

Foreword

In March 1998 the European Commission presented its strategy for the enlargement of the EU, proposals for reforms of central policy areas and the financial perspectives – Agenda 2000. An important section of this report deals with the EU's Common Agricultural Policy (CAP) and changes that will need to be made.

As part of the work to analyse the consequences of the proposals in Agenda 2000 a network of experts on national agricultural policy has been attached to the Ministry of Agriculture, Food and Fisheries. The results of their work have made a valuable contribution to broadening and deepening the analyses of the Commission's proposals.

The findings and analyses of the network have been important in helping us to understand the necessary changes to the Common Agricultural Policy that are imminent. Therefore, there is good reason to make their findings available to a wider circle of readers. The authors themselves are responsible for the content of the report.

On 1 July 1999 an institute for agricultural economics is to be set up. This will have the main responsibility for economic analysis and investigation in the agricultural policy field, thereby giving the Ministry also in the future access to the analysis and investigative resources required for the long-term reform work.

Stockholm, December 1998

Margareta Winberg,
Minister for Agriculture, Food and Fisheries

Preface

This report is a result of a co-operation between several institutions and organisations: Swedish University of Agricultural Science (SUAS), a consulting company Lantbruksekonomerna, Uppsala University (UU), Swedish Board of Agriculture (SBA), Livsmedelsekonomiska Samarbetsnämnden (LES) and Swedish Environmental Protection Board (SEPB). The activities of the network have been co-ordinated by Ewa Rabinowicz. Peter Frykblom has functioned as secretary of the network until July 1998, followed by Erik Fahlbeck. Several persons contributed to the final product, which should be seen as a result of a joint effort of the participants in the network. Hence, it is not easy to allocate the responsibilities for different chapters in a fair way.

A major contribution has been made by Lars Jonasson (Lantbruksekonomerna) who performed the simulations that constitute the backbone of our analysis, especially in the first part of the report. These simulations are based on an agricultural sector model (SASM) that has been developed by Lars. He has also prepared background material for large parts of the part A and chapters 8, 9, 10 and, together with Bo Norell (SBA), for chapter 12. Ewa Rabinowicz (SUAS) has written chapters 7, 9, 12, 15, 16 and 17. She has also been responsible for editing of the report together with Olof Bolin, (SUAS) Erik Fahlbeck, (SUAS) and Yngve Andersson (UU). Erik has prepared chapters 1, 2, 3, 5, and 6. Chapter 13 has been written jointly by Peter Frykblom and Erik Fahlbeck (SUAS). Bengt Rundkvist (SEPB) has provided valuable comments to this chapter and to the report in general. Olof Bolin (SUAS) has prepared chapters 8, 10 and 11. Yngve Andersson has written chapter 14 and Per Persson (LES) prepared chapter 4. We have also benefited from valuable comments from the staff of the Department of Agriculture. The remaining errors are our own.

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Summary and conclusions

The objective of this study is to analyse the effects that could follow from an implementation of the Agenda 2000 proposal, focusing mainly on implications for agriculture in Sweden. Results in the study are derived from two kinds of methodology; model-based calculations and principally oriented reasoning about specific issues related to the CAP and the Agenda 2000 proposal.

The impact on Sweden has been assessed using an agricultural sector model, SASM, developed by Lars Jonasson. SASM is a regionalised programming model based on farm accounting data. The impact of Agenda 2000 has been evaluated by comparing the expected effects of this reform proposal with a scenario representing a continuation of present policy. This "present policy" scenario represents a long-run, optimal adjustment to the current level of prices, direct payments, quotas etc. assuming that the agromonetary system will be abolished. Consequently, the outcome of present policy differs from preliminary figures for 1998. The calculations are based on the assumption that agricultural commodity prices will fall as deep as the proposed cuts in intervention prices. Within the Agenda 2000 scenario the so called national envelopes have been designed in such a way as to favour extensive forms of production. National supports to milk production in northern Sweden have been kept unchanged, implying lower support per cow, as total production will increase in response to expanded allocation of quotas to this region.

The study is divided in two parts, A and B. The first focus on implications for Swedish agriculture and builds mainly on calculations with the chosen national model. The second part addresses a number of questions related to the Agenda 2000 proposal.

Part A

The overall picture of the estimated impacts of an implementation of the Agenda 2000 proposal in Sweden indicates limited changes on agricultural production. The model used identifies only minor economic consequences in real terms.

Table i Production under different scenarios (1000 tons)

	1998 preliminary	Present policy	Agenda 2000 base	Change in per cent*
Grains	6,462	5,173	4,728	-9
Oil-seeds	116	176	218	24
Sugar beets	2,801	2,651	2,651	0
Roughage/pasture		4,413	4,396	0
Milk	3,280	3,300	3,373	2
Beef	149	131	113	-17

1998 preliminary represents average yields at actual area for crops and animals as represented by 1997 actual figures.

** Changes in per cent between the present policy scenario and the Agenda 2000 bases scenario*

Source: Statistics Sweden (SCB) and model estimations in SASM.

The main reason for the modest effect on production is that agricultural production is strongly regulated by quantitative policy measures. Such measures limit the possibility to reallocate production and thereby reduce real economic impacts. As long as all the existing instruments that regulate production, i.e. producer rights, like animal headage premiums, direct payments to arable land etc., are kept unchanged within the CAP, large parts of the economic consequences that may follow the reform proposal, tend to end up as changes in values of quotas, producer rights and land. To attain substantial changes in production behaviour, on behalf of the farmers, a more far-reaching reform than the Agenda 2000 proposal of the CAP seems to be needed. Model analyses also illustrate the idea that, under such a regulated system as the CAP, many of the identified changes become strongly related to the technological requirements in the different regimes, or more generally: "the devil is in the details". Consequently, results are strongly related to the chosen technology, the chosen political requirements and to the physical relations in agricultural production. Changes in world market prices seems to be of minor importance. Moreover, since the Agenda 2000 proposal opens up for national incentives in many areas, but sticks to the production restriction instruments, the final outcome according to agricultural production will, within the national quota systems, become strongly related to specific Swedish policy decisions.

The result is similar to results obtained by other studies. The overall impact of Agenda 2000 on prices, quantities and incomes in European agriculture appears to be relatively small according to available studies. Generally speaking, most of the impact, as predicted by those studies, is not due to changes of profitability but to changes in supply management parameters. Expansion of production of milk, cereals and oilseeds is due to

the changing of supply restrictions on those commodities. With respect to grain and beef production, Swedish results seem to differ considerably from calculations conducted on the EU level. Production of those commodities is expected to decline in Sweden but expand in the EU. To some extent this is a result of differences in assumptions and methodological approaches. The chosen model takes into account differences in land quality and allows a choice to produce or to set aside arable land. Thereby, a more realistic representation of the opportunities facing the producers is obtained. Similarly, the de facto decoupling of the suckler cow premium, which is not incorporated in other models, contributes to the decline of beef production, estimated for Sweden. Sensitivity analyses conducted indicate that results are robust under reasonable variations of assumptions.

Despite the relative small impact on production, existing farmers will, however, suffer from lower land values, but will also realise increased production quota values. The estimates show that the value of the milk quotas will increase, due to lower costs for feed grains, silage and pasture. There will also take place a capitalisation of bovine premiums in mother animals. Costs for silage and pasture will decrease as a result of lower costs in land use. Model calculations also identify increased values of the implicit producer rights in meat, i.e. headage premiums for suckler cows. These premiums will also increase in value due to raised bovine premiums. Also sugar quotas show an estimated increased value, even though sugar isn't included in the reform proposal. Sugar quotas will be more valuable since the cost of land in alternative use decreases.

As a consequence of marginal impacts on production and consumption, estimated total welfare changes become limited. For Sweden as a whole it is possible, and even probable, that the net and short run economic consequences end up in red. The Agenda 2000 reform proposal will, however, lead to redistribution; with losses for tax-payers (partly) compensating losing farmers, while consumers will become gainers. Since Sweden is a net contributor to the EU-budget, it may be the case that the increased burden on Swedish tax-payers will offset the estimated food sector net welfare gains in a national general equilibrium context. As long as the battery of quotas, premiums, producer rights etc. are kept, it is reasonable to believe that the administrative burden will increase. If cross-compliances, direct payments to virtual cows, modulations, national envelopes etc. are implemented, the necessary increase in administrative efforts may be high enough in themselves to offset the otherwise estimated minor, but positive, welfare effects.

Part B

A specific national set-aside policy seems necessary, since the upper limit of set-asides is crucial according to a number of important issues such as: the use and non-use of arable land, the price of grains, the self-sufficiency of grains, environmental consequences and to the compensational outcome of the Agenda 2000 proposal. If no upper limit is chosen it seems profitable for farmers to set aside the main part of their arable land, as they thereby are able to totally avoid machinery costs, implying increased "arm-chair farming". Even if that, in some dimensions, may be environmentally beneficial, the legitimacy of a policy paying farmers for using their land for non-production may be severely threatened, especially as the main part of the domestic grain consumption in such a case must be based on imports.

Set-aside payments may, at a first glance, be considered as the final solution to the problem how to decouple agricultural support. This may not really be true, though. First, if normal farming practices are required to be eligible for support, some production will be necessary, even if it without the direct payments would be non-profitable. Second, if the upper limit is below 100 per cent set-aside, farmers must keep some machinery to fulfil the cultivation demands and thereby produce more, compared to a situation with no machinery and no production. In both cases, the technical requests linked to the payment of set-aside premiums will, in the Swedish case, drastically enhance production. Interesting is also that the link between direct payments and crop production is enforced with the Agenda 2000 proposal, making the support still more coupled. In lowering grain prices direct payments become more decisive than previously in making production profitable, as a larger share of the crop production needs acreage payments necessary to pass the zero profit limit.

