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First Experiences of Finland in the CAP

Edited by
Lauri Kettunen

Maatalouden taloudellinen tutkimuslaitos
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Preface

The integration of the Finnish agriculture to the Common Agricultural Policy has proceeded smoothly so far. Production has not dropped from the pre-integration period. Cultivated areas of grains have even increased. The level of market prices fell nearly 50 %, but the transitional support as well as the normal EU support have kept incomes at a satisfactory level. However, the future of agriculture involves a great deal of uncertainty and this has stopped investments almost completely. Farmers are concerned about future prices, and they fear that the national support may not be permanent, and it is falling in any case. Many farmers are considering quitting production, but the lack of alternative employment causes them to stay in agriculture.

A seminar on the adjustment of new member countries in the CAP was held in Alnarp, Sweden June 6-8, 1996. This publication presents the papers on Finnish agriculture. They deal with the developments during the first year as an EU member, 1995. First, an overview is presented on the whole agriculture, followed by papers on food industries, horticulture, and the foreign trade. The adjustment of farm enterprises and environmental programs is also reviewed. A paper which was not presented in the seminar explores the trends of the structure up to 2005. Finally, the future of the Finnish agricultural policy in the framework of the CAP is dealt with. Thus, the reader has a chance to have a look at the effects of integration from various points of view.

The articles are either papers presented at the seminar or they have been slightly revised afterwards. Each author is responsible for the content of her or his paper. The editor thanks for their contributions. He also appreciates very much the valuable work done by Jaana Ahlstedt in editing the publication.

Helsinki, September 15, 1996

Lauri Kettunen

Contents

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ADJUSTMENT OF FINNISH AGRICULTURE IN 1995

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Abstract. The adjustment of Finnish agriculture to the EU membership has largely gone as was expected, except that the market prices have been somewhat lower than was forecast before joining the EU. This was partly caused by the strengthening of Finnish markka, but the prices of beef, mutton, and eggs have been clearly below the average levels in the EU. Overproduction may be one reason for the collapse in the price of eggs, but in the case of beef and especially mutton there is no excess supply that might affect the prices. Livestock production, in particular, has stayed at about the same level as in 1994. The area under cereals grew to some extent, mainly due to the considerable decrease in the required set-aside area.

Trade between Finland and the other member states increased as was expected. Especially meat imports increased considerably from the earlier levels. This was made possible by the fact that the decrease in the consumer prices (about 9 % by the end of 1995) led to an increase in the consumption of pigmeat and poultry meat. The trade in dairy products, like cheeses and yoghurt, increased as well. Some decrease occurred in the food imports to Russia and Estonia.

During a transitional period of five years a degressive support is paid to agriculture, and in the first year this was quite high. The purpose of the support is to alleviate the adjustment of farms to the toughening competition in the single market. Because of the support, farm income stayed at about the same level as earlier. Farmers managed the first year as EU members quite well, even if some of the support was postponed to be paid in 1996. Income development looks relatively good still in 1996, but in the long run the situation is likely to be much more difficult.

The first year as EU members was characterized by delays in the decisions on support, which led to uncertainty about the income development among farmers. Farmers had to learn to operate in a new bureaucratic system, but things have started to run quite smoothly. Support for the transitional period will keep the incomes at a satisfactory level, but the future involves a great deal of uncertainty.

Index words: producer prices, consumer prices, support, incomes

1. Evaluation of the effects of the EU membership

Membership in the EU changed the operational environment of the Finnish food sector completely. In the closed economy before joining the EU the price of the raw material was almost completely regulated. Producers and food industry were able to make their calculations and plans with a great deal of certainty as the price was known. In the new open economy competition has increased at all levels. The shops can buy food from many different sources, and thus the domestic food industry must be able to respond to the competition from the single market. Raw material is also available both in the domestic market and the whole EU area. Thus the prices become adjusted at many different levels, and competitiveness in terms of prices is also required at each level.

However, Finnish food sector is not yet quite in the same position as the other EU countries due to the support paid during the transitional period. The support paid to the producers, in particular, may distort the price formation. At least in principle the price paid by the food industry may be slightly below the overall level in the EU. The effects of the integration are not yet fully visible.

The effects of the EU membership are the greatest at the entrepreneurial level. Farmers make their decisions on production on the basis of the current price and support level. In this connection the profitability of production and incomes are important factors. The processing sector operates in a similar way on the basis of economic factors. Finally, products are transferred to the consumers through retail stores. In this chain the stores (wholesale businesses) play a decisive role as the food products can be bought from the open single market. Finnish food industry must be able to respond to the competition. The profitability of food industry is largely determined by the price of the raw material. Farmers, i.e. the producers of the raw material, have to adjust their prices according to the prices set by the processors.

Ultimately the ability of agricultural producers to operate in these circumstances affects the whole national economy. If farmers have to give up production, the processing sector is the first to suffer as well, and in the end this affects the whole society in the form of e.g. increasing unemployment and difficulties in the state economy, unless those who have discontinued their production are able to transfer their resources to other production sectors.

It became clear in the negotiations on the accession of Finland into the EU that the competitiveness of Finnish agriculture in terms of prices will be decisive in the adjustment into the EU. Consequently, it was important for Finland that the Accession Treaty with the EU would guarantee an adequate production volume. In this respect the outcome was satisfactory. The production quotas were set so that they allow maintaining the production at the level of 1992. The production quantities of milk and meat are about the same as earlier. The area entitled to CAP reform support is 1.6 mill. ha, which is larger than the culti-

vated area in the past few years. In 1995 200,000 ha of the maximum area remained unused.

Farmers receive support from both the EU and the national funds. The possibilities to continue production depend on the profitability of production, i.e. the economic result. Ultimately, farmers' incomes are decisive. For a few years the farmers may wait and see where all this leads to, but if the economic result remains too small, there is not reason to continue agricultural production.

In examining the adjustment into the EU, special attention should be directed to the price formation in Finland compared with the average prices in the EU, especially in the closest competing countries. Another central point to be monitored is the realization of the planned support for the part of the whole country and individual farms (different production lines and regions).

This paper presents a brief overview of the most important reactions observed in the prices, production, and in the consumer behaviour in the first year as a member of the EU. In this connection it is not yet possible to present any deeper analyses on the effects of the membership, but we are concerned with short-term reactions observed in the prices and production. Very likely the market prices have already become adjusted to the EU markets, but the production is still searching for new levels. In the long term the reactions are also going to affect the structure of agriculture, which is highly significant with respect to the costs, profitability, and the possibilities to continue agricultural production in Finland.

2. Producer prices

2.1. Producer prices of crop products

Cereal prices became very rapidly adjusted to the prices paid in EU markets. During the first week of 1995 the market prices fell to less than half of the prices of 1994. The decrease was very dramatic in the case of rye, in particular, because its target price and producer price had been clearly higher than that of wheat, which for its part had been higher than the prices of barley and oats (see Appendix).

At first the prices of the new crop were a little lower than the EU markets would have required, but they rose gradually to the average price level of the EU, as far as this can be determined due to e.g. differences in the quality.

The compilation of the price statistics changed as a result of the EU membership. The earlier statistics were based on producer prices, i.e. they indicated the prices the producers received. The statistics were made on the basis of the account prices paid to farmers, and the transportation costs were taken into account in the price. Thus the prices were so-called farm gate prices. These are

no longer recorded directly, but the prices are so-called market prices. Transportation and handling costs must be deducted from these prices before we arrive at the producer price proper.

2.2. Producer prices of livestock products

The market prices of livestock products fell to about half of the level of 1994, but the producers received support for the transitional period in the form of both additional prices and support based on the area and number of animals, and the real price paid to the producers is the sum of all these.

The first reactions to prices may be characterized as nervous (see Appendix). In the very beginning of the year the market prices of meat and eggs were clearly lower than had been expected. The producer price of eggs was as low as FIM 3/kg, whereas the average producer price in the EU is about FIM 5-5.50/kg. Before the accession the market price was about FIM 9/kg. The price varied considerably during the year. In the autumn it rose to about FIM 4/kg, but this is still lower than the average price in the EU. The low price level is mainly caused by the vast overproduction, and export markets have not helped to increase the prices.

In the beginning of 1995 the producer price of pigmeat was about FIM 7/kg, which is almost 10 % below the average price in the EU. In December 1994 the price was FIM 16/kg. By April 1995 it had risen to over FIM 8/kg, i.e. close to

Table 1. The most important market prices in 1993 and 1995 as well as estimates on the price level of 1995 made in 1994 FIM/kg (milk FIM/l).

	1993	1995 Estimate	1995
Fodder cereals	1.77	0.76	0.72
Bread wheat	2.26	0.84	0.87
Bread rye	2.85	0.91	0.89
Turnip rape	3.66	1.24	1.20
Sugar beets	0.41	0.30	0.30
Pigmeat	16.18	7.56	8.00
Eggs	8.74	6.30	2.83
Milk	2.73	2.04	1.86
Beef	23.50	15.75	14.60
Mutton	21.91	15.33	10.63
Broiler	12.19	6.55	6.07

Excl. additional price
Exchange rate for ecu = FIM 6.3 for ex ante estimates.

the average level in the EU, and since then the price of pigmeat has stayed at a relatively high level. In the EU the price of pigmeat has risen very rapidly, and the producer price in Finland has been higher than was expected.

The price of beef is slightly lower than the average price in the EU, and thus it is somewhat lower than was expected. This has been a great disappointment for the producers.

The price of the most important product, milk, became immediately established at the expected level of FIM 1.90/litre, which is close to the EU average. Thus the prices paid to the producers have been in accordance with the earlier estimates. Overproduction causes some pressures on the prices, but the export markets have been quite good and this has not caused any major pressures to the producers.

2.3. Prices of inputs

The development of the prices of production inputs must also be taken into account when examining the reactions of the production to the EU membership. The most central factor is the price of fodder, which was expected to decrease by 40 %. In the beginning of the year farmers were very disappointed as the reductions remained much smaller than this, but in the course of the year the prices decreased gradually by about 30 % so they are higher than was expected (see Appendix).

Instead, fertilizer prices fell by the expected 25 % or even more already in summer 1994. This was mainly caused by the abolition of the taxes on fertilizers, and in other respects the prices had already been close to the average level in the EU.

The changes in the value added tax (VAT) lower the input prices. According to estimates, production inputs used to include a VAT of about 7 %, which was abolished as the value added tax was extended to agriculture in the beginning of 1995. Decrease in the producer prices of agriculture has also changed the prices of production inputs within agriculture, like piglets, calves, and seeds. Now it is necessary for farmers to keep accurate accounts in order to be able to see the effects of all factors on the income formation.

3. Production

3.1. Crop production areas

The area under cultivation grew by about 125,000 ha from the previous year as the area under set-aside decreased. Set-aside was no longer mandatory to the

same extent as earlier. It has been estimated that the set-aside area required for the CAP support of the EU is about 80,000 ha, because on many farms the crop is less than 92 tons, which is the limit for set-aside.

In general the cultivated areas of all crops grew. The larger area under cultivation was used for increasing the production of both cereals and grasses. Especially the areas under rye, wheat and oil-seed plants increased from the previous year.

The area under oil-seed plants grew from 1994, although the cultivation of turnip rape has reached as high levels earlier, too. Finland would like to maintain the area under oil-seed plants at the level of 1995, but the Commission requires that it may be only 63,000 ha in 1996.

Measured as fodder units the crop was 3,109 f.u./ha, which is about 3 % smaller than in 1994. The total yield was 5,481 mill. f.u., i.e. about 4 % larger than in 1994 due to the increase in the area. The overproduction of cereals stayed at about the same level as earlier, but it is no longer as problematic as earlier, when the overproduction had to be exported for the world market price by means of national export support.

3.2. Livestock production

The environment of livestock production changed considerably as the market prices dropped in some cases to about half of the earlier level, even if support was also increased and the costs decreased to some extent.

Milk production decreased a little from 1994. The number of farmers delivering milk to dairies (i.e. producers) has been decreasing slowly, and some decrease has also occurred in the number of cows, but the increase in the average yields has kept production close to the earlier levels. Milk production corresponds quite closely to the national quota. At the end of 1994 and at the beginning of 1995 there were no quotas in force, which is considered to have increased the production to some extent in the early part of the year.

Pigmeat production fell by about 1 %. There are pressures to increase production, and, consequently, there is a shortage of piglets. According to some estimates the production is going to grow for a few years, and then it will start to decrease again. Profitability calculations indicate that the profitability will deteriorate quite rapidly, and on the basis of this the production should start to decrease already in 1996.

Beef production has decreased by about 9 %. This has been caused by the decrease in the number of cows as well as by the decrease in slaughter weights, because the earlier price differentiation for the part of the heavy animals has been abolished.

Poultry meat production has continued to grow, in 1995 even faster than before. Poultry meat market has usually been quite balanced, i.e. the production

Table 2. Livestock production in 1989-1995[1)].

		1989	1990	1991	1992	1993	1994	1995
Dairymilk,	mill. l	2,547	2,600	2,345	2,274	2,264	2,315	2,296
Beef,	mill. kg	110	118	121	117	106	107	96
Pork	"	179	186	176	175	168	169	166
Eggs	"	76	76	67	67	70	72	74
Poultry meat	"	30	33	37	36	35	39	42

[1)] The hot weight reduction of meat was abolished at the beginning of March 1990. As a result, the quantities are 3 % bigger than earlier. The prices were also dropped by 3 %. Starting from July 1, 1995 the hot weight reduction is 2 %.

has corresponded to the consumption. The increase in the consumption is probably caused by the relatively low price compared with other meats, and the tendency to favour light white meat.

In 1995 egg production grew by about 3 % despite the vast overproduction and the drop of the market prices to a level that was well below the average level in the EU. It seems that opening the borders was a tremendous shock to the producers and exports could not be made to function properly in order to balance the domestic market and raise the price to the normal level in the EU. According to forecasts the production should stay at a high level in 1996, even if reducing production would be necessary to increase the producer prices.

4. Retail prices and consumption

4.1. Retail prices

As a result of the membership in the EU the consumer prices of food stuffs have decreased, on the average, by 9 %, which is in accordance with the forecasts. According to some estimates, the prices should have dropped by 10 %. Prices fluctuate a lot more than earlier, and this makes it impossible to make any fully accurate calculations on the realization of the price forecasts. The maximum reduction in the prices was subject to the condition that there are no changes in the margins of processing and trade. This condition appears to have been fulfilled quite well.

The decrease in the prices was slowed down by the introduction of the value added tax for the part of food stuffs in the beginning of 1995. The overall value added tax percentage was 22, but in the case of food stuffs it was first 17 and it should drop to 12 in the beginning of 1998, if the decisions made so far are

Table 3. Retail prices of some products in January 1994 and January and December 1995, FIM/kg (milk and cream FIM/l).

	1994	1995 I	1995 XII	Change %
Milk	3.92	3.99	3.91	0
Cream	4.87	4.75	4.71	-3
Butter	14.88	14.02	12.12	-18
Cheese	49.54	48.55	46.96	-5
Margarine	7.93	6.81	6.54	-17
Pigmeat	42.87	35.85	32.72	-24
Beef	56.14	51.01	44.91	-20
Broiler	23.47	19.99	19.14	-18
Eggs	16.48	9.52	9.75	-41
Wheat flour	10.26	7.44	6.86	-33
Rye bread	16.57	15.44	14.99	-9
French bread	14.63	13.20	12.27	-16

Source: The Central Statistical Office, Consumer price statistics.

followed. Prior to 1995 the sales tax on food stuffs was quite complicated due to e.g. the tax reduction for primary products. Through this taxation was lowered so that the VAT percentage of certain products (especially dairy products) was close to zero, but in the case of highly processed food stuffs it was close to the overall percentage of 22. According to calculations, prior to the accession the average VAT for food was 15 %, and it has increased by 2 %.

Considerable changes occurred in the price relations, because now the VAT on all food stuffs is 17 %. The decrease in the prices of raw materials influenced the retail prices the most, but e.g. the price of whole milk, which now has remained the same as before, would have fallen considerably without the changes in the value added tax. The price of butter decreased by 20 % as a result of foreign competition. The price of cheese (Emmental in the Table) decreased very little.

Meat prices fell by 15-20 %. The price of eggs dropped as much as 40 % due to the collapse of the producer prices. The price of flour fell by about a third, and the price of bread by 10-15 %, as was expected. Compared with other countries, bread is still quite expensive in Finland.

The retail prices in Finland are at about the same level as in Germany, which is a little higher than the average level in the EU. However, in the EU countries the VAT varies from zero (in the UK) to 25 % (Denmark), which should be taken into account in the comparisons. Variations in the exchange rates naturally have a direct impact on the price comparisons. In the course of the year

Finnish markka has strengthened against all EU currencies, which has made Finland a more expensive country than earlier.

4.2. Consumption

In general the price and income elasticities of food products are relatively small, and thus even quite significant changes in the retail prices do not have any major effect on the consumption. Meat and cheese form an exception to this. The prices have changed considerably, and the consumption has reacted to the changes quite strongly. The increase in the consumption of pigmeat by 12 % can be considered to have been caused by the decrease in the price. The consumption of poultry meat also grew considerably, by 11 %, but the growth has been rapid in the earlier years, too. Instead, hardly any growth occurred in beef consumption. The demand is mainly directed to pigmeat and poultry meat.

Egg consumption grew as well (9 %), but whether this is permanent or not remains to be seen. So far egg consumption has stayed close to the level of 11 kg/capita despite some changes caused by the decrease in the price.

The consumption of dairy products stayed at about the same level as earlier, except for cheese consumption, which grew according to the earlier trend. The consumption of butter decreased in spite of the fall in the price.

Compared with other countries the consumption of meat and eggs is quite low in Finland. Consumer habits have become established over a long period of time, and they do not change very rapidly. Instead of meat Finns eat fish and drink milk. As a result, the share of animal protein in the consumption is at about the same level as in other industrialized countries on the average. Measured as energy the total per capita consumption is low in Finland (2,800 kcal or 11.7 MJ).

Table 4. Consumption of dairy products and margarine/capita in 1990-1995.

	Liquid milk litres	Butter kg	Cheese kg	Margarine kg	Butter mixes[1] kg
1990	216.0	5.5	12.7	7.6	2.2
1991	209.0	6.2	12.8	7.9	2.6
1992	208.0	5.6	13.1	8.6	2.8
1993	205.3	5.5	13.5	8.7	2.9
1994	201.1	5.4	13.5	8.2	2.8
1995e	197.7	5.2	14.4	7.8	2.7

[1] butter-vegetable oil mixes
Source: The Yearbook of Farm Statistics 1995.

Table 5. Consumption of meat and eggs in 1990-1995, kg/capita[1)].

	Beef and veal	Pigmeat	Poultry meat	Eggs
1990	21.8	33.0	6.8	11.1
1991	21.3	32.9	7.2	10.7
1992	21.1	32.6	7.4	11.0
1993	18.9	30.8	7.3	10.7
1994	18.8	29.7	7.8	10.7
1995e	19.0	33.5	8.7	11.7

[1)] Since 1990 the consumption figures for meat are about 3 % higher than earlier as the hot weight reduction was abolished. A 2 % reduction is again made from July, 1995.
Source: The Yearbook of Farm Statistics 1995.

5. Foreign trade

Very significant changes occurred in Finnish foreign trade as a result of the accession into the EU. The obstacles to the trade of food stuffs and agricultural products were abolished in the trade within the EU, and this increased the trade considerably, as was expected. The character of trade changed clearly from passive exports of excess supply to active trade. Imports naturally increased as the border controls were abolished, but Finnish enterprises also launched exports either on the basis of purely commercial expansion efforts or in order to be able to continue their production despite the reduction in the domestic demand because of the increase in imports.

Now foreign trade is largely directed to the other member states of the EU, but there is also trade with many countries outside the EU. The export of cheese extends to a very large area, and Russia provides a large area for marketing Finnish agricultural products by means of EU support. Trade with the Baltic countries is also on the increase.

The trade of basic agricultural products, like meat and dairy products, increased considerably. This was partly caused by the increase in domestic consumption, which could not be fully covered by domestic production, and partly simply by competition by increasing the selection of goods. As the border controls were abolished, it became possible to increase the trade in the EU markets for the part of products with demand potential. The wider selection of products also increases the demand. New brands of cheeses and yoghurt have come to the stores, and meat products have also been imported. There has also been exported meat available.

The exports of dairy products stayed at about the same level as earlier, even if the imports (especially cheeses and yoghurt) increased considerably. Finland

Table 6. Exports and imports of some products in 1995, mill. kg.

	Exports	Imports
Beef	4.6	5.6
Pigmeat	6.2	7.7
Poultry meat	0.4	2.1
Eggs	13.7	0.0
Butter	18.6	0.8
Cheese	29.4	6.4
Cereals	384.8	196.0

would like to continue exporting the same amounts of cheese as in the past few years, because Finnish cheeses have a very good reputation all over the world.

Intervention activity may cause some changes in the traditional conception of foreign trade. A similar intervention system based on EU regulations as in the other member states was established in Finland, and e.g. cereals are bought within this framework. So far the cereal quantities have been quite small. 100 mill. kg cereals were transferred to the intervention stocks from the national stocks, but only 4 mill. kg barley came from the markets. The payment of export support is also realized through the intervention system.

6. Income trends in agriculture

According to preliminary estimates, in 1995 farm income totalled FIM 7.0 bill. When stock compensations are excluded, the farm income amounted to only FIM 4.7 bill. However, FIM 1.4 bill. of agricultural support was transferred to 1996, and when these, as well as the stock compensations, are taken into account, the total farm income would have been FIM 8.4 bill. in 1995.

Without the stock compensations and the delays in the payment of support the farm income would have been FIM 6.0 bill. This is the same as the level used as the basis for calculating the need for agricultural support. Future income development must be estimated starting from this level. In 1996 the amount of support proper is about FIM 2.45 bill. smaller than in 1995. If the costs decrease by FIM 1.4 bill., as was assumed in the support package, the expected level of farm income in 1996 is FIM 4.9 bill. This is naturally a very rough estimate. The final outcome depends on the prices, production, and use of inputs.

The total return of agriculture was FIM 21.0 bill. The share of support (including price support) was FIM 10.2 bill. Consequently, the return proper in market prices was only FIM 10.8 bill. The costs totalled FIM 14.0 bill. This

Table 7. Development of farm income in 1990-1995, FIM mill. and as an index.

	Gross return	Total costs	Farm income	Index
1990	27,525.5	18,168.0	9,357.5	100.0
1991	25,756.8	17,785.7	7,971.0	85.2
1992	24,989.9	17,460.5	7,529.4	80.5
1993	23,494.3	17,719.7	5,774.6	61.7
1994	24,193.5	16,452.5	7,741.0	82.7
1995e	20,978.2	13,982.7	6,995.5	74.8

indicates how hopeless it would be to practice agriculture in Finland without any support.

No actual collapse occurred in agricultural incomes yet in 1995. Incomes were quite satisfactory thanks to the support and stock compensations. The number of farmers fell to some extent, which should be taken into account in income comparisons. The labour input per farmer remained the same according to estimates. In 1996 the income development will be quite good due to the support payments transferred from 1995. However, in the future the income level is going to fall, according to both the total calculation and estimates at the farm level.

7. Income estimates

Estimates on farmers' income development have been made on the basis of farm model calculations. Calculations made in the Agricultural Economics Research Institute are based on data from the bookkeeping farms. From this data various types of farm groups have been compiled using different criteria. These farm models have been used for calculating the effect of the changes in incomes and prices on income development during the transitional period. They do not include changes in the productivity or other factors.

The calculations show that the incomes of milk producers in area C stay at about the same level as earlier in the next five years, mainly as a result of the LFA support and national nordic support that are about the same during the whole transitional period (Table 8). Environmental support also contributes to the income development, but not as much as in the southern parts of the country. However, the incomes of meat producers decrease considerably without any help through productivity or other rationalization support. The incomes of cereal producers are also going to decrease dramatically.

Table 8. Examples of income development in 1995-2000.

	Area	Size	1993 FIM/farm	1995	1997 change, %	2000
Dairy farm	A1	17 cows	132,500	-17	-41	-75
Dairy farm	B	17	132,500	-10	-33	-68
Dairy farm	C1	18	138,500	+5	-8	-12
Pig farm	A	320 places	181,900	-57	-83	-156
Pig farm	C1	320	181,900	-45	-51	-62
Cereal farm	A	46 ha	105,800	-66	-78	-93
Cereal farm	B	39	89,000	-46	-56	-65

Reference: HIIVA 1995

In the case of farmers' incomes in areas A and B (Southern Finland), national support is also important. The payment of this stops in 1996 unless it can be decided in the negotiations with the Commission that due to serious economic difficulties support can be paid in the southern parts of the country in the future, too. This seems to be an absolute necessity for all farmers in these areas, and particularly important for cereal producers in Southern Finland, who seem to have no income left after the transitional period, or even during it.

8. Realization of the support

Central in the realization of the support is the transfer of some of the payments to 1996. Almost all EU support was paid in 1995, only some of the CAP support was transferred to the next year (Table 9). CAP support is a little lower than was assumed in the support calculations because of the fact that the area under cereals remained below 1.6 mill. ha, which is the area entitled to this support.

About 73,400 farms applied for the LFA support, and the amount is altogether FIM 1.61 bill. The share of the EU is FIM 439 mill. The number of applications exceeded the estimates. The Commission set the total number of units at 1.5 mill., which was exceeded by 1.9 %. The basic compensation is 180 ecus/unit, i.e. it would have been FIM 1,048 (green ecu = FIM 5.82). However, because of the excess the price of one unit was FIM 1,007. The compensations were paid in December.

Actually the environmental support is a little higher than FIM 1.4 bill., because there is FIM 300 mill. available for special programmes. However, these have not been utilized very much yet. All farms have not applied environmental support, possibly due to the costly commitments.

Table 9. The planned and realized support in 1995, FIM bill.

	Plan	Real	1996[1)]
CAP reform support	1.7	1.26	0.36
LFA support	1.5	1.61	-
Environmental support	1.7	1.41	-
National support	7.3	6.33	1.38
Total	11.9	10.61	1.74

[1)] Postponed to 1996.

FIM 1.38 bill of the national support and support for the transitional period was transferred to 1996, because agreement on the payments could not be reached early enough with the Commission.

The total amount of national support available was FIM 7.3 bill. because, in addition to the national support proper of FIM 6.85 bill., FIM 482 mill. of excess market charges collected in the past few years were returned to agriculture. Both national and EU support have been realized as planned.

Market prices have been quite close to the price forecasts. Deviations are mainly caused by variations in the exchange rates. When the estimates were made the exchange rate of ecu was about FIM 6.30, but in 1995 it was about FIM 5.6. Consequently, the market prices were lower, even if the behaviour of prices is not quite uniform with the markets. The price of beef, for example, should have been higher than it was. Cereal prices also seemed too low compared to the prices in other EU countries. Instead, the producer price of pigmeat followed quite well the variations in EU prices.

Some losses to the farmers incurred from the fact that the support from the EU is paid using a lower exchange rate for ecu than was used in the calculations in 1995.

9. Investments

Agricultural investments decreased in 1991 and 1992 to about half of the level of the end of the 1980s. There are no statistics available from last year, but no major changes are likely to have occurred. Tractors were bought a little more than in 1994, but the level of sales is still very low, and building investments have probably not increased. Farmers are still very cautious.

Farmers' have been asked about their willingness to continue their production several times. The inquiries indicate that the number of farms will continue

to decrease, but this is a normal trend that has been going on for some time. The farm size grows and, at the same time, production is stopped on small farms.

According to interviews conducted by KUHMONEN (1995), 21 % of farmers plan to stop their production within the next five years. Only 8 % intend to expand agricultural production, and 11 % plan to develop some other forms of rural industries.

Only 3-7 % of the bookkeeping farms plan to discontinue their production, and half of the farms intend to expand the production. These farms are larger than the average and very well managed, so that this is understandable. According to the study by Kuhmonen, too, farms that plan to continue or expand their production are clearly larger than the average.

According to these studies, investments seem to decrease considerably compared with the past few years. Probably the situation still involves so much uncertainty that farmers consider it best to wait and see. Investments seem to remain below the level that would be needed to maintain the production capacity at the present level.

10. General observations on EU membership

Now that a year and a half have gone since joining the EU, the difficulties of the first days and weeks seem to be behind us. Looking back, the adjustment into the EU seems to have gone relatively well. However, problems came up during the whole year of 1995. Details of the Accession Treaty were negotiated on throughout the year, and decisions on many of these were made perhaps later than was expected. The Commission did not manage to deal with the issues as quickly as Finns had expected. Consequently, various kinds of compensations to farmers were delayed, especially the payments of the national support. Farmers had some difficulties with their debts, but it seems that serious problems were avoided by means of special arrangements.

The schedules used in the EU do not suit the nordic conditions in Finland very well. Sowing reports should have been filed by May 15, but this is very early even in normal years, and as the spring of 1995 was exceptionally late, June 15 would have been a more appropriate deadline. Farmers were annoyed by all the new regulations, but with some patience everything went quite well after all.

The first year Finland was a member of the EU was a busy time for the administration of agriculture. An enormous number of farmers' applications had to be processed, but the administration managed the task very well. Local administration was used to this kind of procedures during the national agricultural policy, too, even if the issues were now completely different. The number of personnel has stayed the same as earlier, except in the central administration,

where it has been necessary to increase the number of staff. One new issue was the establishment of the intervention unit, but most of the staff came from the Ministry.

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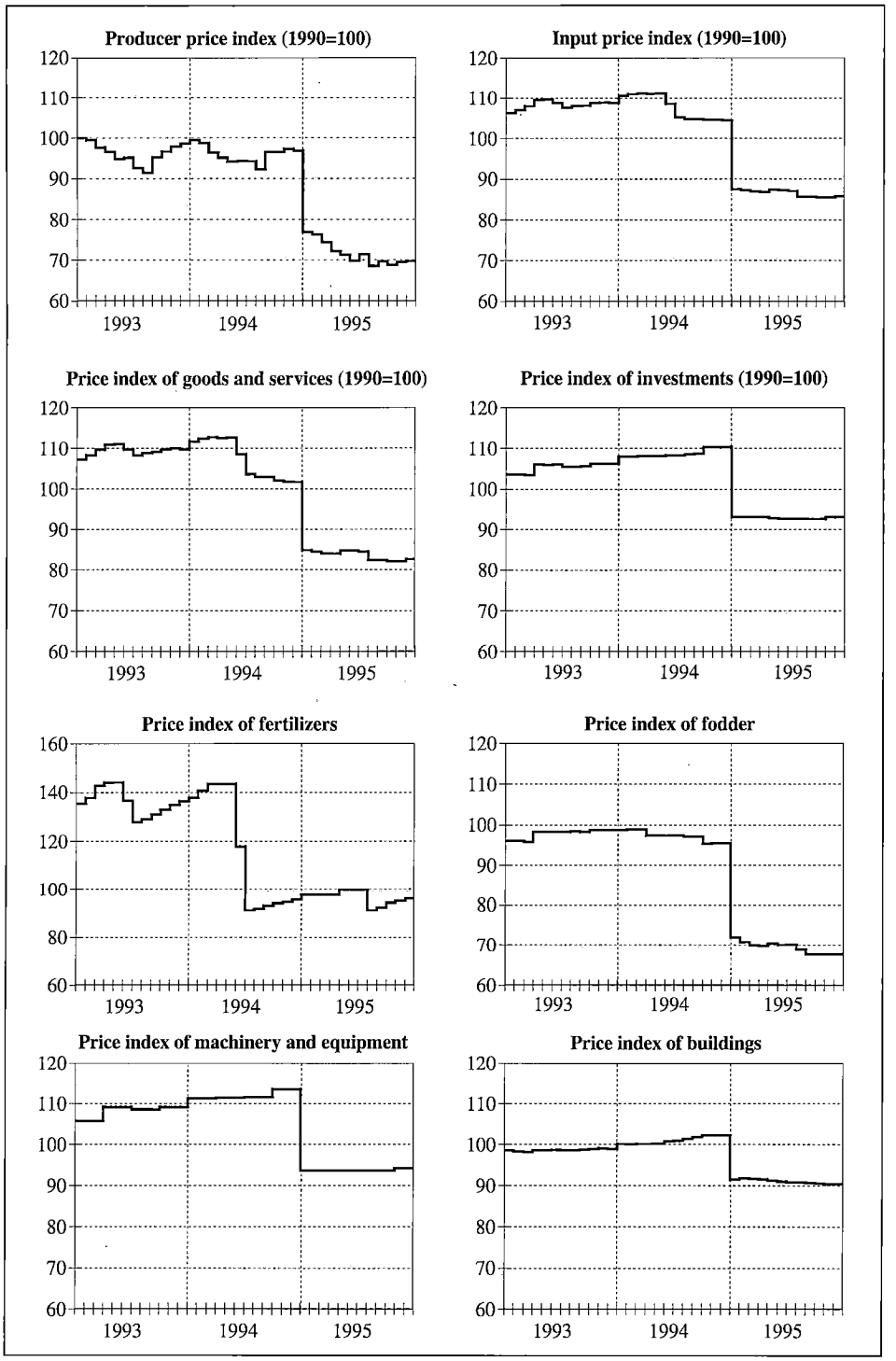
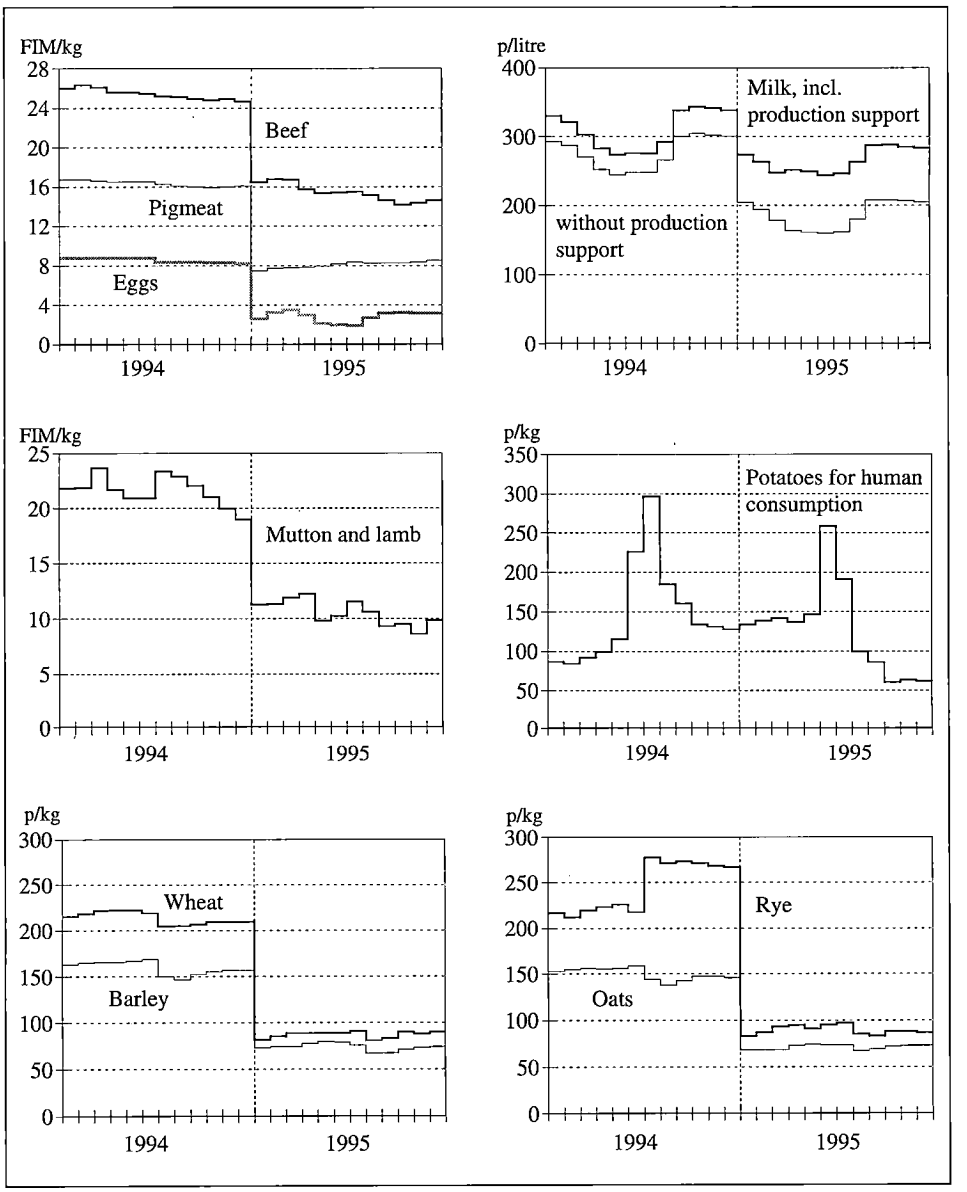
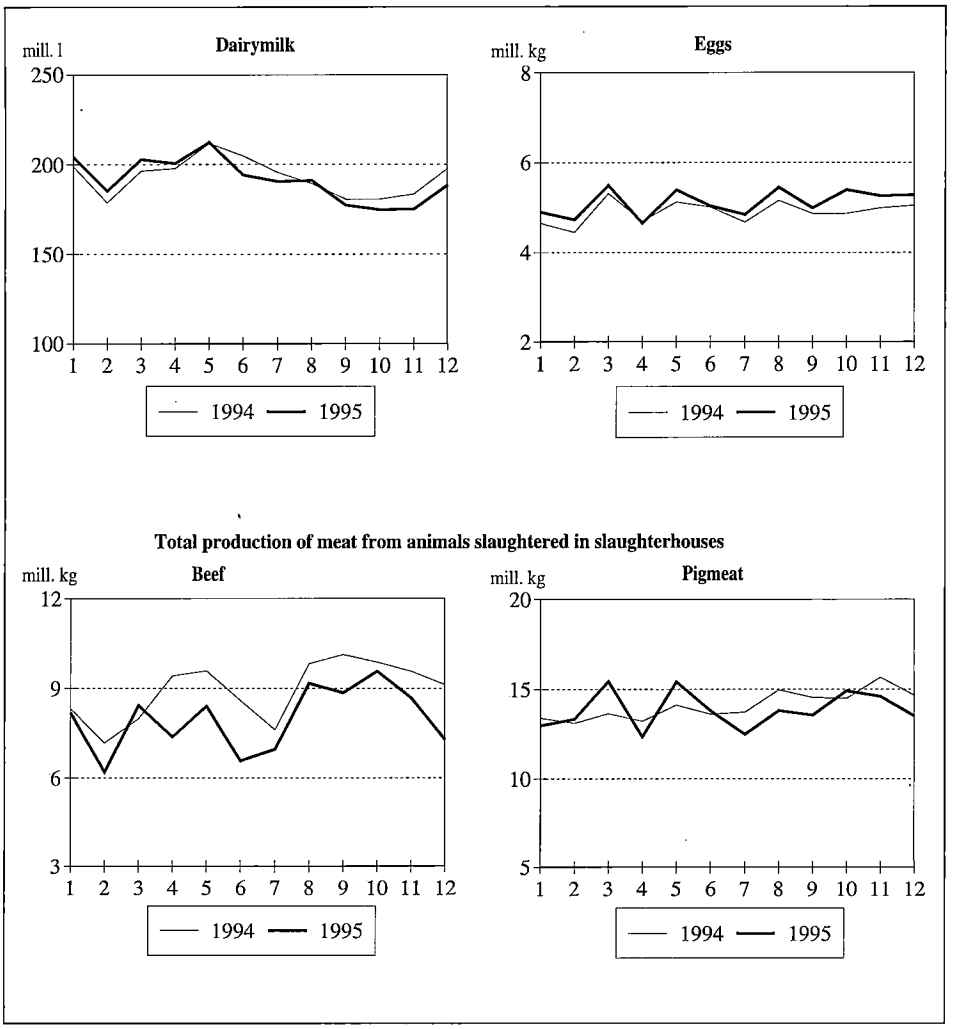
Appendix 1. Agricultural price indices.



