in connection with the calculatory replacement prices the depreciations are based on.

7.1.3. Property income and changes in the value of assets

In the Recommendation for Income Distribution Statistics (ANON. 1977, p. 46), property income includes the net rents, interest and dividends, royalties received, as well as a calculatory net rent for own house or apartment. Among these, the housing income has formed a complex object for study. In the Income Distribution Statistics it has been explained through the different position in terms of income and property of those who own and those who rent the house or apartment they live in. In this connection, the calculatory heating, depreciation, insurance, etc. costs as well as interest on debt are deducted from the calculatory gross rent. The basis for estimating the housing income has lead to a situation in which the housing income in farmer households is

almost twice that in, for example, households of small-scale entrepreneurs, because the houses of the farm population are traditionally big, even if they may be in a bad shape and the standard of equipment may be poor (YLISIPPOLA 1989, p. 73).

In Sweden the Standard of Living Committee (Levnadsstandardgruppen) has examined the bases for calculating housing income and noted that there is no uniform agreement on how housing income should be taken into account in income statistics. In income comparisons in Sweden housing income has not been included in the comparison income at all, although the tax effects of housing income, which distort the comparison income based on taxation, have been corrected (ANON. 1983a, p. 28-31, bil. 3). In examining the calculation of housing income, SÖDERSTRÖM (1977, p. 69-71) notes that corresponding calculations should also be made for the part of cars, boats and other property. In Finland, too, the most unambiguous procedure would be to distinguish housing income from property income.

In this study income comparisons are based on nominal value incomes, which means that taking inflation into account and the possibilities for examining the changes in the value of assets remain subjects for further study. When calculating disposable income, taking inflation into account concerns, apart from depreciations, also other liquid assets with long-term effects, like debts and savings. Depreciations should also be made on the basis of the replacement price instead of acquisition price in the case of depreciations of forestry and other entrepreneurial activity, in addition to depreciations of agriculture. If investments are financed by unindexed external capital, the effects of inflation on the loan capital and on nominal value depreciations are reverse.

In the most central farm groups the undepreciated acquisition costs in agriculture was 70-90 % of the debts of agriculture and forestry. On the smallest farms and in the beginning of the 1980s on the largest farms as well the undepreciated acquisition costs were higher than the debts of agriculture and forestry. Roughly speaking, it looks like the loss of depreciation possibilities to the farmer due to inflation is compensated by a gain in the repayment of debts. Calculations of real income in Sweden, in which the absolute value of the negative correction amount in the calculation concerning the replacement of depreciations based on the acquisition price to those based on the replacement price in 1982-1985 was, on the average, the same as the correction amount concerning deposits and debts, also point to this direction (ANON. 1988b, p. 89-90). In 1986 the difference was more notable (ANON. 1989c, p. 67). However, the effects of inflation vary in different farm groups, depending on the relationship between investments and debts.

It should be possible to account for the changes in the value of liquid assets, both in the case of debts and depreciations, through corresponding index corrections, because the amount of debt used in agriculture and other entrepreneurial activity is available in the taxation data in question, and other debts mainly in the data on personal taxation. Instead, only a small part of savings is taxable, which means that for their part no statistical data on different comparison groups are available. If the benefit from the changes in the value of debts outside the occupational activity is taken into account as property income in income comparison, the loss due to savings should be accounted for correspondingly.

According to Swedish studies, in the case of farmers most changes in the real value (i.e. value changes exceeding the consumer price index) are caused by agricultural

real estates and debts of the farm. In the case of wage earners most value changes result from housing and the debts related to it. It has been noted that the results are very sensitive to the length of the period of time applied in leveling out the price variation (ANON. 1983a, p. 69- 79). In 1982-1986 changes in the real value that are not liable to value-added tax (bank deposits, debts, etc.), estimated on the basis of the Swedish Income Distribution Statistics (Inkomstfördelnings undersökningen, HINK), were SEK 20,000-30,000 in the case of farmers, and SEK 7,000-13,000 in the case of workers and white-collar employees. In the period under consideration the changes in the real value of property shares that are liable to value-added tax (real estates, shares, etc.) became increasingly negative; SEK 7,000-60,400 in the case of farmers and SEK 2,400-13,900 in the case of the comparison groups (ANON. 1988b, p. 89-90, 1989c, p. 65-67).