The same tendency can be seen in animal production and a general observation is therefore that with reduced intervention prices and lower market prices the increased direct payments tend to become more production stimulating. In other words, one of the basic ideas with direct payments, i.e. the decoupling of support to farmers, is partly lost when market prices become so low that production is not profitable without direct payments, and a "coupling effect" may well occur.

Direct payments may be seen as partly compensating for reduced producer prices on the national, or sector, level. The compensation content is, however, weakened when the distributional content of compensation payments are considered, especially since the means are used for raised ambitions in environmental and regional policies. Also, the national quota expansion for Sweden has unexpected distributional implications, above all,

it implies redistribution of production and wealth in milk production from high productivity agricultural areas to less productive ones.

Focusing on the environmental aspects, an implication of the Agenda 2000 proposal, with an upper limit for set-aside at 50 per cent, indicates an increase in the use of pesticides. On the other hand, the estimated leakage of nitrogen in different forms, to air and water, is somewhat reduced, as well as the use of fuel. The total acreage of well-maintained grazing land is almost unaffected. These conclusions are valid for all analysed scenarios, with the exception for the case when no upper limit for set-aside land is determined. The choice of an upper limit for set-aside turns out to be the single most determining factor for the environmental effects. If no such upper limit is determined, all environmental effects are significantly stronger compared to the base scenario. In relation to regional differences in problems related to agriculture, not only environmental, model results indicate that both environmental and economic improvements are possible if such differences are considered when determining the policy.

Compared with the original Agenda 2000 proposal the introduction of national envelopes implies an increased net burden for Sweden. The Swedish share of the estimated budget increase, that is necessary to finance the national envelopes, amounts to 21 million ECU. Livestock producers in Sweden would receive 13 million ECU, which results in a negative net balance of 8 million ECU.

Policy discretion with respect to the use of envelopes is limited. The results are similar for different alternatives, but the underlying structure of incentives would be different. If payments are directed to pasture land, it will be profitable to keep such land, but the grazing animals as such will, however, not be profitable. Such a system creates an incentive to keep pasture land but requires supervision. If payment are directed to animals it will, on the other hand, not be profitable to graze natural pasture land. In order to stimulate permanent use of such land payments directed to animal production must be concentrated to extensive breeding forms. Model results point in the direction of a trade off between efficient production of ruminant meat and permanent use of natural pasture land. It also seems clear that the incentive structure of farmers tend to become even more complex than it already is. One of the most obvious examples is the beef production in Sweden. If the Agenda 2000 proposal is implemented, a beef-producing farmer will receive incomes from many sources: meat, headage premiums, extensification payments, national envelopes, compensation payments and a number of environmental programs. For the farmer it may become extremely complicated to identify what kind of production packages that maximises his total profits. This phenomenon will also make it difficult for administrators to influence production in a specific direction.

The crucial issue in the unfolding WTO negotiations will be the status of direct payments, especially whether such payments will be accepted and on what terms. A key question in this context is the impact of the direct payments on the incentives to produce, since decoupled payments can be considered as so called green box measures. American direct payments, (PFCs), are notified as green measures. A comparison between PFC payments and direct payments in the EU, under the assumption that 100 per cent set-aside is allowed, indicates that the PFC payment may be more production enhancing. If all direct payments are distributed to land and harvesting required, the differences between the Agenda 2000 base version and PFCs are small. Allowing for 100 per cent set-aside, makes EU payments more decoupled than PFC. Conditions attached to production obviously matter. However, even if payments would be formally decoupled such a policy may not be credible.

The comparisons of alternative methods to design modulation of payments indicate that some of the transfers may be too high from the point of view of fairness, but it is difficult to design a modulation programme in a consistent and fair way. Without access to data on costs of production, other incomes and wealth, it cannot be known for sure that incomes are too high. If only the highest payments are reduced, the impact of modulation is almost negligible. A modulation of direct payments, rather than of all payments, appears arbitrary. The difficulties to design a reasonable modulation of payments reveals the fundamental dilemma of the CAP. The CAP originated from social concerns and has been focused on the farm income problem. The alleged low farm incomes have, though, been seen as a sector, and not a social, problem. The remedies have been designed accordingly and consisted of price support. The switch to direct support makes it technically possible to introduce modulation. Introducing some socially motivated restrictions on a sector policy will, however, not result in having a consistent social policy.

It is generally agreed that rural development policies should play a more important role for the future vitality of rural regions. Changes that are proposed in Agenda 200 consist, however, mainly in some minor simplifications and reorganisations of existing measures. One of the explanations of depopulation of rural regions has been the result of declining share of food in peoples budget expenditures and low competitiveness of rural regions in producing those commodities that have been demanded instead. Rural development policies will hardly be able to counteract the continuous decline of agricultural employment. Instead, rural development policies should enhance competitiveness of rural regions by making some of the benefits that contribute to higher efficiency in urban regions available in rural areas and by removing negative implications to

such regions that may emerge as by-products of policies in other areas. Such benefits could include access to larger pools of resources. The principle of policy integration that will be followed, if Agenda 2000 is implemented, should be the ability to improve efficiency, by achieving economies of scope, avoidance of overlapping and by making it possible to handle larger projects. Closest potential for efficiency gains may be found between projects based on environmental support and rural development measures devoted to environment and small scale processing.

Implementation of Agenda 2000 proposal contains some "good news" from the point of view of alleviating the enlargement of EU towards East and Central Europe. Prices for consumers would be lower, some simplifications of the CAP have been proposed, funds for rural development and restructuring, that the CEECs have been promised are, in the long run more efficient than boosting agricultural production in response to higher prices. The WTO commitments will also be facilitated, since the expansion of production at lower prices and without direct payments will be lower than otherwise. The long term problems of the CAP have, however, not been solved. Milk and sugar quotas are retained. Those are detrimental for the CEECs, which may end up absorbing structural surpluses from the incumbent members of the EU. The CAP is still highly complicated and the resulting structure of support to agriculture would, with Agenda 2000, become extremely unbalanced. Farmers in the CEECs would be forced to compete on uneven terms.

End notes

The existing CAP can be criticised for having fewer means than objectives. The reform proposals in Agenda 2000 can, on the other hand, be said to propose a broad range of instruments with conflicting ends. Above all, it is hard to distinguish the final result of the Agenda 2000 proposal according to the outspoken objective of enhancing the competitive advantage of EU agriculture on international markets.

Is the Agenda 2000 proposal an improvement from the point of view of efficiency and equity? The major trust of the proposal is the replacement of price support by direct payments. It can be argued that such a change is a first step in an ongoing process of reform, but Agenda 2000 can hardly be seen as the final outcome.

As long as the impact on production is modest, the related net welfare gain may be non-existent, if not negative, taking into account the administrative burden of distributing direct payments. If, after a shift to direct payments, the same producers produce the same commodities, using by and large a similar technology, price support may be more efficient. The

advantage of direct payments is that such payments make targeting, and hence a reduction of the total support, possible. The transparency of direct payments makes them open to public scrutiny. In the long run, the only permanent payments that can be justified from an economic point of view are those related to provision of public goods and positive external effects, most notably environmental benefits. In the short run equity considerations may be important, though, if the shift to a new system needs to be implemented gradually.

Also the impact on consumer welfare is related to total transfers. If an unchanged burden of support to farmers is transferred from consumers to taxpayers not much is gained. Welfare gains on consumption will be more or less eliminated by distortions related to taxation since lump sum taxes only exist in economic textbooks. From the equity point of view, it should be observed that consumers and taxpayers strongly overlap. Also, with respect to other major challenges facing European agriculture, WTO and the Eastern enlargement, Agenda 2000 appears to be a start, but not a final solution. Excluding the new CEEC members from direct payments is not a viable long-term option. Perhaps, the Agenda 2000 proposal is not even possible as a short-term relief. Eventually, direct payments have to be extended to the new members or reformed. Long term challenge for European agriculture, in the context of international trade, is not to find new ways of paying the same amount of subsidies, but to identify what kind of payments that are legitimate to protect the European environment and to develop the countryside.

Part A: Modelling the impacts of Agenda 2000

1 Introduction

Reform proposals under Agenda 2000 have a number of goals such as increasing the competitiveness of the agricultural production within EU, easing an enlargement of the Union towards the East, directing production towards more ecologically sustainable approaches and to make the CAP more accepted among citizens.

Integration is one of the most important issues in Europe. For the European Union (EU), the Common Agricultural Policy (the CAP) is one central area in the integration process. In 1997 the European Commission presented a reform proposal covering the CAP and the EU structural funds. The CAP has been questioned for many years. A number of weaknesses have been stressed and the present CAP seems to be costly to producers, consumers and taxpayers. Expenditures related to agriculture still cover almost 50 per cent of the total EU budget. After the MacSharryreform in 1992, factors like internal inconsistencies, complexity and budget pressures motivate further CAP reforms. For the enlargement of the EU towards East and Central Europe, the CAP is of ultimate importance. Further, it seems reasonable to believe that the next WTO round will continue the work started under the previous Uruguay round. For national governments, as well as for the EC-Commission, a comprehensive analysis seems required to elucidate the consequences of the reform proposals made in Agenda 2000 according to the agricultural policy. Will the proposals made meet the anticipated challenges? Will it

ease a further integration of Europe, an enlargement towards the East and the coming WTO negotiations? And if so, will the results be acceptable from a welfare economic point-of-view?

1.1 Agenda 2000

Agenda 2000 prolongs the strategy of the 1992 reform, i.e. a further shift from price support to direct income support. That approach is proposed, in particular, for cereals and beef. The level of the cereal intervention price is proposed to be fixed in one step at ECU 95.35 per ton, i.e. 20 per cent below its present level. A non-crop specific area payment is proposed at ECU 66 per ton multiplied by the regional cereal reference yields of the 1992 reform. This payment may be lowered if market prices are sustained at a higher level than currently foreseen. For beef, the market support will be reduced in steps, totally by 30 per cent. The intervention system for beef will be abolished and a private storage regime introduced. Existing headage premiums will be increased and a new headage payment system for dairy cows introduced. Supply management measures are still provided, but they are intended to play a minor role.