Appendix 2. Market prices.



Appendix 3. Production of milk, eggs and meat.



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CHANGES IN FOREIGN TRADE IN THE FIRST YEAR IN THE EU

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Abstract. Membership in the European Union caused dramatic changes in the Finnish foreign trade. Obstacles to trade between Finland and the other member states were abolished in the beginning of 1995, and EU regulations started to be applied in the trade with the third world countries. The possibilities of domestic production are largely dependent on the competitiveness of the Finnish food economy in relation to the other member states. On the other hand, export support to agriculture is now paid by the EU, and thus national interests for restricting production were removed. Export markets grew, and they pose a new challenge to the Finnish food industry.

The effects of the integration have primarily been evaluated from the viewpoint of the survival of domestic agricultural production, but the development of the foreign trade also offers a very interesting field of research. It is one of the most central factors related to the EU membership, which should result in trade creation and thus increase welfare among the trading countries. It also involves trade diversion towards the integrating countries.

The trade statistics of the first year indicate that the trade between Finland and the EU has increased, especially for the part of meat. This was partly caused by the increase in the consumption as a result of the decrease of about 9 % in the retail prices. This made it easier as well as necessary to import meat to meet the demand. Denmark has been the most important importing country. Prior to the EU membership meat was exported every year. This continued in 1995, but the quantities were a lot smaller.

The consumption of dairy products, like cheeses and yoghurt, grew as well. Cheese imports increased, especially from Denmark and Sweden. Yoghurt was mainly imported from Sweden. There was cooperation between the Swedish Arla and Finnish Valio already before the EU membership. Now this has changed into competition involving powerful advertising campaigns. French yoghurts are also striving to get to the Finnish markets. Imports have primarily resulted in an increase in the selection, which in turn increases the demand. The quantities of exported dairy products were about the same as earlier. Cheese exports, in

particular, have established their markets both in the EU and in other countries, and the membership in the EU is not expected to cause any changes in these.

Imports of bread cereals increased considerably in 1995. It is not quite clear, however, whether this is a result of the EU membership or whether it has been caused by some kind of market difficulties in Finland. No major changes have occurred in cereal production, which means that there is still overproduction of cereals in Finland. Barley was exported as earlier, but the exports of oats have remained small, considering the need.

The welfare effects of the EU membership have not been studied very much yet. Preliminary estimates on the increase in the consumer welfare seem to have been realized, because the consumer prices decreased according to the forecasts. However, agricultural production has not decreased as was forecast in some models, because the support paid to farmers has exceeded the expectations. So far the losses to producers have been minimal. The welfare losses of taxpayers have increased due to the increase in the support and the membership fee of the EU.

Index words: agricultural trade, integration, trade creation, trade diversion, welfare estimates

1. Change in the operational environment

Before the membership in the EU, the Finnish foreign trade was typical for a closed economy. Imports were regulated by means of import levies, duties, and quotas. Exports were supported through various kinds of subventions, and a license from the authorities was required for exports. This concerned raw material exports, in particular. Imports of highly processed products from the EU countries were somewhat less regulated, but due to import levies the prices of imported food products rose at least to the price level of the domestic products.

Exports of Finnish agricultural products consisted mainly of surplus exports. Some decades ago this may have been an important source of foreign currency income, but for a long time the world market prices have been so low that in practice the exports have been completely unprofitable. However, exporting surpluses has been necessary in order to maintain the domestic price level. As the production of almost all products exceeded the domestic demand at the set price level, supporting exports was the cheapest solution to balance the markets.

Membership in the EU resulted in very profound changes in the Finnish foreign trade. All obstacles to the trade between the member states were abolished immediately in the beginning of 1995, and EU regulations came into force in the trade with the third world countries. Finland no longer needs to support exports, as the EU carries the responsibility for this. It is now possible to

practice active foreign trade, as far as this is profitable in the single market prices and with the current export support. The authorities no longer aim at restricting production because of surpluses, even if this might be necessary due to the national support. At least from the viewpoint of the employment policy the national special support paid in Finland is well justified. Within the whole EU area restricting overproduction is necessary, but the Finnish government will hardly take any initiatives on this.

The reason for joining the EU was to increase welfare through growth in the trade. However, each country should specialize in the production of the products for which they have the best possibilities. In the first place this concerns the national economy as a whole. Transferring resources from agriculture to other sectors might be recommendable in the case of Finland. European integration is not, however, intended to be this kind of total integration, but agriculture has a special position in it. By means of production quotas each country is guaranteed a certain level of production, even if this would not be ideal with respect to the idea of 'pure' integration.

Agriculture involves many other than purely economic factors, which are used as arguments in justifying the special position of agriculture, even if many economists have called these arguments into question. However, they are mostly based on every-day realism. It is desirable to maintain the population in all parts of the country, and factors related to regional policy offset the purely economic considerations. Consequently, at least for the time being Finland produces the same amount of agricultural products as prior to EU membership. How long this will continue can only be surmised, especially as all facts are not even known yet.

Despite the various kinds of restrictions, membership in the EU resulted in very significant changes in the foreign trade of food products. In the long run this will affect the whole food sector. In terms of scientific research this is an extremely interesting situation that attracts the attention of researchers and that can be studied in many different ways. It may be asked how the trade is going to change for the part of the member states and with respect to the third world countries, how much the trade will increase, how well Finnish exporters have succeeded in the new situation, and what the benefits of integration are from the viewpoint of producers and consumers. Classic examples of the effects of integration are trade creation and trade diversion. In this connection it is impossible present any extensive account of all these issues, because there is not yet enough statistical data available. The foreign trade statistics for 1995 are not yet completed, and thus it has been necessary to use a shorter period of time. However, this should have no major impact in terms of the general conclusions. More detailed comparisons of the quantities can be made in a few months. In this paper we shall concentrate on the changes in the trade flows, quantities, and prices.

2. Effects of integration on trade and welfare: analytical background

The traditional tools for analyzing the effects of market integration are the concepts of trade creation and trade diversion known from the literature on customs unions (NORMAN 1989). In trade creation lower trade barriers between countries generate more trade displacing sales previously internal to the newly associated country. In trade diversion, lower trade barriers divert trade from third countries to the members of the custom union. Trade creation can also occur if the decline in prices stimulates consumption, or if the custom union's common tariff against third countries is lower than one of the partner's pre-union tariff.

An example of the effects of integration on trade and on the welfare in the partial equilibrium framework is presented in Figure 1. Two different situations before the accession are considered: (a) Finland (F) imports a portion of domestic consumption from the world market at P_W levying a tariff which is the difference between the domestic price (P_F) and the world market price; (b) Finland exports surplus production to the world market covering the price difference by means of an export subsidy. In Finland, examples of case (a) are fruit and vegetable products, whereas case (b) is relevant for most livestock products. It is assumed that the accession of the new country does not affect the price level of the EU.

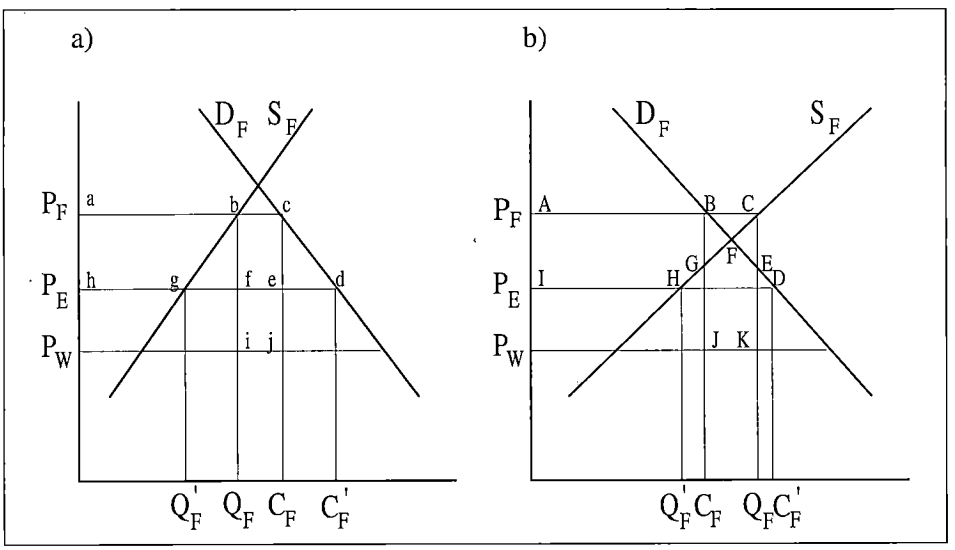

Figure 1. The effects of integration on trade and welfare: (a) importing country; (b) exporting country.

In case (a), domestic consumption is C_F, production Q_F, imports C_F-Q_F, and tariff revenue area *bcji* before integration. After the EU membership, domestic consumption increases to C_F', increasing consumer surplus by *acdh*. Domestic production falls to Q_F' reducing producer surplus by *abgh*. Imports from the EU are C_F'-Q_F', but now no tariff revenue is collected. Thus, the net effect on welfare is *bgf+ced-efij*, which can be positive or negative. The gains arising from trade creation and trade diversion is equivalent to part of the tariff revenue lost.

In case (b), consumption rises by C_F'-C_F, increasing consumer surplus by *ABDI*. Production falls by Q_F-Q_F' and producer surplus falls by *ACHI*. Trade changes from exports of Q_F-C_F to imports of C_F'-Q_F'. Government revenue rises by the amount of export subsidy previously needed (*BCKJ*), and the net economic welfare increases by *BFG+CEF+DFH+EFGJK*.

The basic framework becomes different if, as in Finland, different forms of support are directed to agriculture for ensuring the volume of domestic agriculture and farm incomes after the accession to the EU. Let us consider the effects of production subsidy in Figure 2, where it is assumed for diagrammatic simplicity that the subsidy leads to the volume of production that equals to the volume before the EU membership.

The subsidy (P_F-P_E) shifts the supply curve downwards (S_F'). Domestic production and producer surplus do not change. In part (a) consumer surplus increases by *acdh*. Government revenue falls by *bcji* (tariff revenue lost) and by

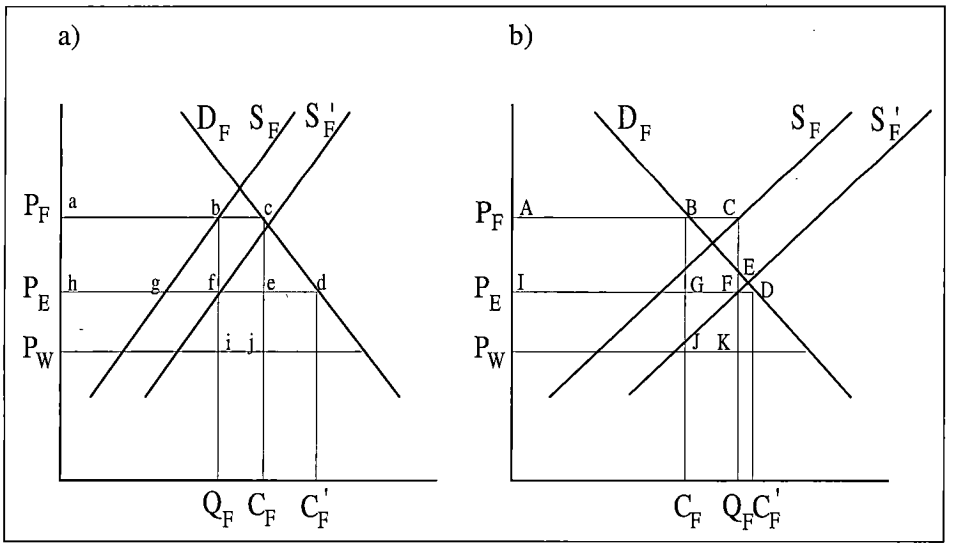

Figure 2. The effects of integration when production subsidies are used: (a) importing country; (b) exporting country.

aceh (production subsidy). The net effect on welfare is *ced-efij*, i.e. a portion of the positive effect of trade creation is lost compared to Figure 1. In (b) government revenue rises by *BCKJ* (previous export subsidy) but, at the same time, falls by *ACFI* (production subsidy). Thus, the net effect on government revenue can be positive or negative. In this case, the overall welfare rises by *DEF+BEKJ*.

There are several well-known limitations in the procedure employed above. Compensating and equivalent variation would be more appropriate techniques than consumer surplus calculation when static effects of integration are analyzed. A static single market analysis ignores the interactions within the food chain and between the food sector and other sectors of the economy, and it does not include the costs of adjustment to trade shocks (e.g. unemployment). This kind of analysis also ignores factor mobility between countries. Furthermore, the analysis of intra-industry trade needs more sophisticated methods.

If markets are imperfectly competitive, additional effects come into play. Today, a large and increasing proportion of international trade in the food sector is in processed products, and these markets can be described as imperfectly competitive. For example, SMITH and VENABLES (1988) argue that trade barriers lead to market segmentation in which firms can set some of their strategic variables at the level of national markets, while other variables are chosen at the world level. Integration changes the degree of market segmentation and the nature of the strategic interactions between firms in different countries. Furthermore, the general equilibrium model of HAALAND and NORMAN (1992) is based on the Cournot competition with differentiated products and pre-integration segmented markets in which firms can charge higher prices at home than abroad due to the larger market shares in the domestic markets.

At the micro level, it can be seen that market integration results in lower trade costs, more aggressive competition, and lower unit production costs (EMERSON et al. 1988). In addition to the abolition of national tariffs and import quotas, lower trade costs will result from the reduction of border controls and the harmonization of product standards. Lower trade costs will promote exports and automatically lead to more aggressive competition. The effect can be significantly greater if the possibilities of the dominant firms to exploit their large market shares in pricing on the domestic markets are no longer possible. Average production costs will be reduced, for example, if high-cost producers will lose market shares due to increased competition, or if increased competition increases the efficiency of production.

Further changes can result from integration if the increase in the market size induces economies of scale, or if there are changes in macro-economic policy. Dynamic welfare gains from integration can arise if liberalization induces capital formation and raises output more than static effects alone would predict (BALDWIN 1992). In this context, analyses need to operate at the level of general equilibrium. Some industries are expanding and some are getting smaller, so

that additive effects result from new allocation of recources between industries. Similar dynamic gains can arise, for example, from increased spendings on R&D or other factors of productivity growth as a result of increased competition.

3. General features of the change in the foreign trade

Membership in the EU was expected to have a major impact on the foreign trade of Finnish agricultural products and foodstuffs. Imports of agricultural products grew, but the decrease in the prices led to an increase in the consumption. This made some room for imported products, and the need for exports did not grow very much.

After significant changes in the market environment the adjustment to the new situation takes some time, and during the first year new models of operation in foreign trade were still searched for. This concerns exports, in particular, where the exports of surpluses were replaced by a new model based on market factors, even if the supported exports will continue to some extent as EU members as well. There are certain expectations related to the increase in the imports both in the trade and among consumers.

Even if some general trends in the development of foreign trade for the part of agricultural products and foodstuffs can be observed already after the first year as EU members, more detailed view on the trade flows in Finnish foreign trade as a member of the EU can only be obtained after a longer period of time. Increase in imports causes pressures for exports, because the markets lost in the own country must be replaced by exports. Future development of foreign trade also depends on the development of domestic production and competitiveness, as well as consumer behaviour and increase in the consumption.

In the first year in the EU the foreign trade of Finnish agricultural products and foodstuffs was characterized by an increase in imports and a decrease in exports. The increase in imports as the borders were opened and restriction on imports were abolished was as expected. Exports to Russia have declined, which might be considered an example of trade diversion, but this may also have been caused by the increase in the restrictions to the trade to Russia. These factors will not be analysed any further in this paper.

The first year in the EU also increased the number of trading partners in foreign trade. Because very little foodstuffs were imported prior to the EU membership, the increase in the number of trading partners was a natural consequence of the increase in the trade itself. As could be expected, the increase has mainly occurred in the trade from other EU countries, i.e. for this part there has been trade creation. Until now the trade was mainly conducted with the closest neighbours, except for cereals, which were imported from the USA and Canada, too.

Table 1. Meat imports in 1994 and 1995 (1,000 kg).

	1994	1995
Beef	4,606	5,617
Pigmeat	1,506	7,673
Mutton	184	727
Poultry meat	478	2,107
Other meats	35	379
Processed meats	72	3,052

Source: Foreign Trade.

In 1995 meat imports grew the most (Table 1). The share of imported meat (about 20 mill. kg) in the total meat consumption in Finland is about 7 %. Meat imports consisted mainly of pigmeat. Even if the number of trading partners grew, imports from Denmark accounted for over a half of the total meat imports. Except for mutton, the increased imports did not cause any problems in the domestic meat markets. The domestic beef supply decreased in 1995, and thus there were no pressures to increase exports. The decrease in the consumer price of pigmeat caused a 12 % increase in the consumption.

In the case of dairy products, the most significant change was the increase in the imports of yoghurt, but the imports of cheese increased as well. Decrease in the consumer prices increased the consumption of eggs, which reduced the need to export them. The most important export country for eggs is Sweden, and Russia comes second. In terms of exports the difficulties were the greatest in the case of cereals.

The effect of the membership in the EU on the prices of imports is more difficult to find out, because earlier the quantities were so much smaller and the change from strongly regulated imports to total abolition of all obstacles was so dramatic. The prices of imported foodstuffs decreased from the viewpoint of the processing industry, trade, and consumers as a result of the abolition of import levies on imports from the EU countries. For example, in 1995 the average import price for pigmeat from EU countries was 16 FIM/kg. In 1994 the import price of pigmeat at the world market price was 12 FIM/kg. In addition, the expansion of imports from mainly highly specialized products to bulk products has decreased the average import prices of some product groups.

In the following a more detailed study of the foreign trade of agricultural products and foodstuffs for the part of certain agricultural products is presented. The products included are cereals, cheeses, yoghurt, mutton, and some processed meats. It should also be noted that prior to EU membership all foreign trade was documented. Joining the EU abolished border controls and caused changes in the compilation of the statistics on foreign trade.

4. Foreign trade of some products

4.1. Cereals

Annual variations in the weather conditions influence the level of the foreign trade of cereals in Finland. The self-sufficiency in fodder cereals, i.e. oats and barley, has usually been exceeded, instead, at times it has been necessary to import bread cereals, i.e. wheat and rye. In 1995 Finnish cereal trade was characterized by an increase in imports and a decrease in exports. The imports of wheat have been the greatest, but proportionally the most significant increase occurred in the imports of rye. In the domestic market there has been a slight shortage of supply for the part of these products.

Earlier most of the wheat came from the USA and Canada (95 % in 1994), but in 1995 only 3 mill. kg was imported from outside the EU countries. In 1995 the most important countries from where cereals where imported were Germany and Sweden, which covered about 90 % of the cereal imports to Finland. Thus a shift to the EU countries can be observed in the trade of cereals (Table 2). For this part the trade creation and trade diversion have become realized as could be expected according to the theory.

In 1995 the production of bread cereals exceeded the yield of 1994. Thus the increase in cereal imports in 1995 cannot be explained by a decrease in the domestic production. The main cause was that for some reason the entrance of the domestic crop of 1995 to the markets was delayed. The increase in imports can be considered to indicate that the markets function quite well, i.e. the reduced supply of domestic cereals was covered by increasing imports by a corresponding amount.

Earlier the Finnish Grain Board alone was responsible for the foreign trade of cereals, in addition to the storage. Now cereal exports are being carried out by private businesses, and private mills also act as importers according to their own needs.

Table 2. Imports of cereals to Finland in 1994 and 1995 (mill. kg).

	1994	1995		1994	1995
Wheat	77.0	131.6	EU-15	16.0	192.4
Rye	10.6	61.4	East. Europe	3.3	0.6
Barley	4.9	1.0			
Oats	..	2.0	Other countries	73.2	3.0
Total	92.5	196.0		92.5	196.0

Source: Foreign Trade.

Table 3. Exports of cereals (mill. kg) in 1994 and 1995.

	1994	1995		1994	1995
Wheat	54.7	8.4	EU-15	11.7	91.5
Barley	365.4	271.1	East. Europe	89.5	3.1
Oats	567.0	105.3	Other Europe	51.1	114.9
			Other countries	834.9	175.3
Total	987.1	384.8		987.2	384.8

Source: Foreign Trade.

In 1994 987 mill. kg cereals were exported, part as food aid. In 1995 the cereal exports amounted to only 385 mill. kg. The exports of oats have decreased the most (Table 3), but in the case of barley the quantities are about the same as earlier. Entering the markets has been very slow in the case of oats.

In 1995 the exports to the other EU countries grew. Exports were mainly directed to Denmark and Germany, but Norway was still a more important export country in Europe, and the exports grew for the part of both barley and oats. Cereal exports to the Near East, which are important for the part of barley, in particular, declined in 1995, and so did the exports to the USA. In 1994 the share of the USA of the oats exports was 97 %. In 1995 there were no exports to the USA. It is not yet known whether the reason is to be sought among the Finnish exporters, or whether this has been caused by the decrease in the interest towards Finland in the USA now that Finland is a member of the EU. Cereal exports to Eastern Europe declined as well.

4.2. Livestock products

4.2.1. Yoghurt

In the case of dairy product markets, the liberalization of trade and trade creation have been the most clearly visible in yoghurt sales. Earlier hardly any yoghurt was imported, but in 1995 the imports totalled 12.5 mill. kg (Table 4). Because the domestic production has stayed at the same level as earlier and no major changes have occurred in exports, the consumption must have increased by about the same amount as imports.

Due to the shift to value added taxation, the price of milk raw material paid by the processing industry did not decrease when Finland joined the EU. However, the first year in the EU brought along some changes in the prices in the dairy product sector, too. The increased imports and competition lowered the

Table 4. Imports and exports of yoghurt in 1994 and 1995 (1,000 kg).

	1994	1995
Imports	337	12,473
Exports	9,575	11,249

Source: Foreign Trade.

price of yoghurt. The average import price of yoghurt was 5 FIM/kg. The competitive situation is well illustrated by the fact that the retail price has been about the same.

In practice almost all yoghurt imports have come from Sweden. Entering the markets was realized by making the brand name Arla known in Finland by means of a conspicuous advertising campaign, and the price was also used as a means of competition. Correspondingly, Finnish Valio has spent a lot of resources in order to take over markets in Sweden. Very little yoghurt has been imported from the other EU countries. From France the imports were only 3,000 kg, and a little more came from Holland and Germany.

A slight shift has occurred in yoghurt exports. Earlier more than 80 % of yoghurt exports went to Eastern Europe, mainly Russia. In 1994 9.5 mill. kg yoghurt was exported, and in 1995 the exports were 11.2 mill. kg. Decrease has occurred mainly in the trade to the east. Exports to Sweden, the share of which in yoghurt exports is 48 % in 1995 increased the most. The markets were established already in 1994.

4.2.2. Cheeses

In 1994 the share of imported cheeses in the total Finnish cheese consumption was 5 %. Despite the increase in the imports from 3.5 mill. kg in 1994 to 6.4 mill. kg in 1995, the share of imported cheeses in the total consumption was still under 10 %. Cheese consumption has been on the increase in Finland, and in 1995 the growth was about 0.8 kg/capita. It seems that the imports of new types of cheeses increases the consumption.

Membership in the EU did not cause any changes in terms of the trading partners in cheese imports, but there was some increase in the quantities (Table 5). Finland imports cheeses mainly from Denmark, and the share of this in the total cheese imports was 34 % in 1995. Sweden is also an important import country, and its share of cheese imports was 24 %. Growth in the import quantities has occurred mainly in the imports from these two countries.

In the foreign trade of cheeses exports have exceeded imports. About 30 % of the domestic production has been exported. In 1994 cheese exports amounted

Table 5. Cheese imports in 1994 and 1995 (1,000 kg).

	1994	1995
Total	3,497	6,386
Denmark	1,001	2,162
Sweden	584	1,564
Germany	563	809
France	506	581
Great Britain	390	326
Holland	245	529

Source: Foreign Trade.

to 27.5 mill. kg, and no major changes in the export quantities have occurred in 1995. Cheese exports have differed from the exports of agricultural surpluses in that it has partly been based on export contracts with the USA and the EU within the framework of quotas.

4.2.3. Mutton

With respect to the meat markets the membership in the EU has affected the markets of mutton the most. In Finland the consumption of mutton is very low, only 0.3 kg/capita a year, which means that the markets are small and very sensitive to changes in the price. The production of mutton has been about 1 mill. kg. So far the imports have been restricted, and the purpose of imports has mainly been to cover the consumption peaks. As the borders were opened in the beginning of 1995 the import quantities increased considerably. Even if there are no exact data available on mutton imports in 1995, they are estimated to have risen to about 0.7 mill. kg. In the previous year only 0.2 mill. kg mutton was imported. Most of the imports come from New Zealand. Within the European Union mutton is a product with a shortage of supply, and New Zealand has an import quota for mutton in the European Union. The increase in the imports to Finland has occurred within the framework of this tariff quota. In 1995 imports started to come from the EU countries as well, but the share of this was only about 10 %.

In 1995 the average import price for mutton was 24 FIM/kg. The market price for Finnish mutton was as low as 10 FIM/kg, and the imports have been blamed for this. About the same amount of additional price as well as support according to the number of animals has been paid to farmers. It is possible that this support has mainly gone to slaughterhouses and trade. In the retail the price of domestic mutton has clearly exceeded that of the imported meat.

4.2.4. Processed products

Unlike in the dairy sector, in which the main emphasis in imports has been in highly processed products like cheeses and yoghurt instead of e.g. butter, in the case of meats mainly raw meat has been imported. Very little processed meat products have been imported to Finland, but the relative growth has been more dramatic than in the case of raw meats.

The imports of processed meat and sausages began to increase more clearly in autumn 1995, and the current year will show at which level the imports will become established. Imports of sausages and other similar products totalled 0.9 mill. kg, and most of this came from Denmark. In 1995 the imports of other meat products (e.g. ham) were altogether 2.2 mill. kg, and 60 % of this came from Sweden.

80 % of the exports of both sausages and other processed meats has been directed to Eastern Europe, mainly Russia. The exports to Russia declined in 1995. There have been very little exports to the EU area, and only a slight increase could be observed in 1995, mainly in the exports to Sweden.

5. Intervention activity

As part of the shift to the common agricultural policy of the EU, an intervention unit was established in the beginning of 1995. Its main tasks are the administration of export support and purchases to the intervention stocks. Export companies need an export certificate from the intervention unit for supported exports of agricultural products directed outside the EU and for receiving export support. Monitoring the exports and export support became even more important when the application of the GATT agreement began in the beginning of July, 1995.

In 1995 export support totalled about FIM 314 mill., and most of this was used for supporting the exports of cereals, cereal products, and dairy products. Increase in the consumption of pigmeat and eggs reduced the need for exports.

The purpose of the intervention system is to be able to start purchases if the producer prices decrease below the set threshold values. The purchases to the intervention stocks remained smaller than was expected. For the part of cereals this was caused by the fact that cereals entered the markets very slowly. 104 mill. kg barley was bought to the intervention stocks, and 100 kg of this came from the State Cereal Storage Centre, which until 1995 had been responsible for the foreign trade and storage of cereals.

In addition to the public intervention stocks, support to private storage may be utilized if necessary for seasonal variation and dealing with temporary market

disturbances. In Finland private storage has been utilized in the case of pigmeat and lamb.

6. Estimates of the welfare effects

It has been estimated that most of the immediate economic effects of the EU membership result from the integration of Finnish agriculture and food sector into the European single market. In the case of almost all other important sectors the integration had in practice been realized prior to the membership.

Consequently, numerous studies on the integration of agriculture have been made in the 1990s. Most of the researchers have been analyzing the effects of the EU membership on the profitability of agriculture and incomes of farms. Very few quantitative ex ante studies on the welfare effects of the EU membership have been presented.

In the study by VAITTINEN (1992) an attempt was made to estimate ex ante the changes in both the behaviour of producers affecting the supply and the demand behaviour of consumers if agricultural policy of the EU were applied in Finland. The change in the supply was estimated by means of supply elasticities obtained from the parameters of the estimated translog model. Consumer behaviour was estimated by means of the AIDS demand system. Finnish food production was estimated to fall to about a half from the earlier level already in the short run, and Finland would become a net importer of foodstuffs. The food processing sector and trade were assumed to be fully competitive, and thus the changes in the prices of agricultural products would be transferred in full to the consumers. As a result of the partial equilibrium model, the consumer surplus was estimated to grow by FIM 6 bill., the producer surplus was estimated to decrease by FIM 7 bill., and the State expenditure was estimated to fall by FIM 7.1 bill. Consequently, the net benefit would be FIM 6.1 bill., i.e. about 1.4 % of the GDP. In retrospect, it can be noted that the model forecast quite well the decrease in the consumer prices of foodstuffs (the estimate was 12.9 %). Naturally the support paid to agriculture could not be taken into account, and thus both the losses to producers and the benefits to consumers were clearly overestimated.

In the general equilibrium model by TÖRMÄ and RUTHERFORD (1993) the support to Finnish agriculture was taken into account. It was assumed that direct income support from the EU would be FIM 4 bill. a year. Cereal production was forecast to stop completely in the long run, pigmeat production was forecast to decrease by over 40 %, and milk production by about 30 %. Consumer prices were estimated to fall by 2 %, and the net increase in the welfare was estimated to remain below 1 %.

Now that there is more and more data available on the changes in the foreign trade, prices, production, and consumption, the effects of the EU membership can be evaluated ex post. The simplest method is to compare the situation as EU members to the situation before the membership. The producer price level of Finnish agriculture decreased considerably in the beginning of 1995, but the incomes of agriculture and the production stayed at about the same level as earlier as a result of various forms of support. Thus there were hardly any welfare effects due to resource allocation. The most significant changes were the decrease in the consumer prices and increase in the consumption. For example, the retail price for pigmeat decreased by 22 % and that of broiler by 16 %, and the consumption increased by 13 % and 12 % respectively. To counterbalance the growth in the welfare of consumers the burden to the taxpayers caused by agriculture increased slightly in 1995, but this is estimated to decrease very rapidly (see KETTUNEN and NIEMI 1995).

In the long run the welfare effects of the integration of Finnish agriculture into the EU are related to, among other things, the changes in agricultural support and increasing competition in the food chain. The level and continuation of national agricultural support involve a great deal of uncertainty. There is also uncertainty relating to the agricultural policy of the EU due to e.g. the possible eastern expansion. Even if we may be able to keep domestic agricultural production at about the current level, the imports of especially processed foodstuffs continues to increase in the future. Increasing competition affects the competitive environment of the Finnish food processing sector. If the companies have earlier been able to utilize the market forces made possible by the strong concentration of the field, membership in the EU may lead to an increase in the welfare through this.

However, in order to evaluate the effects of the integration on the trade and welfare, the effects of the EU membership should be separated from the other potential factors, e.g. the GATT agreement, fluctuations in the world market prices, and changes in the real incomes and consumer habits. Consequently, an alternative scenario should be estimated alongside the real development trend to indicate the situation without the EU membership. This approach is a challenge to the research in this field, because it requires detailed identification and modelling of the effects of the EU membership.

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ADJUSTMENT OF THE FINNISH FOOD INDUSTRY

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Abstract. Nearly the first one and a half years in the EU is now behind us. This period of time has meant a considerable change for the Finnish food industry. At this moment it is not, however, possible to evaluate exactly all these changes because of several time lags in statistics. Therefore this article attempts to only briefly describe the overall situation, mainly making an overlook on the annual reports of the principal Finnish food firms. In addition, changes of food foreign trade and state aid to food companies are briefly discussed. Main emphasis is given to the food industry closely related to Finnish agriculture.

Even if the Finnish food firms managed survive the first year in the EU, it does not indeed mean that the future prospects are very promising. Major problems of the Finnish food industry have been the relatively small size of processing plants and the high fixed costs. The food industry has, however, been restructured in recent years, and is now much more competitive than in the beginning of this decade. In the coming years food industry, like other industries, requires low price and cost development, in order to successfully continue the many structural improvements that are still going on. The first year of the membership has proved that the support measures included in the Accession Treaty for the food industry for the five year transition period, do not considerably help the adjustment process of food firms.

Many studies and surveys indicate that Finnish consumers rely on the products of the domestic origin. Finnish food is high in quality, and there are no problems with animal or plant diseases. Food firms are also making extra efforts to maintain and even improve this situation. The high quality of Finnish food is the best competitive advantage both in the domestic market and in the efforts to market Finnish products in the single market of the EU as well as outside the EU - even if this is a same strategy as in many other member countries, too.

Index words: food industry, adjustment, EU, Finland

1. Introduction

Before Finland's EU membership it was widely believed that an over-night change from traditionally sheltered domestic markets to the open European food markets would be very difficult for the Finnish food industry. Now, after nearly one and a half years most fears have proved to be exaggerated, and fortunately the most negative ones have not come true. But it is worth noting the competition on the European food markets is getting harder almost daily and therefore only the most competitive food companies will survive.

In the following chapters a brief outlook will be made on how the Finnish food industry managed the first year of the membership. This analysis will be extended to the foreign trade of the food products, imports and exports, because these figures give useful information on the changes that food companies were confronted with. Further, some highlights are also given on the public aid that is given to the Finnish food industry in order to soften the membership adjustment process. Finally, some future aspects will be discussed.

When considering the Finnish food industry, it is worth noting that a prominent share of it belongs to cooperative organisations. In 1995, the agricultural cooperatives, owned by agricultural producers, had the following, high percentage shares over the marketed quantities of agricultural products: milk, 94 per cent; meat, 68 per cent and eggs, 79 per cent.

In the past, food industry firms were very closely related to agricultural production. For example, even small municipalities had their own dairy. This was especially the case in west and southwest Finland. This is why a starting point for the rationalization measures of the dairy, as well as the slaughtering industries has been a challenge in the Finnish food industry. There has been a substantial structural change, which has not been rapid enough to guarantee the proper competitiveness for the sector. This is true, in particular with respect to international competition.

2. General features of the Finnish food industry

The food industry is of great importance in the Finnish national economy. Of all industries, food production ranks third, regardless of the criteria applied, after metal manufacturing and wood industry. The gross value of production was about FIM 48 billion in 1994, while the value-added of the food industry was nearly FIM 12 billion. Total employment was about 40,000. This accounts for about 2 per cent of the total employment of the country, and about 10 per cent of the total employment in the Finnish industry (ANON. 1995b).

The major product groups in food industries, in terms of value-added, were in 1994: slaughtering and meat processing 21 %, beverages 16 %, bakery products 16 %, dairy products 15 %, chocolate and confectionery 6 %, animal feed 5 %, and all the other sectors the rest 21 %.

Raw materials used in production have been largely of domestic origin (about 85 %). The total number of food producing companies in Finland was about 1,700 in the beginning of 1990's. The great majority of them, however, are small family owned bakeries. Milling and sugar industries are very concentrated, whereas in slaughtering and meat processing industry a few big cooperatives have high market shares. In this branch there are, however, about 140 operating firms in Finland. In the dairy sector the industry has also strongly concentrated. The surplus capacity exists in several food branches (HERNESNIEMI et al. 1995).

The traditional sectors (dairy, slaughtering, meat processing, animal feed) of the Finnish food industry have a rather low value-added of processing, even through their share of the total industry output is large, measured in terms of gross production. This is a problem, in particular, in the context of foreign trade, since a major part of these products belong to the group of agricultural surplus products (AALTONEN 1993a, 1995).

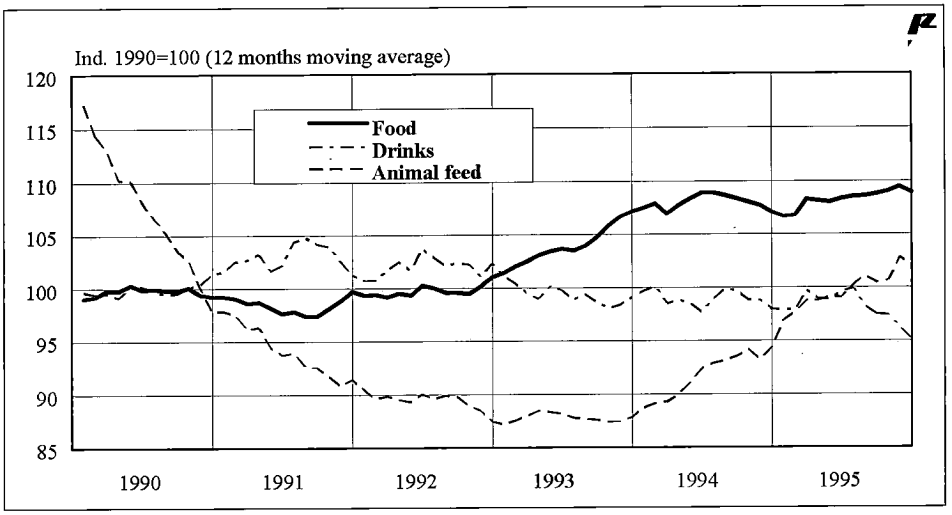

Figure 1. Food industry production in Finland in 1990-1995 (Source: ANON. 1996).

