

MAATALOUDEN TALOUDELLISEN
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TIEDONANTOJA N:o 124

*THE AGRICULTURAL ECONOMICS
RESEARCH INSTITUTE, FINLAND
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PROBLEMS OF INCOME POLICY IN
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Introduction

The sixth Finnish-Hungarian-Polish seminar on agricultural economics was held in Poland November 4-9, 1985. This publication includes the papers presented by the Finnish participants. All the papers prepared for the seminar will be published by the Institute of Agricultural and Food Economics in Warsaw. The subject of the seminar was: Problems of Income Policy in Agriculture.

Helsinki, January 1986

Johdanto

Puolassa pidettiin kuudes Suomen, Unkarin ja Puolan maatalous-ekonomian seminaari. Seminaarin aiheena oli tulopolitiikan ongelmat maataloudessa. Puolan maatalousekonomian laitos julkaisee seminaariraportin, joka käsittää kaikkien osanottajien alustukset.

Helsingissä tammikuussa 1986

USE OF CALCULATIONS OF PRODUCTION COSTS AND BOOKKEEPING RESULTS
IN THE FOLLOW-UP OF FARMERS' INCOMES

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1. Background

Since 1956, incomes received by agriculture and the target prices of the chief agricultural products have been regulated in Finland according to the current agricultural income legislation. The present Act on Agricultural Incomes was passed for the price years 1983-84 and 1985-86. In 1984 certain changes were made in the law, and it was extended to apply to price years 1986-87 and 1987-88. The price year for animal products begins March 1 and that for rye, wheat and feed grain on August 1. The objectives of the Act are to ensure the farming population a just income level, to guide and balance agricultural production and to stabilize the prices of farm products. The Act on Agricultural Incomes thus regulates the entire agricultural economy of the country in many different ways.

Ensuring the farming population a just income level is now emphasized in the Act. According to the law, development of agricultural incomes must take into account that annual farm income provided by rationally managed farms providing full employment as well as skilled industrial workers' annual income, and trends in both. To date, most attention has been paid to following up of trends of incomes; the process for comparison of income levels is now being developed.

The Act on Agricultural Incomes also requires the stabilization and regulation of price levels of farm products so that self-sufficiency in food supplies and the agricultural production it

entails can be assured in the long term. Some provisions of the Act concern the regulation and balancing of agricultural overproduction.

In order to realize these goals, the Act on Agricultural Incomes prescribes the procedures to be used to set the target prices for the main agricultural products and price policy subsidies. Target prices are set for rye, wheat, feed barley, feed oats, milk, beef, pork, mutton and eggs. The Act also specifies how the costs incurred in the exportation of overproduction are to be divided between agriculture and the State. It should be mentioned that the exportation of agricultural products from Finland can take place only with the aid of State-paid export subsidies. With respect to surplus products, the Act prescribes the maximum amounts; if such amounts are exceeded, agriculture itself is responsible for any marketing costs incurred. The proportion of marketing costs paid by agriculture is collected in the form of marketing and exportation expenses and through taxation. The Act specifies that the proportion paid by agriculture may not amount to more than 10 per cent of the farm incomes earned during the price year. The production and exportation limits set in the Act for milk, pork, beef, eggs and feed grain for 1983-87 are as follows:

	1983	1984	1985	1986	1987
Milk received by dairies (million litres)	2,790	2,760	2,730	2,710	2,695
Exportation of pork (million kg)	18	16	14	14	13
Exportation of beef (million kg)	14	12	12	12	12
Exportation of eggs (million kg)	17	15	13	12	11
Exportation of feed grain (million kg)	-	-	-	480	480

The costs of exporting amounts exceeding the above figures must be paid by agriculture.

The target prices and price policy subsidies for each price year are based on negotiations between the Council of State and agricultural producers' central organizations, on which the Council of State bases its decisions. The negotiations may also deal with other immediate measures affecting agricultural incomes. The target prices and the amount of price policy subsidies are based on overall calculations of agricultural gross return and costs, and farm income is the difference between the two. The overall calculations consider agriculture as one entity, without dividing it into lines of production. The calculation is made yearly on the basis of the average quantities of products and inputs for the three previous calendar years, taking into account the present levels of prices and costs.

The negotiations on agricultural incomes are in two stages. The first clarifies how costs specified in the overall calculations have changed since the last settlement was reached. Increases in costs, or what is called cost compensation, are made good to agriculture by raising the target prices and price policy subsidies. The overall calculations to monitor changes in costs are made twice a year, with the exception of changes in capital costs, which are taken into consideration only once a year.

In addition to the question of cost compensation, the agricultural incomes negotiations also discuss how farm income should in general be developed, i.e. the actual increase in farm income which is totally a matter open to negotiation. In this respect agricultural incomes can also be linked with the general collective bargaining negotiations. The currently valid agricultural incomes agreement, for instance, was incorporated in the two-year national income settlement reached in 1984. Under such settlements, agreements are made about wages and other terms of employment for various fields. According to the settlement, farm income was to increase by FIM 310 million in 1984 and FIM 345 million in 1985. Cost compensation for agriculture is adjusted twice a year according to the overall calculations prescribed by law.

If agreement is reached in the agricultural negotiations, the Council of State sets new target prices to be in force as of March 1 or, in the case of the review negotiations held in August, as of the beginning of September. If agreement is not reached by the deadline set, the target prices in force at the time are applied until an agreement is reached, whereafter the Council of State sets new target prices that come into force at the beginning of the following month.

The farm income increase is distributed between the target prices of various products and price policy subsidies. The distribution takes into consideration the market situation for agricultural products as well as trends in production costs for different products.

2. Calculations of production costs based on farm models

Full compensation for a rise in costs due to the use of purchased production inputs to agriculture represents protection against inflation. In 1984 cost compensation totalled approximately FIM 871 million, and the actual increase in farm income was FIM 310 million. Compensation of cost increases is highly important to agriculture, as it applies to a considerable portion of the gross value of agricultural production. According to the overall calculation, in 1984 costs amounted to about 67 per cent of the gross agricultural return.

When the change in farm income are distributed between the target prices of various products, attention is paid to the trend in production costs for different products. For this purpose the Agricultural Economics Research Institute calculates the production costs of the chief agricultural products, which are used to follow-up the development of production costs of different products. The calculations of production costs are based partly on theoretical farm models constructed on the basis of information gathered from bookkeeping farms and partly on norms and test results. The data

from bookkeeping farms are central to clarifications of levels of crops and yield, for instance. The farm models represent conditions in southern Finland and farming somewhat more efficient than average. The calculations comprise the production of milk, beef, pork, mutton, eggs, bread grain, feed grain, sugarbeet and oil plants. In addition, calculations for starch potatoes are now being compiled. Calculations are made up for each product as produced on farms of three different sizes. The lines of production contained in the calculations cover the major portion of Finland's agricultural production. The above-mentioned products account for about 90 per cent of gross agricultural production.

The cost structure of the farm models used as the basis of the calculations was last defined in 1980; thus any changes that may have occurred in the cost structure are not reflected in the index series that describe the trend in production costs. It should be stated, however, that no great changes have taken place in the cost structure during this time. Next, as an example, the trend in production costs for milk and bread grain are compared to the price trend for corresponding products in 1980-84. The sizes of farms specializing in milk production used for the farm models are 8, 16 and 32 cows and 11, 22 and 45 hectares of arable land. The sizes of farms specializing in bread grain production and used for the farm models are 20, 40 and 80 hectares of arable land. The objects of inspection in Figure 1 and 2 are a milk production farm of the 16 cows model and a bread grain farm of the 40 hectare model. The costs trend in the Figures has been compared with the trend in the prices of the corresponding products. With respect to bread grain production costs are compared to the target price of wheat. The price trend for milk and wheat in the 1980s has followed rather closely the trend in production costs.

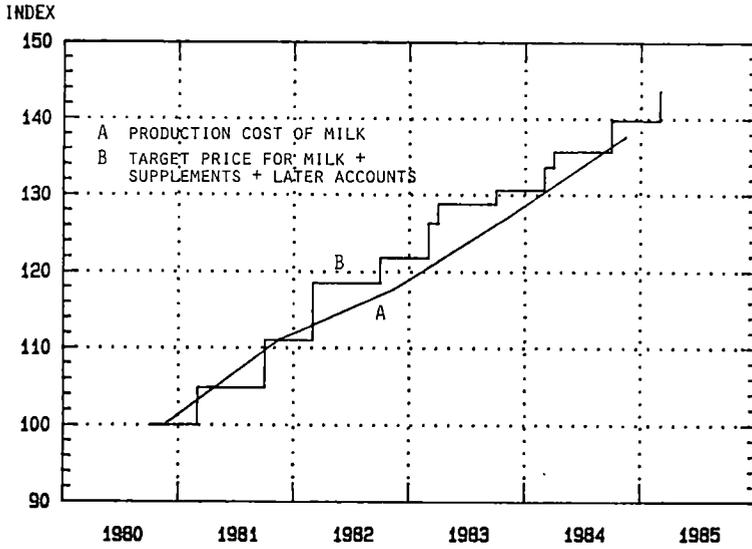


Figure 1. The trend in the production cost of milk on the farm model with 16 cows and 22 hectares of arable land and the trend in the price paid for milk (4th quarter of 1980 = 100).

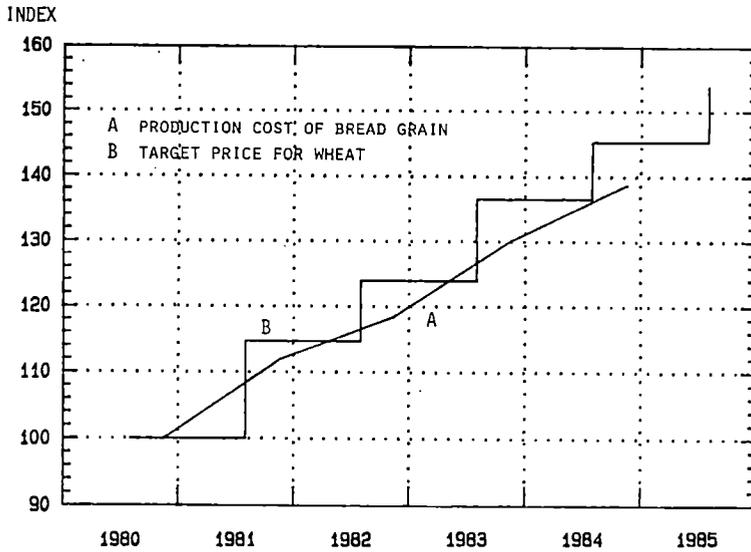


Figure 2. The trend in the production cost of bread grain on the farm model with 40 hectares of arable land and the trend in the target price for wheat (4th quarter of 1980 = 100).