The main objective of the proposals is to improve the price competitiveness in the sectors. In the case of milk, the supply management system will be prolonged to year 2006 and will continue to play a major role for the dairy sector. For milk, cuts in intervention price of 15 per cent are proposed. An annual headage payment for dairy cows will partly compensate for this. Generally, compensational payments proposed are not intended to fully compensate for price reductions.

No degressivity and no time limits are proposed for the direct payments. In addition, individual ceilings on the total amount of direct payments under different market regimes, i.e. modulations, are proposed. The Agenda 2000 offers Member States the possibility of modulating direct payments in all agricultural sectors on the basis of labour input used on the farm as well as the possibility of introduction of cross-compliances. The details are summarised below.

Agenda 2000 - Summary of proposals

Cereals: reduction of intervention price from 119.19 ECU/t to 95.35 ECU/t, increase in indirect payments (non crop specific and applicable to cereals, oilseeds, non-textile linseed and set-aside) per hectare from 54 ECU/t to 66 ECU/t. Reference rate for compulsory set-aside will be fixed at 0 per cent.

Beef: reduction of effective market support from 2780 ECU/t to 1950 ECU/t. Replacing intervention by private storage. Increase in direct payments for suckler cows from 145 to 180 ECU + additional payment for bulls from 135 to 220 ECU + additional payment for steers from 109 to 170 ECU + additional payment, new payment for cows 35 ECU. Payments for cows are annual, one payment per bull, two payments for steers. Additional payments are based on the envelope model (hectare or headage).

Milk: The quota regime is extended to 2006. Additional quotas are introduced for young farmers (1 per cent) and mountainous areas and Nordic zones (1 per cent). Support prices are to be reduced by 15 per cent, compensated new direct payments for dairy cows amounting to 100 ECU per unit + additional payments (headage or per hectare) according to national preferences (envelope model).

Horizontal provisions: Direct payments above 100 000 are reduced by 20 per cent, payments above 200 000 are reduced by 25 per cent. Cross compliances are left to the discretion of the Member States who may decide on appropriate measures.

Agri-environmental measures: Funds made available from cross compliances or modulations remain available for MS as additional environmental support. LFA-payments based on per hectare basis.

Rural development: RD1 (agro-environment, afforestation, early retirement and LFA), RD2 (investment in agricultural holdings, marketing, forestry, development of rural areas). Financed by EAGGF Guarantee except for RD2 in objective 1 regions.

1.2 Objectives of the study

The study aims at providing an analysis of possible impacts of the Agenda 2000 proposal on Swedish agriculture. The study focuses primarily on impacts on Sweden. In addition, some general issues, potentially relevant to the Union as a whole and indirectly affecting Sweden, are included. When information is available, comparisons with other Member States are made.

The analysis centres on the impact on economic efficiency. However, equity considerations are also included in the analysis, e.g. in the case of modulation.

The outline of the report is as follows. The report is divided into two main parts. First, an agricultural sector model is used to estimate impacts of the reform on production, consumption, governments expenditures, trade etc., in Sweden. The second part provides a discussion of specific issues related to Agenda 2000 and to the model-calculations, such as alternative designs of modulation, set-asides, national envelopes, etc.

In the first part, the mathematical model is presented, followed by a comprehensive presentation of the base run scenario. The presentation includes impacts on production, land use, livestock numbers, direct payments, consumption, trade as well as welfare consequences for producers, consumers and tax-payers. Figures are shown for the national and in some cases for the regional levels. The base run scenario corresponds to proposals made from the Commission on March 18, 1998 and it is assumed that the Agenda 2000 proposal is fully implemented. In cases where the proposal leaves the design of the regulations to the discretion of the national governments, assumptions are based on recommendations made by the Swedish Ministry of Agriculture.

The base run scenario is complemented by other policy scenarios advanced in connection with the Agenda 2000 proposal, namely the French proposal of cutting direct payments to be able to reallocate funds to rural development and a proposal for a radical reform of the milk regime advanced by the "London club". Since Agenda 2000 opens up for national discretion of the policy, two different scenarios concerning the use of envelopes and the set-aside requirements are considered.

Impacts on farm level are also examined to complement the sector model used. Scenario designs are the same for the farm level.

In the base run, full impact of proposed price reductions is assumed. Implications of alternative assumptions are examined in the form of

sensitivity analyses. In addition, reliability of the results is discussed, focusing on key methodological assumptions in the model.

Part two of the study is devoted to the discussion of special issues. Several of the new regulations, notably the national envelopes, may be implemented in different ways. Impacts of varying assumptions are examined separately, keeping the remaining factors constant. This applies to the set-aside requirements, the national envelopes and the distribution of additional milk quotas.

The major feature of the reform proposal is to switch from price support to direct payments. As direct payments are intended to compensate for the price cuts, we discuss principles of compensation. A critical examination of the different methods and principles of modulation is carried out as well.

An environmental impact assessment of the Agenda 2000 proposal is presented as well as a discussion that focuses on the impact on food consumers. Changes in horizontal regulations, as well as the theoretical foundations of rural development policies, are analysed. Comparisons with other member states, based on other studies, are also presented. Finally, a discussion of issues related to the next WTO round and the Eastern enlargement completes the analyses in part two of the report.

1.3 Swedish agriculture

Before presenting the model and the results, a brief introduction to the agricultural sector in Sweden is given below.

Primary production in agriculture is about 1.1 per cent of the Swedish GDP and less than 2 per cent of total employment (Statistics Sweden, SCB). When up- and downstream industries are added, figures grow substantially.

Today, there are about 90 000 farmers in Sweden, of whom 26 000 may be characterised as full-time farmers, (i.e. they have labour requirements in agriculture of 1600 or more standard hours per year, figures from Statistics Sweden, SCB, 1998). More than 75 per cent of farmers' assessed income comes from non-farm sources (Statistics Sweden, SCB).

On the plains in Southern Sweden, conditions for cropping are similar to those in Denmark and in the northern parts of Germany. Soils have a high clay content; the growing season starts in April and ends in September. In the southernmost parts sugar beets are grown as well as grains, oilseeds, potatoes and vegetables. Pig fattening and milk

production are also important in these areas. Grass can be harvested two to three times a year.

The northern parts of Sweden, together with the highlands and the woodlands in southern Sweden, have less fertile soils and a shorter growing season. Conditions for agriculture are similar to those in Finland and Norway. In these areas, milk production is by far the most important agricultural commodity. Many farmers, that used to have milk production, have, in recent years, switched to beef production because of raised productivity in milk production in combination with the introduction of quotas and environmental programmes.

The average size of a Swedish farm is today almost 32 hectares of arable land, but full-time family farms without animals may be 250 - 300 hectares or larger. In counties with fertile arable land in the middle and southern parts of Sweden the average size of farms is between 40 and 60 hectares arable land per farm. The average herd size of a milk producer is today about 30 cows, while those farmers who build new stables may establish herds of more than 60 - 80 cows.

Agricultural production in Sweden has never been explicitly export-oriented. For decades, the official agricultural policy has focused on national self-sufficiency. When support programmes and border protection measures stimulated production above domestic consumption levels, exports took place with the help of export subsidies.

In 1990, the Swedish parliament decided on a radical agricultural policy reform - an internal deregulation. The main idea was to maintain border protection and eliminate all internal market regulations. A substantial adjustment programme gave temporary compensation/support to farmers during a five-year period. National programmes, mainly linked to environmental aspects within agriculture, were important parts of the reform. The deregulation intentions never came to a fulfilment, since the Swedish government applied for EU-membership in 1993.

References:

Yearbook of Agricultural Statistics 1998. Statistics Sweden, SCB, Halmstad, Sweden.

2 Methodology

In analysing effects of the Agenda 2000 proposal a sector model of Swedish agriculture is used. The model is called SASM-95 and has been developed by Lars Jonasson. A comprehensive presentation of the model can be found in Jonasson (1996).

In short, the model can be summarised in the following box:

Characteristics of SASM-95:

- Sector model covering Swedish agriculture and primary processing.
- Mathematical programming model.
- Multi-regional model with 10 production regions, 5 market regions and transport activities.
- Comparative-static equilibrium model with some dynamics in fixed assets.
- Demand is represented by regional linear demand functions and export at given prices.
- Supply is derived from production activities within the model and by import at given prices, separate from export prices.
- Production technology is represented by detailed regional crop and livestock budgets connected with a set of biological, technical and political restrictions.

The model maximises total welfare of producers and consumers. Consumer behaviour is represented through price elasticities on a number of food commodities. Consumer food prices are based on farm gate prices plus fixed and variable costs for transports and processing. Traditional assumptions for utility maximisation are used (i.e. consumers prefer more and cheaper food to less and more expensive food).

Producers are assumed to be profit maximisers. In the model, farmers are represented by a number of production activities. Each activity represents production of a commodity. According to allocation

of arable land, the model can choose between wheat, rye, oats, barley, rape, sugar beets, potatoes, grass for forage, ley, natural pasture, fallow and "others". For each crop commodity, fixed regional input cost structures per hectare are determined, i.e. each activity is given a fixed per hectare use of capital, machinery, tractor hours, man hours, fertilisers, pesticides, etc. Each activity also has a regional given output per hectare and yields per hectare are the regional averages.

The model is based on ten production regions in Sweden and each region has its own cost structure and yield. To some extent, actual differences in farm structures, natural conditions and transport costs etc. are represented in the model.

In each region, the arable land is split into two groups, one consisting of "better land" and one of "worse land". Demanding crops such as sugar beets, bread grains, oilseeds and potatoes can only be grown at "better land". Grass for forage and feed grains can be grown on all kinds of land, but feed grains give a 10 per cent lower yield on "worse" land. The classification is based on observed growing patterns of farmers, i.e. in each model region the share of "better" land is determined by the share of production that can be grown only on more fertile land (sugar beets, bread grains, oilseeds and potatoes).