3. Recent developments of the Finnish food industries

3.1. Dairies

It is often said that the Finnish food industries are not competitive enough in the international markets. This argument is based on the fact that for example in the dairy sector the number of dairies has been historically very large. In 1960, the number of dairies in Finland was approximately 350, by 1985, the number had decreased to less than 150 dairies. In 1995, the number of dairies was about 60, of which 50 dairies are cooperatives, and the remaining 10 are privately owned dairies.

A considerable change in the size and structure of Finnish dairies has occurred during the 1990's. In 1989, for example, the size distribution of dairies in the Valio group were according to the volume of milk as follows: 22 % were dairies buying annually less than 15 million litres, 34 % between 15 and 50 million litres, and 44 % were buying more than 50 million litres of milk. In 1994, the corresponding figures were 6 %, 25 % and 68 %. In the same way, volumes of production of various dairy products per dairy have considerably increased. The most concentrated production takes place in milk powder production.

Today there are actually four dairy groups in Finland. Dairy cooperatives that own Valio Ltd., Milka coop dairies, so called Kymppi-group that includes 12 coops and finally, a private company Ingman Foods. In addition there are a couple of companies manufacturing cheeses and/or their substitutes and ice-cream (Unilever/Van den Bergh Foods, Raisio Ldt.).

In recent years, rapid changes in the structure of the dairy sector have taken place, while dairies are merged with each other. In fact, the biggest change occurred among the cooperative dairies that belonged to the former Valio, the Finnish Cooperative Dairies' Association. In the 1980's, more than 100 Valio-dairies existed, but at the end of the 1980's, the first large regional dairy, Normilk Ltd. was established covering northern Finland and the Ostrobotnia region, i. e. major parts of West Finland. After this dairies in eastern Finland, as well as in southern Finland, were merged. As a result, there were three large regional dairies and a small number of individual Valio member dairies, mainly in southwest Finland.

Because of the establishment of these regional dairies, the organization and market operations of the Finnish dairy sectors has also been altered. Earlier, Valio took care of the marketing of all products produced by the cooperative dairies, except fluid milk products. This, however, changed at the beginning of 1993: Valio is, today, a marketing company that is owned by the above mentioned large regional dairies and separate small dairies. In addition to the domestic marketing, Valio Ltd. takes care of the export of dairy products, as well

Table 1. Change of the turnover of the Finnish dairies in 1995.

	Turnover, billion FIM		Change	
	1994	1995	billion FIM	in %
Valio Ltd	8.58	7.97	-0.61	-7.1
Milka	0.44	0.40	-0.04	-8.5
Kymppi-group	1.26	1.26	-0.00	-0.1
Ingman Foods	1.13	1.00	-0.13	-12.1
Total	11.41	10.63	-0.78	-6.8

as other international operations.

Valio Ltd. and its dairies accounted for 75 % of the delivered milk in 1995. At the end of the year 1995, Valio Ltd. owned five manufacturing plants, and there were altogether 31 regional cooperative dairies that belonged to the Valio group.

Valio Ltd. has various kinds of marketing or manufacturing contracts with cooperative dairies. Altogether 27 coop dairies buy milk from producers and deliver it to Valio for processing. Those 12 coop dairies outside Valio, mainly small in size, have organised the above mentioned Kymppi-group with certain common activities.

Table 1 briefly describes the change of the turnover of the Finnish dairies or dairy groups in 1995 compared to the year before the EU membership. The dairies lost about 7 % of their turnover, mainly due to lower EU prices. While Valio has been almost the only exporter of Finnish dairy products, it has suffered considerable losses after Finland joining the EU. These losses were caused by the prominently lower export refunds in the EU compared with previous national export support. In this way the membership had different effects on dairy companies, depending on their share of dairy product exports (AALTONEN 1993b, 1995).

3.2. Slaughterhouses

Within the various food industries, slaughtering, meat processing and their related industries (numerous food products with a varying meat content) are one of the largest industrial sectors. The number of slaughterhouses has decreased rapidly: in 1965, about 70 slaughterhouse plants existed in Finland, but in 1995, the number has been reduced to 25 slaughterhouses. Of these, 9 slaughterhouses belong to the group of four large regional cooperatives and the remaining 16 are privately owned slaughterhouses. The number of meat processing plants, has been and still is high, consisting of numerous small private companies.

Table 2. Change of the turnover of the selected Finnish slaughterhouses in 1995.

	Turnover, billion FIM		Change	
	1994	1995	billion FIM	in %
LSO Food	3.37	2.62	-0.75	-22.1
Atria	2.56	2.14	-0.42	-16.4
Karjaportti	0.97	0.79	-0.18	-18.9
Saarioinen	1.06	1.04	-0.02	-1.5
Total	7.96	6.59	-1.37	-17.2

In the slaughtering and meat processing sector, the structural development has been different from that in the dairy sector. The cooperative slaughterhouses have been traditionally smaller in number than the dairies: the number of regional cooperative slaughterhouses was, at its highest, 14 slaughterhouses, in 1960. The central organization for the cooperative slaughterhouses, the Finnish Farmers' Meat Marketing Association TLK, was operating until the year 1991.

Until 1991, each cooperative slaughterhouse was operating in its own geographical area and the central association managed the marketing operations within Finland, as well as the foreign trade of meat and meat products. After the dissolving of the central organization, the four regional slaughterhouses marketed their product throughout the country, thus competing with each other. Also, two new, modern meat processing plants have been recently built, one in southern Finland and one in western Finland. The two biggest cooperative slaughterhouses established, however, a joint company, the TLK Trading Ltd., responsible for the foreign trade of meat and processed meat products.

Nowadays the largest slaughterhouses and meat processing plants in Finland are LSO Foods, Atria and Karjaportti. The two first ones are owned by the cooperatives, but a processing units are companies. Karjaportti, just constructing a new slaughterhouse plant, is a full coop located in eastern Finland, but is marketing its products nationwide. In addition there are private slaughterhouses and meat processing units large in number in Finland, the largest of them are Saarioinen and Pouttu.

Strategies of the Finnish slaughterhouses

Due to the EU-membership, slaughterhouses had to change some of their strategies very quickly. In particular, the cooperative slaughterhouses are in a different situation in relation to their possibilities to buy raw material from meat producers. Atria Ltd. is operating in a region, where lots of beef cattle and pigs

are raised. LSO Food, on the contrary, is operating in southern and southwestern Finland, an area with shortage of beef. This is why LSO used to have earlier a contract with Atria to buy some extra beef for processing purposes. This stopped, however, in the beginning of 1995 and thus LSO was obliged to import beef, mainly from Denmark and Sweden, in particular, during the first half of 1995. Atria and Karjaportti are, on the contrary, strongly based on processing the domestic meat only. Also LSO has later on made an agreement to buy its extra beef requirements from the Pouttu company which is operating in the same region as Atria.

3.3. Egg packing firms

The most problematic agricultural sector in the first year of the EU-membership proved to be egg production, packing and marketing. It is a well known fact that eggs as a perishable, surplus product within the European markets, have considerably fluctuating prices. It is worth of noting that before the EU-membership the producer prices of egg were, however, very stable in Finland. It was, however, a big surprise to egg producers during the first months of 1995 when they realized that egg prices dropped so low that they corresponded only 20-30 per cent of the prices in the previous year.

The largest packing plant, a cooperative Munakunta, lost 48 % of its turnover in 1995 compared with 1994 (from 0.39 billion FIM to 0.21 billion FIM). Producer prices paid by Munakunta were 42 % lower than in 1994. One evident reason for lower prices paid by the coop is that Munakunta's share of the Finnish egg exports is more than 70 per cent. Export prices remained low and, in addition, the export refunds paid by the EU were lowered considerably to the end of 1995. The remarkable reduction of the traditionally high national export support caused particular economic problems to Munakunta due to her high share of egg exports.

3.4. Milling, baking and related industries

In this context it is not possible to describe in detail the development of the milling industry in Finland. There were still, in the 1960's, hundreds of small local mills, but during the last two decades their numbers were radically reduced. Today, only three large grain processing companies exist in Finland (Melia Ltd., Cultor Ltd. and Raisio Ltd.) that still operate nationwide and internationally. In addition, there are a few number of local mills at the regional level.

Production of animal feed is also a prominent part of the Finnish food industry. At present, there are only two large industrial plants (Cultor Ltd., Raisio Ltd.) operating after the bankcrupty of the Novera group. The processing

Table 3. Change of the turnover of selected Finnish food companies in 1995.

	Turnover, billion FIM		Change	
	1994	1995	billion FIM	in %
Huhtamäki	8.28	7.83	-0.45	-5.4
Cultor	6.40	5.77	-0.63	-9.8
Raisio Group	3.52	3.22	-0.30	-8.4
Fazer	3.60	3.92	+0.32	+8.9
Total	21.80	20.74	-1.06	-4.9

plants are located in west and southwest Finland.

The Finnish sugar processing industry is concentrated in south Finland, due to the natural sugar beet production areas. Two sugar companies, Cultor Ltd. and Lännen Tehtaat Ltd. have merged their activities to form the joint company, Sucros Ltd., with four processing plants (AALTONEN 1993b).

The food manufactures described in the chapters above (dairies, slaughterhouses, egg packing plants) are mainly cooperatives owned by the Finnish farmers. These coops have thus been very closely tied to domestic agriculture in the past, and will be so also in the future. In fact, the relationship between the cooperatives and agriculture is becoming deeper in Finland. This is due to the fact that before the EU membership farmers received just about the target prices, fixed in the negotiations between the government and the farmers' organisations. The food cooperatives and other companies were actually able to transfer their cost increases to consumer prices, and in this way to maintain their margins. This was possible since the country was sheltered from the international competition by the import measures; also the internal competition between food cooperatives and other companies were limited.

In Finland there are, however, a few food companies that have already for years had large scale international operations. These companies, Huhtamäki Ltd., Cultor Ltd. and Raisio Ltd., belong to the biggest companies in Finland. Their orders according to the turnover in 1995 were 21, 31 and 47, respectively. These companies manufacture both volume products as well as highly specialized, fast growing businesses. Their worldwide operations are primarily based on innovative products, not on the high, effective production with large volumes. Also Fazer Ltd. is worth mentioning, a company that exports about 35 % of its production (VOLK et al. 1994, 1996).

As it is described in the Tables 1-3 above and the Figure 2, these four companies were able to maintain their turnover rather stable in 1995 while Fazer Ltd. even increased it slightly. There are three fundamental reasons for

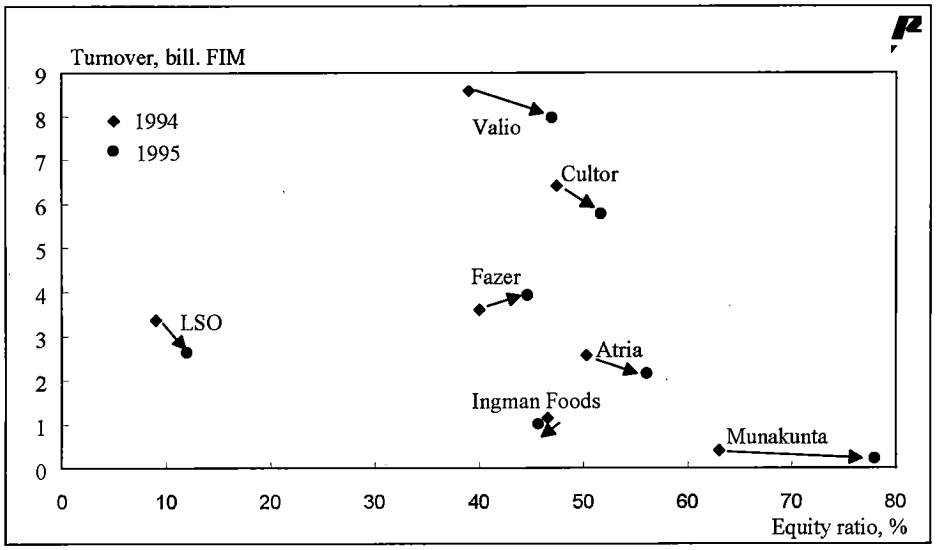

Figure 2. Change of turnover and equity ratio of selected food companies in 1994-1995 in Finland.

this: firstly, these companies are operating in several branches, secondly, they are no longer dependent on the Finnish domestic markets, and thirdly, also domestic markets were maintained well because of an expanding demand for food due to the retail price reductions.

The general opinion seems to be that companies managed to cope with the first EU-year better than expected and this is naturally a good platform to continue. Currently, however, it is not possible to know what kind of changes there will be in the coming years.

4. Foreign trade of agricultural and food products

The supply of, and demand for the main agricultural and food products have not been balanced since the 1960's. The rate of self-sufficiency of various products has, however, been declining in the 1990's. But, the chance to export agricultural and processed food products, with the help of export support paid by the state and farmers, benefitted the food industry. However, Finland's foreign trade of food products has been rather limited in quantities.

Finland's food imports have been far more diversified than her exports. Imports consist primarily of foodstuffs, which for climatic reasons, cannot be produced at home. These products include coffee, tea, fruits, vegetables, various

Table 4. Finland's foreign trade in foodstuffs in 1994 (ANON. 1995b).

	Imports Mill. FIM	%	Exports Mill. FIM	%	Balance
Free trade products	2,470.3	28.9	2,121.2	41.0	-349.1
Other food manufactures	1,304.6	15.2	764.4	14.8	-540.2
Dairy products	109.2	1.3	684.4	13.2	+575.2
Primary products, total	4,098.4	48.0	1,522.2	29.5	-2,576.1
Fodder	557.4	6.5	70.0	1.4	-487.4
Total	8,539.9	100.0	5,162.3	100.0	-3,377.6

feeding stuffs, and in certain years, also grain. A substantial part of food imports originates from developing countries. In 1994, the total value of Finnish food imports amounted to FIM 8.5 billion or slightly over 7 per cent of the total Finnish imports. The corresponding figure for Finnish exports of agricultural produce and foodstuffs was nearly FIM 5.2 billion, equivalent to 3 per cent of the total value of Finnish exports.

Of food imports, 41 per cent came from EU-countries, 14 per cent from EFTA-countries, 3 per cent from Eastern Europe countries, and the rest, 42 per cent, from numerous other countries. Of food exports, respectively, 16 per cent went to EC-countries, 16 per cent to EFTA-countries, 50 per cent to Eastern Europe countries, and the remaining 18 per cent to other countries.

The Table 4 shows a kind of starting point to the foreign trade of agricultural products in the beginning of the Finland's EU membership. Unfortunately just now there is a prominent time lag in the statistics of the foreign trade of Finland, and this also concerns food products. The European Union granted Finland a permission to establish a temporary control system concerning imports of such agricultural and food products which are closely related to agriculture. Through this system it is possible to follow up our food imports even on a weekly basis.

The membership increased imports of dairy and meat products

In 1995, exports of dairy products maintained approximately on the previous year level (increase in cheese exports, decrease in butter exports), but as to the meat exports they diminished considerably. This was due to the increased domestic demand of meat, especially pork and poultry.

Figure 3 describes what really took place in imports of foodstuffs in 1995 in terms of volumes. Imports of agricultural and food products were under a keen, weekly, surveillance last year. Many expected that right from January the first

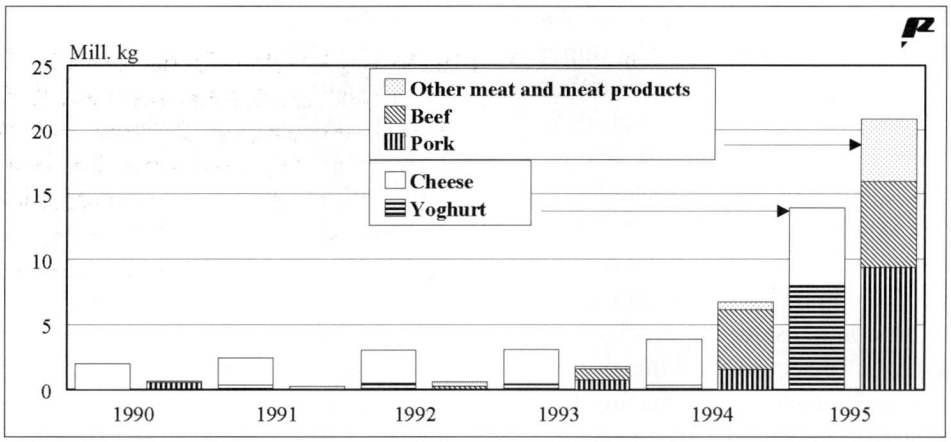

Figure 3. Imports of dairy and meat products into Finland in 1990-1995 (ANON. 1996).

1995 imports of both agricultural and processed food products would flow to the Finnish markets. This was not what really happened. The imports of meat were quite aggressive, but actually it was not only firms in the neighbouring member countries that exported to Finland, but also the Finnish companies and numerous small meat import firms. It is worth noting that TLK Trading Ltd., a company for a foreign trade of meat and owned by coop slaughterhouses, did not import meat at all during 1995.

In the year 1995, the imports of meat to Finland totalled 23 thousand tons, of which beef 35 %, pork 52 %, poultry 9 % and mutton 4 %. Even if this import seems to be very small, it was quite a radical change to have even this high meat imports compared to the history. In 1995, the share of imports totalled thus 7 % of the domestic meat consumption.

Dairy imports concentrated to cheese and yoghurt

Even the foreign trade in dairy products was quite stable in 1995, the first year of the EU membership increased the quantities of imports of various cheeses as well as yoghurts. The major importer was Arla that brought the first Swedish yoghurts to the Finnish markets in April 1995. Also French yoghurt Danone and some German yoghurts have found their ways to Finland.

Hence the increased imports, the domestic cheese and youghurt manufactures were able to expand their production, thanks to the growing domestic demand for these dairy products due to prominent price reduction. The Finnish dairy sector, in particular Valio Ltd. was also successful in its export efforts on

several markets in the case of cheese, and on the Swedish yoghurt market. During the first EU-year the imports of cheese accouted for about 8 % of the internal consumption and in yoghurt approximately for 15 %, respectively.

The first year in the European Union has proved that the Finnish food markets have some interest also to the food companies in other member countries. Even if Finland is located far from Central Europe and even if the Finnish food markets are small, it is evident that food imports to Finland are going to further increase. This is a challenge for the Finnish food firms; they need to become competitive enough to maintain to a great extent the domestic markets and to compensate imports by increasing exports of their own. This is also the best way to secure the Finnish agricultural production, because the more competitive Finnish food firms are, the higher producer prices they are able to pay to agriculture.

5. Finnish food industry and the state aid

The Accession Treaty between Finland and European Union contains some parts concerning also food industry. Firstly, the aid of EU's Structural Fund is fully utilized to soften the effects of the adjustment, secondly, the national aid during the five year transition period is used in a flexible way and thirdly, if there are serious market disturbances, measures may be taken within 24 hours after announcing the Union.

EU's horizontal, structural aids are allocated according to the EU Regulation 866/90 to all food firms taken into account regional characteristics. According to the indicative plan, 500 million FIM, of which a half is paid by the EU, will be granted to the food industry during the five year transition period. The share of EU and national aid together, however, is only 20-25 % of the costs of various development measures taken by the food industry. In addition, administrative problems of the Finnish government and the Commission have caused a prominent delay in the implementation of the aid.

The national aid can be granted to food companies firstly, for research and development, as well as marketing campaigns etc. Secondly, aid can be allocated on investments and also other measures to help structural adjustment. When determining this aid, especially the competitiveness of the firm in the long term is taken into account, as well as the EU's and national competition rules.

6. Future prospects of the Finnish food industry

After one and a half years in the EU it is not possible to make a proper assessment on the future of the Finnish food industry. Although the first EU-year was generally speaking better than expected, it is clear that a competition in the Finnish markets will tighten in the coming years. It seems evident that in the beginning of the Finland's membership, food companies and food exporters in other member countries had not yet prepared their strategies concerning their export trade to Finland.

In general, the competition will get harder also in the internal European food markets in the near future. There are two major factors affecting on this: the Gatt-agreement and a possible enlargement of the Union to the Central Eastern European countries. These big changes will naturally increase uncertainty also on the Finnish food markets.

As presented earlier in the text, there are two different categories of food industries in Finland: the first one very closely related to Finnish agriculture and, the second one only loosely tied to domestic agriculture, like chocolate and sugar confectionery. If it is possible to safeguard Finnish agriculture, the food industry based on the domestic agriculture will also have better possibilities to survive. If, on the contrary, agriculture, is not maintained, the food industry should be able to replace domestic raw materials, to a great extent, with foreign products in order to survive. This is, however, not possible to a large extent in many branches of the food industry (e.g. dairies, meat processing).

A future scope of Finnish food industries processing basic agricultural products will therefore depend essentially on the changes of the volume of Finnish agriculture. The increasing competition requires further costcutting; e.g. to quit small processing units, to find out new logistical solutions, and to seek out cooperation, even with a competitor.

Finnish food industry faces enormous challenges in terms of structural development. The negotiation outcome with the EU grants the possibility to apply structural aid during the transitional period in a more flexible way than in the Union in general. The public aid will remain, however, lower than expected and so the adjustment process is more or less self-financed by food cooperatives and other companies.

The studies and surveys indicate clearly that Finnish consumers rely on the products of the domestic origin. Finnish food is high in quality, and there are no problems with animal or plant diseases. Food firms are also making extra efforts to maintain and even improve this situation hence the open borders. The high quality of Finnish food is our best competitive advantage both in the domestic market and in the efforts to market Finnish products in the single market of the EU as well as outside the EU - even if this is a same strategy as in many other member countries, too.

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FOOD SECTOR FACING CHANGES AND CHALLENGES

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Abstract. The system change in Finnish food sector was carried out during one night. The old subsidy system based on price support was changed into CAP based on direct subsidy system. As part of the accession treaty negotiated with the EU, administrated prices for Finnish agricultural products (prior to accession, 30 to 40 per cent above those of the EU) were required to be lowered to EU level from the beginning of 1995. A comprehensive package of compensatory payments were agreed to facilitate this adjustment. During the first year of membership of EU consumer prices cheapened by 11 %. The main reason for this is increasing competition in agricultural business. According to the accession treaty farm net income before and after membership would be equal in 1995. Due to Finnish government's savings decisions in spring 1995 farm net income diminished 17 % in the first membership year and will have diminished by 30 % by 1997 compared with the time before membership. Two-thirds of farms face improving efficiency to achieve the former farm net income. The membership favours consumers, it is unprofitable for farmers and other operators in the food chain can manage.

Index words: adjustment, CAP, farm income, system change

1. System changes in food chain in 1995

Before membership producers and the state made yearly an agreement on the target prices of the main agricultural products (Figure 1). Food processing industry had to use this raw material because of border protection. Industry and

[1)] Acknowledgments to researcher Marko Tuomiaro for defining comments.

trade put their costs and marginals on input prices and the result was consumer price. Turnover tax deduction influenced on the raw material prices of industry so that their material costs were around on the same level as in central European countries. The agricultural prices were full-cost prices and demand for these products played a minor roll (HEIKKILÄ and MYHRMAN 1994).

EU-membership meant liberalization and opening for foreign trade of agro-food sector in Finland. Those earlier nearby closed markets are now open for European competition. Producer prices have fallen into half or more from earlier and subsidy system has been changed from price support into direct support. Input costs have fallen a bit. State guarantee of marketing farm products at a beforehand given price has been eliminated and marketing risks have been addressed to farmers like in other branches of economy.

In the framework of the EU consumers give price and quality signals for the market and trade has an essential position in price setting system. It gives signals and the level for food processing industry as well as importers at which price they will buy commodities. Food industry and producers have to be adjusted to this process. Thus the pricing process of food has been turned upside down.

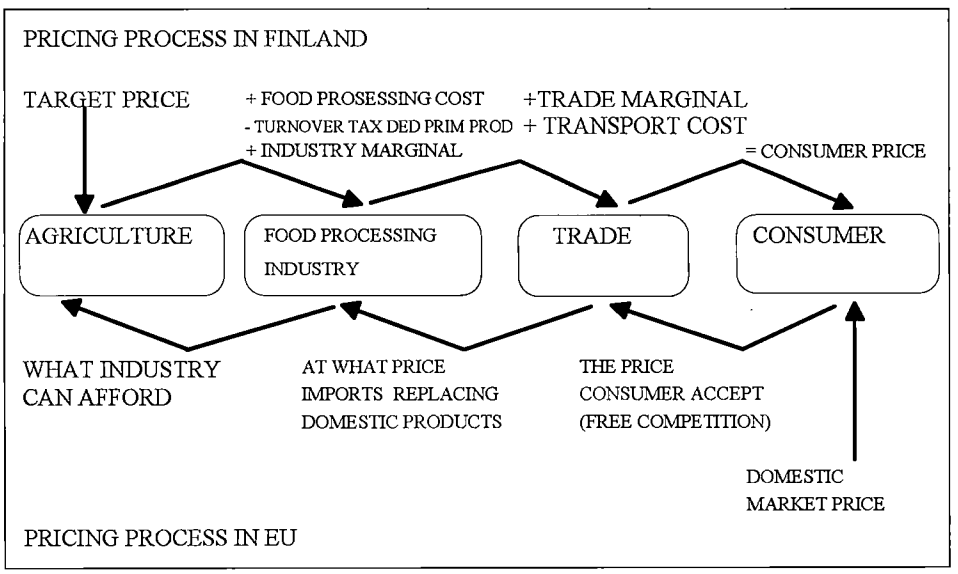

Figure 1. Pricing process in Finland before membership and as a member of the European Union.

2. Policy changes in agriculture

2.1. The goals of agricultural policy before membership

The Finnish government's policy has been to stabilize agricultural prices and incomes. The agricultural prices have been set according to full-cost principle. The income target has been as high income level as that of skilled industry worker. The agricultural policy has produced a higher average level of farm incomes than it would have occurred in free-market economies. This has resulted in fixing the incomes to be stabilized at too high a level.

The Finnish agricultural stabilization policy has faced another problem - productivity - in its full strengths. Productivity will generate a mechanism for continued re-allocation of resources, out of low-income-elasticity industries (agriculture) into high-elasticity ones. There is a continued depressing tendency on prices and incomes in the contracting industries.

Due to high price policy, productivity and low-income-elasticity the Finnish government's stabilization plan has showed a deficit, for goods will have been purchased which cannot be sold at all. In order to limit the production quotas have been assigned to individual farmers and penalties imposed for exceeding the quotas, bonuses have been paid for set-a-side etc.

The two targets behind agricultural stabilization policy to secure a stable level of income and to provide a high level of income have been on conflict in Finland much before the membership of the EU.

2.2. From administratively guidanced prices into the price levels of the EU

Finnish government negotiated with the EU a comprehensive payments package to facilitate farmers to adjust to the price level of the EU. The target was that farm net income before and after membership would be equal. In the year 1995 because of government savings decisions in spring 1995 farm net income diminished 17 % in the first membership year and will have diminished by 30 % by 1997 compared with time before the membership (Table 1).

The calculations (HEIKKILÄ and MYHRMAN 1994, VATT 1994, HEIKKILÄ et al. 1996, MYHRMAN and HEIKKILÄ 1996) are based on the assumption that in the first stage of adjustment farmers go on farming in the same way and intensity they did before membership. So it is just the change of support system and falling price levels that have influence on farm net income.

Before the membership border protection and export support facilitated the high price policy of agricultural products. Administered prices p^k were negotiated with the government according to the Farm Income Act. At these prices government committed itself to buy the whole production. Farmers have faced

Table 1. Farm net income before and after the membership, FIM, bill.

	1993	1995	1995 savings	1997 savings
SALES INCOME	22.0	12.5	12.5	12.5
- COSTS	20.3	15.3	15.3	15.3
= FARM NET INCOME (exc. subsidies)	1.7	-2.8	-2.8	-2.8
+ FARM SUBSIDIES	4.2	8.7	7.9	6.9
= FARM NET INCOME (incl. subsidies)	5.9	5.9	5.1	4.1

Source: KETTUNEN and NIEMI 1994, MYHRMAN and HEIKKILÄ 1996.

horizontal demand D^1D^1 (Figure 2). After abolishing border protection farmers will also face infinitely elastic demand D^*D^* at the price level of the EU. Horizontal demand curve D^*D^* is determined by single market. Finnish farmers are price-takers.

Shifting of the original supply curve S^1S^1 to the right is based mainly on decrease of the prices of production inputs. If the supply curve shifts from S^1S^1 to S^2S^2, farmers' situation remain unchanged. If the supply curve shifts only to S^3S^3, farmers' situation is worse compared with that before membership. At P^* farmers will produce amount Q^* instead of amount Q_o. Due to insufficient compensatory payments farmers' losses are indicated by the rectangle p^mCDp^* (LIPSEY 1963, RITSON 1977, MYHRMAN and HEIKKILÄ 1996).

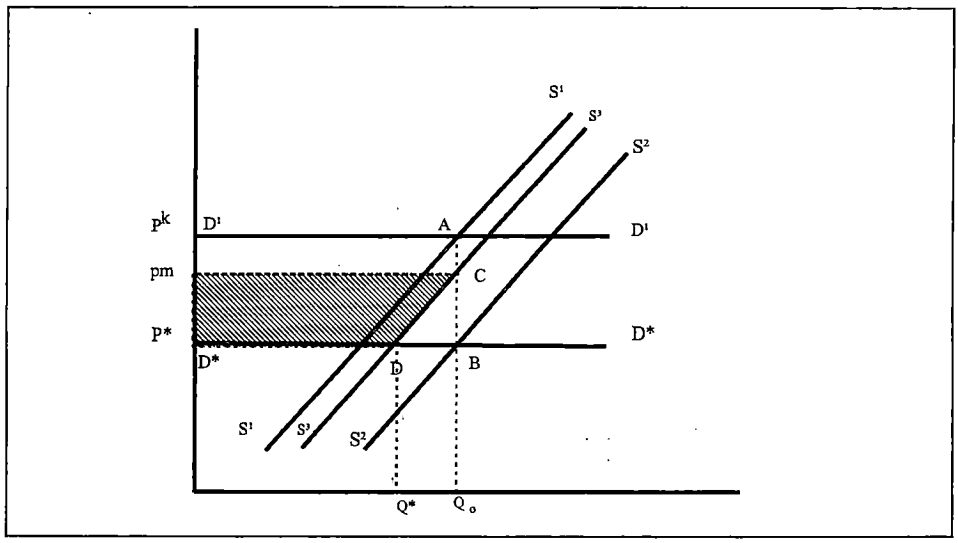

Figure 2. Shifting of demand and supply curves.

2.3. Problems of the transition period

Figure 3 shows the individual farm in long-run equilibrium before the membership of the EU. At the price p^k the firm maximizes its profits by producing q_o, since at q_o average revenue equals average costs. We have assumed that in the first stage of adjustment farmers go on farming in the same way and intensity they did before membership. In other words farmers face a perfectly inelastic supply and the price fall is compensated by direct support. If the decrease of the prices of production inputs shifts the original marginal cost curve MC_o to $(MC_o\text{-}S^k)$, farmers produce at the price P^* the same amount as before membership. If the decrease of the prices of production inputs is smaller, the marginal cost curve shifts only to $(MC_o\text{-}S^m)$ and the average cost curve AC_o shifts only to $(AC_o\text{-}S^m)$. At the price P^* an individual farmer will produce amount q^* instead of amount q_o. Farmer will, however, be now making sub-normal profits or even losses. Before moving to the place D it is worth to stay at the place C for a while. Reason for this is that the production has been tuned with amount q_o. At q_o production costs are minimized and the individual farm can sell the whole production q_o. Income losses of a farm are indicated by the rectangle p^mCBP^* (LIPSEY 1963, VARIAN 1993, KUHMONEN 1996, MYHRMAN and HEIKKILÄ 1996).

So far no significant changes seem to have occurred in the production in the beginning of the membership (KETTUNEN 1996). A question that immediately arises: would it not be worth stop farming instead of running at a loss? To answer this question requires dividing the farm's costs into fixed and variable

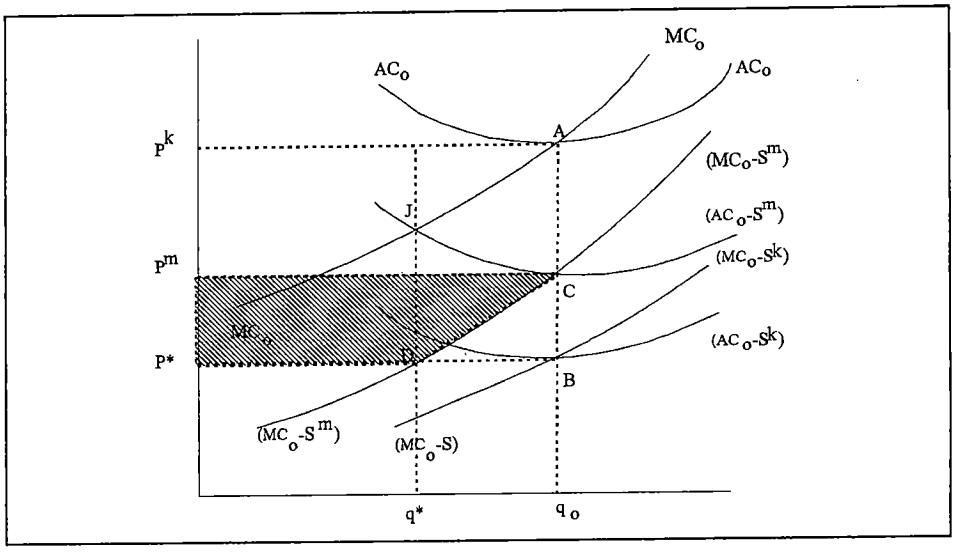

Figure 3. The EU cost shock.

costs. Since fixed costs must be paid in every case, they do not affect the decision to produce or not. Variable costs can, however, be avoided by stopping production. It thus pays to continue production only if receipts cover variable costs.

3. The scope for adjusting agriculture in the first membership years of the EU

3.1. The scope for adjusting agriculture

We quantify the scope for adjusting Finnish agriculture by assuming that farmers go on farming in the same way and intensity they did before the membership. This points out the first stage of adjustment state C in Figure 3. We calculate three alternatives (MYHRMAN and HEIKKILÄ 1996):

- on how many farms receipts cover variable costs, A(1)
- on how many farms receipts plus direct subsidy cover variable costs plus fixed costs not including profits, A(2)
- on how many farms the total income is at least equal to the total income before the membership of the EU, A(3).

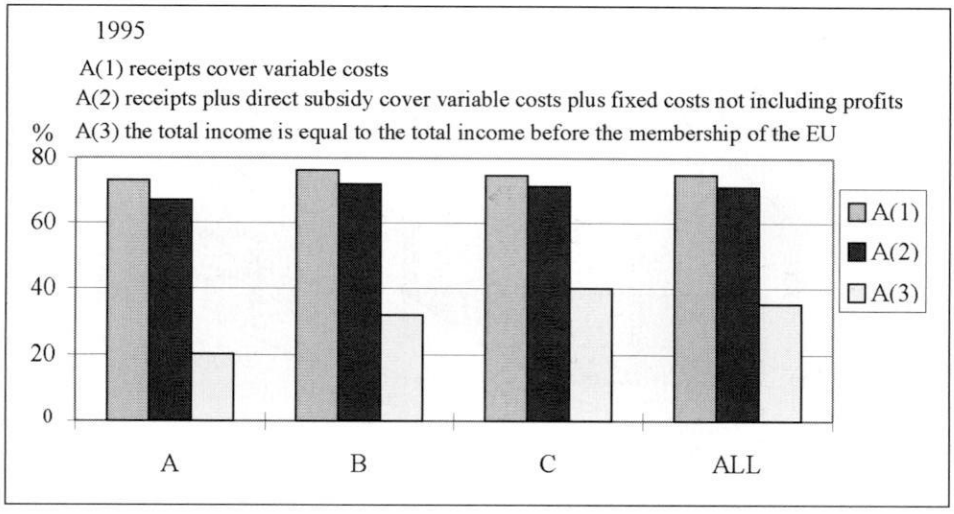

Figure 4. The share of farms achieving alternatives A(1), A(2) and A(3) in 1995 (%).

In 1995 three farms of four fulfilled condition A(1) and about the same with condition A(2). Condition A(3) was fulfilled only by one third of farms and its distribution was skew. The share of farms reaching the same farm net income as before was double in the Northern Finland compared to that in Southern Finland (Appendix 1).

When the transition period is going on all figures are falling a bit. For instance figures for condition A(3) will be 13 % in Southern Finland, 24 % in Central Finland and 32 % in Northern Finland in 2000.

3.2. Impacts on farm level in 1995 and after the transition period

The average decrease of farm net income is 17 % in the year 1995 (Figure 5). The fall is most rapid in Southern Finland. Income level fell under the country average in Southern Finland instead of lying over the average before the membership. If there are no changes in technology or amount of enterprises the farm net income will diminish by 30 % by the end of the five years transition period.

The scope for adjusting agriculture differs in product lines. In advance it was apparent that animal husbandry will survive better than plant production. The biggest looser is according to these presumptions grain production (Figure 6).

Poultry is loosing farm net income quite a lot if the producer price of eggs will stay on the 1995 level. We have large overproduction of eggs. Surpluses may cause problem for milk production too. Export is no more favorable.

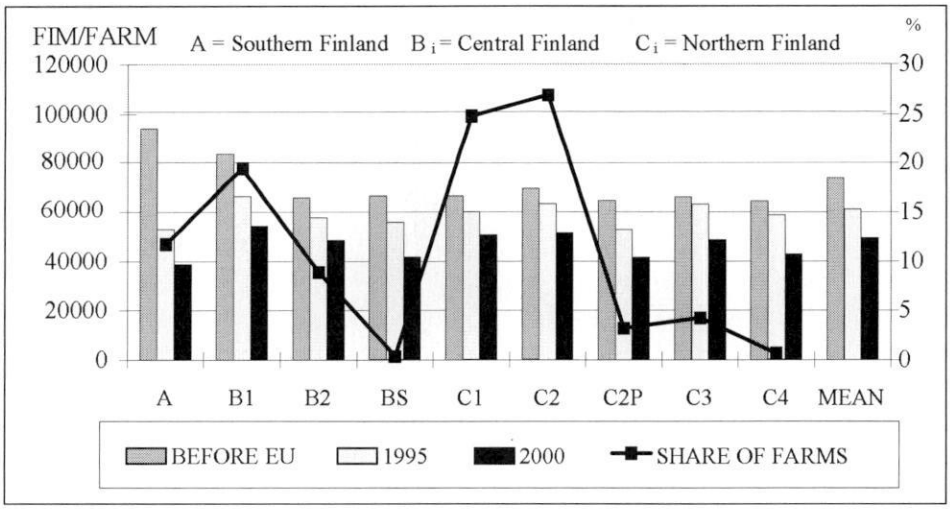

Figure 5. Farm net income (FIM/farm) according to support area before the membership, in the year 1995 and 2000.