In calculating the loss of the purchasing power, the changes in the real value depend on the changes in the indices applied for different property shares in relation to each other (ANON. 1988b, p. 35). Changes in the real value due to agricultural real estates, calculated on the basis of the Profitability Study of Agriculture (Jordbrukseko-nomiska undersökningen, JEU), were negative in most farm size groups during the whole 1980s. The changes in the real value concerning the total assets of farmers were also negative at the beginning of the decade and in 1985. Because of the differences in the statistics and the economy, the results and calculation methods of the changes in the real income in Sweden are not directly applicable to Finnish conditions. A great deal of research will be needed in Finland in order to examine the changes in the value of property shares, both to clarify the theoretical concepts and develop a calculation method, and to compile the necessary data.

7.2. Delimitation of comparison groups

The delimitation of comparison groups is tied to the possibilities for regrouping the statistical units and income data in the necessary statistics. In this study it has been possible to examine the incomes of the comparison groups mainly as the means of groups established from farms, enterprises or households. It was possible to distinguish full-time and part-time farms, among other things, through income data, and to take the size of the enterprise into account through classifications according to the arable land area. The income distribution of the comparison groups has been examined only on the basis of earlier research results and a few statistical tables. It was not possible to take the dispersion of incomes and the reliability of the income data estimated on the basis of samples into account adequately in the different comparison groups. However, reliable comparison results have been achieved by paying attention to the number of sample units in the farm groups under consideration.

The central variables in the income studies between different farmer groups were the farm size, region, the quantity of production on the farm, and the full-time/part-time basis for agriculture. In addition the farm size measured as arable land area, the incomes from agriculture in different production lines are also dependent on the other production capacity of the farms under comparison. Farms on which the use of purchased inputs varies can be made comparable to each other with regard to the farm

size by grouping them according to the gross income from agriculture from which the equipment and other variable costs have been deducted, and in this case the quantity of production practiced on the farm is also arrived at indirectly. When the data on the labor input of the farm family is added to the income data, it is possible to distinguish the different kinds of part-time and full-time farms from each other on the basis of the labor input. Actively producing farms can be distinguished from farms that have made, for example, a contract to reduce agricultural production and farms that are not engaged in agricultural production for some other reason through, for example, the delimitations concerning the sales income of agriculture as well as through labor input data. The criteria related to the efficiency of production and the employment of the farm family can also be taken into account through delimitations concerning the sales income and labor input.

It should be possible to take a regional division that is appropriate, in the first place, from the viewpoint of the natural conditions for agriculture into account in examining the incomes of the farm population. In this study a division at the province level, based on the taxation data (the Enterprise and Income Statistics of Agriculture and Forestry), has been applied. As a result, for example, northern Finland includes very different areas in terms of agricultural production, like central and northern Ostrobothnia, on the one hand, and Kainuu and Lapland on the other. The natural production conditions for agriculture can probably be better taken into account if the division into agricultural districts used in the National Board of Agriculture or the regional division of the agricultural advisory organization is applied in the studies, instead of the provincial division. The application of the smaller existing regional divisions may be problematic from the viewpoint of the statistics.

It is necessary to take the composition of the comparison groups into account in the income comparisons between different population groups in the case of all comparison groups. In this study the incomes of the farm population in different farm size groups have been compared with the average incomes of industrial workers, partly related to the follow-up of the incomes of the farm population that is prescribed by law. On the basis of the Income Distribution Statistics, the income distribution of industrial workers has, on the average, been more even than that of the farm population or small-scale entrepreneurs. However, it can be noted that there are differences in the incomes within the group of industrial workers, mainly dependent on the line of business, and through this, on the region (TOLVANEN 1985, p. 133-148). As the statistical data develops, it should be possible to take the income distribution of the population groups under comparison and the changes in it into account more, apart from examining the income variations within single comparison groups.