Also milk, meat, pork, sheep, poultry and eggs can be produced in the model. With these activities follow fixed costs for input use and output productions per head that vary regionally in the same way as for the crops.

Within this general structure of farm production, processing and consumption activities it is possible to incorporate a large number of political CAP instruments. Regulations, restrictions, payments, etc. that are determined per input, per output, per hectare or per animal are easily included.

Technology is represented through the input and output cost structures, included in the crop and livestock budgets. The farm structure is embodied in the supply of inputs. Inputs can be variable, intermediate, fixed or quasi-fixed.

Most inputs are variable, e.g. fertilisers, pesticides, fuel and labour. These inputs are available at a fixed (infinitely elastic) price. Intermediate inputs (products) are inputs that are produced in one farm activity and used in another, e.g. forage, pasture grass, piglets and calves. Here, supply and demand has to be equal and regional equilibrium prices are obtained. If prices differ between regions, inter-regional trade may occur.

Fixed inputs are typically represented by land. In each region a specific acreage is available for agriculture. This acreage can be used or not, but it cannot be expanded. If all available land in a region can

be used for profitable production, land is a limiting factor and a land rent occurs. This land rent is an important part of the calculated producer surplus. No capital costs connected with present land values are included in the model.

Quasi fixed inputs are fixed in the short run but variable in the long run, e.g. buildings and machinery. The model is run to elucidate intermediate-term effects. Assumptions have been chosen to represent possibilities in what may be interpreted as a ten-year perspective. There are no changes in technology or inflation representing a sequential time dimension. Time consuming development is, however, modelled. Capital stocks, i.e. machinery and buildings, depreciate with a certain percentage annually. The analyses are supposed to illustrate changes in a ten-year perspective and depreciation rates have been chosen such that a certain amount of the capital stock must be reinvested, to ensure continued production at present level. The remaining part of the present buildings will, though, create a producer surplus, similar to the land rent, if used for profitable production. No historical costs for these remaining buildings are included in the model.

In milk production, the model can choose between three options; small, medium or large herds and stables. Initially, the actual distribution of buildings and herd sizes determines the starting point, but in the intermediate run and under changed policy regimes the model will choose the optimal distribution of reinvestments in milk production regionally and in increasing herd sizes. It may be pointed out that the structural allocation in size and region is partially determined by the present structure. Prevailing buildings can be used for free, while new buildings of larger size or in other regions are costly.

When it comes to animal breeding, the model has no restrictions, apart from those that follow from the regional setting, i.e. the model can choose to expand, e.g. beef production in one region, as if this region was "one large farm", that without costs can pool animals to feeding and grazing areas. The regional redistribution of production is, though, softened by the cost advantage for continued production in present buildings such as for dairy production.

Farmers' behaviour is represented by the model's choice of the most profitable set of production activities. Choices are, however, restricted in a number of ways. In each region, biological restrictions on crop rotations may limit the use of crops, and growth in livestock is partly limited by birth-rates, existing buildings and animal feed. Some inter-regional transportation may occur but, at national level, breeding of beef is limited by the number of calves, etc.

EU-regulations, such as quotas, also limit the choice of activities. In Sweden the government has chosen to divide the country in two regions concerning the distribution of milk quotas. Quotas may be traded intra-regionally at administratively set prices, but are not tradable between these two regions. In the model, milk quotas are freely traded within the two quota regions and the equilibrium price indicates a quota rent. In reality, milk quotas can be traded within each region, at an administratively set price.

When it comes to the Swedish environmental programme and regional support, Sweden is split into eight regions which also are represented in the model. The remaining areas in the model are separated into two regions, which makes a total of ten production regions in the model.

Prices are determined by the model as a set of equilibrium prices, but the magnitude for traded products is limited by import and export prices. Export and import prices are exogeneously determined outside the model. They are set at levels that represent actual EU prices. For most products the Swedish export price equals the intervention price while the import prices equals the intervention price plus transportation costs to Sweden.

It is assumed that farmers are unable to discriminate between domestic and foreign markets. Consequently, farmers are modelled as price takers. Even if the model assumes normal negative price elasticities for consumers, farmers do not act strategically, e.g., in order to restrict output for higher prices - with one exception. In setting the price of milk, it is assumed that a fixed part of the price for fresh milk is internally distributed to other milk-based commodities. This adjustment represents the old price-setting structure in farmers' milk-processing co-operatives. Even if there is no evidence for such a price setting mechanism today, it is notable that the price of fresh milk to consumers, as well as the farm gate price, is higher in Sweden than in most other EU-countries.

Prices may vary within Sweden between, but not within, regions. Local differences in production and consumption lead to internal domestic trade in Sweden. Prices may differ according to domestic transport costs.

The model is based on average data. Figures for yields and costs represent regional and group averages. Thereby, the model can represent the nation, or a region, in a simpler manner than a model based on non-linear cost and demand functions. As a result, model outcome becomes "threshold dependent", i.e. the model may over-react at certain critical levels. It may, e.g., be the case that at a certain price, large areas of arable land are used for grain production, but at a slightly

lower price, most of the land will be used for other purposes or not used at all. When the profitability in an activity is close to zero, or close to the profitability in the best alternative use of the inputs associated to the activity, small changes in prices may cause dramatic effects in the model solutions.

It may also be noted that the model chooses to make use of inputs as soon as there exists an activity that generates a positive profit. On the other hand, the model never chooses an activity that is connected with negative profits, unless it is needed as a part of the crop rotation.

Even if models of this kind tend to exaggerate some effects that will not necessarily restrict the usefulness of the models, the results may nevertheless illustrate changed incentive structures of policy reforms. Calculated directions of production and consumption changes may tell us something essential about the new policy, even if the absolute magnitudes may be questioned.

Results from model runs will be complemented with a number of approaches. At farm level, book-keeping data from actual farms will be used. Simple calculations, related literature findings and analytical scrutinising of results, will also be used.

References:

- Jonasson, Lars., 1996, *Mathematical programming for sector analysis*.
Dissertations 18. Swedish University of Agricultural Sciences,
Department of Economics, Uppsala.

3 Impacts on Swedish agriculture at the sector level

In this chapter the impact of Agenda 2000 on Swedish agriculture is compared with a continuation of the present policy. Both scenarios are briefly described below. The chapter presents the main impact of Agenda 2000 on Swedish agriculture. The results are first shown at the national level. Later on the regional distribution of effects is highlighted.

3.1 Present policy scenario

When discussing what impacts Agenda 2000 might have on the Swedish agriculture, the point of reference is important. Sweden has been a member of the European Union for only three years. Several arguments can be given for the position that Swedish agriculture is yet not fully adjusted to the new conditions.

- Firstly, farming is an activity with lengthy adjustments. Adaptation takes time. Present production patterns still reflect pre-EU Swedish agricultural policy.
- Secondly, all changes of agricultural policy that are related to the EU membership have not been introduced at the same time. Some of the policies, e.g. environmental support to permanent ley, have been in place for less than a year. (Shortages of budget funds and demand for co-financing explain the gradual introduction of some measures.)
- Thirdly, the agro-monetary system is still in place 1998 but will cease to exist before Agenda 2000 is implemented. Removal of the agro-monetary system implies a significant reduction of the support to the Swedish agriculture. No compensations for the removal of the system have been envisaged in Sweden.

Since we are interested in the effects of Agenda 2000 per se, the Agenda 2000 run will be compared with an estimated situation of what would have occurred if the Swedish agricultural sector adjusted optimally, in model terms, to the existing CAP of 1998. The outcome of this scenario, a long run equilibrium under the present level of prices, direct payments, quotas

etc., will be called the "Present policy". Moreover, since the analysis focus on the net effects of the Agenda 2000 proposal, the agro-monetary system is abolished also in the "Present policy scenario" and the exchange rate is set at 8.65 SEK/ECU. This figure represents an average exchange rate for the period 970101 - 980630.

Nevertheless, calculated differences will be complemented and compared with actual figures of Swedish conditions, since it may be of interest to relate results also to present conditions. The difference between a long-run optimal adjustment to the present policy and the present production is in some cases significant. As shown in the table 3.1, calculations indicates that Swedish farmers ought to produce more oil-seeds under the present policy, than they actually do. The result may be explained by the relations between the chosen figures for grains and oil plants in the model. According to general recommendations from crop extension services, as well as to a number of estimations on profitability of production, oil-plants seems more profitable "on paper", than the actual behaviour of Swedish farmers indicates. Similarly, the model indicates that if the present policy will be sustained for ten years, substantial changes in land use will occur, see table 3.2. More land will be used for oilseeds and especially ley, whereas land use in cereal production will shrink. It will also be more attractive to set land aside. The share of the base area that is fallow land will increase from 13 to 17 per cent. (The base area is the area that is used for cereals, protein crops and set-aside.)

3.2 Agenda 2000 base scenario

In the Agenda 2000 base, reform proposals from the EU-commission of March 1998 are modelled. The March proposal includes a number of open choices that are to be made at national level. Assumptions about the choice of national parameters have been made after discussion with the Ministry of Agriculture.

- A national ceiling for voluntary set-aside is chosen at 50 per cent of arable land unless the land is used for production of bio-energy. (It is assumed that the area under energy crops can increase by, at most, 50% from the present level.)
- National envelopes: Milk envelope is paid as an additional headage payment, i.e. as direct payments per virtual cow. Beef envelopes are directed towards extensive production forms, i.e. giving a maximum direct payment of 55 ECU per suckler cow, a maximum direct payment to heifers for slaughter at 255 ECU, and allocating the rest of the funds to steers and thereafter to bulls. After estimated adjustments, this ends up at 120 ECU per steer and nothing to bulls.