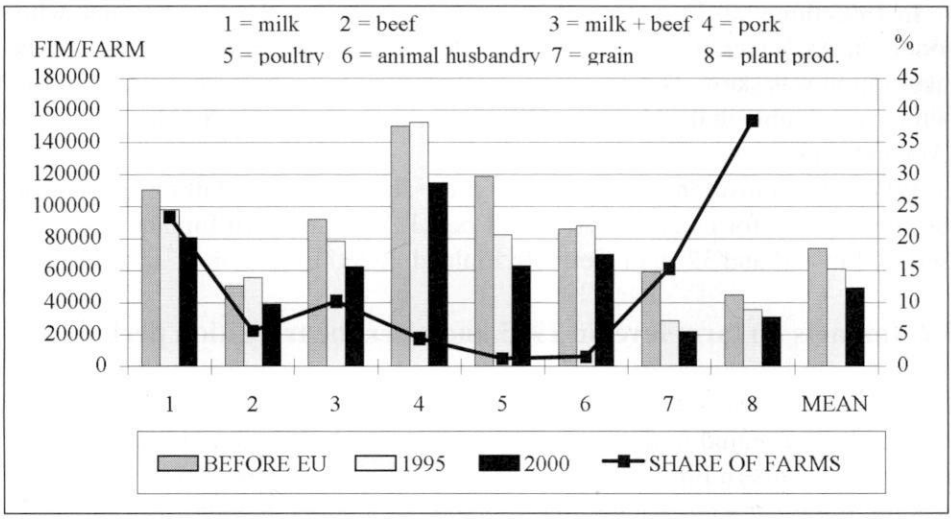

Figure 6. Farm net income (FIM/farm) according to product line before the membership, in 1995 and in 2000.

3.3. Some remarks

When watching *full-time farms* it seems that their income is falling more than the average income of all farms. Now we are talking about farmers whose farm net income is at the minimum 75 % of their total income. In Figure 7 we notice that Southern Finland is less-favored for full-time farmers compared to Northern Finland. The same answer is going through all the results in our study.

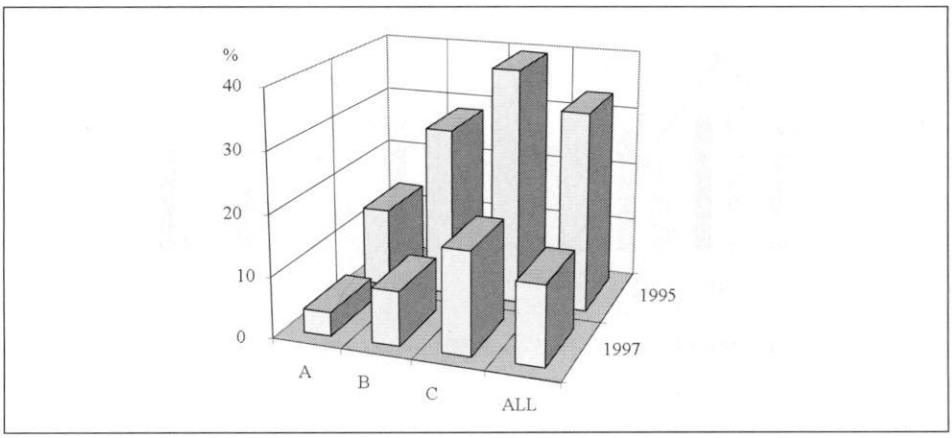

Figure 7. The share of full time farms achieving the same farm net income as member as before the membership (%).

As to the *size of farms* the results of the study show that conditions A(1) and A(2) will stay quite stabile on same product lines and sizes of farms in different parts of the country. The share of farms fulfilling condition A(3) is lowering within the size of farm after 30 hectares.

Proportionally the biggest losers during the transition period will be full-time farmers and big farms which have tuned their production on an efficient (based on old high price system) level. There will be problems in enlarging farm size because small and part-time farms manage proportionally well during the transition period.

4. Changes during the first years of the membership in industry, markets and consumers behaviour

4.1. Food processing industry

Food commodities lost their export subsidies when exported into the European union and border protection earlier sheltering our agro-food sector against import from other EU member countries was wiped out. Those earlier closed and regulated domestic markets were immediately influenced by competition of single market.

Single market of the EU and system change into EU export legislation reduced radically the profitability of foodstuffs export. Export subsidies paid by the EU are 30 % lower than they were in 1994. This affects export outside the European union and as it was mentioned above there exist no export subsidies into the signal markets.

4.2. Markets

The amounts and structure of foodstuffs consumption were changed in 1995 compared to the previous year. The total consumption of meat for instance was risen by 9.1 % of which the rise of pork and broiler were biggest. The consumption of cheese was risen by 4.4 % and yoghurt by 16 % (POHJONEN 1996).

There were just few alternative imported products in retail shops before membership. During the first year as member the assortment of foreign products was enlarged. For instance yoghurt, margarine, cheese and spaghetti got real alternative products from abroad. Market shares of these products were tiny. Domestic production has kept its market share very well during the first year of membership. Trade liberation has affected price level more than imported amounts of products.

Table 2. Changes of consumer prices in 1995 and presumptions.

	forecast (%)	realised (%)
Grain products	-15	-13.3
Meat and meat products	-16	-19.8
Milk products	-4	-7.5
Fish	-4	-4.6
Vegetable oil	-24	-23.5
Egg	-4	-42.3
Sugar	-14	-10.4
Fruit, vegetable, potato	-4	-5.4
Coffee, tea, cocoa	-4	3.3
Other foodstuffs	-10	-6.7
All together	-9.5	-11.5

4.3. Consumers

Consumer prices of food commodities fell on an average 11 % in the year 1995 (Table 2). That is the main reason why import of foodstuffs from single market remained so modest. Price fall was caused by decrease of producer prices and the competition of single market. Specially affected consumer prices are milk products, bovine meat, eggs and fish. The fall of milk products was 7.5 %. That is double compared to the presumptions. For cheese consumer prices fell 16 % and for butter 21 %. Meat and meat product prices fell 19.8 %, egg prices 41 % and fish prices 4.6 % (POHJONEN 1996).

When researching consumer behaviour it was apparent that product price has great importance. 70 % of consumers was of that opinion. The origin of products was significant for 60 % of consumers buying domestic foodstuffs. For those who bought foreign articles the origin of product was not significant. The opinions of consumers favoured domestic products but not consistently. Domestic products seem to have an advantage because of favourable opinions for domestic production but the price was essential factor for both foreign and domestic products.

5. Conclusions

The year 1995 was the first year of membership. The import of food commodities did not start from the very beginning of the year. So the passing year 1996 is the first full year of membership. This year will include some more influence

of the single market for Finnish food processing industry and trade. It will show the strength of import competition during a whole year and it will show consumer behaviour. It will show the scope for rationalising processes in industry.

We have in Finland plenty of capacity and modern equipment in food processing industry but not in full use. Our competition ability will now be tested after many years without foreign competition. Trade is nowadays the central factor in the food chain from producer to consumer. All central firms have an assortment including imported alternative products for consumers to select. The price level of these products dictates conditions for domestic alternatives. The price of domestic equivalent article cannot differ very much upwards from the price of imported one.

As a whole the food chain kept its range in 1995. All other factors excluding agriculture could quite well adapt the new circumstances and common market competition. The profitability of food processing industry fell in 1995 and may cause problems in future.

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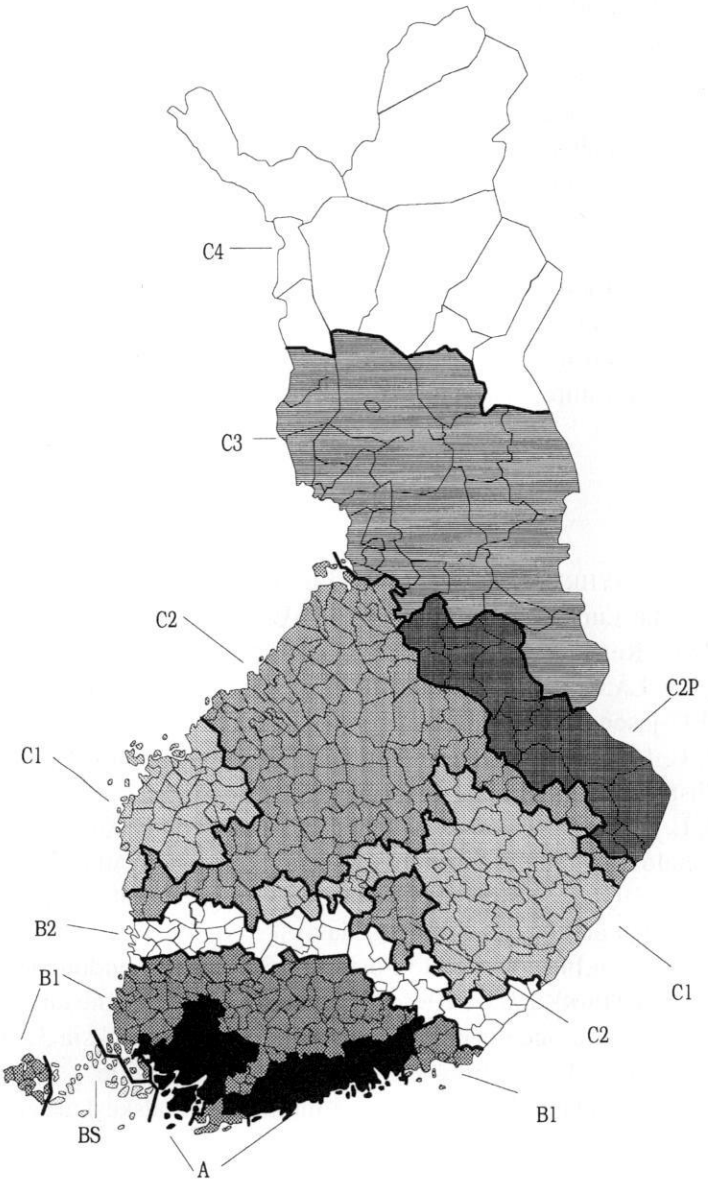
Appendix 1. Support regions in Finland.



Northern Finland = C3 and C4
Central Finland = C1, C2 and C2P
Southern Finland = A, B1, B2 and BS

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ECONOMIC ANALYSIS OF FINNISH FARM ENTERPRISES IN THE CHANGING OPERATIONAL ENVIRONMENT[1)]

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Abstract. Finnish farm firms are facing a change in prices, relative prices and direct support which is of exceptional magnitude compared to other countries joining the European union. This remarkable change - a sudden decrease in product prices and an increase in direct support - makes it difficult if not impossible to estimate the consequences on the basis of aggregated historical data. In this research project 1 our target is to investigate the adjustment process and the consequences for different regions and in different lines of production starting from the farm level. The estimates of short-run adjustments are derived from production functions based on biological trials. This approach was chosen because the elasticities of aggregated supply and demand models are quite uncertain in the circumstances we are facing in Finland. Because of the unfavourable relative change in prices the optimal output of Finnish farms will fall. Furthermore the farmers will face hard times trying to adjust, because they cannot expect that the adjustment process will lead to higher prices for products. Starting from the farm level we expect to have a thorough look at the adjustment opportunities and the adjustment process. Although we cannot know farmwise production functions we can make rough estimates of the reactions (at the farm level) through the analysis of technological possibilities.

Index words: agriculture, integration, adjustment, farm, production and cost theory, Finland, EU

[1)] This article is based on the larger research project financed by the Academy of Finland. The researchers involved in the project are Prof. Matti Ylätalo, Erik Haggrén, M.Sc., Tuomas Kuhmonen, M.Sc., Matti Ryhänen, Ph.D and Timo Sipiläinen, Lic.Sc.

1. Introduction

Finnish farm firms are facing a change in prices, relative prices and direct support which is of exceptional magnitude compared to other countries joining the European union. When Greece, Spain and Portugal joined the European Union (1981 and 1986) the production conditions changed far less than the operational environment in Finland, because the changes in prices of agricultural products and inputs were minor, and the relative prices remained approximately the same.

This notable change - a decrease in product prices and an increase in direct support - makes it difficult if not impossible to estimate the consequences from historical aggregated data. The econometric estimates from aggregated data may lead to conclusions which greatly overestimate the adjustment capacity at the farm level, they may also underestimate the changes in the production process caused by output prices close to variable costs and direct support which seems in many cases be higher than family farm income.

In this research project we investigate the adjustment process and the consequences for different regions and in different lines of production starting from the farm level. In addition to regional and production averages we apply the deviations of the input-output variables to construct models from which we can estimate how the production, income, size and number of farms are going to change in the next few years. One of the challenges of this research is to solve the problem of how to derive the aggregated outcome from farm-level results.

The analysis requires that the adjustment reactions can be estimated. The estimates for short run adjustments are derived from production functions based on biological trials, an approach chosen because the elasticities of aggregated supply and demand models are quite uncertain in the circumstances we are facing in Finland.

We shall apply the results of the analysis to a sample of Finnish farms consisting of almost 13,000 farms representing approximately 10 percent of the Finnish total. The data set is based on the information collected for taxation, but it also includes information about quantities produced, number of animals and size of the farm.

2. The approach

Production technology determines the limits to economic activity on farms. There are various ways to construct the underlying production technology. In Table 1 we represent the approaches provided by the production and cost theory.

Table 1. Combinations of (production and cost) theoretical and empirical approaches and their applicability in investigating the effects of discrete price changes on Finnish agricultural production.

LEVEL OF AGGREGATION	DUAL	PRIMAL	
	Economic data	Physical-technical farm data	Experimental data
Highly aggregated data	Poor applicability	Poor applicability	
	Several different levels of aggregation		
As disaggregated as possible	Problematic because of discrete change in prices	Good applicability, if variation in inputs is large enough	Good applicability, if experiments are conducted "correctly"

We also evaluate how applicable these approaches are taking the alternative data sources into account.

The primal approach is applied in traditional production and cost theoretical analysis. The basis of this approach is biological-physical and technical factors which define the production possibilities set for all possible input-output combinations of the farm. If the production is assumed to be technically efficient, the production takes place at the frontier of the production possibilities set, which can be described by the production or transformation function. When the assumption of optimizing behaviour is related to production function analysis (the primal approach) input demand can be explicitly derived from cost minimization or profit maximization and output supply from profit-maximizing behaviour.

Alternatively, the dual approach has been widely used in production and cost theoretical studies. In the dual approach economic data can be utilized directly. Concrete benefits of the dual approach in comparison to the primal approach are flexibility, and simplicity in deriving demand and supply functions. DIEWERT (1982) and POPE (1982) have shown that the production technology can be described consistently both with primal and with dual functions if the profit or cost functions are well-behaved and their definition is consistent with a well-behaved production function (MCFADDEN 1978).

Although the dual approach makes it possible to model causal economic relations, it cannot be fully utilized in this study due to the fact that there are not

as disaggregated data about input and output prices such as farmwise price series for separate feed stuffs or nutrients as there should be for the analysis.

The remarkable change in policy regime may largely influence the farmers' decision-making. Since estimates based on the time period under the old policy regime may be biased in the new operational environment, the primal approach is preferred for the analysis. However, the dual approach can be used to approximately estimate the substitution effects of different inputs if weak separability can be assumed.

Two alternative approaches may be chosen for determining the plant and animal production functions. We could utilize either experimental data or the results of agricultural production in practice (see Table 1). Experimental data comes from controlled trials. In this case it has been decided beforehand which variables may vary and which are kept constant. In the experiments it is also possible to decide to what extent the variables are allowed to vary and what kind of combinations of inputs and outputs are to be under investigation. The controlling actions confirm that there are no significant errors in the input application.

It has to be kept in mind that in the experiments it is possible to standardize factors which may vary in practical farming, so that experimental results may not be directly applicable to practice. On the other hand experimental data is more reliable or at least as reliable as practical farm data in response studies (HEADY and DILLON 1972). Furthermore, in practice the application of inputs cumulates on a certain area in input-input space (as well as in input-output space) since the farmers are looking for the best economic result (RYHÄNEN 1988). Therefore in practical farm data the variation of inputs is not large enough for our purposes.

The analysis of farmers' short-run reactions in the changing operational environment are based on production and cost theory and on the analysis of biological-physical experimental data. The conclusions are also partly based on practical farm data. Although EU membership does not alter the principles of economic action, the change in prices and relative prices as well as direct support probably influence the output produced and inputs applied. It is most profitable for the farmer to produce the output at minimum cost no matter how the output produced is determined.

Short-run effects at the farm level have to be known, especially when the changes in operational environment are rapid and large. By production and cost theory relative prices and the production technology (input requirement set) determine the optimal input combination. Thus, the cost-minimizing input bundles at the given output level per an animal or hectare are probably not the same in all possible price relations.

3. Economic relations

When the normative target is taken into account in addition to biological-physical relations the problem can be represented as a problem of economic optimization. The essential part of the economic analysis is the factors restricting production.

It is assumed by the production and cost theory that production function is well-behaved. The profit maximization problem is formulated as an unrestricted optimization problem. In the general case (n variable inputs) the unrestricted optimization problem can be written as:

$$\Pi = py - \sum w_i x_i. \quad (i = 1,2,...,n). \tag{1}$$

where the quantity of input i is x_i, y is the quantity of the product and w_i and p are the prices of input i and output.

The profit maximizing point can be solved from formula 1 when n equations are solved simultaneously (the first order conditions):

$$\partial\Pi/\partial x_i = 0 \iff \partial y/\partial x_i = w_i/p. \tag{2}$$

The second-order condition for profit maximization (the Hessian matrix being negative definite) is automatically valid, because the production function is assumed to be strictly concave. In this case the solution of (2) n equation system yields the optimal use of x_i inputs.

When two first-order derivative equations (2) are divided by each other we get the following interdependence:

$$f_i/f_j = w_i/w_j, \tag{3}$$

where $f_i=\partial y/\partial x_i$.

Both in animal and plant production several different products are often produced simultaneously, e.g., potatoes of different size and meat of different quality. In this kind of production it is impossible to allocate inputs separately to different products. The target function for an unrestricted optimization problem can in this case be solved as follows:

$$\Pi = \sum p_j y_j - \sum w_i x_i, \quad (j = 1,2,...,k) \tag{4}$$

where there are k simultaneous "responses". When the second order condition is valid the simultanous solution of n equations $\partial\Pi/\partial x_i=0$ gives the optimal use of input x_i.

4. The consequences of the EU price and support policy at farm level

In the following short run analysis inputs are treated as an aggregated input and the input price relations are kept constant, enabling graphical illustration. In the short-run analysis it can be assumed that the size of the farm and the production technology do not change and thus the analysis can be based on production units (e.g., hectares).

These assumptions can be written as follows:

$$y = f(x_1|x_2,.., x_n), \tag{5}$$

where output is dependent on input x_1. Inputs $x_2,...,x_n$ are fixed inputs and the output is diminishingly increasing i.e., $f_1>0$ and $f_{11}<0$.

Price support

Price support alters the price relation between input and output. Since an increase in the output price increases the marginal value of the product, the rational farmer increases the use of input to achieve the optimal point where marginal revenue equals marginal cost. If the price support is allocated to the variable input the marginal cost of this input decreases which also increases the use of the input.

When Finland joined the European Union the prices of agricultural products decreased considerably. Therefore the application of input x_1 should diminish. On the other hand at the same time the price of the variable input also decreased which will have the opposite effect. The change in the use of the variable input depends on the shape of the marginal physical product curve and on the change in relative prices of input and output. EU-membership caused the price (p) of output to decrease relatively more than the price (w) of input, i.e., the price relation w/p increased. According to the theory this leads to the economic optimum where the use of variable input is lower than before the membership. The decrease in variable input use also causes a decrease in output.

Direct support

As a member of EU the Finnish farmers' direct support is bound to production units (hectares, animals). Although direct support increases the revenue per unit of production it does not have an effect on the price relation of the variable input and output and thus does not influence the optimum. Changes in direct support policy have an effect on the optimum only where the prices of the

variable input and output change at the same time. This can be illustrated as the following profit function defined for a production unit:

$$\Pi = py - wx_1 + S, \tag{6}$$

where S is the direct support per production unit. The first derivative of the profit function can be written as follows:

$$\partial\Pi/\partial x_1 = p(\partial y/\partial x_1) - w = 0 <=> \partial y/\partial x_1 = w/p, \tag{7}$$

which shows that in the short run the direct support bound to the production units (hectares, etc.) does not have an effect on the optimum of the variable input. However, various levels of support for different crops may also influence their relative profitability. A rational farmer will, taking the direct support into account, allocate his arable land to the most profitable crops if the natural conditions and the agreements concerning agricultural production allow it.

Even an equiproportional change in prices of input and output however decreases or increases the profit by the same proportion. It should be noticed that depending on the marginal physical product and price relations, the optimal input use could be even zero for many farms. This can be illustrated by Figure 1

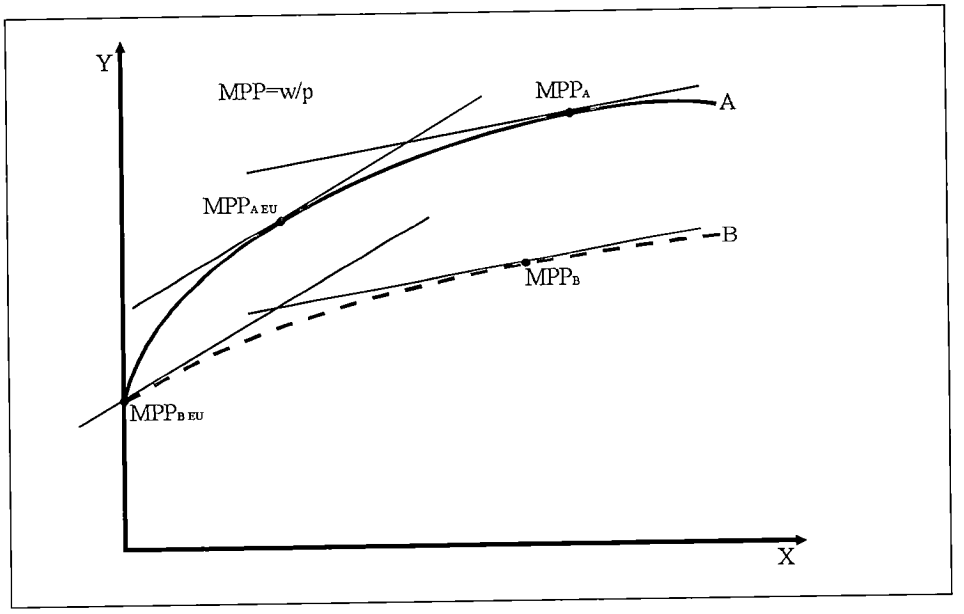

Figure 1. The effect of the change in price relation (w/p) on output produced, two different technologies.

which describes the effect of the change in relative prices (due to EU membership) on two different production technologies, A and B.

An increase in price relation w/p will cause adjustments in the application of the input in both technologies, A and B, but technology B is less tolerant of the change in the price relation, even a minor change in which would yield the economic optimum of the zero use of the variable input. A similar change in price relations would in technology A lead to a decrease in the application of the variable input and thus also to a decrease in output. However, with technology A it is reasonable to continue the production, at least in the short run.

The supply of agricultural products can be illustrated applying the duality between production and cost function (DEBERTIN 1986, VARIAN 1992). In this case cost functions are represented as a function of output and the prices of inputs are constant i.e., they are either prices in the EU or prices before EU. Average physical product (APP) and marginal physical product (MPP) can be solved directly from the production function. Average variable cost $AVC=c_v(y)/y$ can be derived by multiplying 1/APP by the price (w) of the variable input. Similarly, it is possible to determine $MC = c_1(y) = w/MPP$.

The profit-maximizing farmer determines the optimal application of inputs trying to fulfil the first-order condition (MR = MC). To a price taker, the marginal revenue equals the price of the product. The maximum profit can be achieved at the same point as on the production function (w/MPP = p). Since the production function is concave the marginal cost increases as the function of output (the second-order condition). The supply can be determined by the first- and second-order condition as follows:

$$\text{a)} \quad c_1(y) = p, \quad \text{if} \quad py - c_v(y) - c_F \geq -c_F \qquad (8a)$$

$$\text{b)} \quad y = 0, \quad \text{if} \quad py - c_v(y) - c_F < -c_F\,, \qquad (8b)$$

where $c_v(y)$ is the variable cost and c_F is the fixed cost. If the price relation between the input and output is unfavourable (8b) the farmer should exit the market, but it should be noticed that although the farmer would stop production, the fixed cost still remains.

According to the theory the marginal cost curve goes through the minimum of the average cost curve. The farmer will continue his production as long as the price of output is higher than the average variable cost ($p \geq c_v(y) / y$). Thus the farmer will continue his production if and only if the marginal cost curve is above the average cost curve. This part of the marginal cost curve is the supply curve of the farm (8a), and every point on this part of the curve is the profit-maximizing point at the corresponding output price level. When the marginal cost curve stays below the average cost curve the supply is zero. In Figure 2 the cost functions of different production technologies (broken and continuous lines) are illustrated. The prices are EU prices (EU as a subscript) and the prices

prior to EU membership (without a subscript).

As can be seen in Figure 2, in different technologies the effects of relative price changes may be dramatic. In the technology described by a broken line it would be profitable to stop production at EU prices when, in the technology described by the continuous line, the farm would continue its production after adjustments in the application of inputs. Thus the influence on the diminishing aggregated supply is twofold: the output of the farm (the technology of the broken line) will be zero and the farm (the technology of the continuous line) will produce less. When the profitability of farming is poor it is improbable that all of the production capacity released would be acquired by the farms that continue their production.

As we have already stated, in the short run the farmer will continue his production if the return from the production is at least as high as the variable cost and the level of output is chosen according to the optimum of the variable input (MPP = w/p). Inputs can be divided by the length of the time period into several groups according to their fixity. When the period gets longer more inputs will become variable and the variable cost increases in relation to the return on the production. When the period is long enough all inputs are variable. Thus in the long run the production cost has to be covered by the return on production.

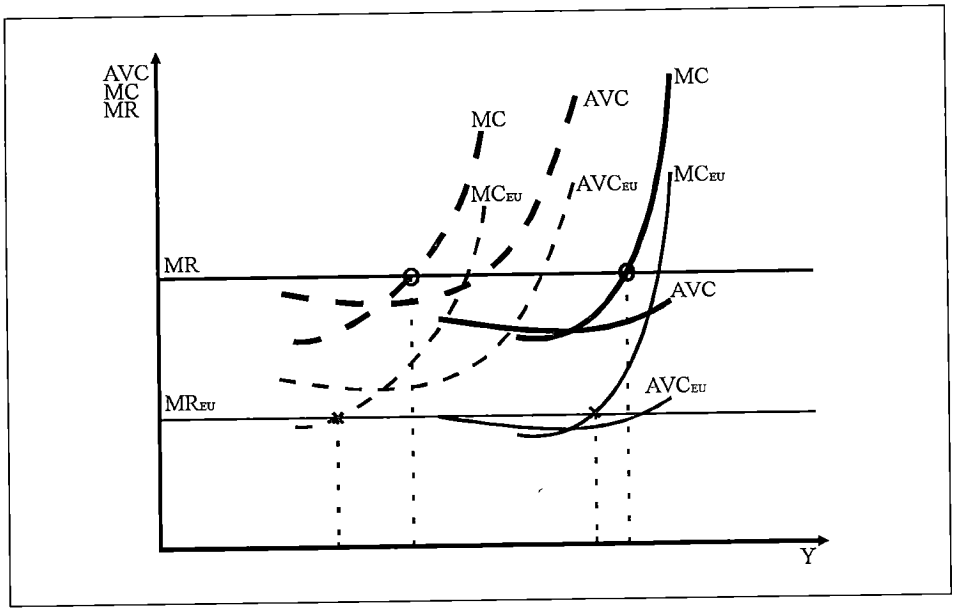

Figure 2. AVC -, MC - and MR -curves of the farms operating under different production technologies before and after EU membership.

As a price taker a single farmer will produce as much output as is profitable (even zero) if there are no certain minimum terms for getting the support. It is highly likely that the prices of agricultural products will decrease in the future in the EU (see THOMSON 1995). Thus the farmers will face a continuously worsening price relation between input and output. The price relation w/p may soon lead to a situation where on some farms it is not profitable to apply variable inputs in production. When the time period gets longer the number of these farms will probably grow (MYHRMAN and HEIKKILÄ 1996). This means that economically rational farmers will stop their production but will try to keep the direct support. If production activities required for direct support are minor the farmers will start to maximize the difference between direct support and the cost of the actions to get the payment, that is, their goal will become cost minimization in order to receive a predetermined level of support (LATUKKA et al. 1994). This would lead to a marked decrease in domestic supply of agricultural products. This also means that the direct support bound to the production units would to a larger extent be paid for apparent farming or be simply based on the ownership of the resources.

Could the direct support also be stimulatory?

It may be assumed that it is not in the Finnish national interest to leave the food supply largely dependent on foreign production. Therefore it is probable that certain requirements for farming will be introduced which have to be fulfilled in order to receive the support. There are two possible approaches: a certain quantity of inputs applied or, a certain quantity of output produced per production unit may be required as a condition for direct support.

In Figure 3 we illustrate the effects of these different requirements, minimum input application (x_1'') or output production (y''), on output produced. As we can see in Figure 3 it is possible that the price relation w/p and production technology are such that the optimum of variable input use (point A) can be located either to the right or to the left of x_1''. If point A is located to the right of x_1'' the farmer will choose this point and the minimum requirement has no effect on the short-run input application. If it is located to the left of point x_1'' the farmer will choose either point A or B. The choice is dependent on the amount of direct support bound to the production units. If the direct support S is large enough i.e., $S > p(y'-y'') + w(x_1''-x_1')$, the production will take place at point B, it being profitable to take the advantage of the direct support. If the price relation w/p is unfavourable and the direct support bound to the production units is small the optimal quantity of inputs may also be zero.

If the direct support bound to the production units is large compared to the return on production certain production technologies and/or price relations w/p may lead to a situation where the inputs are wasted with no intention of

achieving any output.

The application of input x_1" can be confirmed by setting a minimum limit for output, y" (point B), this avoiding the problems of minimum input use such as wasting inputs (apparent input use). If the precondition for the direct support is the minimum yield, the farmer may choose between two alternatives. The production takes place either at point B or to its right if the production is profitable. Unprofitable production will be stopped.

If the national plant production is to be continued the criterion of minimum yield should be chosen. This means that the rational farmer would operate at point B, if the direct support bound to production units is large enough for profitable production. The profit maximization problem turns into the problem of cost minimization. In the situation in Figure 3 the farmer would produce the output y" with minimum cost. This optimization problem can be written as a Lagrangean

$$L(\lambda,x_1) = wx_1 + \lambda(y"-f(x_1)). \qquad (9)$$

For example, on the basis of the prevailing production technology and relative prices the farmer operates at the short-run optimum, point A where MR=MC (Figure 3). Let's assume that the production at this point is unprofitable and the

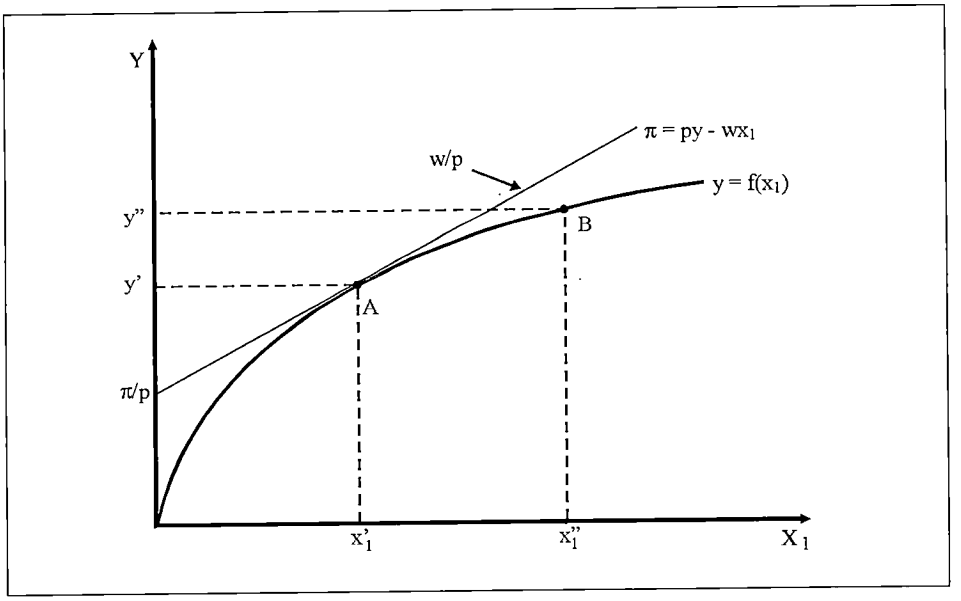

Figure 3. Profit maximization and the requirement of minimum input application or of minimum output.

specific output wanted ('by the society') would be reached at point B. If the price support makes the production profitable, the farmer will operate at point B where MR=MC according to the new price relation. The output y" could also be produced (keeping the original prices) by setting the specific minimum requirement for the output and keeping it as a precondition for direct support, which, in turn is large enough for profitable production. In this case equal amounts of the price or the direct support are needed for profitable production.

Let's assume that the production is not profitable at point B under the new price ratio, but the minimum output wanted ('by the society') is still y". Thus extra support is required for profitable production. If the output price support is applied the price should be increased even more. This yields the optimum output which is higher than the output y" (the optimum being to the right of point B). The higher output requires also an increase in the application of input, and due to the decreasing marginal physical product, the average cost will also increase. By applying direct support the effect of increasing marginal cost cutting part of price support can be avoided. In this case a bigger amount of price support than direct support is needed to give the same income effect to the farmer.

As a member of the EU the application of price support is in principal not allowed. This follows that the direct support required for profitable production in Finland has to be high. This may cause the problem of lacking stimulus for production. Therefore 'the society' should take advantage of making an agreement with the farmer who should produce the given minimum output in order to receive the direct support. These agreements would benefit both farmers and the economy. The benefit would follow from the fact that the agreement would guarantee both the preconditions for profitable production (if the support is high enough) and the production taking place at minimum cost (at the same time ruling out the possibility of apparent farming connected to the requirement of minimum input application). But these kind of output bound agreements may not be in line with the support policy in the EU and the GATT.

6. Conclusions

The price relation w/p between inputs and outputs changed considerably when Finland joined the European Union. In the main production regions of Central Europe production potential and yields are better than in Finland (ANON. 1995). Because of the unfavourable relative change in prices, the optimal output of Finnish farms will fall. Furthermore the farmers will face hard times trying to adjust, since they cannot expect that the adjustment process will lead to higher prices for agricultural products. In a so-called normal situation the firms may continue their production in the short run although the price of the product falls

below the average variable cost. The firms accept the economic losses if they expect that the price increase in the future will cover the losses, but in the case of Finnish agriculture the decrease in domestic output does not necessarily have an effect on the producer price due to the fact that Finland is now a member of the common market.

Starting from the farm level we wanted to have a thorough look at the adjustment opportunities and the adjustment process. Although we cannot estimate farm production functions we can make rough estimates of the reactions (at the farm level) based on the analysis of technological possibilities. In addition to clarifying the technical adjustment opportunities of the farms we take the changes in the cash flow and profitability into account. These farm reactions are needed for the estimates of the aggregated effects on the supply of agricultural products. They are also needed for deriving aggregated demand for agricultural inputs.

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FINNISH AGRI-ENVIRONMENTAL PROGRAMME IN PRACTICE - PARTICIPATION AND FARM-LEVEL IMPACTS IN 1995

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Abstract. This paper deals with the Finnish Agri-Environmental Programme (the FAEP) and its first year of implementation in 1995. The main emphasis is in examining participation in the FAEP and farm-level impacts of the participation. The analysis of the participation is based on the IACS -register, and the farm-level impacts are examined on the basis of farm survey data. The FAEP consists primarily of the General Agri-Environmental Protection Scheme (the GAEPS) and the Supplementary Protection Scheme (the SPS). Total expenditure on the FAEP was some FIM 1,408 million (ECU 247 million). The GAEPS accounted for the major part of expenditure of the FAEP; almost 95 % of the total expenditure, i.e. FIM 1,331 million, was spent on this general scheme. The SPS took some FIM 80 million, and its share can be expected to increase slightly in 1996-1999. Participation in the GAEPS in 1995 was high; 80 % of the farms (80,000 farms) and 90 % (2 mill. hectares) of the arable land were cultivated under the GAEPS criteria. The share of cultivated area under the GAEPS was the highest (96 %) in area A and the lowest in areas B, C3, and C4 (79-87 %). The coverage of the GAEPS was some 90 % of the cultivated area in most production types. However, pig and poultry farms participated in the GAEPS the least (85 %) and the most common reasons the farmers stated for not participating the GAEPS among the animal husbandry farms was the need for investments and the criteria for a minimum area for manure spreading. The main reason why some crop farms did not join the GAEPS was the need for investments and setting up buffer zones. Lack of information on the GAEPS also caused some farmers to stay out of the GAEPS. According to farmers' point of view, setting up buffer zones affected farming methods the most of all the GAEPS criteria in 1995. As a result, some 28,000 km of buffer zones were set up by the main ditches and water routes. Because in order to get a full premium in 1996 a farm-specific commitment to a lower level of fertilizing must be made, the criteria for maximum fertilization are expected to have a stronger impact on farming practices in 1996-1999 than in 1995. The GAEPS is financially significant especially for

farms in area A. The impact of the SPS can be seen in, for instance, a substantial increase of organic production, which is expected to continue in 1996. Long term environmental impacts of the FAEP cannot be verified yet, but as farms participate the FAEP in very large numbers, positive environmental impacts are expected to be achieved in the near future due to e.g. reduced nutrient use and leaching.