7.3. Statistical applications

Income study concerning the farm population has been under way for several years, and the needs that have been presented in the study have been taken into account in recent changes in the statistics. The joining of the samples of the Enterprise and Income Statistics of Agriculture and Forestry published by the Central Statistical Office and the annual statistics of the National Board of Agriculture from the begin-

ning of the statistical year 1985 can be regarded as the most important change in the statistical basis in the 1980s from the viewpoint of the income study. A completely joint sample was reached for the part of the data from 1987. As a result, it is possible to get the data compiled by the National Board of Agriculture, like the number of animals and labor input, according to the production line and other classifications of the Enterprise and Income Statistics. In principal, the production line classification can also be made more accurate through the data from the National Board of Agriculture.

Obtaining the income and labor input data from the same farms makes it possible to classify the farms into part-time and full-time farms on the basis of the distribution of the labor input. Compiling the labor input data of agriculture in a way that corresponds to the income data of the Enterprise and Income Statistics also requires continuous revision of the Labor Input Statistics. In addition to the labor input of the farm family, the number of persons and the composition of the farm family are also available from the Labor Input Statistics. This data can be applied in determining the incomes per person in the different farm groups according to the Enterprise and Income Statistics.

Agricultural statistics that are based on samples are largely dependent on the development of the Farm Register (ANON. 1989e), which forms the sample frame. A general agricultural census is made in every tenth year and the latest in 1990, on the basis of which it will be possible to correct the Farm Register and make it up-to-date, and through this also to improve the reliability of the sample-based statistics indirectly (Kom.miet. 1988:18). In the agricultural census, a quantity of data on the farms is compiled, and on the basis of this it is possible to make a rough production line classification in the Farm Register. Consequently, in the future the samples from the Farm Register can be divided according to, apart from the region and farm size, the production line as well. Also the full-time and part-time basis for agriculture and the extent and impact of the ancillary activities of agriculture have been examined in the agricultural census.

In the income statistics based on taxation data the completion of the statistics is at least a year and a half. For the follow-up of farmers' incomes, farm models have been established from the bookkeeping farms of the Profitability Study of Agriculture, through which the income development until the time corresponding to the completion of the necessary indices, i.e. usually about half a year, can be anticipated (IKONEN 1988, ALA-MANTILA 1989). The application of the bookkeeping farms and farm models to the anticipation of the income level of the farm population based on the Enterprise and Income Statistics should be developed so that it would be possible to estimate the effects of the realized changes in prices and, on the other hand, to anticipate the effects of the planned changes in prices, on farmers' income development and income level by means of the results of the farm models.

Bookkeeping farms are farms that have volunteered to join the study, and even if their farm size is above the average, this does not as such make it impossible to use them for examining the income level as well. The calculation of results on the bookkeeping farms can also at present be applied to studies of farmers' incomes from different sources, although the main purpose of the bookkeeping farms is to study the economic profitability of agriculture. Through certain additions and specifications, the

items of income up to the disposable income are available in the data from the book-keeping farms. By means of the data on the money flow on the bookkeeping farms it is possible to examine the disposable cash income of the farm family and its use. On the other hand, the money flow provides a detailed division of the investments and their financing.

When the development that is in progress is taken into account, agricultural statistics as a whole form a versatile starting point for the income study concerning the farm population and its development. The joint sample basis of the Enterprise and Income Statistics of Agriculture and Forestry and the National Board of Agriculture forms a basis for an extensive file indicating the income level, labor input and other factors related to these, concerning all farms. A detailed study of the incomes of the farm family and their use is possible on the basis of the results of the bookkeeping farms. By means of the Income Distribution Statistics it is possible to compare the incomes of different population groups through several different concepts. Nominal incomes can be examined on the basis of all these sources of data, but additional calculations, in the first place related to depreciations and the changes in the value of the liquid assets, are needed in order to arrive at the real incomes.

Summary

The aim of this study has been to examine the foundations for the income comparison concerning the farm population, the determination of the incomes of the different comparison groups, and the ways in which they can be made comparable with each other. At the same time, an attempt has been made to develop methods for income comparisons between the different farmer groups, as well as for comparing the incomes of the farm population with those of wage earners and small-scale entrepreneurs, based on the existing data.