According to the Act on Agricultural Incomes, decisions about prices must also consider the market situation for agricultural products. Partly due to marketing difficulties encountered at the end of the 1970s, the price of grain was raised considerably more slowly than that of other agricultural products. In 1980-82 the prices of grain were increased in order to offset their retardation. Price decisions reached after 1980 have been affected by the overproduction of animal products, which slowed down their price development (Table 1). Naturally, this situation also affected the income development of farmers as well as the distribution of incomes within agriculture itself.

Table 1. Trend in target prices in 1980-84. (The prices are as of September.)

	Milk		Beef		Pork		Eggs	
	Pennies(P) per kg	Index	FIM/kg	Index	FIM/kg	Index	FIM/kg	Index
1980	152.6	100.0	17.14	100.0	10.91	100.0	7.25	100.0
1981	171.9	112.6	19.44	113.4	12.31	112.8	8.20	113.1
1982	188.9	123.8	20.73	120.9	13.14	120.4	8.88	122.5
1983	205.7	134.8	22.31	130.2	14.18	130.0	9.60	132.4
1984	221.6	145.2	23.91	139.5	15.38	141.0	10.20	140.7

	Rye		Wheat		Barley		Oats	
	P/kg	Index	P/kg	Index	P/kg	Index	P/kg	Index
1980	157.7	100.0	146.7	100.0	100.1	100.0	93.6	100.0
1981	183.1	116.1	168.2	114.7	124.4	124.3	115.9	123.8
1982	202.7	128.5	185.8	126.7	138.0	137.9	129.5	138.4
1983	220.7	139.9	204.8	139.6	151.0	150.8	141.5	151.2
1984	245.0	155.4	218.0	148.6	161.0	160.8	150.0	160.3

Calculations of production costs aim merely to show the trend in production costs for different lines of production and different farm size. They do not unambiguously show the level of production costs. In practice, costs vary considerably from farm to farm, making it difficult to measure their level absolutely. Calculations of production costs based on farm models can at best be used to compare costs, on a relative level, between different sized farms (Figures 3 and 4). If the costs of milk production on a farm model with 8 cows, calculated per litre of milk produced, are designated

by the figure 100, the respective figures are about 80 for a farm model with 16 cows and about 70 on a farm model with 32 cows. Correspondingly, if the production costs per kilogramme of grain is designated as 100 on a farm model with 20 hectares of fields, the respective figures are approximately 90 for a farm model with 40 hectares of field and about 76 for a farm model with about 80 hectares of fields. Such comparisons require that the models are comparable with respect to production technology, harvest, level of yield and use of production inputs, for instance.

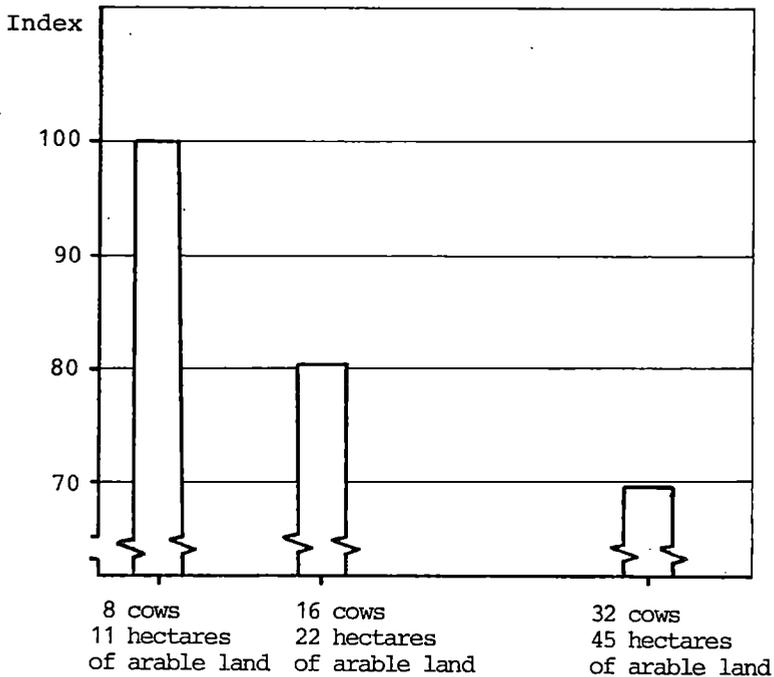


Figure 3. Relative production cost of milk per product unit on different sized farms, as of November 1984.

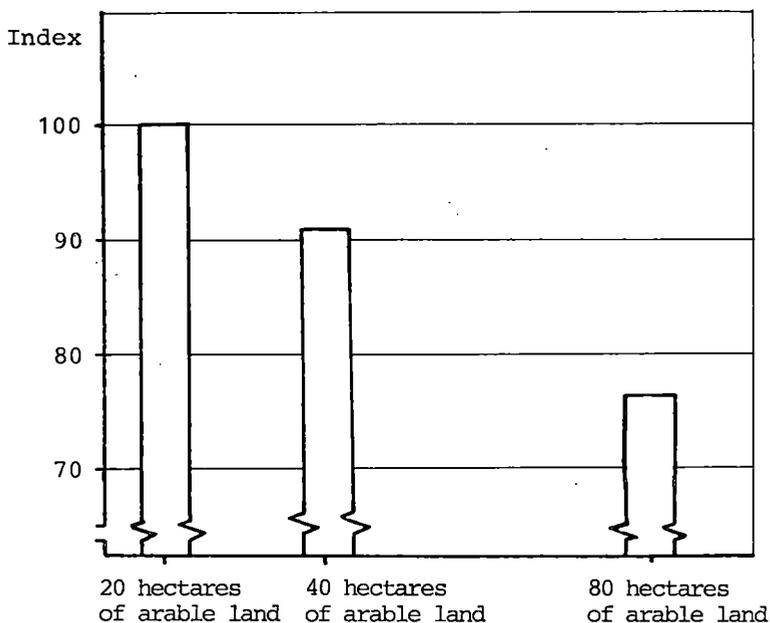


Figure 4. Relative production cost of bread grain per product unit on different sized farms, as of November 1984.

3. Follow-up system for agricultural incomes

The current Act on Agricultural Incomes has paid more attention than previous Acts to the farming population's income level and its development. The Act states that a system, based on statistical material obtained from practicing farms, should be developed for the follow-up of incomes. The system should include the central lines of production and groups of farms representing different regions. Development of the follow-up system was assigned to the Agricultural Economics Research Institute, which initiated a research project on the subject in 1981.

The principal task of the follow-up system is to show the development of agricultural incomes for different lines of production. In addition, it is hoped that the system will make it possible to

assess the effects of alternative price solutions on agricultural incomes during negotiations. This requires that the system be both flexible and quick.

The follow-up system for agricultural incomes at this stage comprises these lines of production:

- Milk production
- Beef production
- Pig production
- Pig production combined with pork production
- Pork production
- Egg production
- Grain production

According to the Act on Agricultural Incomes, the follow-up system should also comprise groups of farms from various regions. The calculations have been made applying the following regional distribution, when possible:

- South Finland
- Central Finland
- South Ostrobothnia
- North Finland
- Lapland

The regional boundaries are shown in Appendix 1. It has been fully realized in the way presented above only with respect to milk production. For the other lines of production, the small number of bookkeeping farms, among other factors, has caused limitations. Calculations of grain production have only been made for southern Finland, where that line is concentrated.

The calculations are based solely on data, obtained from bookkeeping farms, compiled for farm models (farm groups). There are approximately 1,100 bookkeeping farms located throughout the country. They are not a representative sample of all farms, since the bookkeeping done for farming profitability studies is voluntary

in Finland. Thus it is natural that the bookkeeping farms are to some extent rather more efficient than average, though the differences are becoming smaller. The task of the follow-up system is merely to show the income trend, which is probably the same for bookkeeping farms as for other farms. There may, however, be differences in the level of income.

In the calculations the bookkeeping data are used as such; they are not supplemented with norms, for instance in order to even out annual fluctuations. On the other hand, the farm models are based on the average of data obtained over a period of three financial years, calculated as the standing average for three years running as the bookkeeping results for each financial year become available.

As the calculations are based on the average data for three years, changes in the prices of products and production inputs must also be taken into account, as must the price trend, when assessing the development of incomes since the year for which the last bookkeeping data were available. The effects of changes in prices on different items of gross return and costs, as well as capital values, are considered with the aid of various price indices.

In assessing incomes development since the last bookkeeping year, the amounts of input and output are kept constant. Thus the estimated income development does not reflect trends in agricultural productivity, either; this is considered in the calculations as soon as the bookkeeping results for the following year are available.

In the follow-up system, economic results are calculated for farm income, i.e. the farming family's compensation for their agricultural work and for their own capital invested in farm production. It is further divided into the farming family's labour and capital incomes.

In all 22 farm models have been selected for the follow-up system. Their distribution by production line is as follows:

Line of production	Number of farm models
Milk production	7
Beef production	5
Pig production	2
Pig and pork production combined	2
Pork production	2
Egg production	1
Grain production	3

In the following, farm models representing milk and grain production are inspected more closely. Milk-producing farms from various regions, with 12-15 cows, were selected for closer study, as were model grain farms with 20, 40 and 80 hectares of arable land. The development of incomes in 1981-83 is presented in Figures 5 and 6. The results for 1981 are based on quantitative averages for 1979-81, those for 1982 on averages for 1980-82. The Figures also show the estimated income development for 1983 and from November 1982 to November 1983 calculated on the basis of quantitative data for 1980-82. The interval November 1982 November 1983 was chosen in order to attempt an assessment of the effects of price and other agricultural policy decisions on farm income.

Between 1981 and 1983, farm income from milk production rose in all regions. In 1982-83 it increased in South Finland, Central Finland and South Ostrobothnia by 1-3 per cent, whereas it decreased in Lapland and other norther regions. The contrary income development in the latter regions was due for the most part to the greater use of purchased feed in those regions. The cost of fodder rose from 1982 to 1983 considerably more than the costs of other pruchased supplies.

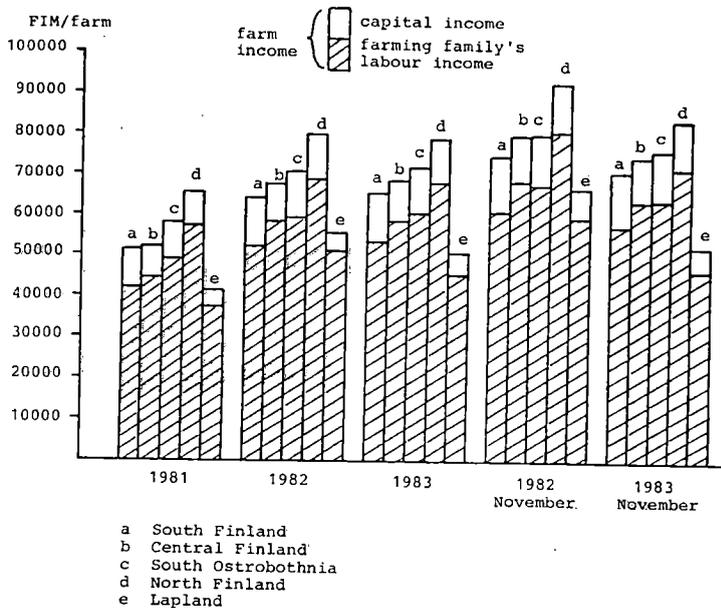


Figure 5. Farm income, farming family's labour income and capital income in milk production on farms with 12-15 dairy cows, in different regions, in 1981-83 (FIM/farm).