Index words: EU, agriculture, environment, policy, regulation 2078/92

1. Introduction

The implementation of the EU agri-environmental support scheme by means of the Finnish Agri-Environmental Programme (FAEP) is perhaps the first significant step in integrating Finnish agricultural and environmental policies. Although some agricultural policy measures with environmental considerations have already been in use, the main purpose of the earlier measures has usually been other than improving the state of the environment. For instance, fertilizer taxation during 1976-1994 (SUMELIUS 1994, 23) primarily aimed at cutting down the overproduction of grain. Up to some degree, this is the case with the agri-environmental support scheme as well, because the Finnish Agri-Environmental Programme is part of the support package to help Finnish farms from falling down to financially unsustainable conditions in the EU market. The goal of securing the minimum conditions for practising agriculture is dominant especially in support area[1)] A, where the agri-environmental support is the primary EU support measure. However, despite having also other than purely environmental goals, agri-environmental support scheme is expected to cause an extensive shift towards environmentally sound production methods, because receiving support is subject to detailed environmental criteria for farming practices.

The purpose of this paper is to provide an overall view of the FAEP and its expected impacts. The main emphasis is given on examining participation in the programme and the farm-level impacts of the support scheme. The paper is structured as follows: The FAEP is described in section 2, the participation in the GAEPS is presented in section 3, section 4 describes the farm level impacts of the GAEPS and section 5 concludes the paper.

[1)] See Appendix 1 for support areas.

2. Implementation of the agri-environmental support scheme in Finland

2.1. The agri-environmental support scheme of the EU

In examining the Finnish Agri-Environmental Programme it is useful to first take a look at the goals of the original legislation for the agri-environmental support, namely the EEC Regulation No. 2078/92. The goals of the support programme are 1) to accompany the changes to be introduced under the market organization rules, 2) to contribute to the achievement of the Community's policy objectives regarding agriculture and the environment, and 3) to contribute to providing an appropriate income for farmers.

The agri-environmental support scheme must be implemented by the Member States by multiannual zonal programmes in accordance with their specific needs. Zonal programmes must be drawn up for a minimum period of five years, and they shall reflect the diversity of environmental situations, natural conditions, and agricultural structures and the main types of farming practices of the region. Community environment priorities should also be taken into account in the programmes (EEC Reg. No 2078/92, art. 3).

The agri-environmental aid scheme is designed to support farmers to undertake farming practices that have a positive impact on the environment. A wide array of farming practices compatible with the requirements of environmental protection can be supported, including the shift to less intensive farming (for instance by reducing the use of inputs or the cattle density per forage are, or by organic farming), maintaining the countryside, ensuring the upkeep of abandoned farmland, setting aside farm land for a long term, or managing land for public access. In addition, the aid scheme may include training of farmers to undertake farming practices that are compatible with the environment (EEC Reg. No 2078/92, art. 3).

2.2. Environmental impacts of agriculture in Finland

Despite the fact that agricultural land covers less than 10 % of the total area in Finland, farming practices have a strong impact on the environment. According to commonly used division to positive and negative externalities, Finnish agriculture can be roughly characterised as causing a positive externality of maintaining the countryside and a negative externality of nutrient runoffs.

Even if the use of fertilizers has stayed at a quite low level, nutrient leaching has serious consequences because of the large number of shallow waters and the location of a large share of the agricultural land near the waters. In Southern Finland the main environmental concern is to reduce the nutrient runoff, soil

compaction, and erosion due to the cultivation of crops. In the most intensive cattle production areas nutrient leaching due to inappropriate manure storing and spreading causes environmental problems. According to the Ministry of the Environment (ANON. 1995, pp. 72-73), improving the state of waters through a substantial decrease in nutrient leaching, reducing the amount of released ammonia from manure storing and spreading, reducing the use of pesticides, and maintaining and improving the agricultural landscape and biodiversity in agricultural areas are needed in order to achieve sustainable development in agriculture. The primary measure in carrying out these changes is the Finnish Agri-Environmental Programme.

2.3. The Finnish Agri-Environmental Programme

The Finnish Agri-Environmental Programme for 1995-99 consists of four elements: the General Agricultural Environment Protection Scheme, the Supplementary Protection Scheme, Advisory Services, and Training and Demonstration Projects. The two last measures are marginal in scale compared to the SPS and especially to the GAEPS that is the cornerstone of the whole FAEP.

The FAEP aims at compensating farmers for costs or income losses caused by measures to protect the environment or landscape management. Securing the income of farmers in the changing economic conditions is also a goal of the FAEP. The objectives of the FAEP are:

- to reduce pressures on the environment, especially on surface waters, ground water, and air, and to reduce hazards caused by the use of pesticides
- to preserve biodiversity and manage agricultural landscape
- to protect wildlife habitats and endangered species
- to produce agricultural commodities in an extensive and environmentally friendly manner.

Assessing the overall impact of the FAEP is of course very difficult and cannot be appropriately verified until after several years of implementation of the measures. However, some estimates of the expected impacts have been presented. For instance, long term effects of the FAEP with respect to water quality are estimated to be an about 20-40 % decrease in the erosion and phosphorus and nitrogen runoff. This should slow down substantially the eutrofication in rivers and inner lakes in Southern and Central Finland and especially in the coastal areas of the Baltic Sea (ANON. 1994).

The general scheme GAEPS is available in the whole country, and it is intended to cover as large a share of the total agricultural area as possible. In

order to get support under the GAEPS, the following criteria[2] must be fulfilled in farming practices:

1. Farm environmental management plan must be prepared
2. Certain base level of fertilizing must not be exceeded
3. Manure must be appropriately stored and may not be spread on frozen soil or snow.
4. Stocking density must be below 1,5 LU/ha
5. Buffer strips (width 1 to 3 m) must be left on the sides of main ditches of water courses
6. At least 30 % of arable land must be covered by plants during the winter in areas A and B
7. Landscape and biodiversity must appropriately maintained on the farm.
8. Spraying machinery must be tested by an authorized agency and pesticides may be applied only by a person who has completed training on pesticide use.

Premiums paid for participating the GAEPS differ between support areas and cultivated plant (see Annex 2 for premiums). Support levels vary between FIM 250 and FIM 1,730 (ECU 40 - ECU 275[3]), and they are the highest in area A and decrease towards the north. In the southern areas, especially in area A, the GAEPS premiums compensate for the income losses that occured as Finland joined the EU in 1995. This policy is justified by the fact that, without any compensation, the continuation of agricultural production would have been endangered.

According to the agri-environmental protection scheme, farmers must be compensated for any additional costs or income losses due to undertaking environmentally beneficial measures (EEC Reg. No. 2078/92). Thus, the premiums paid should in principle reflect the actual cost of undertaking the required measures under the GAEPS. Determining the exact costs of fulfilling the criteria is difficult, but some overall conclusions can be drawn. First, the incentive to join the GAEPS is no doubt the highest in the case of the farms in area A, where the premium is the highest. Secondly, especially on animal husbandry farms, the cost of joining the GAEPS can be substantially higher than the premium if high investments on storage capacity for manure are needed in order to have large enough stores for the annual accumulation of manure. Because it is impor-

[2] In addition, the applicant may not be over 65 years old and the farm must have at least one hectare of arable land.

[3] FIM = ECU 5.7

tant to make animal husbandry farms participate in the GAEPS, focusing investment aids on these farms may be needed (KUHMONEN et al. 1994, PIRTTIJÄRVI et al. 1995).

The Supplementary Protection Scheme is intended to support special measures to improve the environment, and it is directed to a limited number of farms. The premiums paid under the SPS are more strictly based on the actual costs of implementing a certain measure than the premiums under the GAEPS. The farmer must participate in the GAEPS in order to be eligible for the SPS, which includes support for the following measures:

- organic production and conversion to this
- establishment of riparian zones and treatment of runoff waters from arable land
- commitment to storing, handling, and using manure from other farms
- landscape management and enhancing biodiversity
- extensification of agricultural production
- rearing animals of the local breeds in danger of extinction.

3. Implementation of the Finnish Agri-Environmental Programme in 1995

3.1. Participation in the General Agricultural Protection Scheme

The GAEPS attracted even more farmers to participate than expected. Some 80,000 farms in total joined the programme, and only about a fifth of all farmers did not to participate in the programme. The average rate of participation was the highest (89 % of all the farms) in support area A. In areas B - C4 the rate of participation varied between 73 % (C4) and 83 % (C2 areas). Because most of the farms are located in areas A to C2 and the environmental burden caused by agriculture is the most serious in those areas, the high coverage of those areas is very significant.

Cultivated area under the GAEPS is at least as good an indicator of the impacts of the scheme as the relative amount of participating farmers. The GAEPS covers even more of the cultivated area than of the total number of farms (Figure 1). The GAEPS has almost a full coverage (96 %) in area A, and coverage of the cultivated land in the whole country is as high as 90 %. The coverage of the scheme in areas C2, C3 and C4 combined is 89 %. The original target of some 87 % coverage (ANON. 1994) of the total arable land area was slightly exceeded.

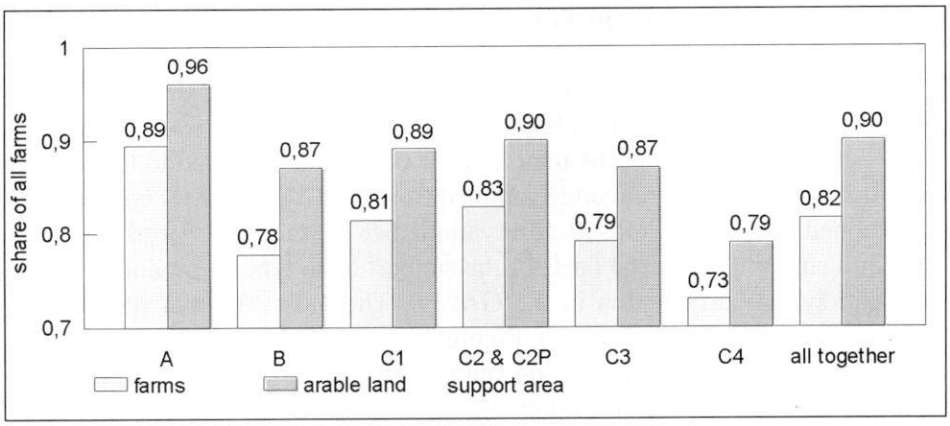

Figure 1. Share of farms and arable land under the GAEPS.

Differences in the incentive to participate in the GAEPS between support areas and types of production seems to have caused only a small number of farmers to stay out of the GAEPS. Figure 2 shows that in the main types of production[4)] participation is around 80 % of all farms and the GAEPS covers around 90 % of the cultivated land on these farms. Pig and poultry farms make an exception in this sense, and coverage of the GAEPS is some 85 % of arable land.

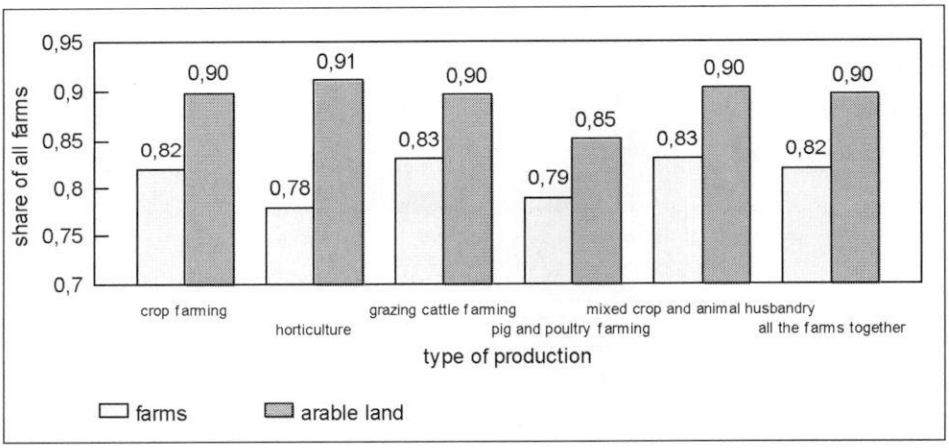

Figure 2. Participation in the GAEPS by main types of agricultural production.

[4)] Although all types of production are not included, Figure 2 covers some 95 % of the total cultivated area.

3.2. Non-participants of the GAEPS

In order to collect information on participating and non-participating farms in the GAEPS, the Agricultural Economics Research Institute carried out a farm survey[5)] in February, 1996. The total number of farmers included in the survey was 1015, and they were randomly sampled from the IACS-register by using 40 proportioned subsamples (15-50 observations per subsample). Farms were divided into subsamples on the basis of the support area, type of production, and participation/non-participation in the GAEPS. The most common reasons for the non-participation are reported in Figure 3.

As it could be expected, among animal husbandry farms the criteria of minimum area for manure spreading and the investment need for manure storing facilities were the most important reasons for not joining the GAEPS. Some third of the non-participating pig and poultry farms face the biggest difficulty in fulfilling the criteria for a minimum area for manure spreading, whereas a third of farms with grazing cattle (dairy farms mainly) consider the investment need for manure storing facilities to be the most difficult criteria to fulfill. The situation on farms with mixed animal husbandry and crop production appears to be similar to that on farms specialized in grazing cattle production. For the non-participating crop farms, the fertilizing criteria, the investment need, the buffer zone criteria, and the lack of information available were the most significant reasons for not joining the GAEPS.

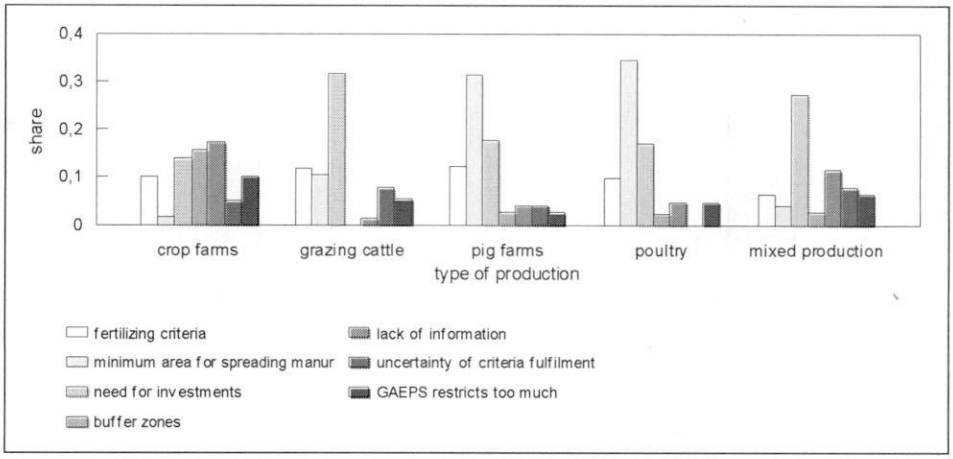

Figure 3. Reasons for not participating the GAEPS as stated by the farmers.

[5)] Survey was carried out for MTTL as an informed phone survey by the Food & Farm Facts Ltd.

3.3. Total expenditure on the FAEP

Even if 1995 was the first year of implementation of the FAEP and especially the supplementary measures did not attract as many farmers as anticipated in 1996-99, the level of participation in the FAEP was surprisingly high. Total expenditure on the FAEP was some FIM 1,408 million (ECU 247 million). The GAEPS accounted for the major part of the expenditure of the FAEP; almost 95 % of the total expenditure, i.e. FIM 1,331 million, was spent on the general scheme.

Measures under the SPS cost altogether some FIM 80 million (ECU 14 million), and most of it (FIM 36 million) was spent on organic production or conversion to this (Figure 4). Area under organic production was some 25,000 hectares in 1995 and almost 30,000 hectares were under conversion (ANON. 1996). The support for liming sulphatic fields also played a major role in the costs of the SPS. Because supplementary measures are not expected to be implemented in a large scale until 1996, the expenditure on SPS can be expected at least to increase slightly in 1996-1999. For instance, if all farmers who intended[6] to shift into organic production actually do so in 1996, the area under organic production or conversion to this will be up to some 85,000 - 95,000 hectares in 1996. Especially many of the crop farms in areas A and B seem to have intentions to shift into organic farming.

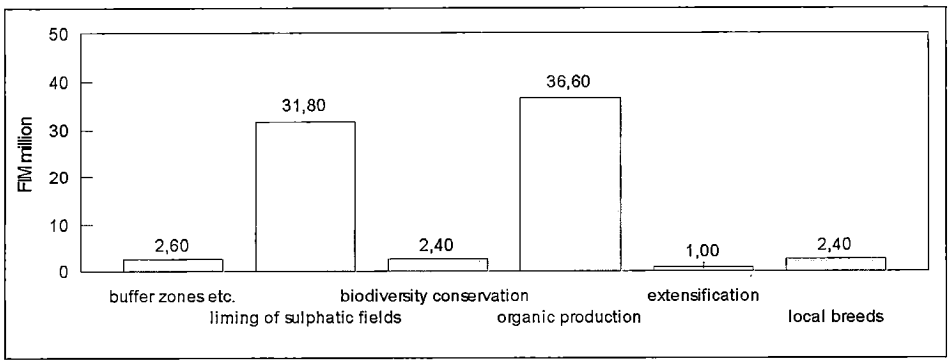

Figure 4. Expenditure on SPS in 1995.

[6] The estimate of area for organic production in 1996 is based on the farm survey in February 1996, reported in more detail earlier in chapter 3.2.

4. Farmers' opinion on the farm level impacts of the GAEPS

4.1. Impact of the GAEPS on farming methods

Farmers' responses describing in a zero to four scale how much the GAEPS criteria affected farming practices on their farm are reported in Figure 5. Numbers and explanations on the horizontal axis are the specific GAEPS criteria as described in detail on page 4 of this paper. Bars represent the mean score of the responses for particular criteria in different types of production. The level of impact was described as follows: Impact was 4=very significant, 3=significant, 2=somewhat significant, 1=not very significant, and 0=not significant at all.

The mean of the responses on the impact of the GAEPS varies between 0 and 1, 5, and the GAEPS did not affect actual farming practices in a very radical manner (Figure 5). The most significant changes in crop farming are considered to result from the fertilizing criteria and setting up the buffer zones. Preparation of the farm environmental management plan has also affected farming methods quite significantly. Setting up buffer zones has had a rather significant impact on animal husbandry farms. The criteria for manure facilities has also been significant, and animal husbandry farms will face changes in their practices for storing and spreading manure. In 1996-1999 it can be expected that e.g. the criteria for a maximum fertilizing level will have a more significant impact on farming practices. In 1996-1999 farmers have a stronger incentive to lower the fertilizing levels, because if a 10 % decrease in fertilizing from 1994 to 1996 is not verified, the premiums paid under the GAEPS are lowered by 10 %.

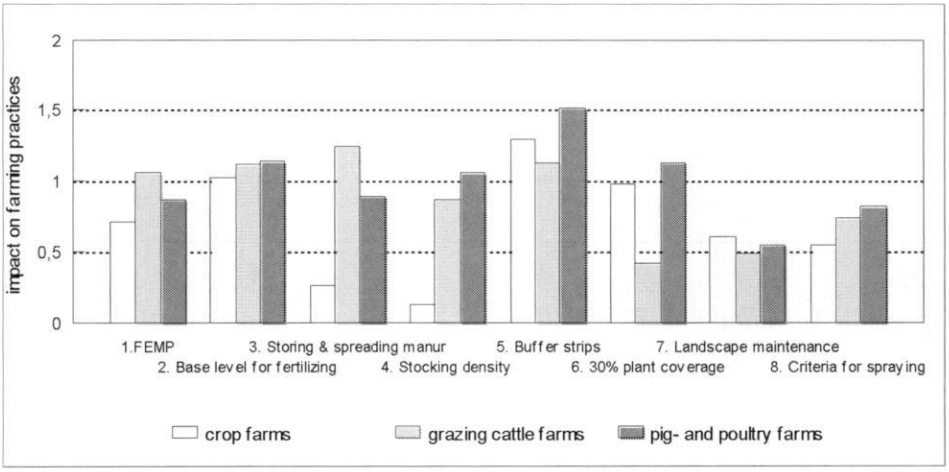

Figure 5. Impact of the GAEPS criteria on farming practices.

4.2. The GAEPS and financial situation of farms

The relative importance of the GAEPS support to the financial situation of the farms is reflected by the average relation between the GAEPS support and the net farm income[7]. Figure 6 is based on the data from bookkeeping farms of the Agricultural Economics Research Institute, and it shows the averages of this relation without taking any costs due to the GAEPS into account. To find out the actual relation, the cost of fulfilling the criteria[8] should of course be taken into account. Although Figure 6 does not describe the "income effect" of the GAEPS support in a fully correct manner, it gives information on the financial importance of the GAEPS in different regions. Taking the actual farm-level costs of the GAEPS into account would lower the share of the support of the net farm income substantially, but the relative importance of the premiums in different areas would remain basically the same.

A high rate of participation is evident in area A; the support level being this high, the incentive to join the GAEPS is remarkably high. The average net farm income in area A without GAEPS support would vary from some FIM 50,000

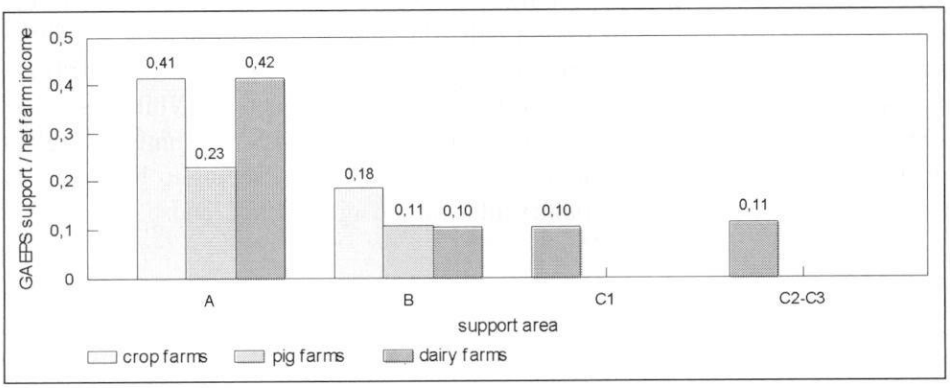

Figure 6. The share of the GAEPS support of the net farm income.

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[7] Net farm income is defined here as the revenue left for paying for farmer's own capital and labour.

[8] Summarising the impact of the GAEPS on the financial situation of the farms is not an easy task because costs of fulfilling the GAEPS criteria cannot be precisely calculated. Cost estimates in the Finnish proposal for the agrienvironmental programme (ANON. 1994) vary between FIM 400-800/ha in area A, FIM 300-600/ha in area B, and between FIM 100-200 in C areas. However, the actual costs differ most likely with respect to the type of production. PIRTTIJÄRVI et al. (1995) present cost estimates between FIM 40-260/ha, depending on the area and type of production. Estimates are not straightforwardly comparable because PIRTTIJÄRVI et al. (1995) omit the investment and labour costs.

(crop and dairy farms) to FIM 100,000 (pig farms), which is certainly a level at which it is questionable whether the farm is able to stay in production. Especially in the case of C areas it is surprising that most farms actually participate in the GAEPS, regardless of the rather low financial incentive to use environmentally sound production methods.

The results of the survey concerning the importance of the GAEPS premium for the farm finances are reported in Figure 7. They show that for some farms premiums are financially very significant, whereas on some other farms the costs of fulfilling the GAEPS criteria may be higher than the GAEPS premium. According to farmers, the financial importance of the GAEPS is very significant especially in area A. Significance decreases towards the north (areas B, C1, and C2-C4), and in areas C2-C4 more than 15 % of the participating farmers expect more costs than revenues from participating in the GAEPS. An almost similar pattern in this respect in area A can be due to e.g. protest answers. Further exploration of the survey data is needed to study the characteristics of the farms stating that the costs of participation are higher than the premiums. Even though a plausible explanation is that some farmers are indeed willing to pay for improvements in the environment, some of the presently participating farmers might not stay in the GAEPS for the whole period 1996-1999. For instance, some animal husbandry farms have a rather high incentive to leave the GAEPS if fulfilling the criteria for manure spreading and storing is very difficult. It is also possible that the GAEPS is an incentive to quit production. While almost a fifth of the farmers in area A state that without the GAEPS the continuation of farming would have been questionable, the GAEPS also seems to have had a major role in maintaining the countryside and the agricultural landscape.

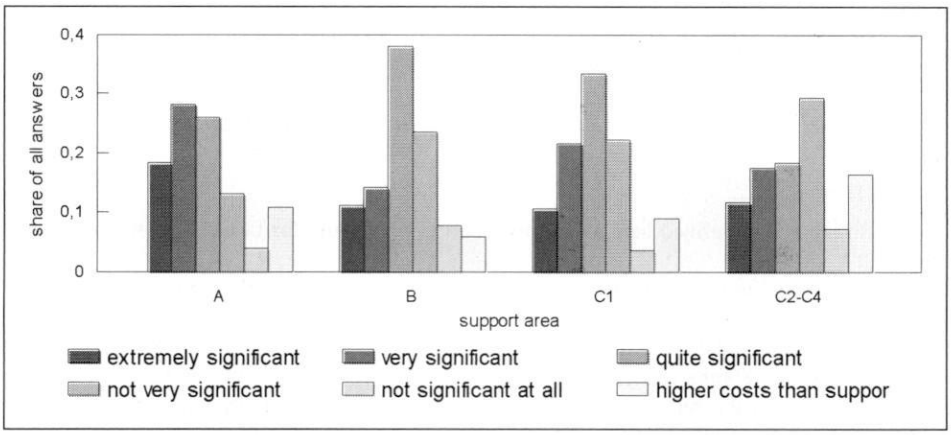

Figure 7. Financial significance of GAEPS as stated by the participating farmers.

5. Conclusions

The Finnish Agri-Environmental Programme is the primary measure in improving and maintaining rural environment by means of integrated agricultural and environmental policies. Implementation of the FAEP began in 1995, and participation in the GAEPS, the most important part of the FAEP, was very high, i.e. 80 % of the farms and 90 % of the cultivated area.

Variation in participation between the support areas and production types was quite low, although there exists a decreasing trend in participation towards the north, and especially in the case of pig and poultry farms participation in the GAEPS was lower. Participation of farms with grazing cattle was high, and the most important reason for their non-participation was the investment need for manure facilities. The high rate of participation of animal husbandry farms is expected to result in reduced nutrient leaching from manure spreading and manure storing facilities. However, some animal husbandry farms might leave the GAEPS or stop the production if the investment need for manure facilities is too high and no investment aids are available. Farmers' willingness to join the GAEPS, even when it might cause them additional costs, also signals their willingness to contribute for improving the rural environment.

Crop farms participated the GAEPS in a very large scale and e.g. in area A the GAEPS covers the cultivated area almost totally. Areas of intensive crop production are covered by the GAEPS in a very large scale, which can be expected to result in a positive development in solving the agri-environmental problems of those areas.

Fulfilling the GAEPS criteria was not very difficult or costly for the major part of presently participating farmers, and almost all of the farms can be expected to stay in the programme. Perhaps the most important single change in farming practices due to GAEPS criteria was setting up some 28,000 km of buffer zones (ANON. 1996) by water routes and main ditches, which will certainly have a positive contribution in decreasing erosion and nutrient leaching. It must be noted that the year 1995 was the first year of the GAEPS and the criteria will not have a full impact until 1996 and 1997, when all the criteria must be fulfilled.

It is of course too early to say how positive an impact on the environment the FAEP has in the long run. For instance, verifying the decreased nutrient leaching and its positive impacts will take several years. In spite of this, already the first year of implementation shows that the goal of farmers' participation in the programme is fulfilled better than was anticipated, and positive environmental impacts can be expected in the near future. However, the big question with respect to the rural environment is how agriculture will adapt to the economic environment of the EU and what kind of implications this will have to the countryside.

The impact of supplementary measures under the SPS can be seen, for instance, in the substantial increase of organic production. The area under conversion to organic production in 1995 (i.e. 30,000 hectares) was already over double the area already in organic production. Conversion into organic production can be expected to continue at an almost steady rate in 1996. Organic production is an attractive alternative for Finnish farmers because it is now an economically competitive alternative to conventional farming, especially in dairy production (KOIKKALAINEN 1996, p. 41). The problem with the organic farms is, however, how to make the living after the premiums decrease substantially after the three-year period of conversion.

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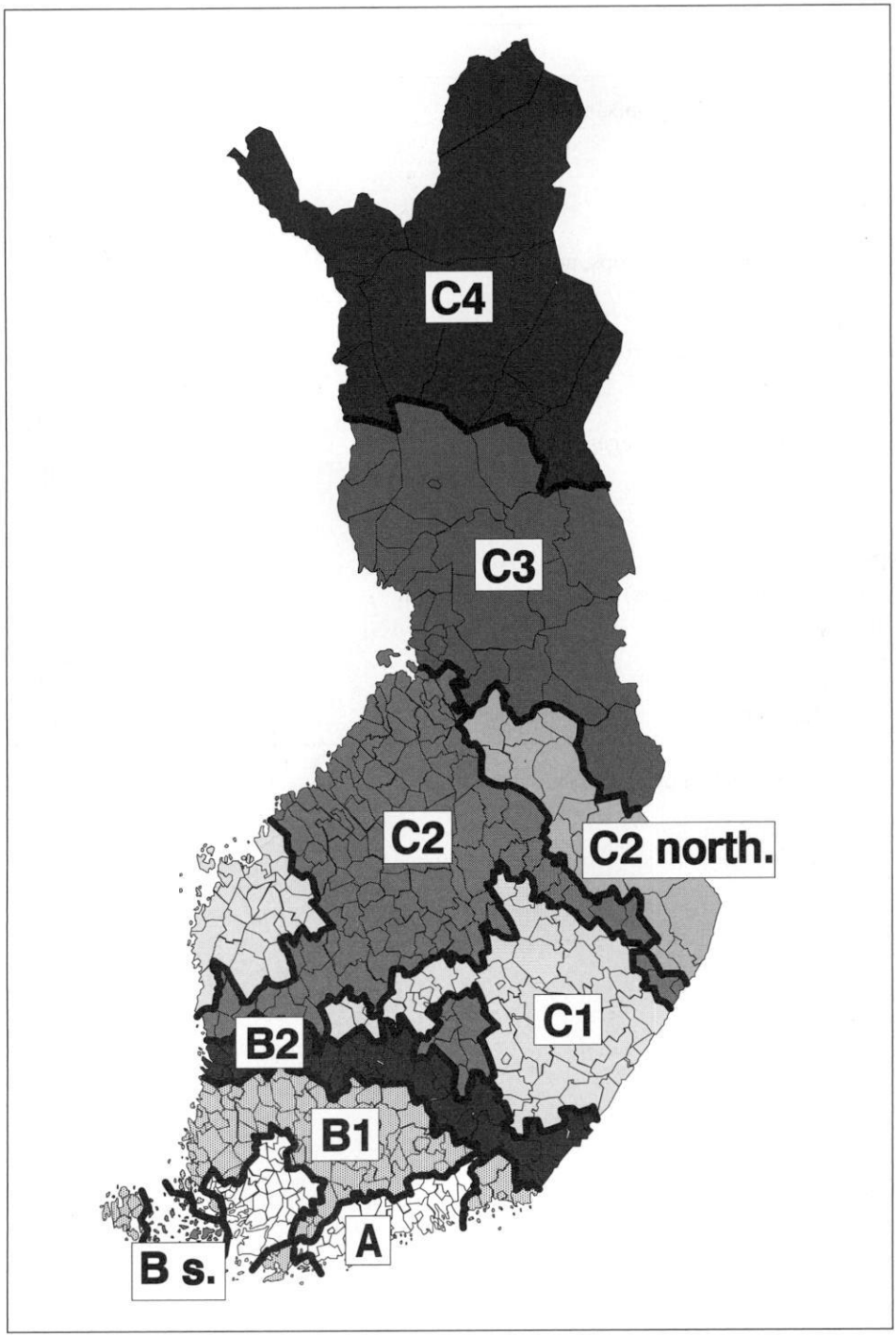
Appendix 1. EU support areas.



Appendix 2. The annual premiums of the FAEP.

GAEPS	FIM/ha	ECU/ha
Cereals, peas, oil-seed plants, starch potato		
- area A	950	167
- area B	540	95
- area C1	365	64
- areas C2-C4	230	40
Grass, sugar beets, other crops, non-food production		
- area A	1,570	275
- other areas	770	135
Vegetables, fruits and berries		
- annual plants	1,570	275
- perennial plants	3,990	700
Long term set aside with vegetation		
- area A	540	95
- area B	365	64
SPS		
conversion period (3 years) to organic production		
- area A	1,620	285
- area B	1,440	253
- areas C	1,265	222
organic farming	630	111

see e.g. ANON. 1994 for other premiums under FAEP

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FINNISH HORTICULTURE WITHIN THE EU

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The Central Organization for Finnish Horticulture

Abstract. There are 9,000 horticultural enterprises in Finland. These enterprises produce vegetables and flowers in greenhouses and berries, fruits, vegetables and nursery products in the open field. Horticultural production in Finland employs directly some 20,000 workers. Furthermore same amount of seasonal workers are needed. The value of horticultural production in Finland was about 2.3 billion FIM in 1994.

The average size of horticultural enterprises in Finland is rather small. Finlands northern location causes short growth seasons and because of this the yields are smaller than in the southern countries. Because of these reasons the production costs per produced kilo or piece are higher in Finland than in other EU-countries.

Before Finland became a member of the European Union, the horticultural production was protected by border measures. Horticultural products' import was mainly supplementary to the local production. Import of foreign horticultural products was possible mainly when there was no domestic production or when the Finnish production had been consumed. Because of this, the producer prices in Finland were quite high in for instance comparison with Denmark and the Netherlands. The border measures were important for the continuous development of Finnish horticultural production in spite of the high production costs.

EU-membership had a big and rapid influence also on the horticultural production. Finland was in one night a part of the European common market. In practise it meant that foreign products were now for sale permanently throughout the year. The free competition dropped clearly the Finnish products producer prices in 1995. The clear fall in the producer prices and the unchanged production costs caused a weakened financial situation for Finnish horticultural producers.

In order for Finnish horticultural production to adapt to EU-membership, both supportive actions and new operations models are required. In the membership negotiations between Finland and the EU, an agreement was made on a national support for Finnish horticultural producers during the five years transition period. The support will partly compensate the income losses caused by the

fallen producer prices. This national support which is reduced yearly will compensate only a part of the income losses. It is however important to ease the adaptation of the production to the EU-membership. A longer period support has been negotiated for northern Finland.

The future plan for the horticultural sector consists partly of the increased appreciation and differentation of Finnish horticultural products. An environmental support partly financed by EU has been taken into use. It is the intention that this support will lead the production into a more environmental friendly direction. The structural development of the horticultural sector in the future has also been taken into consideration. Furthermore EU has brought out the question and the possibility of a marketing cooperation. It is a belief that of these different factors such a combination can be made with which the preconditions for horticultural production can also be secured in the future in Finland, in the new member state of EU.

Index words: Finnish horticulture, EU, economics, structure, adaptation, support, future

1. Horticulture in Finland

The area for professional horticultural field production in Finland is about 17,500 hectares and the total heated greenhouse area about 500 hectares (ANON. 1995a). The value of horticultural production in terms of producer prices was about 2.3 billion FIM in 1994 (see Table 1)(ANON. 1995b).

About two thirds of the total area of Finland's greenhouse cultivation is devoted to vegetable cultivation and one third to flower production. Among the greenhouse vegetables tomatoes and cucumbers are the most cultivated by area.

Table 1. The value of Finnish horticultural production at grower prices 1994, FIM mill.

Greenhouse production total	1,393
Vegetables	650
Ornamentals together	743
Field vegetable production total	870
Vegetables	455
Fruit and berries	315
Nursery products	100
Total	2,263

Source: ANON. 1995b.

Table 2. Average enterprise size in horticultural production in Finland.

Greenhouses, m^2	1,531
Field production, ha	2.15

Source: ANON. 1995a.

The most important cut flowers before accession have been roses, chrysanthemums and various bulb flowers. Poinsettias, begonias and african violets are the most cultivated pot flowers (ANON. 1995a).

Nearly one third of field vegetables is for commercial production for the processing industry. Carrots, garden peas, onions and cabbages are cultivated on a larger scale in Finland. The largest part, about two thirds of the area for berry cultivation, is for strawberries. Other cultivated berries are currants, raspberries and gooseberries. In Finland, only cultivation of apples has any commercial significance in fruit production (ANON. 1995a).

1.1. Structure of the sector

There are about 9,000 horticultural enterprises in Finland. Small enterprise size is typical for Finnish production (see Table 2) (ANON. 1995a). Competition in the European market will probably foster the growth in the size of enterprises in the future.

The horticultural branch provides employment especially in the remoted districts and rural areas. Horticulture employs more than 15,400 permanent workers and further 6,000 workers as a seasonal labour force (ANON. 1995b).

Horticultural enterprises are located all over the country. Natural conditions, soil and climate have guided site selection (see Figures 1a and 1b). This arises also because of the long distances in Finland and from the fact that the consumption centers are in various parts of the country. The horticultural production has an important local and economical meaning also in the Finnish archipelago. There the long growing season and early spring give good possibilities for the production of many special vegetables and early vegetables.