The present study is part of the income level study that has been under way for several years at the Agricultural Economics Research Institute. In this connection the study has been supplemented, among other things, with the theory concerning the income concepts. In the study the definition and measuring of incomes has been examined on the basis of literature, on the one hand, and from the viewpoint of the calculations and practical statistical solutions, on the other. According to the Hicksian view (HICKS 1946), the purpose of income calculations is, in practice, to indicate the amount of money that can be spent without altering the financial position. Solomons (Ref. PARKER et al. 1986) illustrates this income concept by dividing it into the so-called variable income and unexpected gain, and he notes that measuring these is problematic for evaluation and directing. Scott (1976) replaces Hicks' condition of the constancy of the financial position by a requirement that the ability of assets to produce income remain constant, in which case random gain has less effect on the income of the period under consideration (Ref. HIBBERT 1983). ANDERSSON & BENGTSSON (1984) have examined the ways in which the changes in the value of assets can be taken into account in measuring the disposable income of agricultural enterprises and farmers. In Swedish income comparisons concerning the farm population, as well as in the compilation of statistics, factors related to calculating the changes in the value of assets have been taken into account.

In Finland the accounting concerning the incomes and income statistics makes it possible, in the first place, to examine nominal incomes. The income formation of the farm population is far more complex than in the case of wage earners. In the study the special features related to the income formation of the farm population have been taken into account by examining several different income concepts, as well as through a versatile classification of farms. International income concepts based on the Recommendation for Income Distribution Statistics have been applied in this study, which results in the following classification of incomes:

+ Entrepreneurial income
+ Wages and salaries
= Primary income
+ Property income
= Factor income
+/− Paid and received income transfers
= Available income

These concepts are being applied in the Income Distribution Statistics, on the basis of which it has been possible to compare the incomes of farmer households with those of the

households of industrial workers and small-scale entrepreneurs. The most central income concepts in income comparisons between different population groups are primary income and available income.

The income comparisons between different farmer groups are mainly based on the Enterprise and Income Statistics of Agriculture and Forestry from the years 1980-1986. In order to calculate the entrepreneurial income of agriculture, the income data of the taxation of agriculture and forestry, available in the Enterprise and Income Statistics, have been supplemented by other files and by adding the data from personal taxation, and through this it has been possible to arrive at, roughly, the aforementioned factor income. In addition, most of the pension incomes and direct taxes are available in the data on taxation. On the basis of the income comparisons between different farmer groups, the following structure of concepts has been formulated for the income comparisons between farmer groups:

+ Entrepreneurial income from agriculture
  (Agricultural income)
+ Calculatory income from forestry
+ Other entrepreneurial income
+ Wages and salaries
= Primary income
+ Property income
+ Pensions
= Total income
− Taxes
= Total net income

In the study the total income has been examined mainly in order to examine the income formation in different farmer groups, whereas the income disparities between farmers have in the first place been examined on the basis of the primary income and net income. In this connection the income comparisons, both within the farm population and between different population groups are based on results calculated per person or consumer unit.

In addition to the income concepts, the establishment of the income earner groups to be compared is essential in preparing income comparisons. In the income comparisons concerning different farmer groups the classification criteria are the production line, farm size and region, as well as farmer's age and the full-time/part-time basis for agriculture. The delimitation of the comparison groups is also tied to the groupings available in the existing statistics.

In 1986 the average agricultural income on farms owned by natural persons was about FIM 50,400/farm and FIM 27,400/person. Agricultural income accounted for, on the average, about half of the total income of the farm population, calculatory forestry income for less than 10 %, other entrepreneurial income for 4 %, and wage income for about 24 %. The share of agricultural income increases along with the farm size. Income disparities between different farm size classes and production lines decrease when, in addition to agricultural income, the other incomes and taxes are taken into account. If the ratio 100 is used to indicate the the average net income of all farms, in the research period the comparison figures on the smallest farms were 70-80, on farms with 10-20 hectares, which are close to the average, 102-108, and on farms with over 50 hectares 177-192. Primary

income was highest, on the average, on pig, poultry and grain farms, and close to the average on cattle farms and in special crop production. On farms engaged in versatile production primary income remained about 10 % below the average. Despite the considerable differences in the production conditions, regional income disparities in agriculture within the same production line were small in the 1980s.