- Extensification premiums are set to 100 ECU. The extensification base area includes: permanent pasture, pasture on arable land and areas where animals can graze after a ley harvest.
- Cross-compliance and modulation is exempt from model estimations.
- Sweden has special support to northern regions - the "arctic areas" (north of 62 nd parallel), so-called national support. According to the Accession Treaty, where provisions for national support are specified, this support is not allowed to increase. Northern areas will achieve an increase in their milk quotas, while the national support to milk production has to be lowered proportionally, in order to keep the total national support unchanged.
- In the base scenario, market prices are reduced equal to the proposed reduction in intervention prices.

Some of these assumptions will be changed in later chapters.

3.3 Model results

3.3.1 Impact on production and land use

The value of production is expected to decline by 17 per cent from 2.3 billion ECU to 1.9 billion ECU. (These figures represent the shares of the Swedish agricultural production that is captured by SASM and therefore lower than official figures.) The decline can be decomposed in decline of the volume of production (0.13 billion ECU) and decline in prices (0.27 billion ECU). Changes of production quantities of the individual commodities at national level are summarised in table 3.1.

Table 3.1 Estimated production (in 1000 tons)

	1998 preliminary	Present policy	Agenda 2000 base	Change in per cent
Grains	6 462	5 173	4 728	-9
Oil-seeds	116	176	218	24
Sugar beets	2 801	2 651	2 651	0
Roughage/pasture	*	4 413	4 396	0
Milk	3 280	3 300	3 373	2
Beef	149	131	113	-17

* No figures available

1998 preliminary has been calculated by applying average yields to the area for crops 1998 and animals as represented by 1997 actual figures

Source: Model estimations in SASM

Grain and beef production are supposed to decline as a result of the reform, while milk and oil-seeds increase. Changes in milk production follow strictly from the increased milk quota. In Agenda 2000, Sweden will get increased milk quotas in northern parts of Sweden. (On the other hand, the value of the compensating direct payments to milking cows is not increased at the national level. As a result, milk producers in southern Sweden will experience a relative loss as compared with producers in northern Sweden and with e.g. Danish producers. (See further discussion in chapter 10.)

In the base scenario, grain production is estimated to decline, in favour of fallow. In many parts of Sweden it becomes more profitable to take land out of grain production and receive direct payments for fallow, compared with investing in expensive machinery equipment for sustained grain production.

When it comes to oil-seeds the situation is different. The estimated net effects imply a reduction in the planted area of about 4 per cent and an increase in production of about 25 per cent. This rather confusing result can be explained by a significant regional change in production but, more importantly, is a shift from spring oil plants to autumn oil plants. With the increased use of set-asides it is possible to have a crop rotation including more autumn-sown oil-seeds, with increased average yields as a result.

When national figures are split up into regional ones, the differences in the fertility of the soil are decisive for regional patterns. On the plains in southern Sweden, grain production will fall slightly, whereas it will drop substantially in other regions. (Some regional figures are presented in tables 3.4 and 3.5)

Beef production decreases considerably as a result of the Agenda 2000 proposals. Declining profitability in producing heifers for slaughter, and the changes in regulations for suckler cows, are the most important explanations. Even more important are the changes in regulations. The impact on beef production is further explained while discussing changes of livestock numbers in table 3.3.

Pork is not covered by proposals in the Agenda 2000 and affected only indirectly. Two comments may, nevertheless, be worth mentioning in relation to pork. First, changes in the beef regime, with lower a consumer price of beef, puts a price pressure on pork. Estimations of traditional cross-price elasticities between beef and pork (e.g. Assarsson et al. 1996) usually identify a substantial substitution effect with respect to changes in relative prices. In model estimations, consumer prices for beef decrease by about 22 per cent, something that certainly will affect the demand for pork. On the other hand, there is a long-term trend in consumer patterns in favour of the "white" meat.

Secondly, at EU-level the proposed drop in intervention prices for grains will lead to an adjustment of export subsidies for pork meat, proportional to the average share of grains in pork feed. Conventionally, Swedish pork producers have used higher shares of grains in feed mixtures than EU producers on average and will, therefore, at least in the short-run, benefit relatively more from this change.

Land use implications

Table 3.2 Estimated use of arable land (in 1000 hectares)

	1998 preliminary	Present policy	Agenda 2000 base	Change in per cent
Winter grains	440	311	305	-2
Spring grains	861	736	642	-13
Oil-seeds	55	83	80	-4
Set-asides	209	229	370	62
Ley	963	1 249	1 192	-5
Potatoes	33	40	40	0
Sugar beets	60	58	58	0
Others	127	63	88	40
Total	2 748	2 768	2 768	0
Cultivated	2 509	2 526	2 367	-6
Fallow*	13%	17%	26%	

"1998 preliminary" are preliminary figures from Statistics Sweden (SCB)

** These figures represent fallow as per cent of the base area*

Source: Statistics Sweden (SCB) and model estimations in SASM

The general impression is that the optimal use of the arable land would not become heavily changed under the Agenda 2000 regime. The most important shift is the significant increase of set-asides. Spring cereals, that have lower yields but can be grown under less favourable conditions than winter grains, decrease.

Table 3.3 illustrates the estimated number of animals. The outcome is highly influenced by the design of the national envelopes.

Animal production

Table 3.3 Estimated number of animals (in 1000s, figures on Bulls, Steers and Heifers represent slaughtered animal per year)

	1998 preliminary	Present Policy	Agenda 2000 base	Change in per cent
Milking cows	442.0	455.9	466.0	2
Suckler cows	163.0	140.1	106.0	-24
Bulls	249.8	164.3	42.4	-74
Steers	11.4	78.6	191.1	143
Heifers for slaughter	53.3	33.5	21.2	-37

"1998 preliminary" are preliminary figures from Statistics Sweden (SCB).

Bulls Steers and Heifers for slaughter refers to actual figures from 1997

Source: Statistics Sweden (SCB) and model estimations in SASM

The small increase in the number of milking cows follows the increase in the national milk quota. Within the group of beef cattle, production is estimated to change drastically, with a large drop in suckler cows and bulls that is partly counteracted by a large increase in the number of steers. For suckler cows, the drop stems from two sources. Partly, the decrease follows the lower meat prices, but the change in regulations is more important. For Sweden, the Agenda 2000 proposal includes a reduction of the national level of suckler cow headage premiums. Since Swedish farmers in 1996 did not make full use of the number of premiums, the total level will be reduced from 155 000 to 132 500 premiums in the proposal. The Swedish National Board of Agriculture started an administrative procedure of redistributing suckler cow premiums from farmers not using them to farmers that wanted to expand their production in 1996. During that year, about 10 000 premiums were redistributed. The reallocation of suckler cow premiums may be seen as one example of Swedish farmers' adjustments to the present CAP. It may, though, be noticed that in model estimations of adjustments to the present CAP, it is not profitable for Swedish farmers to make full use of the national quota of suckler cow premiums.

Within the Agenda 2000 proposal, suckler cow premiums are changed. In the proposal, the total number of premiums is kept unchanged, but also heifers should qualify for 20 per cent of the premiums. Since it is probable that most suckler cow producers have recruitment heifers of at least 20 per cent of the number of suckler cows, this proposal will affect producers in a manner similar to a reduction in the number of premiums of 20 per cent. The change may also be seen as a sort of decoupling. For

farmers breeding suckler cows, it will be accepted to include recruitment heifers up to 20 per cent of the total number of headage premiums. As a result of this regulation change, the number of suckler cows in Sweden will drop by 20 per cent. The total drop in meat production in Sweden is estimated to become less than 15 per cent.

It may also be noted that with a production change from bulls to steers the total number of animals will increase. Steers grow at a slower speed than bulls. In the model, steers are supposed to have a rearing period that is about 15 per cent longer than for bulls, something that contributes to the drop in meat production

In model estimations, meat production in Sweden is not profitable without the direct payments, i.e. headage premiums, extensification payments and environmental programs.

Regional implications

In the model used, Sweden is divided into 10 production regions (see figure 3.1 below). These regions follow the geographical boarder of the CAP related support schemes in Sweden. Region 1 is the most northern and "arctic" part of Sweden, with a large share of small holdings and a share of crop farms under the national average. Conditions for agriculture is unfavourable and woodlands and mountains dominate this very scarcely populated region, without larger cities. Region 1 qualifies for the highest levels of LFA supports and additional nationally financed regional support in agricultural production. The main agricultural production in this region is milk.

Region 2a is the region with the second worst conditions for agriculture. The production structure is about the same as in region 1. Region 2a contains coastal areas and areas near larger rivers in northern Sweden and some woodland areas in the western parts of Sweden. Also this region is very scarcely populated. Part time farm and small holding dominate in agricultural production and the lager farms are diary producers.

Region 2b is located in the south east part of northern Sweden. Conditions for agriculture is not favourable here either, but better than in region 1 and 2a. The structure of the production is about the same as in region 1 and 2a; woodlands dominate and the share of small holdings is higher than the national average. Regions 2a and 2b qualifies for national support and for LFA support.

In region 3 conditions for agriculture are also week, even if conditions are better than in the more northern parts. Woodlands dominate and the share of small scale farming is still above national average, but a

bit lower than in the previous regions. Region 3 qualifies for the lowest level of national support and for LFA support.

Region 4 does not qualify for national support, but for LFA support. Conditions for production is still rather weak, but the share of small holdings is lower than in the more northern regions. The share of crop production is about the national average and the region is not so sparsely populated as the northern regions.

Region 5a contains higher woodlands in southern Sweden. The share of small holdings and crop holdings is less than national average and milk and beef dominates the production. A large share of the Swedish semi natural pasture area is located in this region and, hence, the region is important in relation to environmental concerns about biodiversity. Conditions for crop production are not so good.

Region 5b also qualifies for LFA support and is dominated by woodlands at lower levels than region 5a. The production structure is about the same, but the share of crop production is higher than in region 5a, though still lower than the national average.

Region 5c is at the boundary of the LFA regions. It is qualified for regional environmental supports but not for regional compensation payments for animal production. It is located near the plain regions and is characterised by a landscape at the border between woodlands and plains. Milk and beef production is important in this region that also have a substantial share of the national semi-natural pasture area.