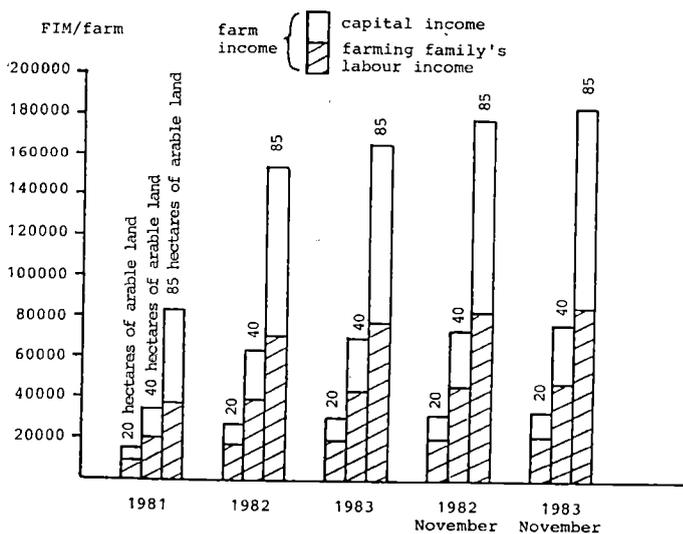


Figure 6. Farm income, farming family's labour income and capital income in grain production on different-sized farms in South Finland in 1981-83 (FIM/farm).

Although the calculations do not show absolute agricultural income levels, they can be used to make conclusions about relative differences in incomes between regions. The natural prerequisites for farming are appreciably worse in the north of the country than in the south. Despite this, however, the income calculated per farm and per dairy cow have been at least the same or even higher in northern regions than in the south of the country, with the exception of northernmost Lapland. This finding shows that the State's regional agricultural subsidizing policy has been successful in levelling out the regional income differences. It must also be pointed out, though, that the average income development may be somewhat different from that of bookkeeping farms.

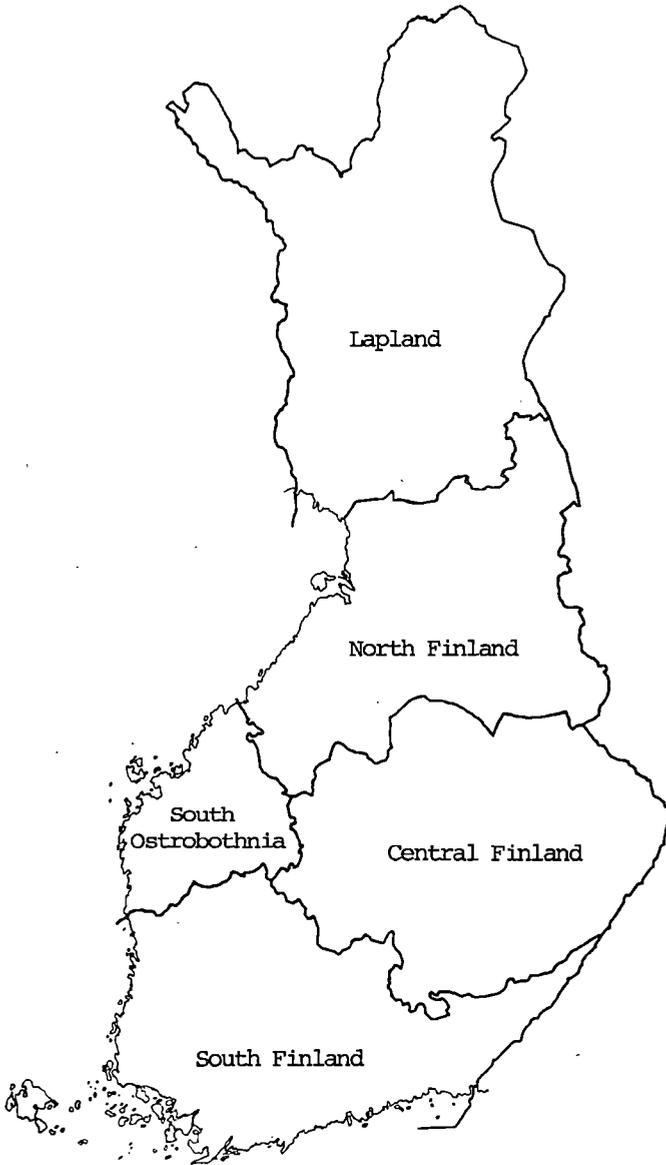
The effects of price decisions made in 1983 on income development have been estimated by comparing the farm income of November 1983 with that of the previous November. The comparison was made in fixed amounts using average quantitative data for the three year period 1980-82.

Figure 5 shows that farm income from milk production declined between November 1982 and November 1983 in all regions if changes in harvest and yield are not taken into account. This result was partly the result of problems with agricultural overproduction, which have depressed increases in animal products in particular. Further, during 1983, marketing costs covered by agriculture were increased by the collection of a marketing fee.

Farm income from grain production rose rather sharply between 1981 and 1982, mainly because of fluctuations in the harvest. Input and output data for 1982 were about the average values for the period 1980-82, those for 1981 about the average values for the period 1979-81. The years 1980 and 1982 yielded relatively good crops, whereas harvests in 1979 and 1981 were somewhat below average. The quantities of input and yield were the same for the calculations of farm incomes in 1982 and 1983, so the results show only the effect of price increases on farm income. In 1983 farm

income from grain production were some 15-17 per cent greater than in 1982, and rose by about 10-11 per cent from November 1982 to November 1983.

Calculations within the follow-up system have been made for other lines of production as well, using the same procedures as for milk and grain production. Calculations made in 1981-83 are the first to be carried out according to the follow-up system, and the results already obtained have been handed over to the agricultural income negotiators. Little practical experience with application of the system has been acquired so far, but the calculations will also be made in future, and they will be developed annually, as new statistical data from bookkeeping farms become available. The calculations associated with the follow-up of agricultural incomes can be considered a necessary addition to the follow-up of farmers' incomes and of the effects of agricultural policy measures.



Map 1. Regional distribution of milk production.

INCOME LEVELS OF FARMERS AND INDUSTRIAL WORKERS

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1. Background

Farmers' and wage earners' income levels are compared in order to obtain the information needed to make decisions on issues of agricultural policy. Many studies on income levels cover the entire country or concentrate mainly on following changes in incomes. The previous Acts on Agricultural Incomes required that only farmers' incomes be followed. The new Act on Agricultural Incomes, which came into force in 1982, was the first to list comparisons between farmers' and wage earners' incomes as a specific goal. Accordingly, the Agricultural Economics Research Institute initiated a comparative study in 1982, the preliminary results of which became available this year.

A central problem encountered in comparative income studies is the use of consistent definitions for concepts pertaining to incomes. The concepts applied must take the various sources of income of the comparison groups into consideration as uniformly as possible, whereafter statistics can be compiled on the respective incomes defined by the concepts in use.

The chief objective of clarifications of farmers' income levels is to follow agricultural incomes, as the Act applies to such incomes only. Correspondingly, wages are the main income source followed for wage earners. As far as was possible on the basis of available statistics, the study also considered farmers' and wage earners' other sources of incomes, i.e. primary income and available income (Figure 1). The concept 'primary income' includes entrepreneurial incomes, wages and salaries, incomes from forestry and other additional incomes. Statistics for available income are obtained by adding property incomes and received current transfers to primary income. Taxes and other

paid current transfers must be deducted. For this study, however, the primary interests were entrepreneurial income from agriculture for farmers and wages and salaries for wage earners.

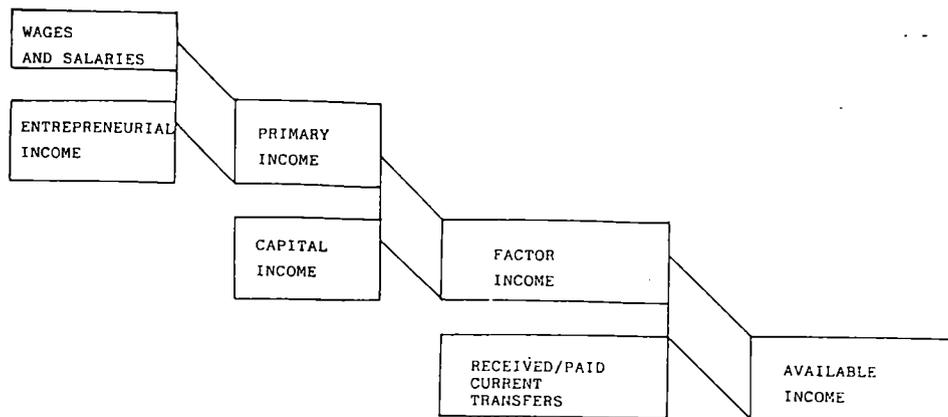


Figure 1. Income concepts.

In the following, entrepreneurial income from agriculture, also called farm income, has been calculated according to the scheme for the whole of agriculture presented in Figure 2. Agricultural gross return is composed mainly of crop production, animal production and State subsidies, with compensation for crop damage should such loss occur. Expenditures necessary for production include the costs of all purchased supplies, the costs of hired labour and social expenses, the costs of maintenance, improvement and depreciation of machinery, buildings and drainage, interest payments and overhead costs. Farm income, the earnings of the farmer and his/her family and their compensation for investing their own capital in agriculture, is the amount remaining after all expenditures have been subtracted from the agricultural gross return. Expenditures have recently amounted to some 70-75 per cent of the agricultural gross return, with the farm income totalling a little more than a quarter of all gross returns. In

1983, a better than average year for agriculture, farm income came to somewhat over 30 per cent of the gross agricultural return.