When the part-time and full-time basis for agriculture is taken into account, the relationships of primary and total net incomes to the average of all farms of a corresponding size in the years 1983-1985 were as follows:

	Primary income	Net income
Part-time farms	95-119	102-140
Subsidiary farms	88-103	88-101
Full-time farms	96-118	73-100

On farms owned by farmers under 50 years of age the primary income was the average of 25-30 % above the average of all farms. The primary income of pensionable farmers, especially on small farms, was clearly below the average but, as a result of the pension income, their net income was close to the average of all farms.

In this study the income distribution within the farm population has been examined on the basis of the results of earlier studies and statistical publications. In 1986 agricultural entrepreneurs included in the five highest deciles, on the basis of the Income Distribution Statistics, received about 76 % of the primary income per income earner, 67 % of the available income of households, and 57 % of the available income per person. On the basis of the Enterprise and Income Statistics of Agriculture and Forestry it can be noted that in the 1980s the income distribution of the total income liable to state taxation and net income has become more even. Instead, the distribution of the agricultural income has remained almost the same. UUSITALO (1988) has examined the changes in the income distribution over a longer period of time, and he has noted that the relative income level and the livelihood of agricultural entrepreneurs has clearly risen from the 1960s to the 1980s. In addition to the structural change, the increase in the received income transfers, especially pensions, as well as in the additional wage income have had an impact on the income development of agricultural entrepreneurs.

The basis of the income study concerning the farm population are closely related the agricultural price acts, through which the guarantee of an equal income development for farm population with other population groups has been pursuid since the 1950s. In the Agricultural Income Acts of the 1980s the determination of the income levels of the population groups under comparison has also been take into account, in addition to the follow-up of the development of incomes. According to the 1982 Agricultural Income Act (ANON. 1982a), the annual income from agriculture on a rationally managed farm that provides full employment to the farm family, the annual income of a skilled industrial worker, and the development in these must be taken into account in the income negotiations.

It has been possible to delimit the farms providing full employment to the farm family in different production lines, referred to in the Agricultural Income Acts, by means of the labor input data. On the other hand, through data on incomes it has been possible to

distinguish individual farms on which income from agriculture and forestry forms the main source of livelihood for the farmer and spouse. These full-time farms include farms engaged in crop production as well, but the comparison groups of farms providing full employment consist mainly of livestock farms. Rational management of the farm is mainly equated with the efficiency of production, and in this respect it has been possible to delimit the comparison groups only indirectly, through data concerning the labor input, farm size, turnover, farmer's age, and other factors. The other participants in the income comparison are the skilled industrial workers whose income has been examined mainly by means of the statistics concerning the standard wage rate.

In the comparisons concerning the agricultural income and the wage income of industrial workers, in 1980-1986 the farm groups providing full employment to the farm family included 35-40 % of farms owned by natural persons. In the period under consideration the agricultural income per person on these farms was, on the average, 50-68 % of the average wage income of a skilled industrial worker. If the groups of smaller livestock farms, which can almost be regarded as providing full employment, are included in the comparison, agricultural income was the average of 41-55 % of the comparison income.

Results from farms defined as full-time farms on the basis of the income data concern the years 1983-1986. In terms of the production conditions for agriculture, these years were better than the long-term average. Agricultural income on full-time farms was the average of 69-71 % of the income of industrial workers. In the groups of full-time farms with a larger farm size, further distinguished in the study, agricultural income in 1986 was the average of 79-81 % of the comparison income. In this case the comparison included about 70-80 % of full-time farms, i.e. about 25 % of farms owned by natural persons. Reaching the average wage income of industrial workers in agriculture on full-time farms required, on the average, a farm size of over 30 hectares.

In the 1980s according to the Income Distribution Statistics, the primary income of farmer households calculated per economically active person was, on the average, 68-77 % of the corresponding income of the households of industrial workers. The primary income per the farmer and spouse calculated on the basis of the Enterprise and Income Statistics of Agriculture and Forestry was 60-71 % of the aforementioned income of the industrial workers. Differences in the results of the comparison are partly caused by differences in the statistics, which have been dealt with in various connections (e.g. TOLVANEN 1985, PUURUNEN 1987b). Available income indicates the consumption potential of households, and it has been examined solely on the basis of the Income Distribution Statistics. The available income of farmer households per person or consumer unit was 86-96 % of the corresponding income of industrial workers. When the available income is examined, instead of the primary income, the differences in the ratios due to the farm size in 1986 decreased as follows:

	2-5	5-10	10-20	20- ha	Average
Primary income	42	49	67	92	71
Available income	83	85	91	106	95

Because agriculture is the most clearly comparable to small-scale entrepreneurial activity, it is natural to compare farmers' income with that of other small-scale entrepreneurs as well. In 1986 the primary income per economically active person engaged in farmer households was the average of 68 % of the corresponding comparison income of small-scale entrepreneurs. In case of the available income the average income levels are almost the same. In relation to the income of small-scale entrepreneurs in different lines of business, the ratios indicating the primary income and available income of farmer households in 1986 are as follows:

	Primary income	Disposable income
Industry and construction	74	104
Trade and accommodation	72	97
Transportation	59	97
Other services	64	91
Small-scale entrepreneurs, average	68	96

Due to the time period necissary for the completion of the statistics based on taxation, it is usually possible to examine the situation two or three years ago in the income comparisons. However, by means of, for example, the bookkeeping farms and the farm models it should be possible to project the results of the comparisons of income levels closer to the present moment. The joining of the samples of the Enterprise and Income Statistics of Agriculture and Forestry published by the Central Statistical Office and the annual statistics of the National Board of Agriculture can be regarded as the most important change in the statistical basis from the viewpoint of income studies. As a result, it is possible to obtain the data compiled by the National Board of Agriculture, like the number of animals and the labor input of the farm family, according to the production line and other classifications in the Enterprise and Income Statistics. On the basis of the general agricultural census in 1990 it is possible to revise the Farm Register and make it up-to-date, and, consequently, to improve the reliability of the sample-based statistics indirectly. When the development that is under way at the moment is taken into account, in the near future agricultural statistics will form good and versatile basis for the income study concerning the farm population and for the further progress of the income comparisons.

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Annual wage income of industrial workers on average according to the Wage Statistics and the Industrial Statistics.

	1980	1981	1982	1983	1984	1985	1986
a) Average hourly wages of an industrial worker, FIM/hour [1]	20.21	22.80	25.18	27.58	30.42	32.86	34.84
b) Realized working hours, hours/year [2]	1730	1713	1698	1689	1688	1683	1666
c) Annual wages according to the working hours (axb), FIM/year	34 963	39056	42756	46583	51379	55303	58043
d) Hourly wages of the regular working hours, FIM/hour [3]	18.79	21.20	23.49	25.77	28.18	30.27	32.10
e) Annual vacations according to agreements, days/year	(26)	(27)	(28)	(29)	(30)	(30)	(30)
hours/year	208	216	224	232	240	240	240
f) Wages during vacations (dxe), FIM/year	3908	4579	5279	5979	6763	7265	7704
g) End-of-vacation pay (0.5xf), FIM/year	1954	2290	2640	2990	3382	3633	3852
h) Holidays based on the 5.3.84 agreement, days/year	-	-	-	-	-	-	4.0
hours/year	-	-	-	-	-	-	32
i) Wage income for (h) (dxh), FIM/year							1027
Annual wages of a skilled industrial worker (c+f+g+i), FIM/year	40825	45925	50658	55552	61494	66201	70626
Annual change, %		+12.5	+10.3	+9.7	+10.7	+7.7	+6.7
Annual wages, FIM/working hour	23.60	26.81	29.83	32.89	36.43	39.34	42.39
Industrial Statistics:							
Number of employees	424824	420185	409471	398066	390301	381226	363864
Paid wages, FIM/person	39945	45370	50099	54794	60099	65110	69141
Annual change, %		+13.6	+10.4	+9.4	+9.7	+8.3	+6.
Wages, FIM/working hour	23.09	26.49	29.50	32.44	35.60	38.70	41.50

[1] Average total hourly wages according to the Wage Statistics of STK,
  including compensation for overtime and work on Sundays and other holidays.
[2] Realized working hours according to the Industrial Statistics, including overtime.
[3] Average hourly wages of the Wage Statistics of STK, excluding the additions in 1).

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Agricultural income per the farmer and spouse (FIM/person) compared with the average wage income of a skilled industrial worker in 1980-1986. Farm size classes providing full employment to the farmer and spouse in different production lines.