Region 9m contains the plains in the middle-south of Sweden. Arable land is dominated by old sea bottom, with high clay content. Conditions for grain production are favourable and the share of crop producing farms is substantially higher than the national average. One third of the Swedish crop land is located in this region and grain production dominates. The region does not qualify for LFA-support.

Last, region 9s contains the southern plains with fertile soils and good conditions for agriculture. Crop production is important and the share of crop producing holdings is higher than the national average. In this region sugar beets, potatoes and vegetables are important but compared to other regions in Sweden, also the animal production is intensive. A large share of the Swedish pig and poultry production is in this region. A majority of the agricultural production in Sweden comes from regions 9m and 9s. (Region MI on the map is in the model treated as a part of region 9s. Production in region MI is very small compared to production in region 9s and therefore region MI hardly add any substantial affects to region 9s.)

Figure 3.1 Production regions in the SASM model

Figure 3.1 can only be found in the printed edition.

From the model results a number of regional figures can be presented. In table 3.4 and 3.5 employment, production and support are presented. Some environmentally related parameters are later presented in table 3.9.

Table 3.4 Regional employment, production and support, estimations of relative changes under the Agenda 2000 proposal. Present policy scenario = 1.00

	Working hours	Production volume	Production value	Direct support
Region 1	0.95	1.01	0.85	1.27
Region 2a	1.05	1.13	0.97	1.29
Region 2b	0.98	0.98	0.84	1.15
Region 3	0.99	1.00	0.83	1.06
Region 4	1.00	1.02	0.85	1.26
Region 5a	1.00	1.00	0.84	1.71
Region 5b	1.03	0.96	0.82	1.70
Region 5c	1.05	0.97	0.80	1.52
Region 9m	0.91	0.96	0.82	1.19
Region 9s	0.98	1.00	0.90	1.31
Sweden	0.98	0.99	0.85	1.33

Source: Model estimations in SASM

The general picture is that working hours and production are reduced, under the adjustments to the Agenda 2000 proposal, while direct support increases. The main explanation to the reduced production value is a price effect since the production volume is almost unchanged. There is also a shift in production from grain and beef to milk and this shift has some regional implications. Grain production is mainly located in better regions and in these regions set aside often becomes a more profitable alternative. The best area in southern Sweden (9s) is an exception since grain yields are high enough to make production profitable, also compared with set-aside.

Milk production increases at national level. The increase is concentrated to regions 2a and 4. The large increase in northern Sweden is a consequence of the additional milk quotas being allocated to the region but also a result of the fact that the highest profits in dairy production are to be found in regions with the highest regional support. Apparently, those regions have been overcompensated for their natural handicaps. Hence, new investments tend to be most profitable in the least productive regions within each of the three quota regions. However, region 1 is already calculated to have maximal admissible production under the present policy and hence the second worst region (2a) can take the expansion.

Table 3.5 Regional changes in set aside and production of grain, milk and beef, estimations of relative changes under the Agenda 2000 proposal, compared with present policy scenario.

	Set aside	Grain	Milk	Beef
Region 1	0.25	0.97	1.00	1.02
Region 2a	0.21	0.90	1.25	1.03
Region 2b	0.22	0.97	0.99	0.98
Region 3	0.27	0.97	1.00	0.99
Region 4	0.85	0.87	1.06	0.98
Region 5a	0.80	0.62	1.01	0.94
Region 5b	4.46	0.96	1.00	0.79
Region 5c	0.70	0.68	1.00	0.72
Region 9m	1.88	0.87	1.01	0.79
Region 9s	1.37	1.02	1.00	0.69
Sweden	1.61	0.92	1.02	0.87

Source: Model estimations in SASM

Beef production also exhibits an inverse pattern in relation to land quality. Production is calculated to increase in the northernmost regions and significantly decrease in the fertile plains in the south, as a result of increasing support to beef, milk and ley in less fertile regions as well as decreasing support to grains under the Agenda 2000 scenario. Reduced prices and increased support contribute here to strengthening of a production pattern that already exists. The tendency for regional redistribution also becomes more pronounced, when production changes (decreases or increases) compared with the status quo solution where production tends to continue in existing buildings etc.

Region 5c is a small region with special conditions and an interesting optimal adjustment to the conditions in the Agenda 2000 proposal. It is located in the border between plains and forrest areas. The region qualifies for the Swedish regional environmental support for ley but not for the regional compensation payments for livestock. Implementation of the Agenda 2000 proposals would result in reduced profits in grain production. The best alternative in this region is to produce roughage for sale. Therefore production of ley increase, at the expense of grain and set-aside. The roughage can be sold at a competitive price for use by horses and livestock in the plains where grains and set aside is more profitable, or for livestock in the forrest areas where production costs for roughage are higher but livestock is more supported.

The regional differences with respect to direct support are mainly related to the various regional production patterns. In the plains (9m and 9s) production is dominated by grains, pork and poultry where support is unchanged or slightly increased in the Agenda 2000 scenario. In the

woodland parts of southern Sweden (regions 5a to 5c) agriculture is dominated by milk and beef production, the products that are most effected by the suggested change from price support to direct payments. This is also reflected in the noticeable decrease in the production value while direct support increases strongly. The production value decreases considerably also in the case of northern Sweden (regions 1, 2, 3 and 4). Those regions receive sizeable direct support under the present policy since regional and environmental support is a large part of the total direct payments in these areas. Since this part of the support is unchanged in Agenda 2000 the relative increase in support in regions 1, 2, 3 and 4 is lower than in region 5, in spite of the fact that the absolute increase per production unit is the same.

3.3.2 The impact on profitability and farm incomes

Farmers aggregated losses are estimated to become 62.5 billion ECU when optimal adjustments to Agenda 2000 are compared with optimal adjustments to the present CAP. Losses are mainly due to the less profitable grain production.

The composition of farmer incomes illustrates strong linkages between the different regulations. The effects of Agenda 2000 on Swedish agriculture may be summarised as changes in the relative profitability in different production activities. In Table 3.6 below, model calculations of producer surpluses are presented in relation to "fixed" factors of production. Under the prices and payments in Agenda 2000, farmers, or in the model i.e. their production, will adjust according to the profit maximising behaviour. Revenues over variable costs - the surplus - are calculated and distributed to the fixed factors in each activity, with results as shown in table 3.6.

Producer surplus for "fixed" factors is based on gross revenues. The calculation principle can be illustrated by taking suckler cow stables as an example. When variable costs are covered, the remaining surplus is distributed to the area needed for feeding. This area has an implicit alternative value, calculated as a shadow price in the model. Suckler cows must bear this opportunity cost. What is left of the surplus must then cover the cost of the stables, which may vary between regions, depending on existing stocks and the regional production structure. Premiums for suckler cows earn the excess surplus. All figures presented are national averages.

Table 3.6 Producer surplus for "fixed" production factors (in million ECU)

	Present policy	Agenda 2000 base	Change in per cent
Arable land	321.4	214.1	-0.33
Pasture	12.8	13.6	0.06
Sugar quotas	44.5	47.2	0.06
Milk quotas	423.5	437.5	0.03
Premium, suckler cows	0.0	25.2	
Milk stables 10 cows	0.3	0.3	0.06
Milk stables 25 cows	13.5	13.7	0.02
Milk stables 45 cows	100.2	102.0	0.02
Suckler cow stables	4.9	2.2	-0.54
Bull stables	39.3	35.0	-0.11
In all	1007.1	944.6	-0.06

Source: Estimations based on SASM

A number of observations can be made in relation to the figures in table 3.6. Producer surpluses decrease in arable land, i.e. the capitalised value of the grain regime is reduced under Agenda 2000. For pasture there is at first a negative effect due to reduced direct payments to grazing cattle, mainly steers. The reduction of the intervention price to grains also put an implicit pressure on the production of hay and silage since, to some extent, they may be complements to grains in feeding. Grain production is partly compensated for the price reduction, while the higher direct payments to arable land do not include ley land. As an effect of these changes, pasture will become more attractive as a roughage producer, compared with ley produced on arable land.

Another result is that the value of the sugar quotas increases, even though the sugar regime is not included in Agenda 2000. Reduced profitability in alternative use of the land explains the increase.

Milk quotas increase in value as well, despite the fact that reduction in milk price is not fully compensated through direct payment to virtual cows. Lower costs in feed grains, silage and pasture (as a result of lower land prices), make up for part of this effect. Bovine premiums are, furthermore, capitalised in mother animals and since many of the steers will come from milking cows, also this will positively contribute to the value of the milk quotas. Model estimations of the equilibrium prices for bull-calves, show an increase from 286 ECU in the present policy scenario to 545 ECU in the Agenda 2000 base scenario, and parts of this increase will be capitalised in the milk quotas as well.

The strong increase in producer surplus for suckler cow premiums can be explained by increase in the premium itself, but also by the fact that

the payments to steers will be capitalised in the premiums for mother animals. This result is heavily influenced by the design of the Swedish national envelope. Also extensification payments and environmental supports will become capitalised in suckler cow premiums to some extent. At the same time, producer surplus in suckler cow stables is halved, since the number of premiums will limit the number of suckler cows. In some regions, however, a surplus of suckler cow stables will follow.

We can illustrate some effects of the changed profitability also in the use of, and payment capacity, for the fixed factors. For production factors that can be considered as fixed in the model, the most important change is a reduction in the use of suckler cow stables by 24 per cent. Also the estimated use of bull stables decreases, by 7 per cent. A slight reduction, 3 per cent, in the use of natural pasture may also be mentioned. Calculations cover all natural pasture used as fodder area in the model.

Another way to illustrate changed profitability is to focus on the payment capacity, shadow prices, for used resources, as in table 3.7.