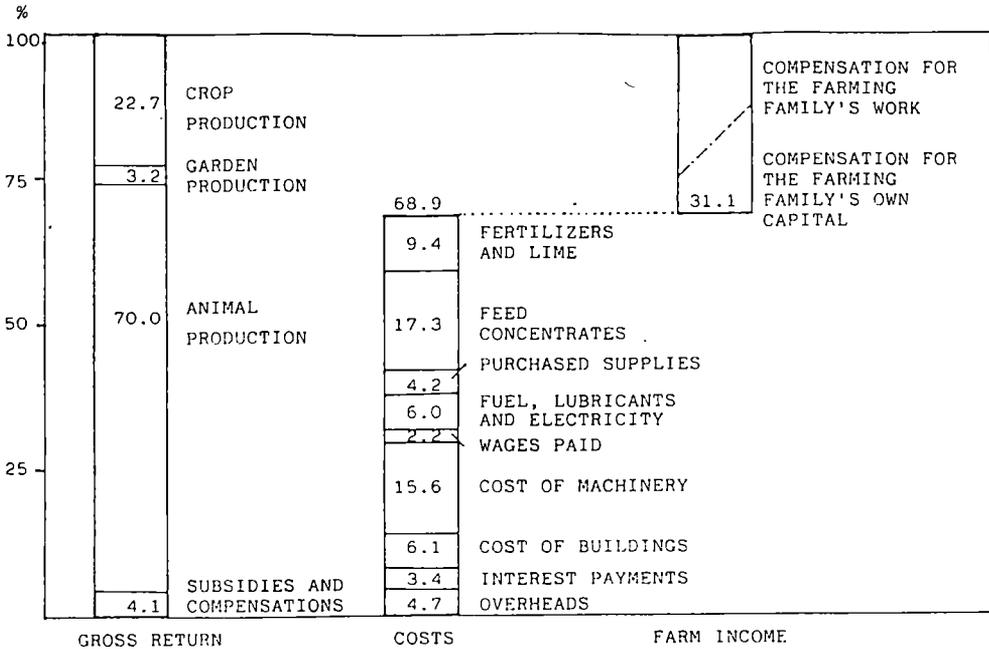


Figure 2. Composition of farm income in 1983.

For the study of income levels, farm income was determined as the average of certain farm groups. Data on returns and expenditures were collected from the enterprise and income statistics of agricultural economy, based on taxation statistics and established in the mid-1970s. In order to establish the farm income as specified above, farm income per taxation has had to be adjusted insofar as e.g. tax-free items are concerned, using other statistics. Other studies have found that the depreciations allowed for taxation purposes are less than the actual depreciation in value. Their adjustment according to farm group is, however, highly problematic nor has such adjustment been done

at this stage of the study. In addition to taxation statistics, the results for bookkeeping farms and some other data on incomes were also used as comparative data.

2. Farm income per farm

On the basis of taxation statistics, the average family farm income in 1982 was FIM 32,400 per farm. These farms had an average of 12.5 hectares of fields. There is great variation in the family farm income, depending on the size of the farm. In farming as in most other entrepreneurial activity, income depends largely on the size of the business. On small farms, however, farm income comprises only part of the farm family's incomes, and farm work accounts for only part of their work input.

There are clear differences in the natural prerequisites for farming in various parts of the country. For this reason there are considerable differences between geographic regions as to line of agricultural production, but farms comparable in size average about the same income level per farm in different parts of the country. Research has shown that price policy support has levelled off the differences in farm income between geographic regions. On the other hand, in southern Finland the lines of agricultural production are distributed so that the average results for this region are near the average results for the entire country; the higher income received from specialization offset the lower income earned on grain farms.

Farmers' and wage earners' income levels have been compared chiefly on this basis of average figures for the whole of Finland. In order to obtain a more complete picture, however, calculations have also been made of farmers' income levels for different lines of production. The grouping of farms into different production lines has been done according to the source of 60-100 per cent of their taxable gross agricultural income. This classification thus excludes farms with a highly diversified production.

In 1982 there were 145,000 family farms with over 2 hectares of fields. Nearly half (46.4 per cent) are cattle farms; of these, approximately three quarters comprise 5-20 hectares of fields (Figure 3). The next most common type of farm turns out a highly diversified line of production. These farms number 56,500, or 39 per cent of all farms, and most often belong to the smallest size group. There is a total of 21,200 farms, or 14.6 per cent, with other lines of production; of these, 6,200 are pig farms, 60 per cent of which have 10-30 hectares of fields. There are 2,300 poultry farms, three quarters of which are less than 20 hectares in size. Grain farms total 9,200, or 7 per cent of all farms owned by natural persons; 80 per cent of these are smaller than 30 hectares in size. There are 3,500 other farms raising other

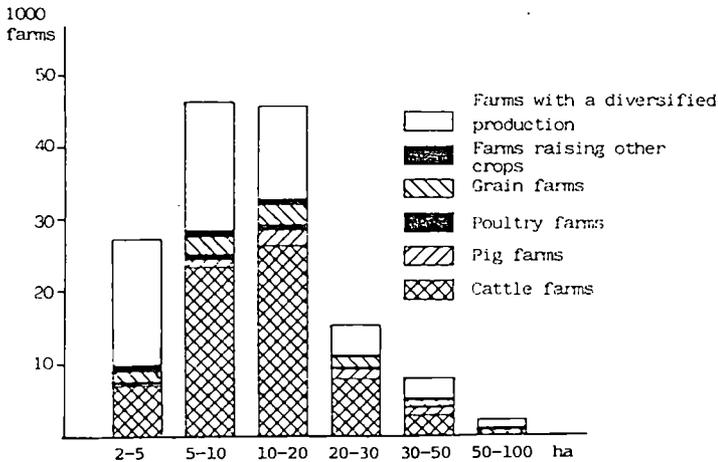


Figure 3. Distribution of family farms according to line of production in 1982.

The clearest differences in incomes from various lines of production are found in southern Finland, where the production conditions are more suitable for special, risky lines of production on a larger scale than elsewhere. Data on cattle farm income reflect the average income level, while the average incomes for farms with a diversified production and for grain farms have remained smaller. The incomes for pig farms, poultry farms, and farms raising other crops are about the same as for cattle farms less than 20 hectares in size. The income level for

the largest specialized farms is clearly higher than for other farms. The small number of specialized farms in the random sample, however, somewhat limits their more detailed analysis.

3. Farm income and the labour input of the farming family

Agricultural income data are traditionally calculated per farm. Such data comprise only the basic information needed to divide income into, e.g. labour input, capital input and also between family members. Information on the farming family's labour input is needed in order to distinguish which farm groups provide full employment for the farming family. The statistics for wage earners almost exclusively comprise the number of working hours per capita. With respect to the farming population, further division of the farm income and working hours per farming family member has proved problematic. The farming family's labour input and family size have been clarified in special surveys of agricultural income and labour input statistics. In the comparisons, the farm income level per working hour has been calculated only as a matter of interest and not for any specific comparative purposes. Calculations of farm income per farming family's working hour have resulted in lower incomes for labour-oriented livestock farms than for farms where crops are raised. On livestock farms, the farm income consists primarily of labour income, whereas on farms raising crops the use of capital is considerable.

The farm income per capita is calculated by dividing the income equally between the farmer in control and his/her spouse. On family farms the farmer and his/her spouse are the main family members. The study has considered men's and women's work on the farm to be equal. It is emphasized that the farm income consists of compensation for the farming family's work and for their own capital. A family farm is owned by the farmer and his/her spouse, who are thus party to its capital income. Furthermore, their labour input covers the major share of all agricultural labour input.

When the farm income is divided to obtain income per capita, it must be remembered that growing crops does not require full-time employment, on small farms not even the input of one spouse. Conversely, on farms concentrating on livestock production, labour input is required from the farmer and his/her spouse, as is the auxiliary labour input of other family members. With the exception of the smallest farms, however, the farming family's labour input is on average sufficient to cover both farmer's and spouse's full-time employment in agriculture.

According to the statistics on farm taxation, the ratio of farmer and his/her spouse per family farm averaged 1.82 in 1980-1982. The income per farm on family farms was FIM 17,800 per capita in 1982. The family farm income per capita increases with farm size at a rate slower than when calculated per farm, because there is a larger than average number of single farmers on farms in smaller size groups.

4. Formation of the comparison groups from the farming population

The Act on Agricultural Incomes now in force states that comparisons of farmers' and wage earners' incomes should be made using results for farming families with full employment on rationally managed farms, and skilled industrial wage earners' income levels. In the definition of rationally managed farms and full employment, we have had to make allowances for limitations in the existing statistics. Efforts have been made to avoid eliminating excessive statistical data in order to enable comparisons as extensive as possible between the two groups. The departure point of the study has been that normal Finnish agriculture is usually rationally managed and that rationally managed farms are found in all size groups and lines of production.

Central to the inspection of farms where the family is fully employed has been the labour input of the entire farming family; less attention has been paid to the distribution of labour input between family members. For the study it was assumed that labour input on a farm providing full employment corresponds with full-

time working hours (1,860 working hours per capita), at least for the farmer and his/her spouse. In addition, auxiliary labour input of other family members may also occur. The members of a fully employed farming family are chiefly single farmers or married farming couples. The work on crop-raising farms is sufficient for only half the year, and it is difficult for their farmers to meet the labour input required for full employment; for these farmers, it has been necessary to place more emphasis on inspections of sources of incomes. Primarily for this reason, data on incomes have been used to distinguish farms for which agriculture comprises the couple's main source of income.

5. Industrial workers' wages and salaries

With respect to wage earners, the comparison is based on a wide range of skilled industrial workers. For this study, wages and salaries were averaged per industrial worker. Skilled industrial workers' wages and salaries were calculated clearly using statistics on the number of person-years per sector. The information on industrial workers' wages, salaries and working hours for the most part is based on the entire material.

The annual wage per working hours was calculated by multiplying the number of industrial working hours by the average hourly rate for skilled full-time workers, obtained from the appropriate statistics. Thus the hourly rate includes all increments for shift work and working conditions as well as Sunday and overtime rates. Among others, holiday pay, calculated according to other survey results, was added to the annual wage.

The study covers wage earners in the sectors of mining and quarrying, manufacturing and electricity, gas and water works, thereby comprising production, assembly and auxiliary workers. The calculations cover 60 per cent of all wages and salaries in these sectors and approximately 90 per cent of all working hours. In 1982, for instance, some 410,000 industrial workers were covered by the statistics.

The calculations concerned only skilled workers, as the statistics do not include data on apprentices' hourly wages. On the other hand, skilled industrial workers' wages (in the broadest sense) do not differ much from the those of average industrial workers. This contention is supported by the results of other statistical analyses, according to which there are only slight differences between the earnings of industrial workers with and without vocational training. The skilled industrial worker's average annual income in 1982 was FIM 49,800. Labour input came to about 1,700 working hours per worker, making for an average hourly rate of FIM 29.35 that year.

6. Farmers' income compared with that of industrial workers

It was not possible unambiguously to calculate the income per farmer's family member, and so comparisons could not be made between the average farmer's and the average industrial worker's income levels. Therefore various sources of data have been used to determine the farming population's income level in order to obtain a basis for comparisons.

The central income comparisons are based on the results for farmers and their spouses for full employment in 1980-1982. Farms 5-100 hectares in size were included in the comparison (Figure 4). For various lines of production, too, efforts have been made to include the chief size groups, where the farming family's labour input corresponds on average to full employment of farmer and spouse. There seem to be considerable differences between farmers' average farm income and industrial workers' average income from wages (Figure 5). On farms 5-20 hectares in size, which comprise 80 per cent of those in the study sample, the farm income for the farmer and his/her spouse FIM per capita is a third of the industrial worker's income. On farms 20-100 hectares in size, the corresponding ratio is two-thirds, but covers only a fifth of the farming population fully employed in agriculture. Calculated per farmer and spouse, the average farm income is about 40 per cent of the average industrial worker's income. When the average farm

income is divided according to the number of hours of input, the ratio of farmers' hourly rates to those of industrial workers is even smaller.