1.2. Natural conditions

Natural conditions of Finland influence significantly the profitability of horticultural production. Growing season is short in Finland and it influences yield level and variety assortment. The yield levels are low and the share of fixed costs per unit produced is high. The harvest season is relatively short and, therefore, the crop has to be harvested before the ground freezes and the snow

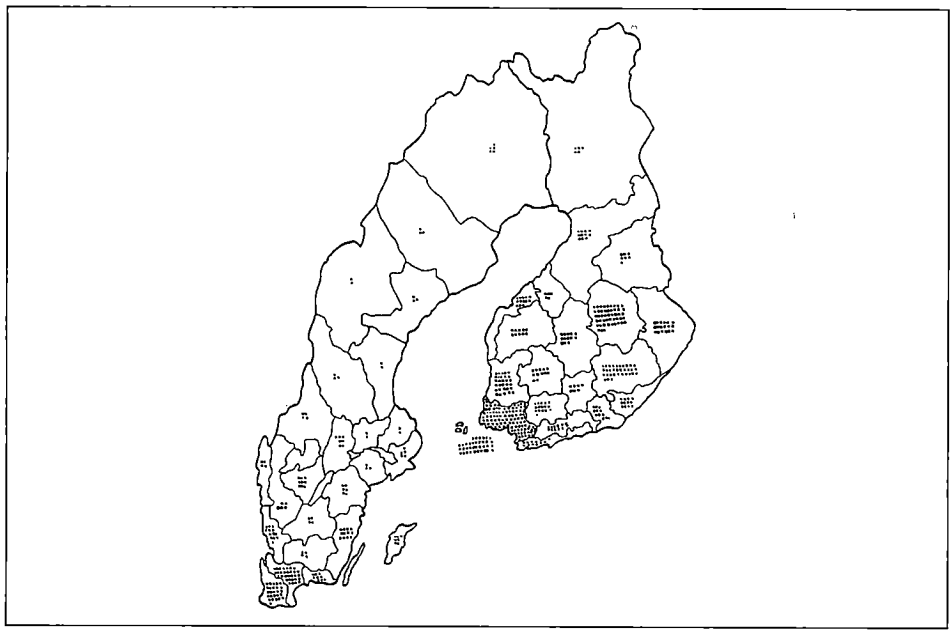

Figure 1a. Location of horticultural field production enterprises in Finland and in Sweden. 1 point = 20 enterprises. Source: ANON. 1991, ANON. 1992.

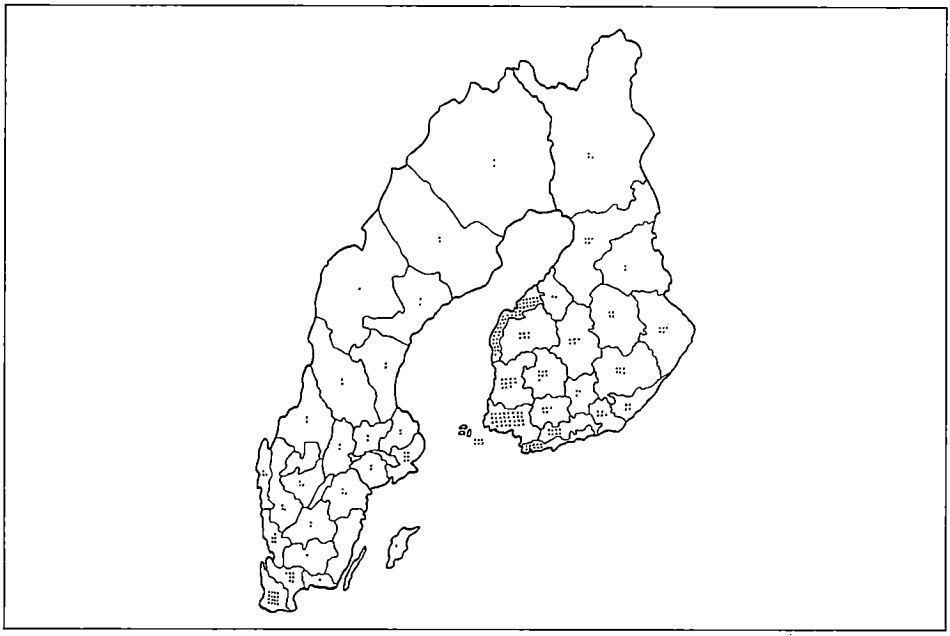

Figure 1b. Location of greenhouse enterprises in Finland and in Sweden. 1 point = 20 enterprises. Source: ANON. 1991, ANON. 1992.

falls. The harvest season limits the possibilities to use machines that are joinly owned, and neither is it possible to stagger the harvest. Early harvest and low temperatures in winter also increase storage costs.

Northern location has also an influence on the greenhouse production: the distribution of total radiation and sunshine hours is unfavourable. The amount of light in late autumn and early winter is less in Finland than for example in Denmark. Because of the light circumstances, the growing season of greenhouse production begins later and ends earlier in Finland than in Central Europe. Harvest season does not begin in Finland until in that phase of the cycle where the prices of early season crops in Center Europe already have began to fall (LEHTIMÄKI 1993).

On the other hand, northern climate gives also advantages for Finnish production. Summer in Finland is short and light. For this reason the growth is fast, and the respiration losses of plants remain small. Therefore, the plants are aromatic and rich in vitamins. Furthermore, the cold winter prevents pests to spread and use of pesticides in Finland can be reduced to minimum, which is less than in many other countries (VESANTO and LEHTIMÄKI 1993). In that way, natural conditions offer good basis to Finnish production to develop even safer products and environmental friendly production methods.

2. Finland is now a member state of EU - what did change?

Before Finland became a member of the European Union, the horticultural production was protected by border measures. The Finnish border measures consisted of quantitative restrictions, import levies and custom duties. Quantitative restrictions were used in such a way that import licenses were admitted only when domestic production did not cover domestic demand. Horticultural products' import was mainly supplementary to the local production. Therefore, the producer prices in Finland were high compared to Denmark and the Netherlands (LEHTIMÄKI 1993).

2.1. Producer prices

Compared with the situation in Finland 1992-93, the producer prices fell 10-50 % in 1995 depending on the product (see Table 3). The situation is most difficult with cut flowers, especially carnations and chrysanthemums. These flowers are produced very cheaply in third countries and import is easy. The producer prices of vegetables for fresh consumption (both in greenhouses and in the open) decreased about 25-35 %. The producer prices of vegetables produced

Table 3. Producer prices in Finland, FIM/kg or FIM/pc.

		Price 1992-93	Price 1995	Difference FIM/unit	Diff. %
Onion,	FIM/kg	3.62	2.54	-1.08	-30
Carrot*,	FIM/kg	3.62	1.70	-1.92	-53
White cabbage,	FIM/kg	1.71	1.32	-0.39	-23
Apple,	FIM/kg	6.86	4.97	-1.89	-28
Strawberry,	FIM/kg	16.00	14.51	-1.49	-9
Tomato,	FIM/kg	9.72	6.21	-3.51	-36
Cucumber,	FIM/kg	8.51	6.18	-2.33	-27
Cut roses,	FIM/pc	2.64	2.01	-0.63	-24
Carnations,	FIM/pc	2.92	1.29	-1.63	-56
Begonia,	FIM/pc	12.75	10.75	-2.00	-16
Cyklamen,	FIM/pc	13.66	10.73	-2.93	-21

* includes washed and unwashed carrot and also packings of 400 g, 500 g and 1 kg.
Sources: ANON. 1996.

for processing industry changed -20 %. During the year 1995 the berries, for example strawberry, had only a slight drop in producer prices (LEHTIMÄKI 1996).

The studies of a marketing promoting organization for horticultural products show that Finnish consumers prefer domestic production. In the future we'll see if consumers are willing to pay more for Finnish horticultural products.

2.2. Production costs

In Finland yearly cultivation costs of horticultural products are higher compared with the costs, for example, in the Netherlands. This is due to both higher costs and lower yields. When the different costs have been compared, pesticide costs were the only expense share that was lower in Finland. Finnish enterprises are quite small and because of this the cost of buildings, machines and equipment is rather high per produced kilo or piece (LEHTIMÄKI 1993).

One of the greatest yearly expense shares for horticultural production is the transportation cost. In Finland the horticultural enterprises are often situated in the rural areas. Long distances cause higher transportation and delivery costs compared with the crowded districts of Central Europe. High transportation costs in Finland are also caused by small production units and production quantities.

Table 4. Change in some production costs in Finland, 1993-1995.

Seeds, plants	0
Fertilizers	-15 %
Pesticides	-30 %
Packing material	0
Buildings	-8 %
Labour costs	+8 %

Source: LEHTIMÄKI 1996.

After the membership of EU the production costs have not changed much. There are some expense shares that have decreased (Table 4). But on the other hand the labour costs, that have a big impact on the total expenses have increased. On the whole the level of production costs was the same during the year 1995 as in 1993 (LEHTIMÄKI 1996).

2.3. Marketing

Finnish horticultural growers have traditionally marketed their products themselves. In EU the common market is open and important buyers demand big quantities. Also the producers in many EU-countries have joined together so that they can offer the buyers a bigger amount and a larger assortment of horticultural products. For example in the Netherlands and in Denmark the share of vegetables marketed by producers' organizations is 70-90 %. These are countries with a large export of horticultural products. By joining together the producers have been able to guarantee the sufficient amount of products and continuity that is needed in export trade.

In Finland the share of products marketed by producers' organizations has been 20 % before accession. As a member state of EU the Finnish producers should be able to offer the buyers the same service as their competitors. In the future the producers' organizations may be one solution for Finnish growers to remain on the market. In Finland the main target for the producers' organizations is not to export but to make it possible for many producers to survive and to be able to continue the horticultural production (LEHTIMÄKI 1993).

3. Adjustment of horticultural enterprises

There were no direct support for horticultural production in Finland before accession to the EU. Producer prices were quite high due to the border measures. The accession to the common market affected drastically Finnish horticul-

ture. The clear fall in the producer prices and the unchanged production costs caused weakened financial situation for Finnish horticultural producers.

3.1. Support measures

Finnish producers can use general EU support measures. Support for less favoured areas (LFA) is used in an area that covers 85 % of the arable land of Finland. An environmental support partly financed by EU has been taken into use in Finland. It is the intention that this support will lead a big part of Finnish production into a more environmental friendly direction. The first year showed that 80 % of all horticultural and agricultural producers applied for the environmental support.

During the membershipnegotiations between Finland and the EU, an agreement was made on a national support scheme for Finnish horticultural producers for a five years transition period. The national horticultural support is based on calculations of income losses. This support has two different parts: area related support and storage support. This support is reduced yearly and it will compensate only a part of the income losses. A longer period support has been negotiated for northern Finland. More efforts are, however, required to find solutions how to adapt to the common market.

3.2. Effects of accession on farms

In the following the effects of accession to EU on Finnish horticulture were calculated based on theoretical farm models (LASSHEIKKI 1994). The analysis is based on two cases, one for field production of onion and one for greenhouse tomatoe production. Both enterprises are situated in the supportarea B. The production area of the farms in case is bigger than the average production area in Finland. The farms were selected as they represent farms thought to be able to develop further and to survive in the future. Both farms market their products to the whole sale market. The return on equity was calculated in both cases using the salary of 39 FIM/h. Development of production costs (see Table 4) has been noticed in the calculation.

Figure 2 shows that gross return from field production of onion dropped 23 % in 1995 compared to the situation before accession. Agricultural income remain positive even after the transitional period. Return on equity is, however, negative already in 1995. This means that the farm will not be able to invest nor will the farmers be able to get full payment for their work. The situation is worse in the case of greenhouse tomatoe production than in field production. Figure 3 shows, that the gross return from greenhouse tomatoe production dropped after accession 38 %. Agricultural income is turned negative in greenhouse tomatoe production in 1998 despite of the national supportscheme for the

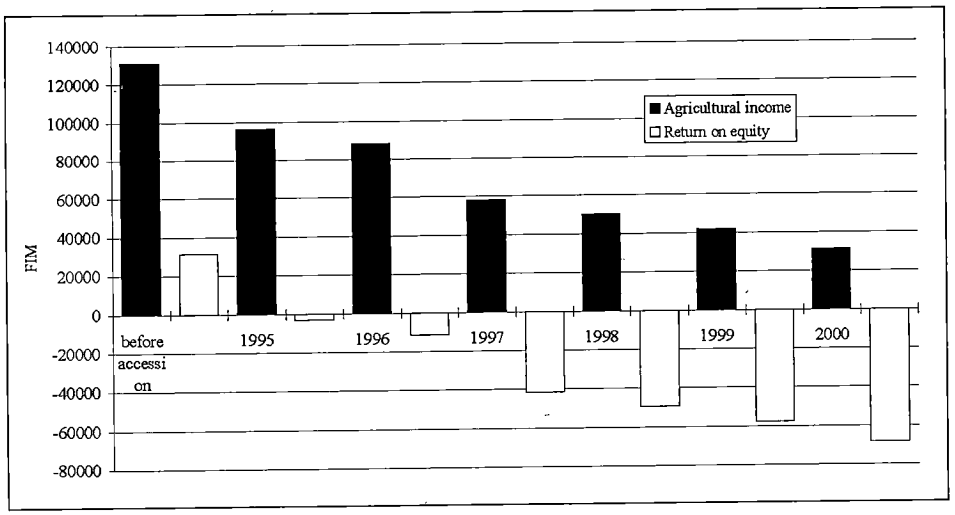

Figure 2. Agricultural income and return on equity in field production in the supportarea B. The farm of 8 ha is specialized in producing onion for storaging. No support is granted before accession. The agrienvironmental support and LFA-support are granted for the production. National aid consists of area related support and aid for storaging for the transitional period 1995 - 1999.

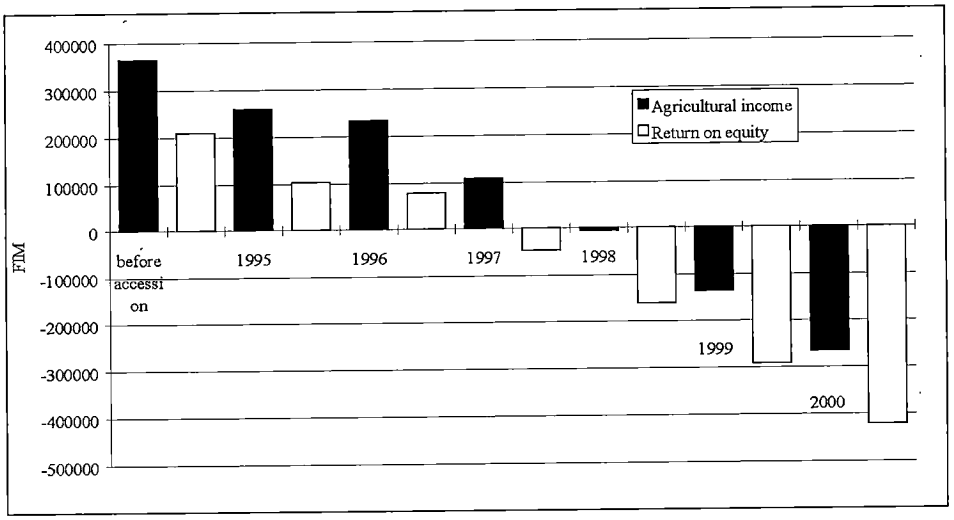

Figure 3. Agricultural income and return on equity in greenhouse production in the supportarea B. The farm of 5000 m^2 is specialized in producing greenhouse tomatoes. No support is granted before accession. Support measures consists of national area related support for the transitional period 1995 - 1999.

transitional period (LASSHEIKKI 1996). It's clear, that additive supportive and constructive measures are needed if price level will not arise compared to the price level in 1995.

4. Producers' future plans

What did the producers think during the first year of membership? How do they continue their production after these changes? These and many other questions were made to 270 horticultural producers in the end of 1995. The interviewed producers represent all horticultural branches in Finland. We wanted to find out by this survey if the growers have made decisions concerning their own future, how their economical situation has changed and how do they plan to market their products in the future etc.

In the interview the producers were asked about their plans for the next 10 years. The results show that almost every two of three growers are going to continue cultivation at least 5-10 years, and about 20 % for at least 3-5 years. They all were asked if they are going to do some changes in the future concerning the cultivation. Every two of three growers are keeping their cultivation unchanged and they'll find out if it is possible to continue this way (see Figure 4). About 17 % of the growers are going to extend their horticultural cultivation. And equally many of the interviewed growers are prefering new possibilities besides the horticultural cultivation.

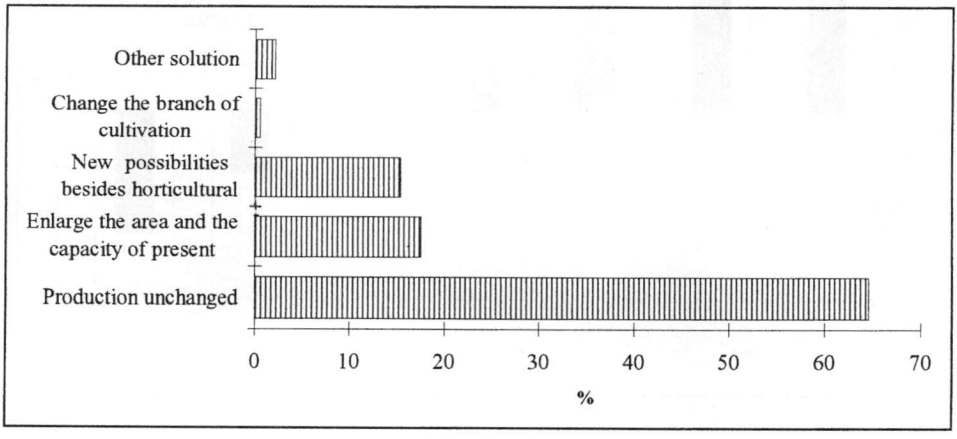

Figure 4. Future plans of those Finnish horticultural growers who intend to continue cultivation at least 3-5 years (December 1995).

Only 3 % of horticultural producers are going to give up cultivation immediately and 12 % are going to give up in 1-2 years. The producers were asked about their plans for the farm after giving up the production themselves. Every other of these growers has one who will continue the work in the farm. There were just 1.5 % of all the interviewed producers who were going to stop cultivation and find a new profession.

These results show that the structure in Finnish horticultural production is changing slowly. One reason for that is the fact that Finnish enterprises are located all over the country, very often in the rural areas where the producers do not have many other possibilities for the future. Big economical changes in the Finnish horticulture and agriculture do not give the producers possibilities to make investments and extend their cultivation. The interview also showed that 36 % of Finnish horticultural producers have a good professional education. The professional skill and co-operation with other growers will help them to adapt to the changes and the common market (LEHTIMÄKI 1996).

5. Discussion

The future plan for the horticultural sector in Finland is based on measures aiming to increase the consumers' appreciation of the products and on specialisation. The structural development of the horticultural sector in the future also has to be taken into consideration. Furthermore EU has brought out the need for producers' co-operation, especially in marketing. We believe that such a combination can be made of these factors that the Finnish horticulture production can be secured also in the future.

Both supportive actions and new operation models are required for Finnish horticultural production in order to adapt to EU-membership and the common market.

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INTEGRATION AND REGIONAL DEVELOPMENT POLICY; FOOD-CHAIN IN FINLAND

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Abstract. Finnish regional policy has been rather sectoral. The agricultural policy, as a regionally oriented policy, has recognized also the regional differences. Since 1994 the new legislation has been in force; the main idea was to integrate national policies into EU's regional and cohesion policy. At the regional level the programmes have objectives to consolidate strenghts and possibilities by measures funded by all relevant bodies.

In this paper, the programmes, national and regional, have been studied in order to check the role of food-processing chains. The basic idea in the chain-oriented programming is the integrated, synergic development in all the nodes of the chain in order to obtain as high cost-effectiveness as possible.

Most of the programmes include the structural possibility to develope chains and clusters (objective 2 -programmes do not have any priorities or measures of food-chain). Objective 6 -programmes have a good internal structure for food-chains; many counties have well defined measures, even priorities for this purpose. Objective 5b -programmes do not have so clear chain-structures although the regions involved have very high dependency on primary production and/or food-processing industry.

The main problems seem to be in the administration/implementation of the programmes. More integrated co-ordination is needed to figure out the real strenghts and development needs of the regions; sectoral approach is still too tight. The other problem is in the dual development strategy; enterprises and co-operatives have their own strategy which does not match well enough (or support) the regional (political) strategy.

Index words: EU -programmes, food-chain, regional policy

1. Introduction

The Finnish regional policy has been directed for 20 years (since the 60's) to the less-developed regions of the country. During the last ten years the tendency was more or less multisectoral; different types of policies were implemented, rural policy as an example. Agricultural policy has been all the time one part of sectoral policies; seen backwards it has included rather strong inbuilt aspect of the regional development policy.

From the beginning of 1994 the Regional Policy Act was reformed. The main scope was the integration into EU. In the new legislation the regional aspect is strong; planning (programming), recognition of regional possibilities (strenghts), objectives and also tight co-financing of the measures were the main parts of the reform. Also the responsibility of implementation was re-oriented; the counties (municipalities) are now in charge to ensure the bottom-up -administration.

National measures and EU -measures (financed by the Structural Funds) are now running by several different programmes. At this stage, the most important programmes are Objective 6, 5b and 2. National programmes are also in action, but they seem to be in the backgroud. In the beginning of 1997 all the regional programmes are intended to be gathered as a Single Regional Programme for the sake of better co-ordination.

2. Food-Chain in the Programmes

To highlight the role and implementing possibilities of food-processing chain, all the Finnish Objective 6, 5b and 2 plans were analysed (Single Programming

Table 1. Change of value added by objectives 1988-93 in the food-processing industry and agriculture.

Support area	Change, MFIM 1988-90	Change, MFIM 1990-93	Change, MFIM 1988-93	MFIM 1988	MFIM 1990	MFIM 1993
Objective 2	872.40	-543.20	329.20	3,558.70	4,431.10	3,887.90
Objective 5b	2,731.90	-775.90	1,956.00	8,463.40	11,195.30	10,419.40
Objective 6	1,311.20	-347.70	963.50	4,289.40	5,600.60	5,252.90
Non-support area	986.50	75.20	1,061.70	9,471.10	10,457.60	10,532.80
Country total	5,946.00	-1,563.00	4,383.00	25,782.60	31,684.60	30,093.00

Documents and the Regional Plans as well). To figure out the regional differences and similarities, some socio-economic profiles were produced; the main focus was in agriculture, food industry and in those industries/services which support these sectors.

Finnish agriculture is rather sharply regionally differentiated. We can statistically show 4-5 areas/zones of specialization in one or two main products. The dependency of the regional economy may be extremely high in these lines of production. In some sub-regions (parts of counties) 20-30 % of GVA may be formed by one production line and the connected food processing. The following questions arise: How do the development programmes support these chains? Are there any differences in objectives, measures and administrative co-ordination by regions and by production lines?

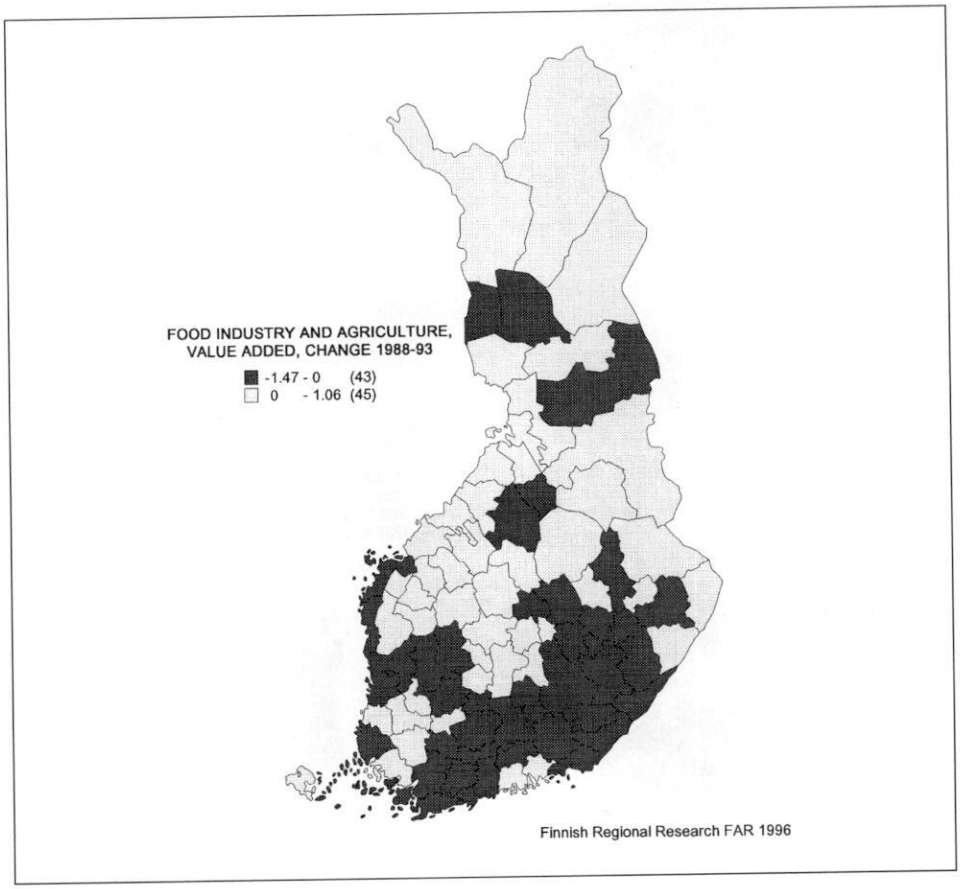

Figure 1. Sub-regions (total number 88; parts of counties) gaining and loosing (dark shading) their relative importance (% of value added) of food-processing industry and agriculture 1988-93.

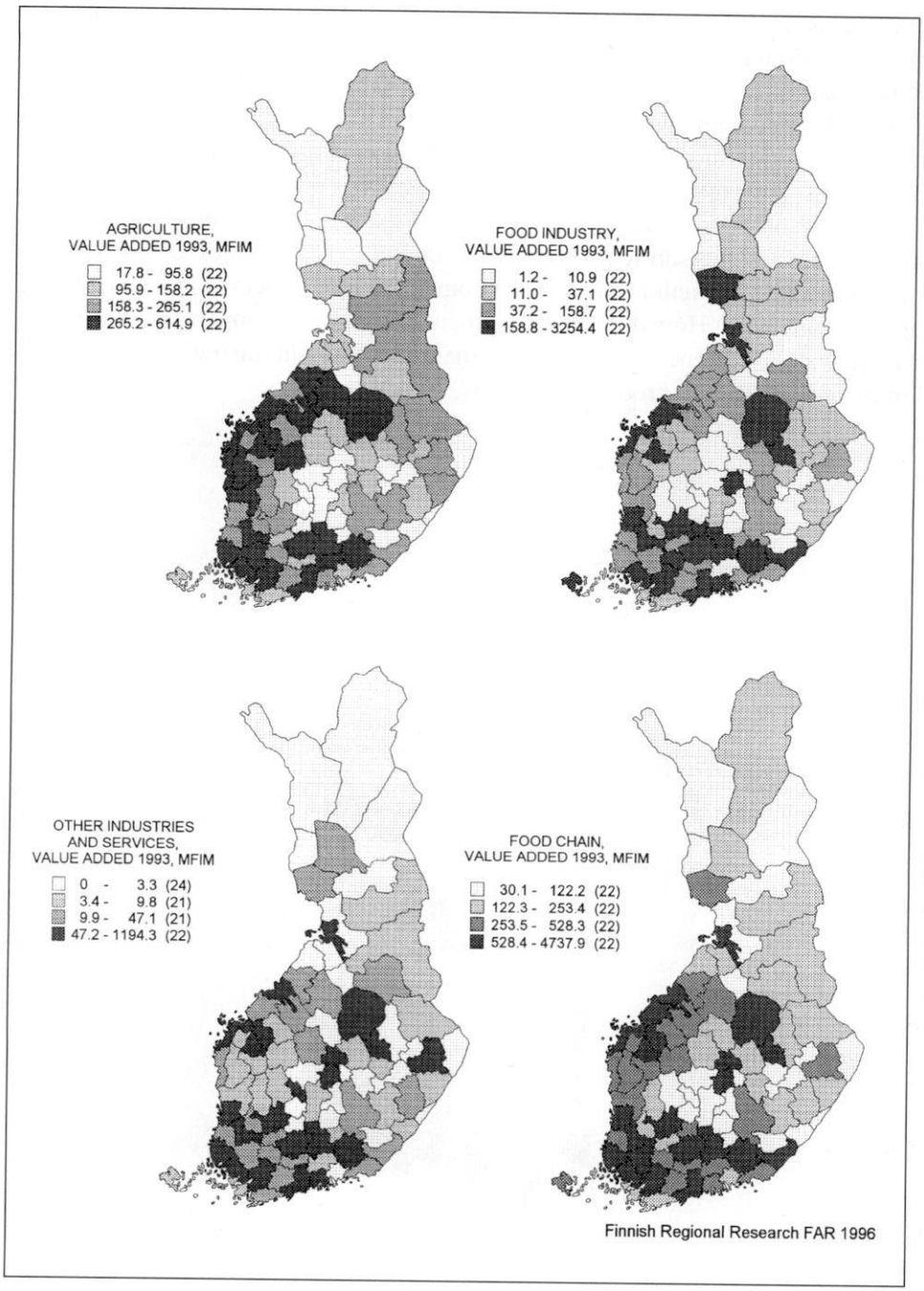

Figure 2. Volume of value added of agriculture; food-processing industry; other industries and services related to the food-processing industry and agriculture; food-processing chain (MFIM, 1993).

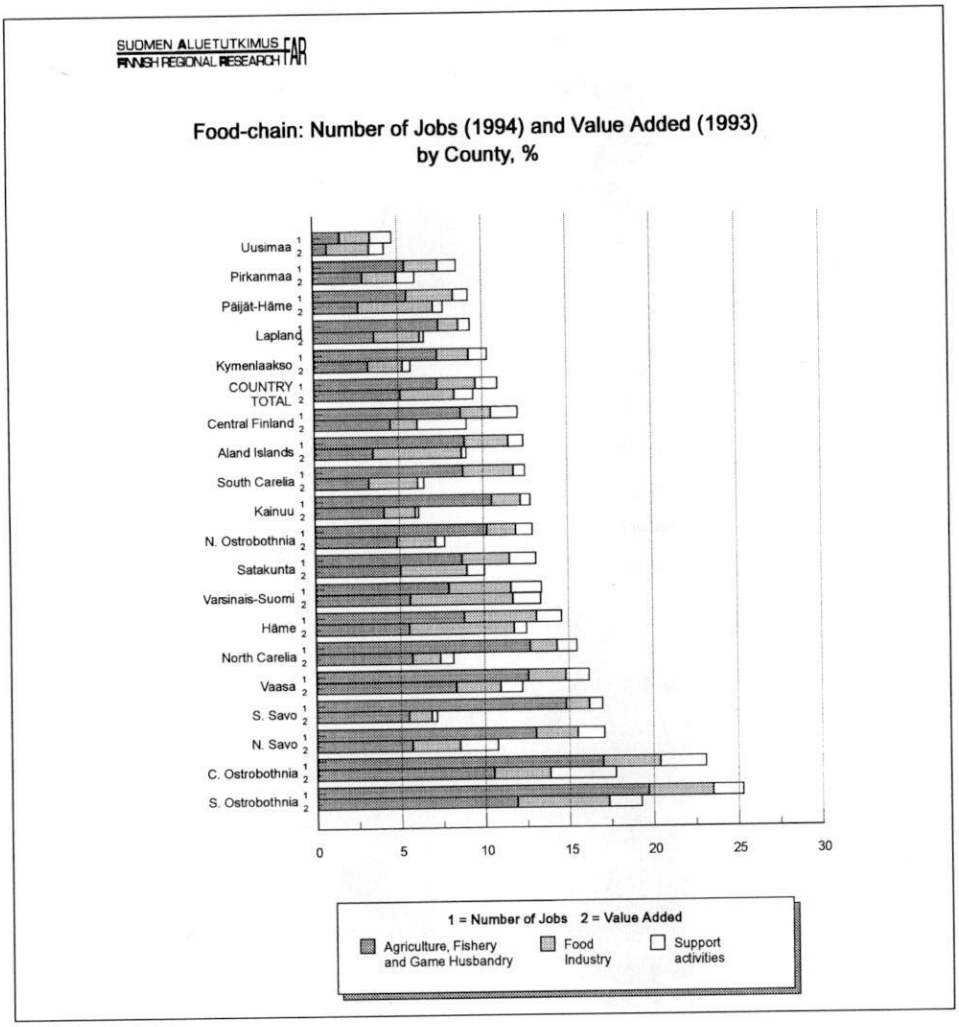

Figure 3. Jobs (1994) and value added (1993) of the food-processing chain (%) by county.

Objective 6

The regions of Objective 6 are mainly remote and they are lagging in the respect of economic growth. The SPD for Finnish Objective 6 regions includes priorities and measures to develope both primary production and food-processing industries as well. There is also an inbuilt package for rural development. Objectives 3 and 4 (ESF/employment) and 5a -measures (farm-level activities) are also included in the programme.

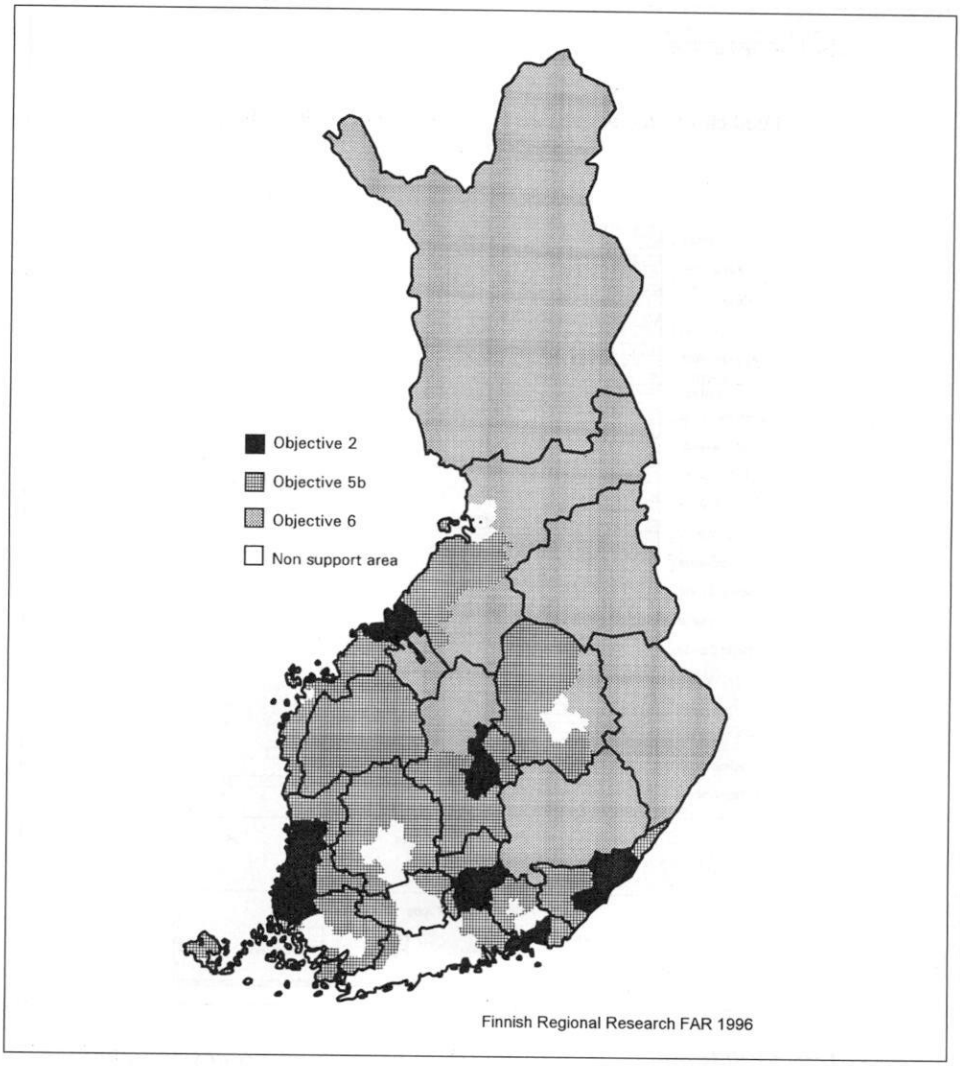

Figure 4. Objective areas of EU's development programmes.

It is possible to find clear structures for the food-processing chains in the regional programmes. The interesting point is, however that also in the regions of rather low importance (jobs or share of GVA) of the chain, there exsist well funded measures for the new products, aid for involved enterprises and supporting education. At least in one Plan the regional machinery manufacture has been connected firmly to support the food-chain. In some cases the objective to develop regional food-processing is focused to rather narrow products (for instance organic farming) and markets to avoid competition in bulk markets.

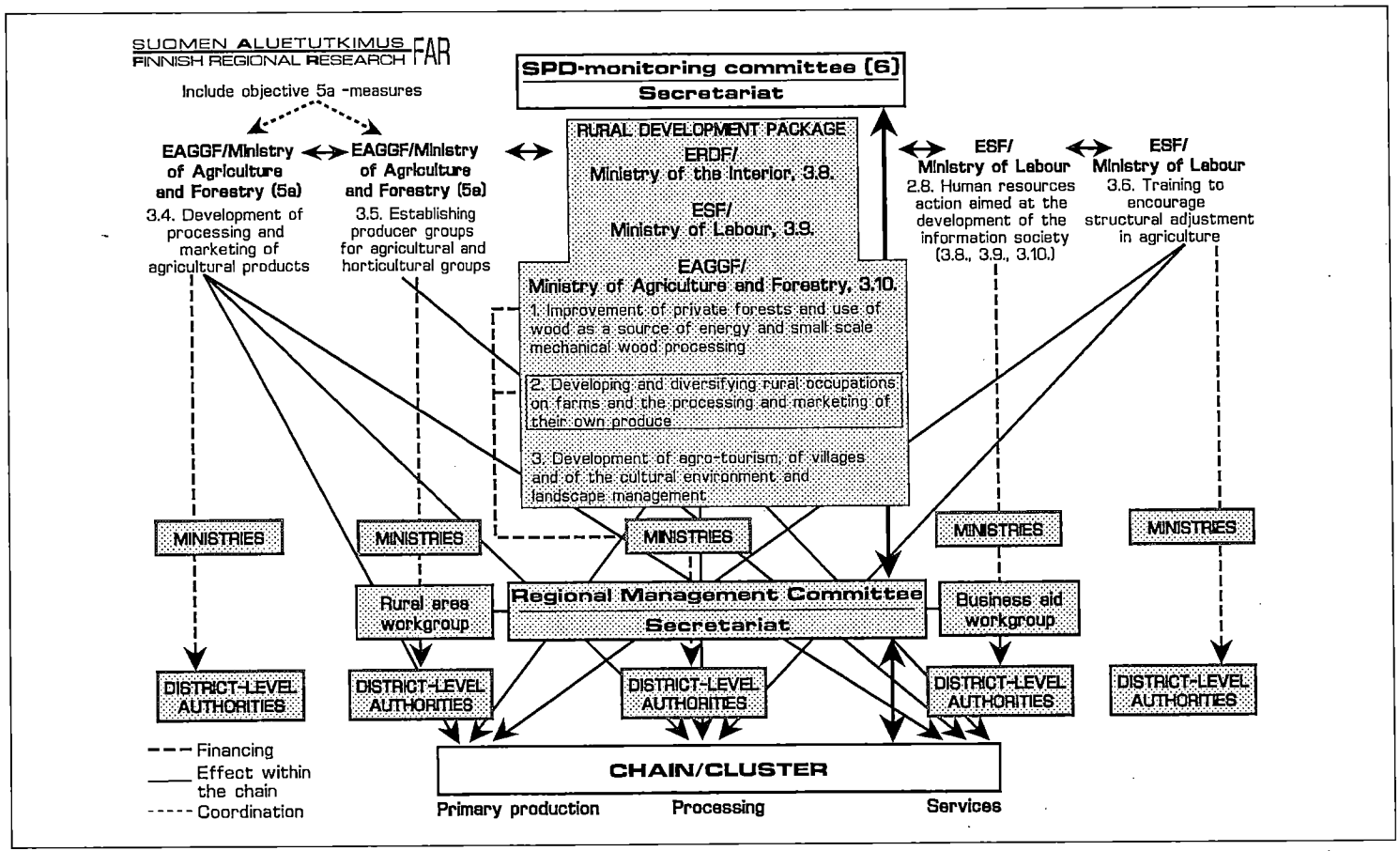

Figure 5. Role of objective 6-measures and administration in the development of food-chain.