WHOLE COUNTRY	Year	Number of farms	% of all farms	% of farms in the production line	Arable land area, ha/farm	AGRICULTU-RAL INCOME FIM/person	Ratio, wages of workers = 100
Cattle farms	1980	40 688	27.1	52.4	17.95	21 810	53
10-100 ha	1981	38 743	25.8	52.9	18.10	22 888	50
	1982	37 029	25.6	55.1	18.41	27 276	54
	1983	38 899	27.7	55.7	18.47	34 955	63
	1984	39 595	30.2	58.5	18.53	38 940	63
	1985	39 029	29.6	61.1	18.76	40 385	61
	1986	38 214	28.7	63.6	19.49	41 778	59
Pig farms	1980	5 094	3.4	78.5	23.94	28 491	70
10-100 ha	1981	5 295	3.5	78.7	23.85	27 624	60
	1982	4 882	3.4	78.7	24.35	33 544	66
	1983	5 017	3.6	78.6	24.31	42 578	77
	1984	4 726	3.6	82.0	24.68	48 798	79
	1985	5 035	3.8	82.7	24.97	50 681	77
	1986	4 670	3.5	83.9	26.55	56 889	81
Poultry farms	1980	1 039	0.7	40.9	20.27	23 748	58
10-100 ha	1981	1 196	0.8	47.6	22.00	25 633	56
	1982	1 072	0.7	47.7	20.13	33 349	66
	1983	1 160	0.8	47.4	19.52	46 212	83
	1984	1 261	1.0	58.1	21.33	43 364	71
	1985	1 211	0.9	59.7	21.67	41 687	63
	1986	1 439	1.1	60.5	21.99	50 880	72
Versatile	1980	6 982	4.6	13.6	33.57	18 845	46
production	1981	7 082	4.7	13.2	33.94	21 009	46
farms	1982	8 325	5.7	14.7	34.34	28 986	57
20-100 ha	1983	6 897	4.9	17.3	33.74	46 382	83
	1984	6 615	5.0	20.0	34.28	51 441	85
	1985	6 527	4.9	17.4	33.68	46 831	71
	1986	6 348	4.8	15.2	33.62	52 822	75
Farm groups	1980	53 803	35.8		20.59	22 095	54
providing full	1981	52 316	34.9		20.91	23 176	50
employment,	1982	51 308	35.4		21.60	28 277	56
average	1983	51 973	37.0		21.08	37 459	67
	1984	52 197	39.8		21.15	41 650	68
	1985	51 802	39.3		21.31	42 228	64
	1986	50 671	38.0		21.98	44 813	63

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WHOLE COUNTRY	Year	Number of farms	% of all farms	% of farms in the production line	Arable land area, ha/farm	AGRICULTU-RAL INCOME FIM/person	Ratio, wages of workers = 100
Small cattle	1980	27 669	18.4	35.7	7.45	12 283	30
farms	1981	26 364	17.6	36.0	7.49	13 560	30
5-10 ha	1982	23 267	16.1	34.6	7.51	15 785	31
	1983	23 583	16.8	33.8	7.49	18 726	34
	1984	22 550	17.2	33.3	7.47	20 310	33
	1985	19 503	14.8	30.5	7.54	21 436	32
	1986	17 036	12.8	28.3	7.67	21 551	31
Small versatile	1980	10 204	6.8	19.8	14.03	10 052	25
production	1981	11 903	7.9	22.2	14.28	11 587	25
farms	1982	13 001	9.0	23.0	14.03	13 913	27
10-20 ha	1983	8 418	6.0	21.1	14.17	21 074	38
	1984	8 215	6.2	24.8	14.04	20 639	34
	1985	8 569	6.5	22.8	14.17	22 670	34
	1986	9 684	7.3	23.2	14.05	23 965	34
Farm groups	1980	91 676	61.0		15.89	17 793	44
providing full	1981	90 573	60.3		16.13	18 854	41
employment and	1982	87 576	60.4		16.73	22 825	45
groups of small	1983	83 974	59.8		16.58	30 555	55
farms, average	1984	82 962	63.3		16.76	33 769	55
	1985	79 874	60.5		17.18	35 053	53
	1986	77 391	58.1		17.84	37 084	53

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