Table 3.7 Estimated annual payment capacity for "fixed" factors of production (ECU per unit)

	Cost per year	Present policy	Agenda 2000 base	Change in per cent
Arable land	-	116.1	77.4	-33
Pasture	-	29.0	31.6	9
Sugar quotas	-	773.8	821.2	6
Milk quotas	-	0.1	0.1	1
Premiums, suckler cows	-	0.0	189.9	
Milk stables 10 cows	679.8	43.1	45.9	6
Milk stables 25 cows	582.7	112.7	114.5	2
Milk stables 45 cows	485.5	405.4	412.5	2
Suckler cow stables	83.2	51.7	37.6	-27
Bull stables	83.2	101.3	98.6	-3

Source: Model estimations in SASM

The lowered profitability in grain production leads to an increase in set-asides. As no reduction in land use is calculated, the net effect will be capital losses for landowners. The payment capacity for pasture increases even if the estimated use of the resource decreases, as model estimations show a lower number of mother animals, i.e. the animals that in the model use natural pasture will have a higher payment capacity for smaller amount pasture land that they graze. In the Agenda 2000 base scenario, there are in some regions not animals enough to graze the total area of natural pasture in Sweden.

Model results indicate that Agenda 2000 may give limited changes in agricultural production and in total producer surplus. Losers are mainly landowners. For animal producers a loss in crop production is partly compensated by grains in animal production. A milk producer will, e.g. suffer losses in plant production, due to lower grain prices. As an effect of lower grain prices and reduced land values, also the value of roughage will decrease. Since milk producers often produce a large share of their own feed, losses in crop production will end up in lower feed prices for the cows. For the farm as a whole, the economic short-term effects may therefore be negative, even if the milk production does not suffer. Even if grain producers or rather landowners with grain production are net losers on Agenda 2000 proposal, they were as a group among farmers that gained most from the Swedish EU membership. They may also be considered overcompensated under the MacSharry reform.

3.3.3 Some impact related to the environment

Swedish national political goals in agriculture concern environmental aspects such as biodiversity, open landscape and reductions of nutrients and pesticide leakage. Some results related to these aspects are summarised in table 3.8 below and will be discussed in greater detail in chapter 13.

Table 3.8 Environmentally related parameters and employment

	Present policy	Agenda 2000 base	Change in per cent
Nitrogen to water (million tons)	41.9	41.0	-2
Ammonium (million tons)	50.9	49.7	-2
Methane (million tons)	150.6	147.0	-2
N in fertilisers (million tons)	154.6	135.9	-12
P in fertilisers (million tons)	14.6	12.7	-13
Pesticides (million ECU)	55.5	59.6	7
Tractor power (million hours)	24.9	22.9	-8
Customary use of natural pasture*	337.0	335.0	0
Working hours (millions)	76.9	75.7	-2

* *In thousand hectares*

Source: Model estimations in SASM

In the model the use of pesticides and fertilisers are fixed under different crops, i.e. there are no estimated changes in optimal use due to changed relative prices.

Increases in set-asides may be positive from an environmental point of view. If plants cover the fallow land, this may well reduce the leakage of nitrogen and phosphorus. If, on the other hand, the fallow is not covered and treated properly, the leakage may just as well increase, at least in the short run. Proposed changes also makes lay on arable land less competitive and since leys have lower levels of leakage than grains, this change may be negative from an environmental point of view. In the national Swedish policy, leys on arable land are seen as important and an environmental support program to stimulate this production is in operation.

Another possible negative effect may follow these changes. According to earlier Swedish studies, the open agricultural landscape has a significant value in the eyes of Swedes (Drake, 1992). Fallow land may, accordingly, be seen as less valuable than grazing fields.

On top of these effects, we can notice that the number of beef cattle may decrease as a consequence of Agenda 2000, resulting in a declined use of natural pasture. Customary use of natural pasture is of high priority to Swedish authorities. The calculated increase in payment capacity and producer surplus for natural pasture is explained by the fact that the model estimates these figures on the basis of the amounts used in the model.

The effects may be most critical in northern parts of Sweden. In the plains the numbers of beef producing livestock are reduced more than average caused by a low profit both compared to other regions and compared to other production alternatives. By this follows a declined use of natural pasture. In northern Sweden the number of livestock is unchanged but the reduced profitability in grain and set aside results in more acreage with lay and a shift from natural pasture to pasture at crop land. An increased use of grain as feed instead of roughage also contributes to more cropland available for pasture and less need for natural pasture.

If 100 percent set aside is allowed another problem might occur. In northern Sweden and in the wooded districts in the south, animal production often is based on tenancy. If whole farms are allowed as set-aside, some landowners may find it more profitable to cash in the direct payments and local animal producers may have troubles to get enough fodder areas. This problem is further discussed in chapter 8.

Table 3.9 Some environmental parameters, estimations of relative changes under the Agenda 2000 proposal, compared with present policy scenario.

	Nitrogen	Phosphorus	Pesticides	Use of natural pasture
Region 1	0.80	0.75	0.89	0.84
Region 2a	0.94	0.90	0.91	0.97
Region 2b	1.00	0.97	0.98	1.00
Region 3	0.99	0.98	0.97	1.00
Region 4	1.00	0.99	0.83	1.00
Region 5a	0.97	0.96	0.70	1.03
Region 5b	0.94	0.93	1.03	1.10
Region 5c	1.03	0.94	0.68	1.34
Region 9m	0.85	0.86	1.26	0.76
Region 9s	0.95	0.97	1.02	0.70
Sweden	0.92	0.92	1.07	0.94

Note that figures in table 3.8 show nitrogen and phosphorus in fertilisers while figures in table 3.9 refer to the total use, including manure.

Source: Model estimations in SASM

The regional patterns of fertiliser and pesticide use follow the regional changes in production. Nitrogen and phosphorus use is reduced in regions with increased set aside area. It is also reduced in northern Sweden by lowered intensity in lay. Lay is the only crop where various intensity levels are considered in the model. Use of pesticides is reduced in most parts of Sweden as a result of more lay and less grain and set aside. In the plains the use of pesticides is calculated to increase as a result of more set aside acreage with short rotation. Pesticides are often used when the fallow is broken. Since regions 9m and 9s includes 55 percent of the arable land the total use is calculated to increase. The negative impact of set aside on the use of pesticides may, though, be overestimated. The large use of pesticides when set aside is taken into production is partly offset by a reduced need for pesticides the nearest following years. However, this effect is not recognised in the model calculations.

3.3.4 Impact on the budget and social welfare

Table 3.10 Estimated payments of support (in million ECU)

	Present policy	Agenda 2000 base	Change in per cent
Direct payments, grains	266.6	292.0	10
Direct payments, oil-seed	36.1	24.7	-32
Direct payments, fallow	73.3	113.6	55
Direct payments, permanent ley	85.1	81.3	-4
Premiums, milk cows	0.0	75.3	
Premiums, bulls	20.7	9.0	-56
Premiums, steers	16.1	63.0	293
Premiums, suckler cows	20.3	23.8	17
Extensification premiums	22.1	54.5	146
Milk envelope	0.0	26.1	
Beef envelope	0.0	38.6	
Premiums, ewes	5.0	5.0	0
National support	38.4	38.2	-1
Compensation payments	97.3	99.8	3
Open cultivated landscape	91.9	93.3	1
Biodiversity	39.0	38.7	-1
Total	812.0	1076.9	33

Source: Model estimations in SASM

Looking at the budgetary effects, the model estimates changes from a strictly domestic point of view. The model has no direct linkages to the EU-budget as a whole. Therefore, changes in Swedish payments to the EU-budget are not calculated. Table 3.10, refers to model estimations of changes in budgetary farm support. In welfare terms, the total effects are summarised in table 3.11.

Table 3.11 Estimated long run changes in welfare (million ECU)

	Present policy	Agenda 2000 base
Producer surplus	0	-62.5
Consumer surplus	0	329.6
Budgetary means	0	-264.9
Total	0	2.2

Source: Model estimations in SASM

Producer surplus is estimated to decrease by about half a billion ECU. Consumers are gainers and estimations point to a net increase in food consumer welfare of almost 330 million ECU, while taxpayers losses are calculated to become about 265 million ECU. The summarised welfare effect is estimated to become positive, but small. Considering the aspect that Sweden is a net contributor to the EU-budget, the net welfare effect from Agenda 2000 is estimated to become negative for Sweden. Welfare implications of the Agenda 2000 are further discussed in chapter 14.

3.4 Summary and conclusions

Model results indicate that Agenda 2000 may give limited changes in agricultural production and in total producer surplus. Losers are mainly landowners. The main reason for the modest effect on production is that agricultural production is strongly regulated by quantitative measures, which limit the possibility to reallocate production and thereby reduce real economic impact. As long as all the existing instruments that regulate production, i.e. producer rights like animal headage premiums, direct payments to arable land etc., are kept unchanged, large parts of the economic consequences that may follow the reform proposal tend to end up as changes in values of quotas, producer rights and land. Moreover, since the Agenda 2000 proposal opens up for national incentives in many areas, but leave the production restriction instruments more or less unchanged, the final outcome according to agricultural production will, within the national quota systems, become strongly related to specific Swedish decisions.

References:

Drake, L. 1992. The non-market value of agricultural landscape. *European Review of Agricultural Economics*, 19(3): 351-364.

4 Impacts on farm level

4.1 Background

Looking at the impact of the Agenda 2000 proposal for Swedish agriculture it is important to monitor the farm level as well as the sector level. Most of the contents in this report have so far dealt with problems concerning the latter aspect. A special model is available for sector analyses and numerous consequences for different scenarios can be read out from these results. When it comes to possibilities to make similar analyses on the farm level, the situation is not that good. One possibility is to make direct analyses from the results of a bookkeeping survey. Although the list of characteristics is not as complete as one may wish, it is possible to make overview estimations about consequences of different scenarios for some type-groups of farms. In part 4.3 some results of such estimations will be shown. A short presentation of bookkeeping survey in Sweden will be given in part 4.2. All figures presented in part 4.3 are separate estimations and have no connection with the sector model (SASM) dealt with in earlier chapters. Moreover, what is illustrated here is an effect (quantities do not adjust) of changed prices and direct payments, while SASM shows the effects in the long run. In that way, the two approaches complement each other.