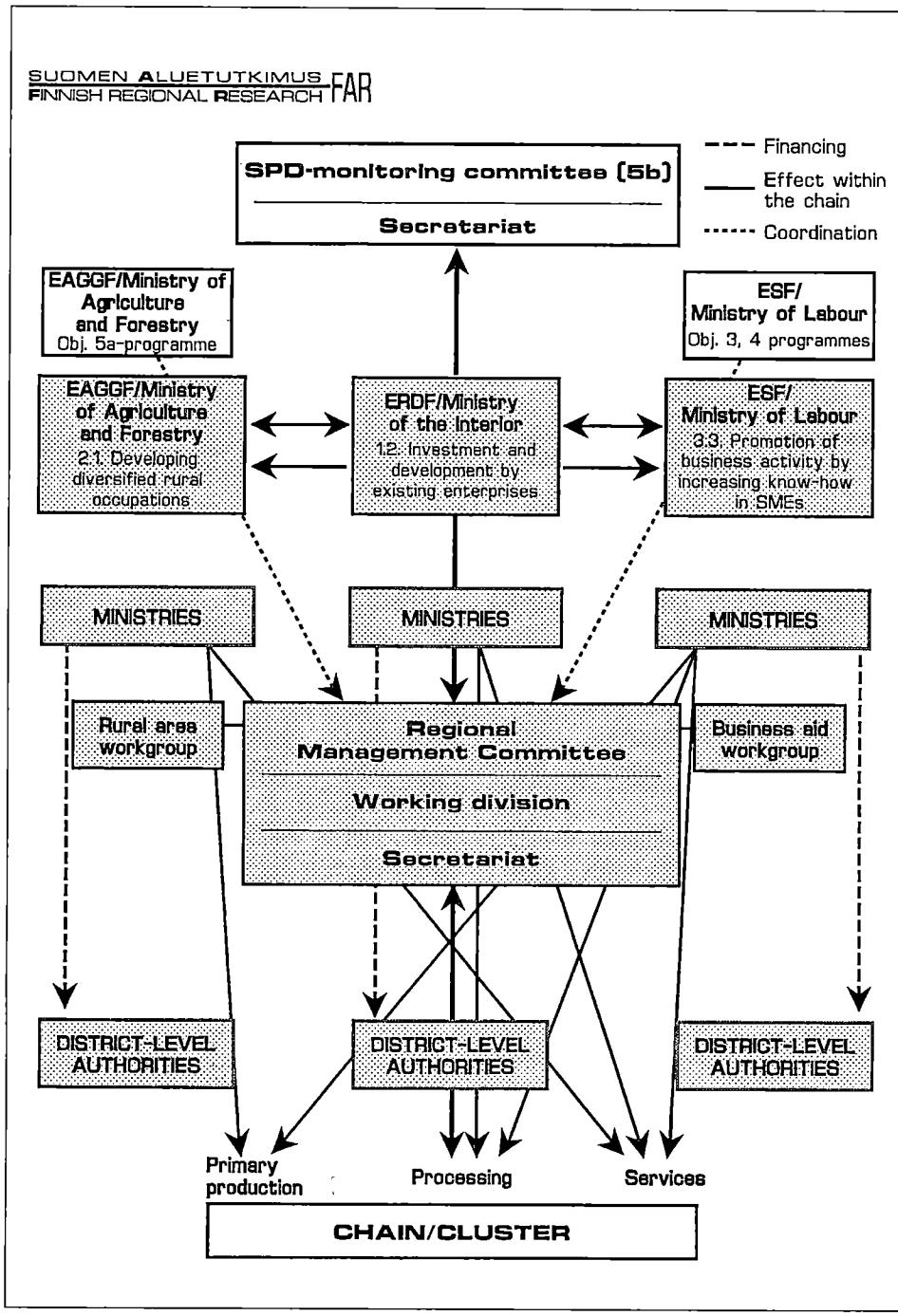

Figure 6. Role of objective 5b-measures and administration in the development of food-chain.

Further questions:

- If the rather good existence of food-chain measures is due to the favouable structure of the programme (SPD), or is it due to the real regional need to keep primary production alive in Objective 6 -areas (although the dependency of the regional economy is not so high)?
- Is it question of the need to re-establish processing enterprises to the area? In some regions the large-scale food-processing industry has left space to operate.

Objective 5b

Objective 5b is, according to the SPD, aimed to diversify the rural activities by strengthening the SMEs, by promoting the adaptation of the agricultural sector and by developing the rural services. In the 5b -regions objectives 3, 4 and 5a have their own measures.

The Finnish 5b -area covers the "rural core"-regions. The main agricultural products are milk, beef and cereals (horticulture as well). There are remarkable differences between the regions. The processing industry is mainly located in the 5b -region, but not explicitely in the region of main primary production.

The Finnish 5b -programme has 5 priorities of which Priority 1. Enterprise promotion and Priority 2. Diversification of primary production cover 70 % of total costs. There are also measures for education and R&D -activities. According to the Plan the development of food-processing chain is possible.

The Regional Plans differ much from each other. In some Plans the priorities and measures are clearly targetted on the regional objectives and some have the same format as the national SPD. Only few plans have measures clearly shaped as "food-chain"-measures although many regions are highly dependent on the chain. We can say that 5b -programmes do not recognize the possibilities of the chains/clusters. The measures have been mostly aimed at the single parts of them without the scope of synergy.

Further guestions:

- Is it due to the rather small amount of resources available for the measures that the chains are not present in the Regional Plans? Is there need (partly "political") to implement numerous projects with wide scale; has there been enough information available (real socio-economic strenghts) for sharp and productive objectives and following strategies.

- Are there still some remnants of "old sectoral" policy at the regional level to prevent these strategies and multi-financing (co-ordination)?

5b- programmes in EU. To get perspective, 49 regional 5b -plans were analysed in respect of food-chains. There are no drastic differences visible in comparision with the Finnish 5b -plans. The development procedures are directed mostly to some parts of the chain. In Denmark, for instance, the priorities (and funding by eg. EAGGF) are promising. The two priorities support the same objective from the different point of view.

Objective 2

Objective 2 -areas have been lagging mainly in manufacturing sector (cities and towns and their adjacent areas). The national SPD does not have any priorities for food-processing. In the introductions the food-processing industry has been mentioned as a lagging sector but further identification is missing.

In the Regional Plans the situation is the same although in some Objective 2 -areas the food-processing industry plays a geat role (GVA -share, employment) and eg. the adaptation problem is well defined.

3. Discussion and summary

It seems obvious that one important point in this discussion is the role of enterprises, co-operatives and processing companies. Great companies and co-operatives do not need (in remarkable extent) financial or R&D -support from the regional programmes. These companies have the enterprise-strategy of their own. The strategy may differ from the regional development strategy.

It is not possible to fit a chain to the regional programmes, if all the partners (bodies involved, including enterprises) do not have the same target/objective.

In the Objective 6 -regions, which have the profile of "lagging behind" or "remote" or "not in the core", maybe the ultimate border of existence is visible. These regions as a whole, may have only one way: All the tools and resources have to operate to the same direction.

Micro- and small enterprises have space to operate if they have opportunity to catch any raw material for their production. In the food-chain, the raw material may be obtained only from the own farm. The result of this logical path is that the size of the enterprise can be only micro-size. 5b- and 6- programmes support well this type of activities.

For the evaluation of the programmes and different types of regional development actions, the socio-economic research (for instance input-output

analysis) is not possible at the moment; the data does not recognize imports and exports between the regions and the methods are too laborous to be used at the regional level as a tool for the strategies.

As a conclusion, there still is a well defined need for

- coordination (between sectoral policies, agricultural, regional and rural policies)
- planning for objectives and strategies relevant for the region
- funding (additionality)
- methods and data to analyse the best objectives and strategies for the region.

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REGIONAL STRUCTURAL DEVELOPMENT OF FINNISH AGRICULTURE UNTIL 2005

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Abstract. This study is concerned with projecting the changes in the farm structure in Finland to year 2005. It focuses on examining the current socio-economic characteristics of farm structure and the options for structural development in the context of European integration.

The study portrays alternative policy scenarios for development of the structure of Finnish agriculture during the next ten years. To meet the objective, a mathematical model for the structure of Finnish agriculture has been developed. By means of the model, the effects of different political scenarios resulting from the membership in the EU on the structure of agriculture are simulated. To quantify the impacts of the changes in price and support policy, the model is solved under two alternative policy scenarios for the period 1995-2005: i) a baseline scenario that is based on the policy decisions as defined in the Accession Treaty and national support package i.e. Finland continue to pay long-term national aid of FIM 3 billion annually until 2005 for the farming sector, and ii) a reform scenario which is simulated assuming that national aid will be gradually reduced and be abolished by the year 2005.

The projections in the study indicate that the trend toward fewer but larger farms will continue. The baseline scenario suggests that the number of farms practicing basic agriculture is likely to decline from little under 95,000 in 1994 to about 55,000 in 2005. In the reform scenario the number of farms will decline by some 60 % to less than 40,000 in 2005. In terms of the development options of the structure, the farms can be roughly divided into three categories: 1) basic agricultural enterprises capable of profitable activity, 2) uncompetitive farms, and 3) farms engaged in diversified rural industries. The competitive and cost efficient farms realize favourable rates of return from farming and provide most of the output, while the uncompetitive farms realize low returns and are not economically viable in the long run. Some farmers will re-orient their agricultural activities in order to improve the viability of their business and diversify their sources of income by working outside agriculture.

Index words: agriculture, structural change, strategic adjustment, integration

1. Introduction

In the past few decades Finnish agriculture has gone through an exceptionally dramatic structural change. This has been characterized by a decrease in the number of farms and labour force, mechanization and increasing efficiency of production, specialization both regionally and on individual farms, as well as giving up the self-sufficiency at the farm level. In 1964 there were 320,000 farms and the number of people employed in agriculture was about 550,000 (26 % of the total employed labour force). 30 years later in 1994 there were only less than 115,000 active farms and agriculture employed about 142,000 people, and this trend continues.

As a result of EU membership pressures to increase the international competitiveness of farms, and the farm size has grown. Estimates on the direction of structural development are quite consistent: the number of production units is going to decrease, the average farm size grows, and the labour input required by agricultural production decreases. However, forecasting the pace of the structural change in agriculture involves a great deal of uncertainty. Uncertainty as to the impact of integration on agricultural structure is a concern among policy-makers. The policy issues are likely to emerge from concerns about income, wealth and employment as they affect the welfare of rural farm households.

The objective of this study (NIEMI et al. 1995) is to examine the development options of the structure of agriculture as Finland follows the common agricultural policy of the EU. As a concept the structure of agriculture is very extensive and complex. In this study the structural development of agriculture is examined for the part of the size structure, number, and production structure of agricultural enterprises both nationally and in the main regions. The cultivated arable land area and the number of animals in the different lines of livestock production are used as measurements of the farm size.

Initially, an overview of the recent structural development in agriculture is presented, followed by a forecast on the future development until 2005. At the same time the study provides data for the discussion on the effects of the pressures for change in the next few years on the development of the structure of agriculture and the possibilities involved. Differences in the effects and survival strategies in the different production lines should be examined as carefully as possible, because the decisions on the focal areas in the development of agriculture are made on the basis of this kind of studies.

In order to achieve the research objectives, alternative scenarios on the development options of agriculture in the following ten-year period are constructed. In the case of evaluating the policy options, the study concentrates mainly on two scenarios. In the base scenario it is assumed that the national support package will be realized almost in full. The alternative scenario is based on the adjustment of Finnish agriculture into a "pure" EU system in ten years.

2. The present structure and recent structural development of agriculture

2.1. Number of farms and their distribution

Finnish agriculture is based on family farms, and it is characterized by a large number of small farms. About 80 % of farms are privately owned and the remaining 20 % are mainly owned by heirs and family companies. The number of farms grew until the 1960s, and after that the total number of farms has decreased quite steadily, except during the time of high immigration in the early 1970s, when the reduction was almost 10,000 farms a year. In 1974 there were about 260,000 farms with at least one hectare arable land, and 20 years later in 1994 the number of these was about 190,000. In 1994 active production was practiced on only 60 % of all farms, i.e. about 114,500 farms. The number of farms can be defined in various ways, as shown in Figure 1 for 1994.

The total arable land area of farms grew until the end of the 1960s, and since then it has decreased. The present arable land area (2.58 mill. ha in 1994) is about the same as in the early part of the 1950s. As the number of farms has decreased, their average size has grown. In 20 years (1974-1994) the average arable land area per farm grew from 9.79 ha to 13.65 ha. However, the average arable land area of active farms is a lot larger, about 19.2 ha in 1994. In Finland the majority of farms belong to the small farm size classes. Despite the large number of small farms, their share of the total arable land area is relatively small. In 1994 about 55 % of farms had less than 10 ha of arable land, but their arable land area was only 17 % of the total arable land area. Correspondingly,

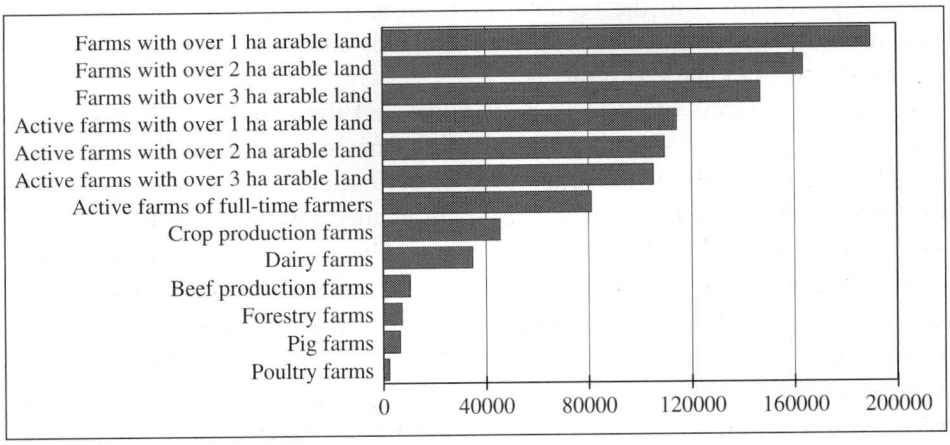

Figure 1. Number of farms in 1994 defined in various ways.

large farms with over 30 ha arable land, which constitute only 11 % of the number of farms, own 39 % of the total arable land area. About 20 % of active farms own more than 30 ha arable land, and their share of the total arable land area of active farms is almost a half.

Since clearing own land was made unprofitable in the latter part of the 1980s, renting land has increased considerably. In the past 20 years the rented arable land area increased by almost 300,000 ha, and in 1994 the total rented area was about 424,200 ha, i.e. 19 % of the total arable land area under cultivation.

The age structure of farmers and changes in this influence the structural development of agriculture a great deal. The labour force in agriculture is relatively old compared with the labour force in other sectors. In 1994 the average age of all farmers was almost 53 years and that of full-time active farmers 47 years. About 31 % of owners of active farms were over 55 years old. Nearly 13 % of active farms were owned by farmers who had already reached the retirement age, i.e. who were over 65 years old. In terms of the different production lines, the age of cereal and egg producers was above the average. The concentration of the distribution of the farm population to older and older age groups is caused by the fact that relatively few people enter the industry and it is mainly the younger age groups that move from agriculture to other sectors.

2.2. Regional production structure of agriculture

The preconditions, present structure, and development possibilities vary a great deal in different parts of the country. In order to take the regional differences into account in this study, agriculture is examined in four different main regions, Southern Finland, Middle Finland, Ostrobothnia, and Northern Finland (Figure 2). According to the regional division used, agricultural production is very strongly concentrated to Southern Finland, except in the case of dairy husbandry and beef cattle (Figure 3).

Measured in terms of both the total value and the number of farms, dairy husbandry is the most significant production line in Finland. In the past few years the share of milk of the total value of agricultural production has been a little over a third. Milk production is quite evenly spread to all parts of the country, except for the northernmost Finland. The structure of production has drastically changed over time. In 1980 there were altogether 90,000 farms with dairy cows, but their number has fallen by more than 60 % in the last 15 years. In 1995 there were about 32,000 dairy farms delivering milk to dairies. In the study period (1977-1994) the number of farms giving up milk production was the largest in Southern Finland and proportionally the smallest in Ostrobothnia. The majority of farms that have given up production were included in the smallest farm size classes. The average number of cows per farm has increased

from 6.5 cows in 1977 to 12 cows in 1994. However, it is still typical for dairy husbandry that the majority of farms belong to the small farm size classes. In 1994 almost 38 % of dairy farms had fewer than 10 cows.

Raising of beef cattle, which is closely linked to dairy husbandry, is practiced on only about 10,000 farms in Finland. A third of the farms are located in Southern Finland, another third in Middle Finland, and about a fourth in Ostrobothnia. Instead, suckler cow production is very strongly concentrated to Southern Finland.

Piglet and pigmeat production is mainly located in Southern Finland and parts of Ostrobothnia. As the main production line 2,800 farms practiced piglet production, 2,600 farms practiced pigmeat production, and about 1,200 farms were engaged in combined pig production in 1994. In terms of numbers, most of the pigmeat production farms are small, i.e. nearly 60 % of these farms had under 50 meat pigs, but they have only about 10 % of the total number of meat pigs in Finland. The share of the largest pigmeat production farms (over 300 meat pigs) was only about 7 %, but their share of the total number of meat pigs was over a third.

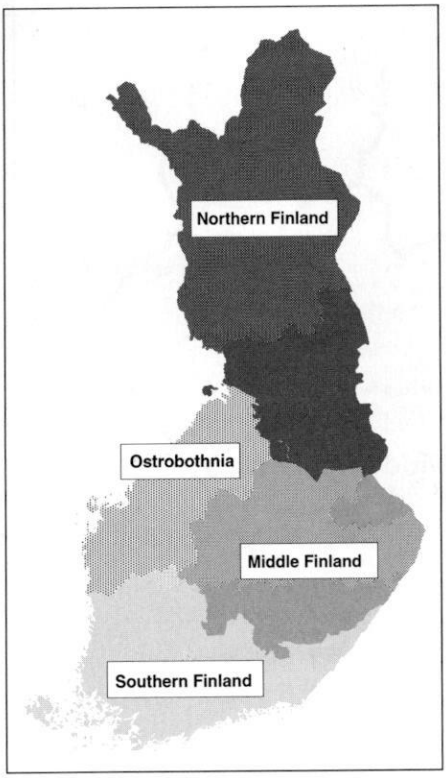

Figure 2. Division into four main regions in the study.

In 1994 about 9,700 farms had hens, but only about 2,200 practiced egg production as their main line of production. Egg production is mainly located in the western part of Southern Finland and parts of Ostrobothnia. The number of farms raising hens has decreased by two thirds from 1977. In Finland hens are kept in quite small units; in 1994 two thirds of the farms with hens had under 100 hens. Only 12 % of hen houses have more than 1,000 hens, but these constitute 73 % of the total number of hens.

In 1994 there were about 37,300 farms specialized in cereal and special crop production, which is about a third of the total number of active farms. Because of the more favourable natural conditions than in other parts of the country, crop production is mainly located in Southern Finland as well as the southern part of Ostrobothnia. Two thirds of cereal farms are located in the area of Southern Finland and a fourth in Ostrobothnia. More than half of crop produc-

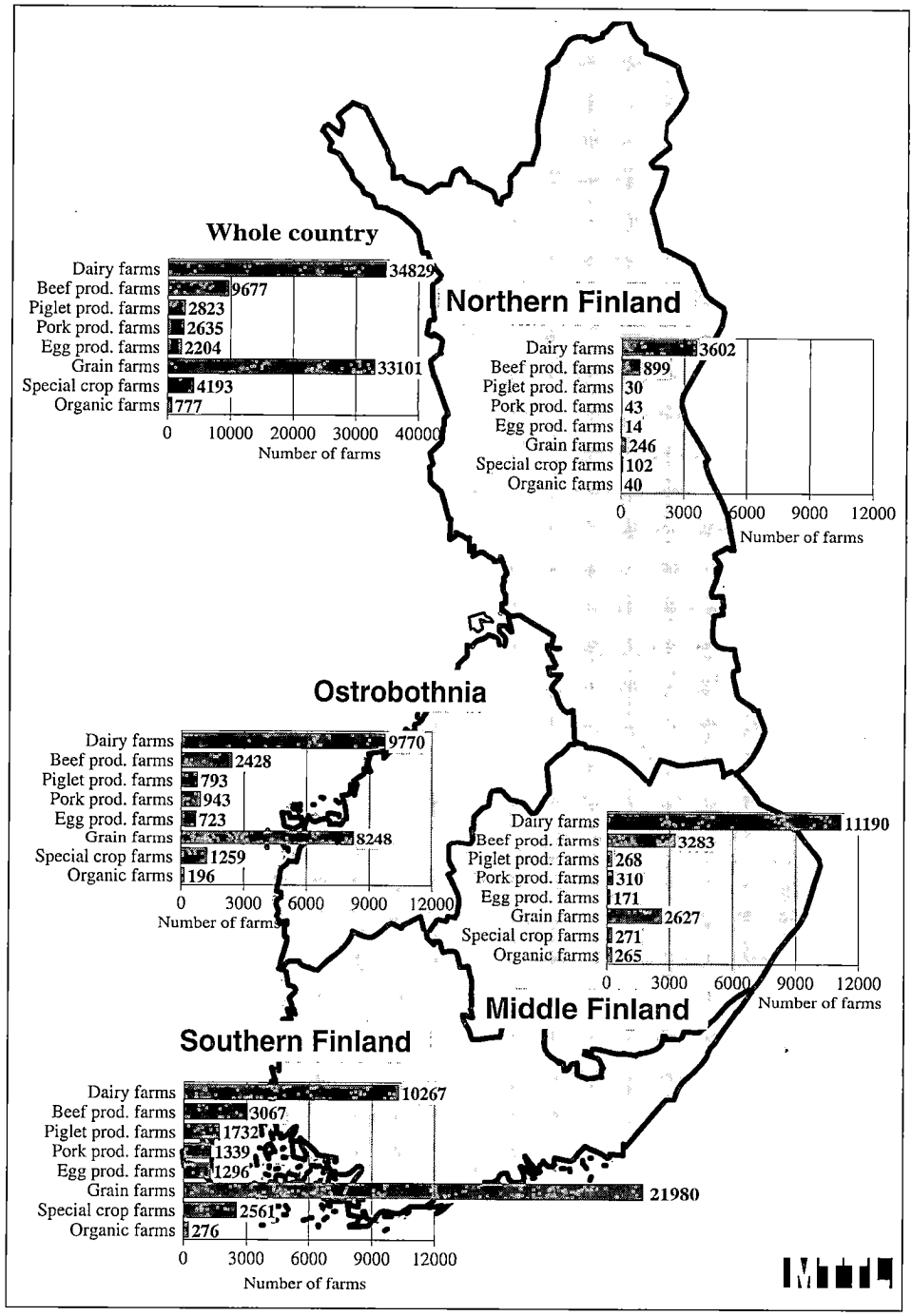

Figure 3. Number of active producing farms in different production lines and main regions in 1994.

ing farms have less than 15 ha arable land, but the share of these of the total arable land area is only about 20 %.

It should be noted that Southern Finland is a highly significant area in all main production lines, except for cattle production, mainly because of the more favourable natural conditions. Middle Finland is the strongest in cattle production. In Ostrobothnia all production lines are more evenly distributed than in other parts of Finland. In Northern Finland the main emphasis is still on dairy husbandry and beef production, as well as in reindeer herding.

3. Economic situation of farmers

In respect to the future structural development of agriculture, it is very important that farms are able to cope with their current debts and to obtain additional loans for future investments (replacement and expansion). As a result of the increase in the capital intensity of agriculture, the significance of self financing in the capital investments has decreased in the past few decades (YLÄTALO and PYYKKÖNEN 1991). In addition, various kinds of production restriction measures have hindered the long-term development of farms and realization of the economies of scale by increasing the unit size. The decrease in the producer prices as a result of the EU membership has weakened the possibilities of farms for self financing considerably, and the financial position of highly indebted farms has deteriorated a great deal.

According to the credit stock statistics of the Central Statistical Office, in the 1980s the credit stock of agriculture and forestry in terms of the nominal value grew 2.8-fold and that of agriculture 2.6-fold. The growth was rapid especially in the latter part of the decade. The growth in the credit stock stopped around 1990, and for the first time there has even been some decrease. At the end of 1994 the total credit stock of agriculture and forestry was FIM 25,027 mill., and credits of agriculture constituted 70 % of this (FIM 17,410.8 mill.).

According to the Income and Tax Statistics of Agriculture and Forestry (ANON. 1996a), in 1994 nearly 40 % of farms were free of debt. The amount of debt varies considerably in the different production lines and it is proportional to the capital stock of farms. In monetary terms the amount of debt is clearly higher on farms specialized in pig husbandry than on farms practicing other lines of production. The amount of debt is the smallest on cereal farms and in special crop production.

Besides the production line, the amount of debt varies considerably according to the farm size and the age of farmers. Young farms have to finance the acquisition of the farm and other major investments necessary when starting entrepreneurial activity almost solely by means of loans, which is reflected in the higher amount of debt among young farmers. In 1994 about 34 % of farmers

who were under 35 years old had more than FIM/farm 300,000 debt, about 16 % of them exceeded FIM/farm 500,000. However, about 17 % of them were free of debt. While in the case of farmers who were 45-54 years old, the amount of debt was about FIM/farm 230,000. In the case of farmers (55-64 years) who have reached the age at which they may transfer the farm to a descendant, more than half (59 %) of farms were free of debt (ANON. 1996a). In 1990-1994 the relative share of debt-free farms grew by 15.1 percentage points, and their share of all farms was 39.6 % in 1994. The amount of debt per farm gives a rough idea of the indebtedness of farms, but no conclusions on the financial position of the farm can be drawn on the basis of this.

Measured by debt/assets -ratio, in 1994 farmers who were under 35 years old were the most indebted with a ratio of 1.43 (ANON. 1995b). The financial position was the best in the age groups of 50-64 years (0.67) and over 64 years (0.26). In terms of farm size, farms with 30-50 hectares had the highest debt/ assets -ratio of 1.09, whereas farms with less than 20 hectares had the lowest ratio.

The decrease in the income level of farmers, high interest level, and over investment have increased the debt burden and financial problems of farms considerably. The problems are related to both liquidity (i.e. the ability to service loans) and finding collateral for loans. The fall in the price of agricultural land leads to a decrease in the value of farms as collateral, and this may in some cases make it more difficult to obtain new credit. It has been estimated that in 1995 nearly 7 % of farms, i.e. 6,500 farms, had difficulties in servicing their loans ANON. 1996b). Over investment and acquisition of additional land are considered the main reasons for the problems. Other important factors include transactions of farms at too high prices, high expenditure of the private household, difficulties in marketing of products, as well as the decrease in the producer prices (ANON. 1991). Young farmers who have farms recently transferred to them are most troubled by the problems mentioned while striving for rational farm size.

In 1994 the average taxable income of farmer and spouse was about FIM/ farm 152,400, where 48 % was income from agriculture and forestry, 43 % was salaried income outside agriculture and income transfers, and 9 % was miscellaneous income (ANON. 1996a). In 1994, the income from agriculture totalled FIM 7.7 bill. From 1990 to 1994, farmers' income from agriculture has decreased by 25 % in real terms. According to preliminary estimate in 1995, income from agriculture decreased by 10 % to FIM 7.0 bill. The production cost totalled FIM 14 bill. Consequently, the total return from agriculture was FIM 21.0 bill., including support of FIM 10.2 bill. In the longer term, farm support will be reduced (see Figure 4), and farmers have to cope with this through rational structural development. Without structural development, the agricultural income is estimated to decrease by about 40 % by year 2000 (NIEMI 1996).

4. Study of structural change in different regions and production lines

4.1. Overview of the characteristics of alternative scenarios

Forecasting the production structure of agriculture has usually been considered difficult due to the uncertainty involved in structural development. Production forecasts have usually been made using trend methods, programming methods (linear programming), and supply functions. Future development can be forecast by means of different kinds of extrapolations of the trends and cycles, if the phenomenon is assumed to continue to change in the same direction. It is usually not possible to forecast turning points by trend methods, and the time span is relatively short.

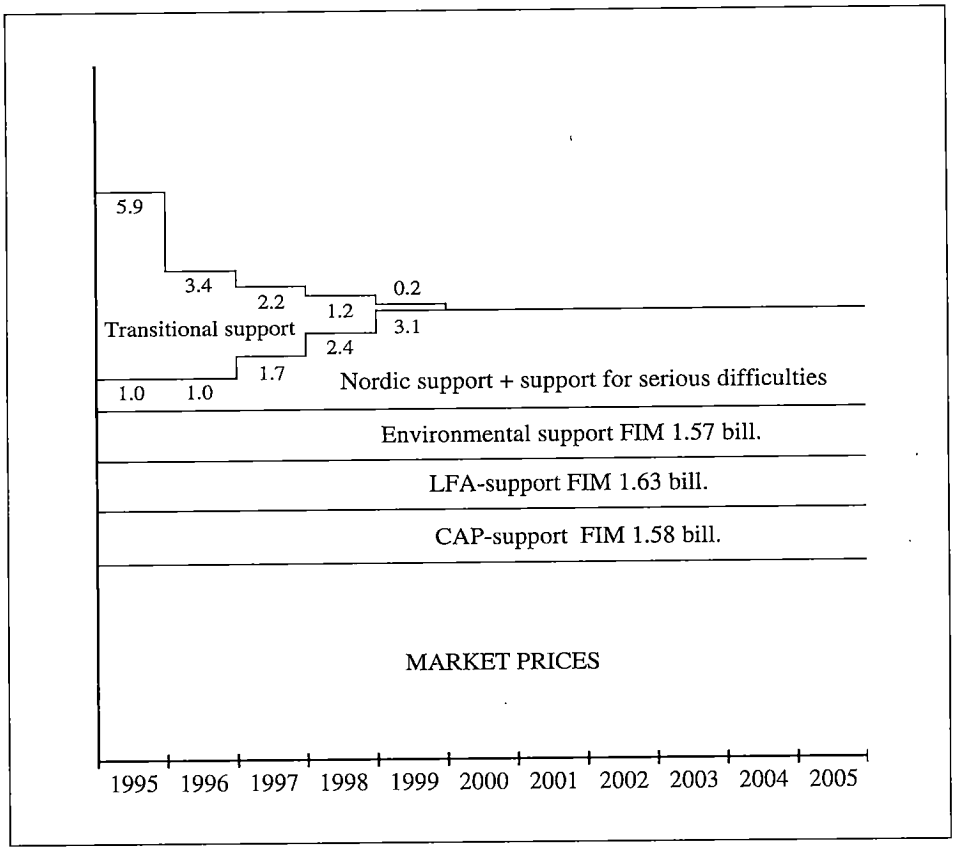

Figure 4. Structure of agricultural support package from 1995 to 2005 in scenario 1.

In this research alternative scenarios of the structural development options of agriculture for the following ten years have been constructed. This kind of research provides valuable data for decision-making and strategic planning.

The starting point in scenario 1, which could be characterized as "soft adjustment", is maintaining a reasonable income level of the farm population and a level of production that corresponds roughly to the domestic consumption. Membership leads to a decrease in the market price level, but the income losses can be compensated for by means of direct support, i.e. support that is not tied to production. The assumption for scenario 1 is that the support package will be fully realized as it was planned in 1995 (Figure 4). Furthermore, it is assumed in scenario 1 that the preconditions for agriculture in Southern Finland are secured through the so-called "support in the case of serious difficulties" (Article 141 in the Accession Treaty). Discussions on the content of the support measures based on Article 141 between the Finnish Government and the Commission were held in the beginning of 1996, and a Finnish aid programme covering a range of agricultural products was accepted in July 1996. However, this decision will be up for review in 1999.

In scenario 2, it is assumed that it is not possible to pay any national support to agriculture after the transitional period of 10 years. In this scenario the national support (Nordic support + support in the case of serious difficulties) decreases gradually, and it would be abolished completely by 2005. Thus, the scenarios differ clearly from each other, representing the extreme possibilities of the structural development of agriculture.

4.2. Method applied

To reach the research objectives, a simple mathematical model has been constructed. The model is used as the instrument in examining the effects of both the changes in the price and support policy on the structure of agriculture in the long run. The main purpose of the model is to describe the two extreme alternatives of structural change by means of the scenarios. Thus the model should not be considered forecasts as such, but as alternative development paths under certain conditions, although the development trends starting from the most likely assumptions may also be used as forecasts. By means of the calculation framework, it is mainly possible to outline the scale of the changes. Thus the results provide some kind of idea of the direction and scale of the effects of changes in the price and support policy of agriculture.

The model for structural change is based on the idea that the degressive income (calculated in EU prices and support) from agricultural production is divided between farms so that the incomes of farms that continue their production (FIM/farm) would stay at the average level of 1993. In the model, the average income level of farms specialized in different production lines and

different main regions in 1993 is taken from the Enterprise and Income Statistics of Agriculture and Forestry. This is followed by a study of how the integration into the agricultural policy of the EU and shift to the new support system affects the agricultural income of farms practicing different lines of production in the different main regions.

The objective of the model is to keep the average income level of the farms at the same level it was in 1993. Because the total income from agriculture decreases in both scenarios, i.e. the net result per unit produced falls, it is assumed in the model that the preservation of the income level requires increasing the production, i.e. the farm size. This is obviously a simplification of the reality. Another alternative would be to examine how much additional income from outside agriculture would be needed to make it possible for all the present farms to continue their production. Consequently, the study based on these models is quite theoretical and inflexible, when we consider the large number of alternative strategies at the level of enterprises. However, the study aims at providing an outline of the impact of structural development only on the number and size of farms.

Improvement of the cost/return-ratio along with the increase in the farm size has been taken into account in the model. This decreases the calculated need for increasing the average size. The economic benefit from the increase in the farm size is reflected at the farm level as lower production costs per unit produced. The improvement of the cost/return-ratio in the model is based on the farm model calculations made at the Agricultural Economics Research Institute (ALA-MANTILA 1992). The model can estimate how much more expansion of the farm size is needed in order to maintain the same level of agricultural income as it was in 1993.

With the estimation of the needed expansion of the farm size, the calculation in the change of the number of farms can be done. The model is based on the full utilization of the national production rights, i.e. preserving the production volume at the current level. The productivity of agriculture has been estimated to grow according to the linear trend calculated on the basis of the years 1970-1993.

4.3. Results

According to the base scenario (scenario 1), the incomes of farms that continue agricultural production would stay at the same level as prior to EU membership, if the number of farms practicing basic agriculture decreases from little under 94,000 farms (1994) to about 55,000 farms during 1995-2005 (Table 1 and Figure 5). In 2005 the number of all active farms would be about 70,000 in the base scenario. The realization of the base scenario means that 3,500 farms practicing basic agriculture would have to stop their production each year.

Table 1. Estimate of the number of active farms in different production lines according to the two scenarios in 2005.

	Point of departure 1994	2005 Scenario 1	Scenario 2
Dairy farms	34,829	19,000	14,000
Cattle farms	9,677	5,300	2,600
Pig farms	6,631	3,400	1,400
Egg production farms	2,204	800	500
Crop production farms	37,294	25,000	18,000
Mixed farms	3,065	1,500	500
Basic agriculture, total	93,700	55,000	37,000
Forestry farms	7,514	8,000	8,000
Other farms	13,296	7,000	4,000
Total	114,510	70,000	49,000

Structural change according to scenario 2 would mean that the number of farms would drop to under a half of the present number. In scenario 2 the number of farms practicing basic agricultural production would be a little over 35,000 and the number of all active farms would be less than 50,000 in 2005. An estimate of the development of the number of farms in the different production lines according to the two scenarios is presented in Table 1.

When examining the results it should be noted that the calculations are based on the preservation of the volume of agricultural production at about the current level. Milk production is based on the national quota, and no changes are assumed to occur in the quantities of pigmeat and cereal production. Egg production is assumed to decrease from 70 mill. kg to a level that corresponds to the consumption, i.e. about 50 mill. kg. If the total volume of basic agriculture production dropped by about 30 % from the present level by 2005, in scenario 1 the number of farms engaged in basic agriculture would drop to under 40,000 farms and in scenario 2 to about 25,000 farms.

In the base scenario, the income of farms in milk production would stay at the same level as before the EU membership if the number of farms were under 20,000 in 2005 (Figure 6). Thus the number of dairy farms would fall by almost a half from the present number of 35,000, i.e. by about 1,500 farms annually. The average size of dairy farms should grow by 0.6 cows/farm a year, which is clearly more than the present annual growth of 0.32 cows/farm a year. How would this kind of structural development be financed? In 2005 the average

number of cows per dairy farm would be 18. On some dairy farms the increase in the number of cows is possible without any increase in the fixed costs. Productivity gains have increased the average yield of cows. As a result milk production quotas, there is a lot of unused capacity on farms due to the fact that milk quotas are fulfilled with less number of cows. Utilizing this unused capacity would make it possible to increase production without investments in new buildings or expansion. This unused capacity should be taken advantage of first. However, on many farms the existing production buildings are still too small from the viewpoint of structural development.