The income levels of family farms providing full employment have also been analysed according to lines of production. The farm income on cattle farms 5-100 hectares in size was 42-46 per cent of the comparison results. The average figures correspond to a farm with 14 hectares of fields and eight dairy cows. Cattle farms account for nearly half of all family farms (Figure 6).

Pig farms are another line of specialization. Pig farms 10-100 hectares in size were considered to provide full employment. Their farm income came to 60-70 per cent of the comparison results.

The other lines of specialization, which are less common, are poultry farming and raising crops. The analysis for farming families specializing in crop raising has been more problematic than for others. Rather many farms have a diversified production, On such farms full employment depends to a great extent on the relation between livestock and crop raising.

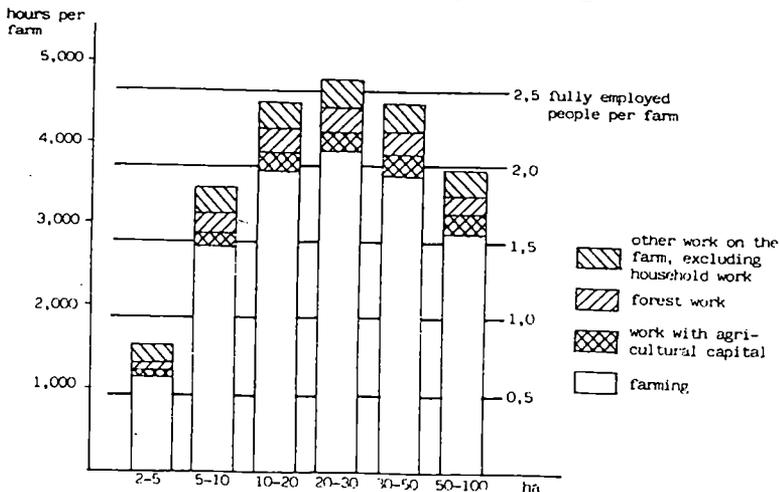


Figure 4. The farming family's average labour input for all farms in 1981 and the need of fully employed farmers assuming an annual labour input of 1,860 working hours per capita.

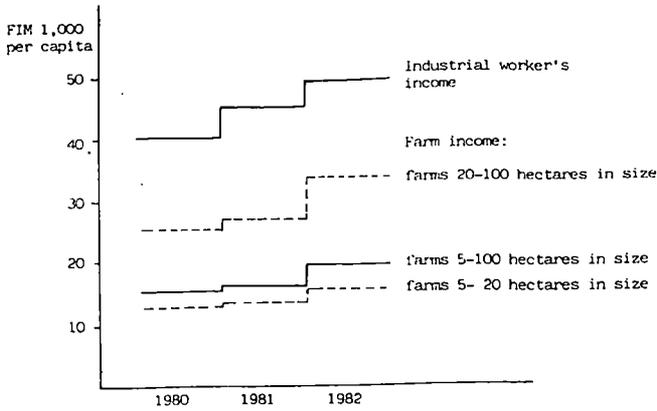


Figure 5. Farm income per farmer and spouse (FIM per capita) family farms providing full employment and skilled industrial workers' income in 1980-1982.

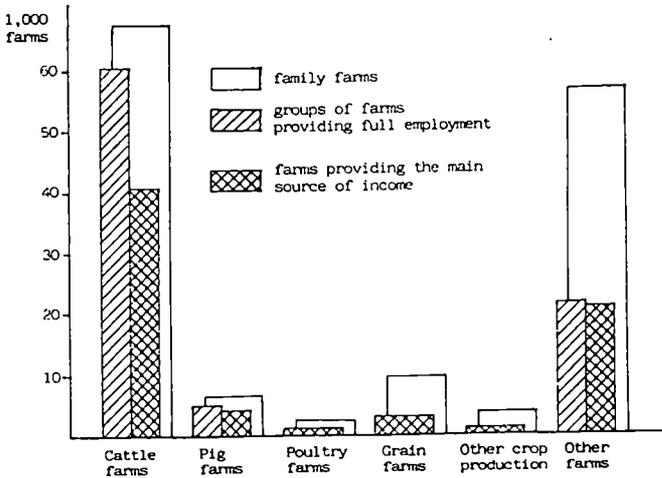


Figure 6. Distribution of family farms according to line of production in 1982.

In this study the farms providing the farming family's main source of income were considered to be farms with a combined taxable agricultural and forestry income of over 75 per cent of the farmer's and his/her spouse's total income. More than half the family farms included in the study fulfilled this definition (Figure 6). The majority of livestock farms provided the farming family's main source of income; the respective proportion of crop production and other farms was one third. This comparison concerns only the results for 1982.

On farms providing the main source of income, the farm income calculated for the farmer and his/her spouse constituted an average of 52 per cent of that of industrial workers. Most farms providing the main source of income were medium or large in size, averaging approximately 17 hectares of fields. Industrial workers' income level was reached on farms over 50 hectares in size, of which less than 3 per cent are family farms providing the main source of income (Figure 7).

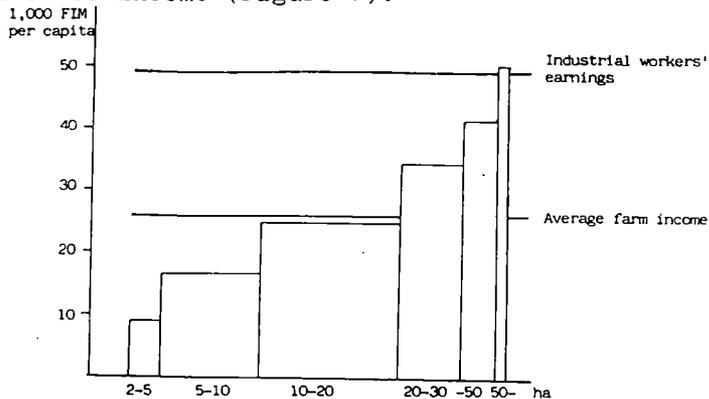


Figure 7. Farm income of farmers' and their spouses obtained on farms providing the main source of income and skilled industrial workers' wages and earnings in 1982.

The farm income on cattle farms providing the main source of income was 55 per cent of industrial workers' earnings. They were an average of 15 hectares of fields in size and had an average of nine cows (Figure 8). Most grain farms providing the main source of income were larger than 10 hectares in size and had an average of 33 hectares of fields. In 1982, which yielded an exceptionally good crop, the income from grain farms neared the average farm income. The farm income on pig farms providing the main source of income was almost 80 per cent of industrial workers' earnings. These were also larger than average, their mean size being 24 hectares. Farms with specialized lines of production attain the industrial workers' income level when over 30 hectares in size, but for cattle and grain farms and farms with diversified production the respective size is over 50 hectares.

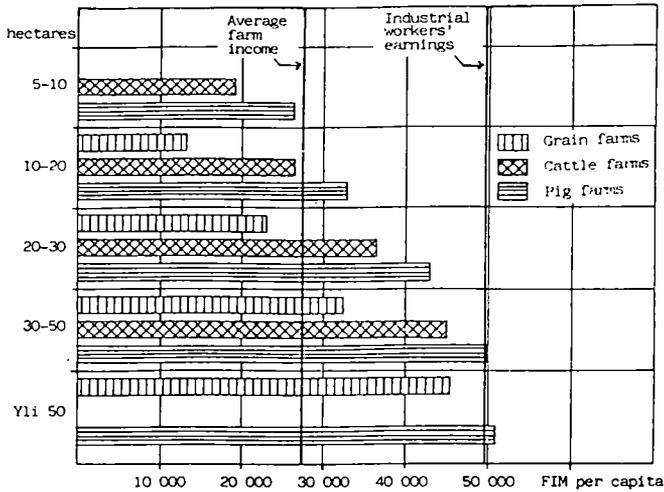


Figure 8. Farm income (FIM per capita) of farmers and spouses working on farms providing the main source of income, according to line of production, compared with industrial workers' earnings, for 1982.

The above income comparisons suggest that the per capita farm income, even in a good agricultural year like 1982, only averages half that of industrial workers. Further, due to the small size of the enterprise, the need for labour input on farms is relatively high, and small farms in practice employ two people. The labour input of two people is sufficient to run a larger farm, too, if mechanization is increased. The results show that the average farm income is close to the average industrial worker's earnings in certain farm groups with specialized production and on larger, more capital-oriented farms. The methods used for this study are best suited to labour-oriented lines of production and farm groups. Many problems are often associated with the use of agricultural production capital, and their effects are difficult to determine at this stage of the comparison study. This has made it difficult to analyse the results, in particular those for capital-oriented size groups. For this study farm income has been calculated per capita, without attempting to distinguish work income from capital income. The importance of capital as a factor of production is, however, significant to some lines of production and on larger farms.

7. Primary income

The majority of the entire farming population receives other income in addition to that derived from agriculture, though farm income constitutes the largest share. The result obtained by adding forestry income¹ and wages to the farm income is the primary income (see Figure 1). The following income comparison is based on the so-called Income Distribution Statistics, in which incomes are analysed for households. Farm household incomes are calculated per capita according to the number of people active in household occupations and therefore cover all family farming, including part-time family farming. In addition to the income of the farmer and his/her spouse, the Income Distribution Statistics include the wages earned by other members of the family household. Some wages are earned in agriculture by working on other farms, some by working in various other trades. Thus the comparison of primary incomes covers incomes earned in other trades as well as farm income. With respect to wage earners, this comparison is based on the average wages and salaries of industrial workers.

The income data from the Income Distribution Statistics are from the year 1980. The per capita primary income of the economically active farming population came to an average of 72 per cent of that for industrial workers (Figure 9). In the size group of less than 20 hectares, the primary income of farming households were 64-70 % of that for industrial workers; the respective proportion in the size group of more than 20 hectares was 90 per cent. The average primary income of farm households where the main source of income was derived from agriculture remained lower, especially in the smaller size groups.

¹ Forestry income is listed in the statistics on the distribution of income as the real income from the sale of timber as reported by farmers.

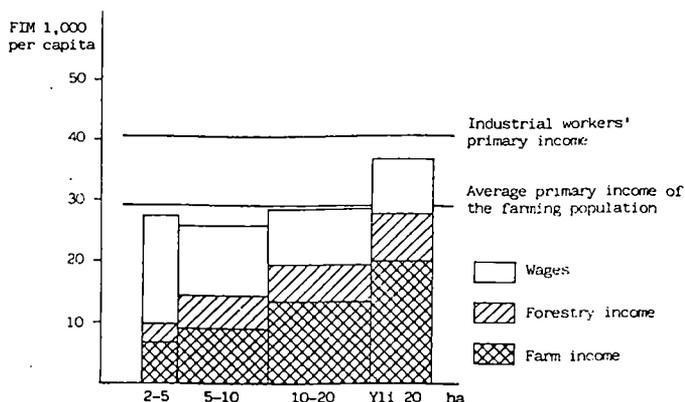


Figure 9. Per capita primary income of farm households for economically active family members and for industrial workers in 1980, according to the Income Distribution Statistics.

Calculation of the primary incomes is based on the rather recently established Income Distribution Statistics, the statistical methods of which are still undergoing development work. However, the present figures give a general picture of how much farmers earn in addition to their farm income. It also gives information about wage earners' incomes derived from other sources.

8. Available income

Available income is obtained by adding the primary income to capital income, and considering paid (taxes) and received (pensions, subsidies, etc.) current transfers (see Figure 1). Available income thus reflects the funds available for household consumption and savings. Farmers' average available incomes per household in 1978-1981 were somewhat greater than those of industrial workers. According to the Income Distribution Statistics, industrial workers' available incomes per household increased quite steadily during those years. Using the ratio of 100 to represent the annual available income of industrial workers' households, farmers' available income per household varied between 103 and 118. Preliminary data for 1981 indicate the ratio was 111 in that year.

Farmers' households have had an average of 2.2 economically active people per household; the respective figure for industrial workers is 1.6. The available income for farm households calculated per economically active household member in 1978-1981 averaged 75-91 per cent of the respective figure for industrial workers (Table 1). The comparison of farm households' available income concerns farms that provided the main source of income, where the occupation of the head of the farming family is listed as farmer. Other economically active household members may have been employed in other sectors.

Table 1. Per capita available income of the economically active (FIM per annum, ratio units) in 1978-1981.

	1978	1979	1980	1981 (preliminary data)
Industrial workers' households:	100	100	100	100
Farm households:				
Farms 2-10 hectares in size	71	70	83	79
Farms 10-20 hectares in size	77	79	89	85
Farms over 20 hectares in size	95	80	99	94
Average	82	75	91	86

The yearly fluctuation in farm households' available income does not seem to be directly related, e.g. to the respective fluctuation in farm income. Greater than average income from the sale of timber in 1980 have contributed to the fluctuation in farm households' available income. On the other hand, many other factors in addition to farm income (such as other incomes and transfers) affect the available income and are included in the

incomes and expenditures of nearly all household incomes, making the concept of available income statistically much more difficult than, e.g. primary income.

Data on available incomes are also obtained through household surveys made every fifth year. These surveys mainly provide background data about households' consumption expenditures and are more general than those of the Income Distribution Statistics. According to their results, the ratio reflecting the farm households' available income was 105 in 1981. The survey analyses the consumption potential of households by dividing them into units, whereby the consumption of the first adult in the household counts for 1 unit and the next for 0.7. The consumption of household members under 18 years old counts for 0.5 units. Calculated in this manner, the average size of farm households is 2.75 units, that of industrial workers 2.16 units. When industrial workers' available income per household is designated by the ratio of 100 per unit, the respective ratio per farm household unit is an average of 83. The ratios for farms grouped according to size vary from 76 to 92.

Both the Income Distribution Statistics and the household surveys show a greater available income per household for farm households than for those of industrial workers. On the other hand, farm households have had more economically active members and more consumers than those of industrial workers. Thus despite their greater available income per household, farm households have had somewhat smaller consumption potential than industrial workers.

9. Summary

The research results presented above indicate that farmers' per capita incomes from agriculture come to about half the wages earned by industrial workers. It must be taken into account, however, that various differences - e.g. in size and line of production - cause wide variation in farmers' incomes. For instance, the income level on larger than average cattle farms (approximately 30 hectares) is about 70-75 per cent of that of industrial workers. The per capita income derived from farms

specializing in pig production averages 60-70 per cent of that for the comparison group; on pig farms larger than average (about 32 hectares), the respective amount is 80-85 per cent. The mentioned incomes are based chiefly on data that apply to the years 1980-1982. It should also be stressed that the annual fluctuations in farm income have been considerable.

The study also compared the primary income of both groups. This comparison comprised farmers' forestry incomes and wages as well as farm income. For industrial workers, this comparison includes any entrepreneurial incomes as well as wages. On the basis of primary incomes, farmers' income level in 1980 was approximately 70 per cent that of industrial workers.

Income levels were also compared on the basis of available income, which also comprises capital incomes, pensions, subsidies, etc. Taxes and other paid current transfers were deducted from incomes. Differences in the size of households were also taken into account. Calculated according to the number of economically active household members, farmers' average available income per capita was 75-90 per cent that of industrial workers in 1978-1981.

With respect to agriculture comparisons of income levels have some problematic aspects. This study aimed to carry out the main comparison on the basis of per capita income. Full employment and rationalization with respect to farmers were in part matters for interpretation and various factors were used for their clarification. Farming is an entrepreneurial activity, and the farming family invests capital into its enterprise. Most of the work is also done by family members. In this study, for purposes of comparison, farm income was calculated per capita, but no effort was made to distinguish work income from capital income.

THE CASHFLOW METHOD - AN ALTERNATIVE APPROACH TO ANALYSE FARMERS' INCOME

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1. Introduction

In the past decades numerous surveys and studies have been carried out on farmers income level. Furthermore, comparative studies were conducted in order to find out the farmers income and that of wage earners outside agriculture. As a measure of income the income which the farmers earn from farming is commonly used. This traditional way of calculating income does not, however, always describe precisely enough the actual amount of money which the farmer has available. For instance, the long term costs are only calculated as estimated depreciations. The traditionally calculated income of the farming family gives thus an inadequate picture of the economic situation of the farmer, because the problems of financing the farm have presently gained more and more importance as indicators of the financial result and profitability.

The main purpose of this article is to look into the applicability of cashflow calculations to measure the income of farmers. The purpose is to find out, whether the calculations in question could result in such useful information which presently is not received from the commonly used economic indicators applied on the Finnish farms. This article is made by the author in the Pellervo Economic Research Institute and is part of a research programme on the income differences between the farming population and the wage earners. This research project is carried out together with The Agricultural Economics Research Institute, Finland. The purpose of the study is to investigate the cash income from farming. In addition we look into, how much the farmer and his family have money for their personal needs. The income and expenditure are calculated on the basis of the total cashflow of the farm, where in addition to farming the income and expenditure from forestry, subsidiary income and investments are also taken into consideration.

Firstly we deal with the concepts and statistical methods applied to measure the income level of the farmers. Then we look into the theory of financing a farm enterprise and the possibilities to develop a calculation method based on cashflow for measuring the income level of farmers. The actual calculations of the cashflow are based on the taxation figures obtained from the enterprise and income statistics of farm economy. Finally an estimation is made as to the utility and applicability of cashflow analyses for measuring the income level of farmers.

2. ON THE CONCEPTS OF INCOME

In economic terms income is defined as compensation for factors of production. As such, income is then looked at from the economic point of view at the stage of earning. From the social point of view we speak of income which may be consumed or could be saved (LAURILA 1983, p. 2). The available income includes, in addition to earnings from productive inputs also income transfers, or income without retribution. Figure 1 shows the different concepts of income and their interdependencies. The figure is based on the UN international recommendation for income distributions statistics 1977 (Provisional Guidelines on Statistics of the Distribution of Income, Consumption and Accumulation of Households, series M 22).

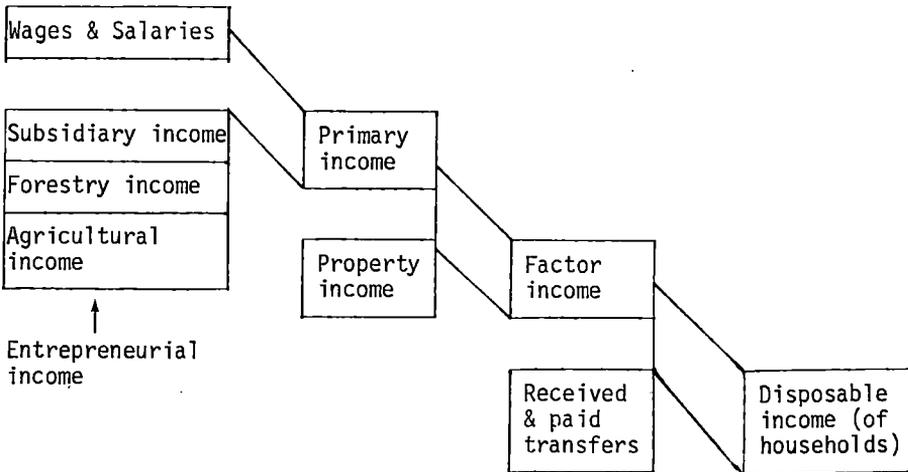


Figure 1. Concepts of income

In Finland this international guideline is applied for the statistics on income distribution and for household inquiries. The access to information is, however, putting a limit to forming concepts on the basis of statistics. So e.g. the definition of the entrepreneurial income in the official income statistics is mainly based on the information obtained from taxation and is thus confined to the grouping of income according to the regulations for taxation.

The definition of the entrepreneurial income is described in detail e.g. in the study of the differences between the income of the farm population and the wage earners (ANON 1985). The entrepreneurial income is usually defined as an income resulting from the difference between the gross income and the expenses of acquiring and preserving it. Often it is also called profit, surplus or entrepreneurial income. On the other hand, the entrepreneurial income could also be understood as the remuneration for the invested labour and capital and perhaps also for the risk involved.

The income may be looked upon from the point of view of national economy, business economy or household economy. The measures used in national economy show the share of the different sectors of the national income and the efficiency of these sectors. The business analysis measures show the application of input i.e. labour and capital into business. The profitability is indicated in terms of business analysis concepts. Concepts similar to income are used when speaking of the profitability of business. The concepts commonly used in agricultural economics e.g. farm income, net farm income, net return or profit ratio, are defined precisely. The net farm income which is part of the gross income from agriculture which is remuneration for the labour input of the farm family and the capital invested in farm enterprise, is directly comparable with the concept "entrepreneurial income", which is used in national accounts (see figure 1). Most farmers receive in addition to the farm income other entrepreneurial income which also should be taken into account. The measures for household economy reflect the social or conformed income. These should be made up in such a way that they give a definite picture of the real consumption potential of the individuals.

When making calculations regarding the income and income development of the farm population it is important to apply such an income concept which can be compared with the income of the wage earners. In addition, one has to be bear in mind that the amount of the entrepreneurial income changes according to the statistical sources. The most frequently used statistical sources of the entrepreneurial income regarding agriculture have been national accounts, the total calculations of the Agricultural Economics Research Institute and Enterprise and income statistics of farm economy based on taxation records.

3. THE FOUNDATIONS AND APPLICATIONS OF THE CASHFLOW ACCOUNTS

3.1 Financing and its theory

The income level stands either for the compensation for the factor income or for the amount of money available for consumption or saving. The income level does not however, reveal all about the economic situation of an entrepreneur, trade or the society. The income level is influenced by several economic factors. In economics it is largely accepted that the income growth in the long run is decisively influenced among other things by the investments (SAMUELSON 1974, p. 220). Changes in investments influence the national income both directly and by multiplier effects causing a series of processes in which also saving and consumption change. Investment and financing are thus closely related to each other. According to the definition, financing comprises all means by which investment needs are met.