Keeping the volume of milk production at the level of the national quota (2.27 bill. litres) requires considerable investments and more capital to be tied to dairy husbandry. According to a rough estimate, the realization of the base scenario would require building investments of about FIM 1.5 bill. in the next ten years, i.e. FIM 150 mill. annually. Including the need for other capital, the need for financing would be around FIM 300-400 mill. annually. The investments should mainly be realized without any government support, because according to the proposal of the Agriculture Finance Work Group (ANON. 1995a), the annual amount of support to investments in production buildings is about FIM 60 mill.

In the case of pig farms the need for decrease is from 6,600 farms to about 3,400 farms, if the incomes of the remaining farms are to be kept at the same level as before the EU membership (Table 2). If the base scenario is realized,

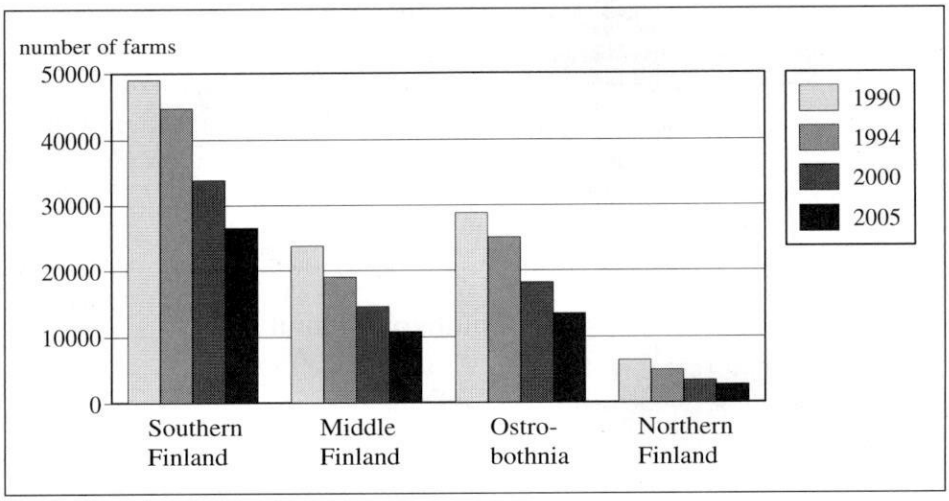

Figure 5. Development of the number of farms practicing basic agriculture in different main regions in scenario 1.

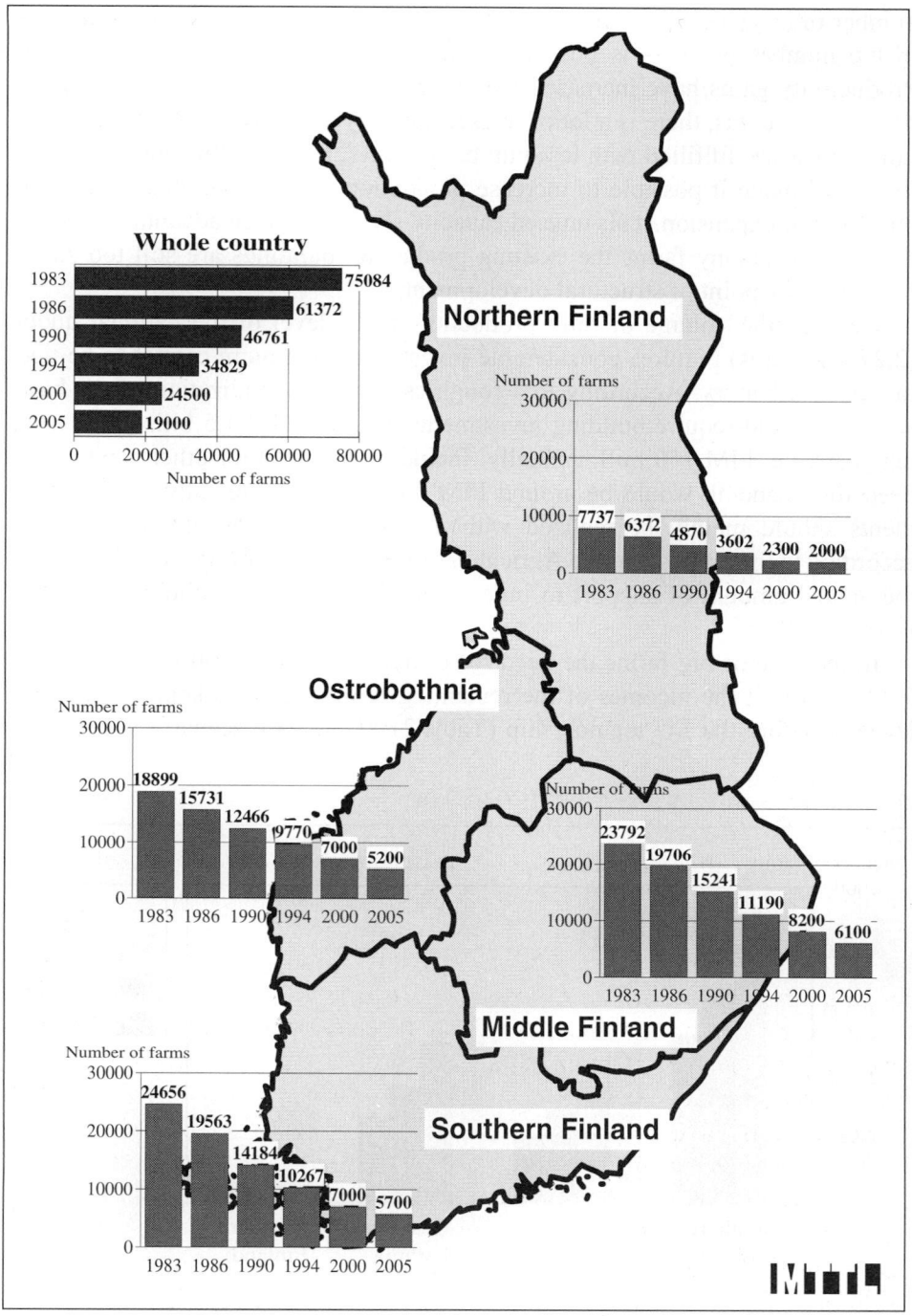

Figure 6. Development of the number of dairy farms in the main regions in scenario 1.

Table 2. Development of the number of active pig farms according to the two scenarios in 2005.

	Point of departure	2005 Scenario 1	Scenario 2
Southern Finland	3,735	2,100	800
Middle Finland	710	300	150
Ostrobothnia	2,109	1,000	400
Northern Finland	77	not estimated	
Whole country	6,631	3,400	1,350

the average size of pig farms in piglet production should be 50-70 sows and in pigmeat production 350-400 pig places. Structural change would require annual investments of about FIM 100 mill. in pig production buildings. According to the proposal of the Work Group (ANON. 1995a), the State support for investments in pig production buildings is FIM 50 mill.

5. Adjustment possibilities at the farm level

As a result of EU membership, the structure of agriculture changes more because of the pressures related to prices and costs than any definite policy measures. Agricultural enterprises operate in a new kind of environment, where the changes constantly erode the foundations of the current strategy. Thus the structure of agricultural production is largely determined by the decisions made by agricultural entrepreneurs. The need, ability, willingness, and possibilities for structural change varies a great deal between farms. It is possible to outline at least four different ways of adjustment in the development options at the farm level: 1) continuation of production as before, 2) increase the farm size, 3) increase the structural diversity of the enterprise, and 4) product specialization.

Some farms can be expected to continue their activity as before. Farms with limited options are small, remote, owned by elderly farmers, and without anyone who might take over. They do not have much debt, and thus they can continue their production for quite a long time. The possibilities for structural development, however, are weak, and the production is likely to be stopped when need for new or replacement investments arises. Farms in remote rural areas have very limited options. These farms are very much dependent on the amount and distribution of direct income support as well as rural policy. The preconditions for production of farms located far from the processing industry

become even weaker if/when the transportation costs must be paid by farmers.

KUHMONEN (1995) has examined the future outlook of farms with over 5 hectares arable land. The total number of farms with over 5 ha is 95,000. According to the study, about two-thirds (65,000) of farmers intend to continue agricultural production for at least the next three years. Only about 40,000 farmers (42 %) plan to continue for at least five years. In terms of different production lines, the continuation of production was the most uncertain in cattle farms, but in the case of pig husbandry more farmers intend to stay in production. Only 29 % of farms specialized in beef production intend to continue their production for at least 5 years, in the case of pig farms the corresponding figure is as high as 74 %, and in the case of dairy farms it is 50 %.

Increasing the farm size, i.e. structural rationalization, is central to the adjustment of small Finnish farms (KOLA et al. 1995, NIEMI 1995). Unit costs decrease as the farm size grow. The aim of increasing production units is to raise efficiency so that income can at least be kept at the current level despite the decrease in producer prices. In all production lines, these farms are already larger in terms of size, number of animals, and cultivated area. Most of these farms are owned by young farmers. They realise that additional investments and efficiency in production are needed in the new operational environment. The future level of agricultural production in Finland is largely dependent on these farms that aim at higher cost efficiency.

From the data on the indebtedness of farms in 1993, it can be estimated that there are about 40,000 farms (under 50 years old) which have debt that is smaller than turnover. These farms have the possibility to invest in structural development (ANON. 1995a). About 10,000 are dairy farms, a little over 5,000 are meat producing farms (cattle and pig farms), and 24,000 are other farms, mainly crop producing farms. However, according to an interview (KUHMONEN 1995), only about 12 % of farmers (8,000) intend to continue their production by increasing the farm size.

Besides specialization and increase in farm size, another alternative is to continue agricultural production as a form of part-time farming. The income from agriculture will be supplemented by other sources of income. Farms that aim to diversify their activity into other industries and forms of production must find markets for their products regionally, nationally, or even internationally. The activity of these farms should be based on both special skills and benefits achieved through networking. Through networking, enterprises may reduce disadvantages caused by their small size and the part-time nature of their activity.

It might also be possible to find markets with better prices for certain specialized products both nationally and internationally. The quality specialization of production, in particular, can be developed in all production lines. One alternative is the conversion into organic production, which has positive impacts to the environment, e.g. the cultivation of organically produced cereals

and processing them. So far only organically produced vegetables have entered the markets in large quantities. It is important to note that there are export markets in Central Europe only for certified organic products. However, there has been relatively little demand for this kind of specialized products, and their share in international trade is quite insignificant. Yet, a country like Finland has a high potential for specializing in a certain, limited field or method of production. Finland would hardly be able to compete with the large producers in the exports of mass products.

6. Conclusions

Change in the environment of agriculture as Finland became a member of the EU in the beginning of 1995 makes it very difficult to forecast structural change. Consequently, the traditional trend forecasts and results of mathematical models may deviate considerably from the actual development. The purpose of the present study is to indicate the need for structural change in agriculture.

Improving the competitiveness of agriculture and securing the preconditions for future activity requires increasing the farm size. Competitiveness in the form of cost efficiency is a precondition for the survival of basic agriculture. Unit costs decrease as the farm size grows, and the increase in the farm size in turn leads to a considerable decrease in the number of farms. In a large, thinly populated country where there are few alternative sources of income this is a threat to the vitality of certain regions. However, competitive and extensive basic agriculture is the best way of securing the possibilities for starting up and continuation of new diversified forms of production in rural areas.

Pressures to expand the production units are great in the new market situation. However, the risks and uncertainty involved in the investments on farms are so high that the economic foundations for increasing the farm size can be questioned. Problems arise, in particular, due to the decrease in the producer prices, which makes it impossible to increase the share of self financing of farms. Furthermore, the starting point for structural development in Finland is very different from those of the member countries in Central Europe. The average farm size is small, and distances between them are great. As a result increasing the farm size is physically more difficult than in Central Europe.

In terms of the cost efficiency, cooperation between farmers would be the quickest and most efficient way toward structural development. Economies of scale could be achieved by cost savings through extensive cooperation. This is very important in order not to increase the indebtedness of farms any further. Possible ways of realizing this would be joint use of machinery.

The farms that aim to diversify their activity need policies promoting diversified industrial activities in the rural areas alongside with the traditional agricul-

tural policy. Financing and training of entrepreneurs with expert help are very important at the initial stage of starting up small-scale rural enterprises. It is also possible for agricultural entrepreneurs to find a niche in the markets with better prices for certain specialized products both nationally and internationally. Quality specialization of production, in particular, can be developed in all production lines. A further alternative is the conversion into organic production, which has positive impacts on the environment, e.g. organically produced cereals and processing them.

Some of the factors influencing the future of Finnish agriculture have very extensive and profound effects, i.e. they determine the direction of future development. The core question in the future of Finnish agriculture is to what direction and by what kind of means we wish to develop Finnish agricultural production as part of the food production of the whole Europe. The problem is as much political as economical. It is vital for the farmers that there are solid policy foundations for production, which make long-term production planning possible.

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FROM THE CAP TO A RAP

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Abstract. Distortions, high costs, complexity and bureaucracy of the current CAP call for major reforms of agricultural policy in Europe. Reform is necessary before the Eastern enlargement of the EU, especially because the 1992 CAP reform was insufficient. One of the major problems is that the Common Agricultural Policy is *not common* enough. When new countries enter the EU, the CAP is not able to meet in a just and equal way the different needs of diverse agricultural conditions of different member states. The EU membership of Finland has clearly accentuated this problem.

To solve the problems, the CAP should be transformed to a *RAP, renationalised, or regionalised, agricultural policy.* The principle of subsidiarity, and political economy of different member states, could then be better respected. Although the Accession Treaty of Finland is one sort of a renationalisation resolution under the current CAP, it does not represent a preferred form of renationalisation and simplification due to its ambiguity, complexity and inherent EU restrictions. Although primary responsibility on most policy measures should be given to member states in the RAP, it would still be important to have a common framework of stricter criteria for environmental and ethical issues of agricultural production in the EU. National policy measures of the RAP should be in good conformity with the Community's constitutional principles and budgetary discipline in co-financed policy measures.

For *simplification* of the CAP, there could be a fixed amount of money from the EU budget to the member states in need of support. Support should be based on clear criteria taking into account special, meaningful agricultural characteristics and conditions of the member states that make them justly entitled to support. At the EU level, total spending on agriculture could then be reduced, better targeted, and more predictable. Consequently, agricultural policy would become more efficient.

Index words: CAP, reform, renationalisation, regionalisation, subsidiarity, support criteria, quotas, Finland

1. Introduction

The Common Agricultural Policy is *(i)* costly, *(ii)* complex, and *(iii)* not common enough. Public policy can be allowed to be costly, provided that it serves the common interests in a cost-efficient way, i.e. the benefits of the policy should be bigger than the costs. The CAP fails this test, in every respect, e.g. transaction costs only are huge as the administration of the CAP is complex, bureaucratic and fraud-ridden. Although the CAP has been a force for European integration (e.g. BUCKWELL 1996a), it is easy to argue that it could and should have served this purpose more efficiently and equally.

One of the major problems of the so-called *Common* Agricultural Policy is that it is *not* common enough. Some argue that the common policy suffers from various national measures within the CAP. But the actual problem is that the CAP does not meet in a just and equal way the different needs of diverse agricultural conditions of different member countries. The need for national measures arises due to inability of the CAP to meet the needs. In the CAP, those who do not need support (i.e., the richest, largest farmers of the best agricultural regions) receive the most subsidies, and those most in need of support receive much less, if any, and even then often for "wrong" purposes (e.g. intensification of tobacco growing leading to environmental damages, or encouragement of bulk production that ends up in subsidised, costly intervention storage). These problems and distortions of the so-called common policy have also, although only gradually, been admitted by the EC Commission, here suffice to quote the agriculture commissioner Franz Fischler's "*Agricultural Strategy Paper*" (COMMISSION 1995, 15):

> "In an European Union that extends from Lapland to Andalucia there is a considerable *diversity of regional situations and problems*, and many citizens perceive and appreciate common policies only with reference to their concrete *regional reality*. In such a situation there is a risk, that they experience more and more difficulties to understand the sense of and the reasons for common policy decisions which do not appear to correspond to their *regional reality*. This risk increases the more common policy regulations are detailed and the more the whole system of regulations becomes opaque." (*italics* by the author)

2. Reforms and reform proposals of the CAP in the 1990s

As the apparent lack of commonness is connected to the unbearable complexity and bureaucracy of the CAP, difficulties arise. Neither the 1992 reform of the

CAP nor the 1995 arctic-alpine enlargement of the EU eased the situation. In terms of this experience, one barely dares to think about the extensive effects of the Eastern enlargement in the future. Further and more radical reforms are needed.

Box 1.

Major events and factors in the development of the CAP and its instruments

1957	Treaty of Rome, Article 39 containing *the five main objectives* of the CAP: to increase agricultural productivity, to ensure a fair standard of living for the agricultural community, to stabilize markets, to guarantee security of supply, and to make products available to consumers at reasonable prices. CAP was based on *the three principles*: common market, Community preference, and Community financing
1958	Conference of Stresa (EC-6 agricultural ministers set the basic operational principles of the CAP)
1960	"Proposals on the working out and implementation of the common agricultural policy" are presented to the Council by the Commission
1962	The first market regulations are adopted
1968	Common prices came into force as the CAP entered its final phase
1973	The first enlargement to EC-9 (Denmark, Ireland, and the United Kingdom)
1973	The first socio-structural directives are adopted (including LFA-support)
1979	Co-responsibility levy for milk is introduced due to ever-increasing milk surplus
1980	Setting of production targets is agreed in principle by the Council
1981	The second, Mediterranean, enlargement to EC-12 started as Greece joined the Community
1984	Milk quotas are introduced
1985	"Perspectives for the common agricultural policy: the Commission's Green Paper" is published
1986	The second enlargement to EC-12 is completed as Portugal and Spain joined the Community
1986	The GATT Uruguay Round of the multilateral trade negotiations started, and it lasted to 1994
1988	The stabilizer system (incl. MGQs) and budgetary discipline are introduced
1991	"Reflections on the CAP", a set of policy analysis and reform papers produced by the Commission
1992	The reform of the CAP
1995	The third enlargement to EU-15 (Austria, Finland and Sweden)
1995	"Agricultural Strategy Paper" presented by the agriculture commissioner Franz Fischler

Especially the 1980s can be seen as an era of almost unrelieved crisis for the CAP with *(i)* rapid growth in budgetary costs incurred through intervention purchases of product surpluses and their subsidised exports, *(ii)* growing surpluses in all main crop and livestock sectors, and *(iii)* a variety of uncoordinated attempts to discourage over-production (COMMISSION 1994, 15). Since the late 1970s, several minor, and often product-specific, adjustments were made in the CAP in order to respond to the aforementioned problems. These measures included e.g. co-responsibility levies for milk in 1979 and for cereals in 1986, milk quotas in 1984, and maximum guaranteed quantities in the 1988 stabilizer system aiming at budgetary discipline also in EAGGF (European Agricultural Guidance and Guarantee Fund).

In 1992, the CAP faced a more comprehensive reform. It affected most the cereal sector: price reduction of 30 %, set-aside of 15 %, but also direct compensation to farmers for loss of earnings resulting from price cuts. Beef producers, beef being the other big surplus product of that time (and also now due to the mad cow, or BSE, disease), faced price cuts, which were also compensated. The high costs of direct payments are borne by the EU budget. To evaluate the success of the reform, and also to remind of the attempts of the EU to include some wider rural and environmental goals in the CAP, it is expedient to list the general objectives of the 1992 CAP reform (COMMISSION 1993, 21):

1) to maintain the Community's position as a major agricultural producer and exporter by making its farmers more competitive on home and export markets
2) to bring production down to levels more in line with market demand
3) to focus support for farmers' incomes where it is most needed
4) to encourage farmers to remain on the land
5) to protect the environment and develop the natural potential of the countryside.

Overall, the 1992 reform still built on the basic principles of the CAP. True, it made an important shift from traditional price support to direct support payments, but the shift was only partial, and many products (e.g. milk, wine, sugar, tobacco, fruit and vegetables) remained quite unaffected by the reform. These characteristics impede the achievement of the first two objectives. Yet, cereal surplus has been cut considerably, although partially as a result of poor post-reform harvests only, and the EU has hastily proceeded to reduce the required set-aside percentage. In spite of the changes in the support mechanism, it seems to be that the notorious 80-20 rule of the CAP did not change to any meaningful extent (BUCKWELL 1996a, RABINOWICZ 1996). Hence, 80 % of support benefit still accrues to the 20 % of producers that have the largest farms,

often in the most favourable agricultural conditions. This cannot be the idea of commonly financed support, and by no means is in line with the objective 3. Moreover, budget costs even increased due to big compensation payments.

The objectives 4 and 5 represent the so-called accompanying measures in the reform package. However, and regardless of their good intentions, they make the agricultural policy even more *complicated and bureaucratic* when the objectives and support criteria is being established for various agri-environmental, structural and rural policies. Is the *common agricultural* policy a right place for them at all? More radical issues, like stronger market orientation (without compensation payments) and liberalisation, or renationalisation, appear only in a very limited extent in the final reform package. However, they were present in the discussions during the reform process, which is commonly known as the MacSharry reform, according to the agriculture commissioner Ray MacSharry of Ireland.

The expert group of European agricultural economists published in late 1994 a study outlining the EU's agricultural policy for the 21st century (COMMISSION 1994). In the very beginning they emphasised that unlike many policy measures and reform proposals in the past, their report has not been provoked by any acute crisis. Perhaps so, but one can argue that the CAP is in a continuous crisis. In addition, in the same fashion as the 1992 reform was made as much due to GATT Uruguay Round settlement on agriculture as over-production and budget problems of the EU's own, the Eastern enlargement started to put pressure on further CAP reforms already then when the expert group started working.

Firstly, the study maintains that the 1992 CAP reform represents a major change in policy direction, from price support to direct payments. This would make possible, on the one hand, a clearer separation of the responsibility for internal market unity and for competition, and, on the other hand, the responsibility for more localised social and environmental aims of agricultural policy. Yet, the adopted direct payments suffer from incomplete decoupling and insufficient targeting. The expert group also criticizes the reform because it was limited to about 50 % of the total EC agricultural output, it increased the imbalances in price support levels between commodities, and added to the administrative burden of the CAP. Consequently, considerations of economic efficiency alone, but also issues of freer international trade and the EU's eastern enlargement, would suggest further reform of the CAP.

The main elements in the expert group's reform proposal are:

1) further cuts in support prices
2) completely decoupled direct payments (to compensate for price cuts)
3) a gradual phase out of the common (EU budget) financing of the compensatory payments

4) elimination of quantitative production restrictions (e.g. quotas, set aside), and
5) better use of EC regional, social and cohesion funds for structural development.

The suggestions can also be seen as acting as a framework for the "Radical Reform" option of Fischler's Strategy paper, which tried to identify the main challenges for the future of agriculture and agricultural policies in the Central and Eastern European countries (CEECs) and in the EU and to assess the impact of an enlargement within the present CAP framework (COMMISSION 1995, 4). The three options evaluated in the paper are: (1) status quo, (2) radical reform, and (3) developing the 1992 reform.

The Commission is in favour of the option 3, which is considered advantageous for both sides in facilitating the CEECs accession to the EU. This option is assumed to lead to higher competitiveness, integrated rural policy, and simplification of the CAP. Simplification in the suggested form implies that more freedom would have to be conceded to member states in the implementation of EU legislation. One aim in simplification is also to make a switch from annual price support negotiations to a pluriannual (five years) definition of a policy orientation framework (COMMISSION 1995, 24). This obviously implies also greater flexibility. However, there remains much to be accomplished in this gradual development option, too. The Fischler paper concludes that "Conceptualizing this approach and elaborating the right policy instruments to implement it efficiently will be a major task of the coming years, if this option is retained". Indeed, if it is retained, as it appears insufficient to accommodate some 10 new members from the CEECs.

Neither of the aforementioned sets of reform proposals is going to be beneficial for Finland as they imply tougher competition in the SEM (Single European Market) as well as from third countries, and an increase in the national budget appropriations. However, the first three proposals in the expert study are in general quite inevitable, and likely to take place simply due to e.g. GATT Uruguay Round agreement and the next WTO round starting in 1999. For Finland, a very crucial proposal is the fourth, in particular concerning national milk quotas.

3. National quotas - to keep or not to keep?

For an economist, quotas are evil as they distort comparative advantage and efficient allocation of resources. The expert group (COMMISSION 1994, 34) wants to eliminate quotas, TANGERMANN (1996) regards the future treatment of quotas for sugar and milk as the real test for the ability to prepare the CAP for the

next century, and GARDNER (1996, 12) includes phase out of dairy quotas in his 'most likely' possible CAP scenario for 1996-2010. BUCKWELL (1996b, 205, 208-209) also criticizes quotas in general and sees the application of (milk) quotas very difficult in terms of the CEECs' accession.

On the other hand, an *environmental* economist may consider quotas favourable, as they maintain, perhaps even improve, a sustainable ratio between livestock numbers, or intensive farms, and natural resources (land and water). But it is clear that that the assessment of the environmental aspects of quantitative restrictions, e.g. quotas and set-aside, is complex and the balance of effects dependent both on the nature of the initial problem and on certain regulatory aspects of the programmes (OECD 1990, 23). Obviously, quotas have some environmental implications, which can be, but not necessarily are, positive. OECD also concludes that restrictions on quota acquisition, or total farm size, slow down intensification and may have positive amenity effects. Of course, such environmentally positive effects must be assessed against the efficiency losses associated with quantitative production restrictions. In terms of administrative burden, quotas are quite easy and inexpensive to operate.

Quotas may also have some role to play in balanced *regional* development. For example, milk is the most important line of production in Finland. Its importance is actually increasing due to the EU membership as milk production is not so hard hit as many other lines of production. Profitability of milk production affects significantly economic viability in many rural regions. If quotas were removed, profitability of milk production in these remote rural regions would deteriorate considerably. If the primary economic activity shrinks, alternatives are rare in these areas.

Although it may not be the best way to deal with the situation, quotas are very likely needed also in connection with the eastern enlargement to the countries of great potential of agricultural production. If this potential realizes, it may also have substantial (negative) environmental effects. TANGERMANN (1996) fears that quotas would prevent the CEECs from making good use of their competitiveness. However, it is reasonable to believe that the CEECs can still make good use, perhaps not full use, of their potential competitiveness, provided that the level of quotas are correctly set. Moreover, quotas do not have to be in serious conflict with the principles of the SEM, as free movement of goods prevails.

Concerning international trade and anticipating the next WTO round, in association to the Eastern Enlargement, the EU will have cogent reasons to abolish milk quotas soon after 2000. However, SHEEHY (1996) expects that such a prospect needs not be as threatening to EU farmers as many believe, as it probably would be accompanied by compensations, which, on the other hand, would not be as generous as cereal compensation were in the 1992 CAP reform due to increasing international pressure and tight budgetary discipline. Obvi-

ously, some countries like Finland could face more serious problems than others in this kind of development.

Quotas can be seen as a way to guarantee a fair distribution of agricultural activities in all member countries, in the spirit of the Rome Treaty (i.e. no industry in any member state should die due to common policies). This kind of an approach is not in line with economic principles and, say, comparative advantage, but it could be preferred in the Community for reasons of e.g. rural livelihood (see objective 4 of the 1992 CAP reform). It is again up to an individual member country whether it wants to fulfill its quota or not. If it is too expensive, there is no sense in doing so. From the Finnish point of view, the milk quotas in the CAP can be seen as a factor 'protecting' Finnish milk production and dairy industry as they prevent more efficient countries of better structure and natural conditions (especially Sweden, Denmark and Holland) from expanding milk production in the SEM and entering Finnish markets in a larger extent than today. Perhaps quotas also alleviate the Dutch manure problem!

4. Subsidiarity and political economy

The fundamental approach in the expert group's (COMMISSION 1994) proposal is to separate more clearly economic efficiency from social and environmental measures of agricultural policy. For these two areas, and in particular in terms of their fifth proposal, the use of different, well-defined *instruments and institutions* is required. KJELDSEN-KRAGH (1993, 41) also claimed that "Agricultural policy and regional policy should be totally separated". Clarification and better explanations for that were called then (KOLA 1993, 49), and the repetition of the request now is even more appropriate as the Strategy paper (COMMISSION 1995, 23) emphasises an *integrated rural policy*: "It therefore makes sense to review the present arrangements, and to adapt and amplify them where necessary with a view to achieving a strengthened and mutually consistent body of measures which allows the mobilization of a maximum of synergies and leads progressively to an integrated rural policy". Bold words, few means. Something, more concrete, could be learned from the Finnish experience (OECD 1995).

If assistance becomes better targeted for e.g. rural development and environmental purposes, efficiency of policy is supposed to increase. The expert group also maintains that efficiency of policy administration would improve. I dare to doubt that, for the more you need to define, determine and control who gets what, when and on what basis, the more bureaucratic and inefficient the system becomes. Transaction costs are bound to increase. The better transparency of direct payments is easily offset by increased opaqueness of criteria behind the payments.

Prior to making CAP reform proposals, the expert group has appropriately considered the following constitutional principles of the Community: *(i)* fair competition, *(ii)* subsidiarity, and *(iii)* consensus. I focus primarily on subsidiarity, the key contents of which is expressed in article 3b of the 1993 Maastricht Treaty as follows:

> "... in areas which do not fall within its exclusive competence, the Community shall take action ... only if and in so far as the objectives of proposed action cannot be sufficiently achieved by the Member States ...".

There are several legal and juridical questions, e.g. primary and secondary legislation and Community's competence in different sectors and also CAP mechanisms, which make the application of the principle of subsidiarity difficult in the CAP (see KUHMONEN and SAVIA 1995, SCHERER 1993, and also KJELDAHL and TRACY 1994). Nonetheless, it is worth elaborating the issue little further as an existing element within the EU to alleviate the lack of commonness in the CAP. As there is little, if any, *a priori* evidence in income and social policies that better results can be achieved with responsibility placed at the Community level, the expert group emphasises that in a reformed CAP, before such agricultural policy measures are employed, there should be convincing evidence that they would be an efficient method to achieve social or income redistributional objectives. Such an evidence is difficult to find, indeed. Moreover, the expert group wanted to emphasise that the question to what extent the financial burden of social and structural adjustment problems in agriculture should be shared between the member states is a separate, essentially *political* issue.

Eventually, the decisions concerning agriculture depend on the political economy in each country. Hence, decisions like these are not economic only, they are also political. Public policy decisions concerning agriculture could be affected by concerns for *(i)* the contribution of the food sector to the national or regional economy, *(ii)* rural livelihood and the role of primary agriculture within, *(iii)* environmental protection and landscape, and *(iv)* food safety and security, including the *economics* of food safety and security. It sounds somewhat strange, especially in the light of the current situation in world markets, that the expert group (COMMISSION 1994, 38) concludes that: "Anyway, food security is not likely to be an important issue in the future". It is, and will be, always. This has been very true for Finland.

With respect to the future development of the CAP, the political economy and national interests of Finland are quite well reflected in the objectives set unanimously by the "Agricultural policy working group" and published in June 1996 (Box 2). Market orientation (concerning prices), budgetary discipline and

reasonable openness to third countries (new EU members) are recommended, but, at the same time, the special national characteristics are emphasised in order to make the CAP just and common enough.

Box 2.

The objectives for reforming the CAP
by the Agricultural policy working group
The Ministry of Agriculture and Forestry, Finland
Intermediate report, June 1996

Starting point (p. 109): at the same time as the approaching Eastern enlargement and international trade policy require changes, the special conditions of countries like Finland should be paid better attention to in the CAP in order to reduce uncertainty associated with the future of agriculture.

Common market organisations:
- quantitative restrictions on production (milk and sugar quotas, reference herds, set-aside) should be retained, at least in the intermediate run
- a more market-oriented direction is preferred in the price system
- proper functioning of the SEM and sufficient openness of the common market organisations towards the third countries should be guaranteed

Support mechanism:
- the EU's support mechanism should *(a)* be simplified, *(b)* be made more equal between different member states, and *(c)* pay better attention to family farming, rural livelihood, and production practices that are better for environment and animal welfare
- income disparities due to natural production conditions in agriculture should be balanced in the EU

Agricultural budget expenses:
- changes to be made in the support mechanism should not increase budgetary burden, at least not in the long run
- concerning EU agricultural expenses, Finland should promote tight budgetary discipline and seek means and objects to cut expenses
- in the EAGGF, funds should be directed from export restitutions to direct support and from the Guarantee section to the Guidance section

- the CAP should be *simplified* (and made more responsive to new requirements: environment, clean and safe food, ethical quality)

- the *agrimonetary system* should be retained as long as all current and future member states have a common currency.

5. Conclusion: from CAP to RAP

Finland is very different from Greece, and Greece is very different from, say, Holland. Nevertheless, in the EU it is assumed that a *common* agricultural policy can deal with farm sectors of all member states. To solve this and the aforementioned problems, the CAP has to be *simplified through renationalisation*, or *regionalisation*. As the CAP is not common enough, and very likely it cannot be made such, either, we should adopt the RAP, renationalised, or regionalised, agricultural policy. The principle of subsidiarity could and should be better respected in agricultural policy, too.

Renationalisation mainly deals with two issues: *(i)* should member states have more power and freedom on decisions of agricultural policy, and *(ii)* should there be a shift from common financing back to national funds? The latter point in particular arises from the expected effects of the Eastern enlargement.

In fact, the Accession Treaty of Finland (as well as that of Sweden and Austria) includes some measures that are of a mainly national nature. In the negotiations, Finland emphasised many country-specific characteristics and disadvantages, in particular the northern location, that should have been taken care of by the CAP means (see KETTUNEN and NIEMI (1994) for a detailed description of the Treaty). When the existent CAP means were insufficient and inapplicable, as expected beforehand, and EU was not willing to pay for Finland-specific measures, the financial responsibility of the northern and transitional support measures was left entirely on Finland.

Yet, also nationally financed programmes, including Article 141 of the Treaty (the remaining serious difficulties in Southern Finland) that was finally negotiated during the summer of 1996, have to be accepted by the EC Commission. The basis and criteria for the acceptance of measures according to Article 141 is not very clear as several different measures of various length will be used (e.g. agri-environmental measures, investment aids, increased transitional support) that are based on different regulations (Article 141 of the Accession Treaty of Finland or article 92 of the Rome Treaty). In addition, the negotiation process seemed to be plagued by unnecessary secrecy. This kind of matters do not improve the understanding of the sense of and reason for common policy in Finland, or in any country.

Although the Accession Treaty of Finland is one sort of a renationalisation resolution under the current CAP, it does not represent a preferred form of renationalisation and simplification. It is a heavy and complicated, mixed package of common, national and semi-national/common measures. The EC Commission has still too big a say, and far beyond the subsidiarity principle, on Finnish policy in e.g. income, structural, environmental, and even regional issues. The package is also unfair e.g. in the case of missing LFA-support for

southern Finland (LFA-support covers 85 % in Finland) and low CAP reform support (about 150 ecu/ha in Finland, Portugal and Spain, over 200 in Sweden, about 300 in Denmark, Germany and the UK, and 350 ecu/ha in Holland). True, the CAP reform support was a compensation for income losses due to price cuts, but was it also intended to retain the 80-20 rule in support benefit allocation? Do the countries and farms with the best competitiveness (conditions, structure) still need the most of the CAP support in the form of export subsidies and direct payments dependent on the yields? The fact that the reform decisions are in line with the CAP principles only shows that the very principles of support allocation are inappropriate and unfair as such, at least from the Finnish perspective.

Stronger *renationalisation* is an applicable way to proceed in an attempt to pursue a policy sensitive enough to national needs. If *regionalisation* as a non-country specific approach is politically easier to accept, that will do, too. It is expedient to remember that national measures are needed only if the common policies ignore the national objectives, needs and conditions. National policy measures should be in conformity with the Community's constitutional principles, including the EC competition policy and the principles of the SEM. Primary responsibility for implementation of social, income, regional or structural policies could be left on member states, whereas it would be important to have common framework for agro-environmental issues as well as production ethics and veterinary and phytosanitary aspects of agricultural production and food products in the EU, be it the EU-15 or EU-25.

For *simplification* of the CAP, there could be a fixed amount of money to member states from the EU budget, based on clear criteria taking into account certain special, meaningful characteristics of the member states - characteristics that make them entitled to assistance. These characteristics should include, *inter alia*, the following:

- natural conditions (e.g. short growing season, low effective temperature sums) leading to high
- production costs
- farm structure
- the disparity between agricultural and non-agricultural incomes
- extent of rural regions and the role of agriculture within
- alternatives for other economic activities in currently agriculture-dominating regions, and
- the share of agriculture in the GDP and labour force.

If there is a clear need for support according to the aforementioned factors, and that need could efficiently be met by agricultural policy actions, the actions should be acceptable Community wide. Current CAP support measures do not

respond to actual need of support.

The member states could use the money from the EU budget, and their possible national, additional financing, as they consider best (in conformity with the relevant regulations of the EU, of course). The total spending on agriculture could be *reduced, better targeted, and more predictable* (no major annual fluctuations). Better predictability was evidently the major achievement also in the FAIR (Federal Agriculture Improvement and Reform Act, the 1996-2002 Farm Bill of the USA) as fixed direct payments were introduced to replace deficiency payments. However, this system, analogous to the CAP reform support, has also problems as it is totally insensitive to market conditions, which are and seem to continue some years ahead very favourable to grain farmers in particular (e.g. ORDEN et al. 1996).

The CAP becomes inevitably less suitable as new and diverse countries, whether arctic-alpine or Central and Eastern European countries, enter the Community. For the time being, an analysis of the Eastern enlargement of the EU and renationalisation/regionalisation of the CAP is left for other studies (recent examples being COMMISSION 1996, and RABINOWICZ 1996). Suffice to say that in order to make the enlargement possible in due time, reforms in the Community's so-called common principles, policies, and institutions are required before that. Similarly, several changes are also needed in the CEECs. The Eastern enlargement is important for the reasons of political stability and economic development in Europe, and agricultural issues will and must not impede or delay that process.

However, in the enlargement process the small member countries of the current EU-15 have legitimate concerns in terms of their agricultural prospects and future (r)evolution of the CAP. This article made an attempt to identify and evaluate some of these concerns, intentionally and in particular from the very point of view of the Finnish agriculture.

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