Financing is divided in two main parts: capital financing and income financing. In farming enterprises the capital is mainly drawn from the savings. Borrowed capital is raised on the financial market. The income financing relies on net income from farming, forestry and subsidiary income. In practice this net income can not be used exclusively for financing investments because it must also be used to cover the private consumption expenses of the farm family.

The financial problems are linked with sufficiency and costs. Thus the basic problem of financing is linked with the timing of the real processes and the cashflow. The functioning of an enterprise is in the theory of economics depicted by the model of the capital circulation (ARTTO 1968 p. 23).

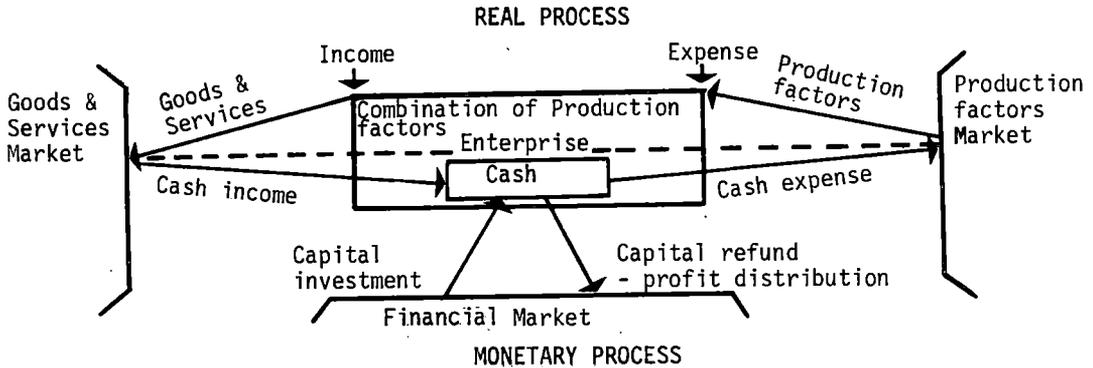


Figure 2. A model for the circulation of capital

The figure shows the flow of real commodities and in the opposite direction the corresponding cashflow. To get a common dimension for all parts the flow of real commodities or real process it is often presented in monetary units. When the monetary unit is used as a measure of value, as it is done in describing real processes, the process and phenomenon is called bonitarian. If the monetary units are understood as a means of payment as it is the case in cashflow of the capital circulation or monetary process, the process and phenomenon is called monetarian (ARTTO 1968 p. 23).

The cashflow of an enterprise consists of the payments to and from the cash. The payments from the cash are carried out as agreed compensation for purchases of production inputs, loan instalments and interests to the financial market, and taxes and remunerations for the entrepreneur as a balance. The payments to the cash are agreed compensations of sold commodities and capital investments. Theoretically all transactions are occurring on genuine markets and are therefore right and real measures (AIROLA et.al. 1977, p. 18-19).

Typical for a sound enterprise is the smooth flow of the economic process. Thus the real process and the monetary process should in the long run be at equilibrium. On the other hand, in the short run the equilibrium is not necessary if the enterprise has the required buffer reserves available, either in cash or in credit (PRIHTI 1971, p. 51).

The real- and monetary processes in figure 2 are the most common processes to show the circulation within the enterprise. Closely connected to them is the information process which is needed to manage them and which often is mentioned as the third basic process of the enterprise. The real- and monetary processes do not continue automatically, but are results of systematic activities and decision making. The management of the activities is a process of its own. Information is gathered from the real and monetary processes which are rearranged to serve as basis for the decision making (KETTUNEN 1975, p. 13).

By measuring the monetary process one gets the clearest and most precise picture of the activities of the enterprise. The book-keeping which registers the cashflow forms the basis for the measuring of the monetary process. In agriculture book-keeping is done using a single entry method based on cash transactions.

3.2 Principles of cashflow calculations

In studying the operations and performance of an enterprise the cashflow analysis is found important. The performance of an enterprise can be measured by its ability to fulfill the cash requirements of different partners, in this case especially its ability to realize the income goals of the farmer. The most important of these goals is the amount of money available for private use which is the compensation of labour and invested capital in farming.

When the enterprise is looked upon in terms of cashflow, the basic logic of its presentation is simple: the enterprise pays for the supply of production inputs with the purpose to create cash income to flow into the enterprise. The production of goods and services is guided by the business idea based on the real process and the

production is sold to receive cash income. The time structure of the cashflow needs capital flow which is connected with the arrangement in financing (KETTUNEN et.al. 1980, p. 18). The cashflow of the enterprise is usually depicted as shown in the following figure:

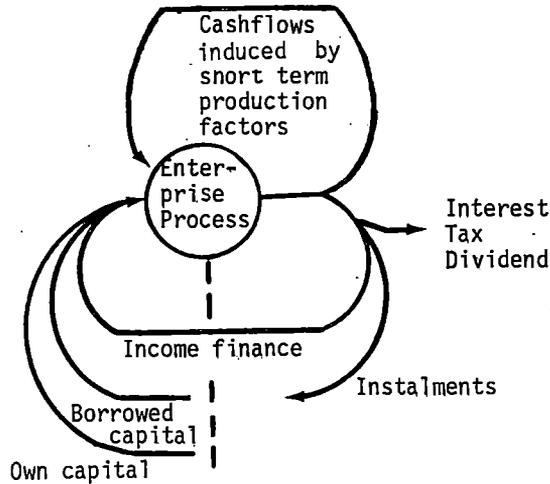


Figure 3. The cashflow of the enterprise

In figure 3 the income and cash creating process which is called the enterprise process is chosen as a focal point. In the model it is assumed that the cashflow for the current cash expenses originates from the revenue flow. Such payments for which the income accumulates gradually during long time as in case of investment is financed by capital and the part of the revenue which is not utilized for current cash expenses. From this part of the revenue also the shares to the financiers and the authorities as interests, dividends and taxes are paid. On the other hand, the farm business differs from the model enterprise in figure 3 especially with respect to the dividends; the farm family cannot adjust its consumption according to the capacity to pay dividends.

Presenting the cashflow this way we find what portion of the income goes directly to payments of the everyday needs and thus we can see how much remains for other purposes. Furthermore the model allows also the measurement of the burden imposed by taxation and interests. It gives an opportunity to study the effectiveness, economy etc. of the enterprise as well.

In business economics there are four different types of cashflow calculations (KETTUNEN et.al. 1981, p. 68):

1. Income statement
2. Fund statement
3. Statement of revenue and expenditure
4. Cashflow statement

In the income statement revenue and expenditure are recorded according to the real process, i.e at the moment the real event corresponding to revenue took place and the input corresponding to expenditure was used. The long-term expenses are calculated as depreciations.

The fund statement differs from the foregoing one due to the fact that the long term expenses are timed to the moment, when the investment is already accomplished. In the statement of revenue and expenditure the entry is done according to remittance. The cashflow statement of the revenue and expenditure are based on real cash processes, which means accomplished payments.

3.3 The cashflow statements

There are many advantages of cashflow statements if compared with statements based on remittance and use. Thus, many measurement and periodicity problems, e.g. depreciations, do not affect the result. For instance the value reducing effect of inflation on the fixed assets does not affect the calculation. The stocks of products and supplies need not necessarily to be stated, so that the possible valuation error of these does not influence the result. The cashflow statements made by several researchers (e.g. ARTTO 1978, p. 65-66) are applied better when describing the profitability of an enterprise than the traditional methods.

The greatest drawback related to the cashflow statements is that the annual changes in investments as well as the changes in stocks strongly affect the result based on cash. These drawbacks are, though, not very serious when one studies the results over several years or the average results of a group of enterprises. On the other hand, the drawback of cashflow statements when measuring the profitability of an enterprise during one period is that the share of the short term expenses of the total expenses affect the result too strongly (LAITINEN 1981, p. 37).

The advantages and drawbacks of the mentioned statements based on cash are primarily connected with their use in measuring the profitability. The interest for these statements is, however, growing both regarding research in business management and the practical calculation of economic results. This is due to the fact, that the cashflow statements form a supplement to the statements based on use. Using different calculation methods one gets a more varied picture of the profitability.

In the financial calculations the cash basic statements play an important role. By analysing the financial status it is attempted to measure the solvency (sufficiency) and solidity (financing structure) of the enterprise (KETTUNEN, P. et.al. 1981, p. 19). Solvency may be analysed either on short or long term. A good solvency means also that the income goals of the farmer can be realized without jeopardizing the continuity of the enterprise. Studying the solidity the emphasis may be on the business risk or financial risk. Also the compensation for the sources and enduse of money are important for the financial analysis. Different characteristics may be used financial analysis of the same part of the business.

By financial analysis it is possible to adjust the picture on the economic situation of the enterprise given by the profitability. Such a study is even more important the more the enterings regarding real processes and monetary process differ, that is to say the more

the use of production factors and the output form products differ in time from the corresponding cash entries. This means in practice that the study of the financial structure together with the profitability is the more important, the greater the share of the fixed costs related to the long term effect of the production factors are and the more capital is bound to the stocks of products and supplies. Because the influence of the fixed costs is great in farming, one has to pay great attention to finance.

4. THE CASH BASED ECONOMIC RESULT OF A FARM

4.1 Cashflow model of a farm enterprise

A farm enterprise is here defined as a unit which is composed of agriculture, forestry, subsidiary income and private economy. The farmer or entrepreneur makes decisions regarding all these activities. The easiest way to examine the financial flow in farming is to do it for the entire enterprise. Eg. in planning the financing of investments this point of view is sufficient (HALKILAHTI 1978, p. 17). On the other hand on examining the profitability of the different parts of the farm enterprise and especially the agriculture, a more detailed model of cashflow is necessary. As a starting point for this we have taken the calculation of the income from the farm, which in fig. 1 is shown to be the sum of the wages and the entrepreneurial income. The aims of the model of cashflow are:

- a) To calculate the annual income from agriculture which as concept is approximate to the agricultural net income.
- b) To calculate the income from the entire farm.

As research material we use the taxation material (Enterprise and income statistics of farm). The taxation based cashflow account is useful for calculating the profitability of farms which for taxation purposes are obliged to record their income and expenses. The taxation calculation of the farm derived from the account does not comprise other periodical entries subject to consideration than depreciations. On the other hand, the depreciations are in the cashflow account compensated by the expenses of the investments, the information of which is available in the taxation documents.

Due to the goals of this study, we have left out the so-called priority of the costs. Thus regarding profit sharing, taxes and the expenses of the private household have not been considered in the present study. Also the changes in the own capital had to be left out due to lack of information. Thus the surplus from agriculture or the entire farm includes the changes in the own capital and the taxes in addition to the part of income to be used for consumption.

To make the model simpler, the interest payments of the farm are deducted already when dealing with agriculture; also in calculating the last surplus, the changes in debts of the enterprise are taken into account together with the real income items.

There is a drawback in ignoring the order of priority of costs. In this case it is difficult to use the common indicators and new ones should be found the understanding of which is not as well established. The structure of the cashflow of the farm enterprise is illustrated below.

From agriculture

From farm

Agricultural gross revenue

- short term expenses

+ tax free subsidy

Agricultural surplus I a

- farm interest

Agricultural surplus I b

- investments

Agricultural surplus II =
self-generated net farm income

Agricultural surplus II
self-generated net farm income
+ net forestry income
+ net subsidiary income
Farm surplus = self-generated
earned farm income

(+/- change in borrowed capital)

(+/- change in borrowed
capital)

Figure 4. Model of the principles for cashflow statement at agriculture and farming

In analysing the income and indicators based on cashflow there is a danger of identifying them with the commonly used income concepts. In the cashflow statement above e.g. the changes in borrowed capital can be taken into account, although it doesn't mean income or expense in a normal sense. Therefore it is in brackets in the accounting model. The inclusion of the debts in the cashflow statement causes great variations in the amount of money from agriculture and farming.

4.2 The information sources for the calculation

As basic information we used Enterprise and income statistics of farm economy 1975-81, which is based on the information obtained from farm taxation. It is assumed that the taxation material with some minor exceptions, matches with the corresponding income and expense figures of the national accounts. On the other side, the taxation material is with exception of the possibility to arrange sales income and purchase expenses from the livestock periodically, purely based on cash. The taxation information has been, however, partly replenished e.g. by information from book-keeping farms.

4.3 Preliminary results

On the basis of the presented taxation material it is possible to make up quite precise and for many purposes useful calculations about the income and expenditure of the farmers. As it is the most important objective of this research item of the Pellervo Economic Research Institute to study the surplus from agriculture and farming to be used by the farmers family and also the increase of borrowed capital, we concentrate on these items in this article. Though the studied concepts do not fully correspond with those used in the income level calculations (ANON. 1985), we will as much as possible use the earlier method. The net cash income from agriculture and forestry corresponds, thus, to the entrepreneurial income and the subsidiary income can be compared with the wages, from which tax is deducted. The income from assets is partly included in the cash income from agriculture as rent income and in the subsidiary income as interest income.

By first deducting according to the model the short term expenses and taking into account the tax-free subsidy (area subsidy) we get the agricultural surplus I a. When we further deduct the interest of the farm enterprise and the investment costs, we get the agricultural surplus II. As a concept it is close to the agricultural net income and because of that we use for agricultural surplus II also the term "self-generated net farm income". The important difference is found in the depreciations, which in this study are substituted by investment cash expenses. If we further take net subsidiary income and the net calculated income from forestry, we get the farm surplus which we also call "self-generated earned farm income". This concept can be compared with the income of the wage earners. If we add the increase of the borrowed capital to the agricultural surplus II or the farm surplus, we get the amount of money from agriculture and farming. Lets emphasize, that the amount of money from agriculture and farming does not at all describe cash for private consumption, but a remarkable part of it is used for financing of production activities, as e.g. for the purchase of additional land.

The following figure shows the cashflow surpluses and their growth during 1975-81 calculated from all farms.

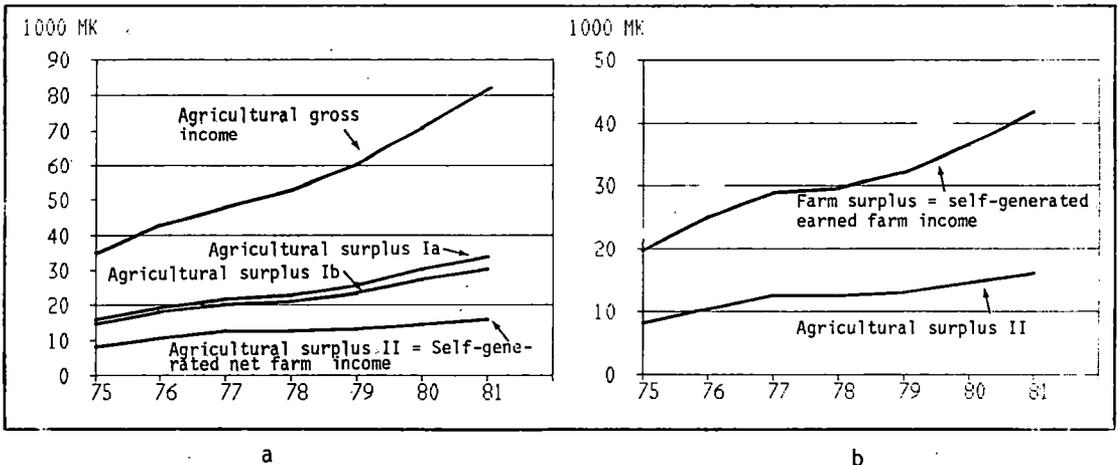


Figure 5. The average cashflow of all farms (mk/farm) 1975-81

The amount of cash (agricultural surplus II) as a share of the total income has during the time of the study gradually diminished (figures 5 a and 5 b). The share of subsidiary income is growing steadily and represents in 1981 already more than one third of the total income in agriculture. The rest of the income comes from forestry.

The agricultural surplus II or the self-generated net farm income has during the period 1975-81 approximately doubled and was in the last studied year appr. 16 000 mk/farm. The farm surplus was in 1981 appr. 42 000 mk/farm. This shows the share which is the income of the farm couple and may be compared with the income of the wage earners. If we also consider the increase of borrowed capital, the amount of money has been during the last three years appr. 6 000 mks higher than the agricultural surplus (figure 6). In real terms the amount of money which is left from the farm, calculated in in this way, was at its highest in 1976, when it was 54 200 mk/farm. After that the average amount of money has remained unchanged and has annually changed between 49 400 and 52 000 mk.

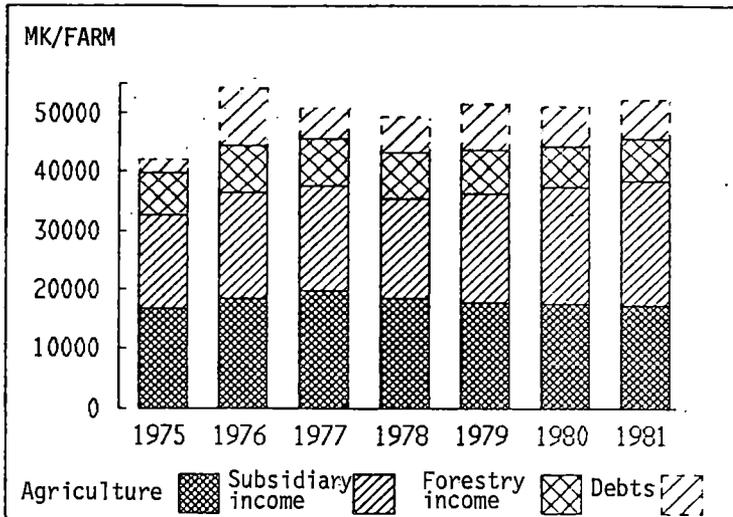


Figure 6. The average amount of money (mk/farm) from farm counted in 1982:s prices and its distribution between the different types of income and debts.

If the increase of debts and the other factors related to the capital value of the farm are left out, as it is done in the study calculating the difference between the farming population and the wage earners (ANON 1985), we get a more precise picture of the income development from the point of view of cashflow. In the cashflow statement, when calculating the surplus or profit, the capital changes are normally not taken into account (ARTTO 1982, p. 17). Thus if the farm surplus of self-generated earned farm income is divided by the average number of income earners, we get the farm surplus per capita in different years as shown in the following figures.

Year	Wage earners on average	Farm surplus on 1982 level mk/capita	% change
1975	1.820	21 864	
1976	1.826	24 406	+ 11,6
1977	1.832	24 879	- 1,9
1978	1.837	23 567	+ 5,3
1979	1.834	23 876	+ 1,3
1980	1.825	24 252	+ 1,5
1981	1.818	25 051	+ 3,3

The figures show that the growth of the farm surplus has been quite even since 1976. The farm surplus per capita has been during the last year of this study appr. 25 000 mk.

In the above given calculations we have not been able to take into account all income transfers because of the inadequate statistics available. Also the interest for the debts referring to agriculture have not been differentiated from the interest for the debts of the farm. In addition the value of the farm products the farm family has used are not taken into account. The greatest difference between this study and the income level study carried out by the Agricultural Economics Research Institute (ANON 1985) is that the depreciations have been substituted by the expenses of investments. The following figures show the annual growth of the income from agriculture as given in marks.

Year	ANON 1985	Our study
1975		8 238
1976		10 405
1977		12 501
1978	17 800	12 553
1979	19 700	13 056
1980	23 400	14 430
1981	25 100	16 025

The agricultural income (agricultural surplus II) calculated according to the cashflow principle was during the time studied appr. 5 000 - 9 000 mks lower than in the study concerning the income level of the farm population and that of the wage earners. The development in both series went parallel especially during the two last years. The comparison of both series of figures is also difficult due to the poor harvest in the end of the 1970:ies which affects besides the amount of depreciation also the expenses for investment.

5. ON APPLICABILITY OF THE CASHFLOW ACCOUNTS

The income level calculations were formerly carried out according to the principles of income statement calculations. The long term expenses have thus been calculated as depreciations. In the cashflow statements, however, the expenses are based on actual real cash entries. The cashflow statements have initially been developed to describe the financial status, but later on they have been used also for measuring the profitability. According to HANHILAHTI (1982, p. 171) the cashflow statement may also be used to calculate the income level of the farmers and especially under certain circumstances the amount of income available. The conditions for this are that a sequence of years or the average from the annual income of a quite great group of farms are studied. In this study both conditions are met by using the taxation figures from several consecutive years, which partly were supplemented with information derived from other sources.

The above studied indicators based on the casflow of farms calculated from the years 1975-81 are to my understanding well suited to show the amount of money derived from the enterprise and available to the farm family for private use. Further the financial calculations regarding the farm families entire economy give useful information also about the growth of the income from a single farm or a group of farms. Monitoring the financial result, we also obtain useful information when planning large investments or change of generations on a farm and the necessary credits with these respects.

By analysing the financial result of different types of farms, we can find out the differences between different groups of farms. The greatest drawback in the taxation material, the lack of labour input data, causes that the indicators depicting the result of the different groups of farmers cannot be compared without taking into account the differences in labour input of the different groups of farmers. This drawback is, however, possible to eliminate by using the labour input information from the book-keeping farms or that from the statistics of the Agricultural Board for the farms with different productions. On the other hand, the classification according to the kind of production may be difficult in studies

regarding the entire enterprise, because the variations in the income from agriculture can quite effectively be balanced by the income from forestry and subsidiary activities.

The cashflow accounts have so far been used relatively little as complement for income statements. With the improvement of the sources of information the use of cashflow accounts will likely become more frequent. In the first place they are applicable for depicting the financial result of the farm, but more and more they might be used also to show the profitability in agriculture.

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