4.2 Some characteristics about the Swedish book-keeping survey for farmers

The sample in the survey is focused upon what in Sweden is regarded as being the most important groups of farmers, namely middle-sized milk-producers and specialised crop-producers. Around 40 per cent of the total gross value for agriculture as a whole originate from milk and connected meat production. The corresponding figure for crops is 30 per cent.

The importance of milk-farms can also be visualised by their share of full-time farms. In Sweden, the number of such farms was 26 000 in 1997.

About 75 per cent of those were classified as milk farms according to the Swedish type of classification system. The number of specialised full-time crop farms was not more than 2 500. A big share of the incomes for the large group of farmers with mixed production, though, come from crops for direct sale. The profitability in crop production is therefore interesting to look at in a broader view.

The milk-farm part in the Swedish bookkeeping survey is stratified into 6 different strata representing three main regions and two farm-sizes in each region. The part containing crop farms just covers one region (flat-land) and two farm-sizes in that region.

It would be possible to estimate the effects on the average results for different scenarios discussed in this report, for all eight regions and farm sizes represented in the survey. However, considering that the scenarios just vary in two respects (horizontal support and general market prices), such estimations do not seem to be meaningful. Instead, one group of milk farms and one group of crop farms, representing one strata each, have been chosen. The effects for those two groups can be assumed to be similar to those for other groups, with the same production represented in the survey.

The farm groups chosen represent: 1) milk farms in the interval 3200 -5600 standard working hours (in the forest land in the south and middle parts of Sweden), and 2) crop farms in the interval 3200 -5600 standard working hours (in the south and middle parts of Sweden).

The average size of the milk farm is 32 milk-cows with corresponding breeding of heifers. The structure data also point to a breeding of bulls (5 per year). The arable land counts for around 50 hectares. Product-income from crop production is only 3 - 4 per cent of the total gross income.

The crop farm has around 109 hectare of arable land. The income from animal production is almost opposite that of the milk farm. More than 95 per cent of the income comes from crop-production.

4.3 Results

Milk farm

Calculation from the bookkeeping survey gives figures from a somewhat different angle than the sector model described earlier. Costs for fixed assets such as land and fixed capital are not included in the figures below, neither depreciation and costs for own labour. The surplus can be regarded as a cash-flow. No adjustments in costs are assumed to occur between the present situation and the base scenario, other than what follows from changes in cereal prices (affecting feeding-costs).

In table 4.1 the average result for the milk group is presented. We can here regard this average as being representative for a typical Swedish milk farm. The figures for product incomes originally represented the situation in 1996, but changes have been small during the period 1996 to 1998 and no adjustments have been made. The general grassland support, which was introduced in 1998, has, though, been included. When it comes to incomes from support there have been some changes during the period. The figures have here been adjusted to reflect the situation in 1998.

Table 4.1 Incomes and costs in ECU for the typical Swedish milk farm (32 milk cows)

	Present policy	Agenda 2000 base	Index, Present policy = 100
Production income from milk	89 045	76 456	86
Production income from meat	10 564	8 028	76
Other animal incomes	1 040	1 040	100
Sum	100 649	85 525	85
Direct payments to animal production	5 847	16 709	286
Total for animal production	106 496	102 234	96
Production incomes from crops	4 393	4 208	96
Direct payments to crop production	3 278	3 686	112
Total for crop production	7 671	7 894	103
Other farm income	9 421	9 421	100
Total costs excl capital, own labour	0 75 201	0 73 181	 97
Surplus	48 387	46 367	96

Source: Calculations based on survey data

As can be seen, the gross value of animal production, as well as the direct payments are, strongly affected by the new prices and direct payments in the base scenario. Thus, the product incomes decline and the direct support goes up. The net effect is, though, negative, which on the bottom line leads to a lower surplus.

An explanation of the result is the fairly high milk production per cow (8 300 kg) on the type-farm. This causes a relatively big drop in product income. The average production for whole Sweden is 7 200 kg.

Crop farm

Figures from the bookkeeping survey show the situation in 1996. Changes in crop-supports and prices have, however, been modest during the period 1996 - 1998 and no adjustments have been made in order to update data.

Table 4.2 Incomes and costs in ECU for the typical crop farm (108 hectare)

	Present policy	Agenda 2000 base	Index, Present policy = 100
Production income cereals	54 787	43 830	80
Production income other crops	33 579	33 579	100
Total production income crops	88 367	77 409	88
Direct payments to cereals	20 484	22 894	112
Direct payments to other crops	6 514	5 892	90
Total direct payments to crops	26 998	28 786	107
Total income from crops	115 365	106 196	92
Total income from animals	4 318	4 318	100
Other farm income	14 073	14 073	100
Total costs excl. capital, own labour	78 387	78 387	100
Surplus	55 369	46 199	83

Source: Calculations based on survey data

Even in this case the higher direct support does not match the drop in income. Behind the drop in the direct payments to other crops is a decline in direct payments to oilseed and a changed payment to set-aside land. The product income is strongly affected by weather conditions. In 1996, the crop-yield for cereals was about 5 per cent higher than the norm-yield. The net effect would not, however, have affected the result by more than about 578 ECU if figures on normal yields would had been used instead of actual yields.

4.4 Summary and conclusions

Figures presented in this chapter are based on bookkeeping data and reflect changes at farm level. Those figures are separate estimations and have no connections with the sector model (SASM) dealt with in the previous chapter. Moreover, what is illustrated here is an impact effect (quantities do not change) of changed prices and direct payments, while SASM shows the impact and adjustments that take place in the long run. In that way, the two approaches complement each other. The analysis covers a typical milk farm and a typical crop farm. The net effect of lower prices and higher direct payments is a lower surplus. The milk farm loses 4 per cent while the loss for the crop farm is 17 per cent.

5 Impacts of other reform proposals

Since the EC-commission presented the Agenda 2000 proposal, some other reform suggestions have been presented. In this chapter effects of two such proposals will be analysed. The two chosen alternative scenarios are the proposal advanced by the French government, called French proposal and a suggestion for reforming the milk regime from the governments in Great Britain, Denmark, Italy and Sweden, here called the London scenario.

5.1 The French scenario

The French proposal suggests, that it should be possible to reduce direct payments within the CAP by 20 per cent and that the funds saved hereby can be used at the national level for different rural development programs. The proposal suggests that reductions in direct payments should be based on objective criteria, such as working hours, total support, yields or environmental parameters at farm level. As a result, some farms may experience reductions of more than 20 per cent. At the national level only 20 per cent should be open for redistribution, however.

The suggestion has been modelled such that all changes within the Agenda 2000 proposal are kept, and on top of that direct payments are reduced by 20 per cent. It is also assumed that only direct payments to arable land and animals are reduced, while regional support and environmental programs are held unchanged. In the model calculations, only the effect of the reduced payments is presented, no alternative use of the saved funds is modelled. Since the funds that are withdrawn from direct payments are not added to environmental or regional programs, farmers evidently lose in this scenario. This is, however, not the basic idea of the French proposal, where farmers as a group would be compensated for lower direct payments in the form of additional environmental and regional support. With this in mind, some model estimations are shown below. All comparisons are made against the Agenda 2000 base scenario.

Table 5.1 Estimated production (in 1000 tons)

	Agenda 2000 base	The French scenario
Grains	4 728	4 702
Oil seeds	218	212
Sugar beets	2 651	2 651
Roughage/pasture	4 396	4 397
Milk	3 373	3 373
Beef	113	113

Source: Model estimations in SASM.

Only small changes in production show up, in the form of a reduced production of grains and oilseeds. Since direct payments are reduced, it is estimated that a smaller proportion of the grain and oil plant area is used for ley and other crops. Also fallow will be less profitable and here the reduction in land use is estimated to be around 30 per cent. All figures for the estimated land use are presented below.

Table 5.2 Estimated use of arable land (in million hectares)

	Agenda 2000 base	The French scenario
Winter grains	0.305	0.298
Spring grains	0.642	0.642
Oilseeds	0.080	0.077
Fallow	0.370	0.254
Ley	1.192	1.256
Potatoes	0.040	0.040
Sugar beets	0.058	0.058
Other crops	0.083	0.163
Sum	2.768	2.768
Cultivated	2.367	2.460
Fallow	26%	20%

Source: Model estimations in SASM

Farm incomes fall under the model estimations of the French proposal, since funds saved by the reductions of direct payments for land and animals are not redistributed through environmental support and regional programs. Figures in table 5.3 summarise estimated changes.

Table 5.3 Producer surplus for "fixed" factors (million ECU)

	Agenda 2000 base	The French scenario
Arable land	215.6	95.4
Pasture	13.6	8.3
Sugar quota	47.2	51.3
Milk quota	437.6	420.0
Suckler cow premium	25.2	18.7
Milk stable 10	0.3	0.3
Milk stable25	13.8	15.1
Milk stable45	102.0	105.3
Suckler cow stable	2.2	2.9
Bull stable	35.0	35.5
Sum	944.6	806
Change in relation to present policy	-62	-200.6

Source: Model estimations in SASM

Figures in tables 5.2 and 5.3 illustrate the effects of the reduced payments to grains, oil plants, fallow and animals. It can be noted that sugar quotas increase in value, since the opportunity cost of land is reduced. Pasture will, according to the estimates, be less profitable since direct payments to animals are reduced and since it becomes cheaper to feed animals with grains and roughage from arable land. Figures also indicate that reductions in animal premiums are offset by the lower feed prices, following the reductions in direct payments to land.

When comparing the chosen environmental parameters, there is almost no difference between the Agenda 2000 base scenario and the French scenario. A small reduction in the estimated use of pesticides (about two per cent) and a very small increase in the use of natural pasture (less than two per cent) is calculated.

At farm level, the French proposal gives a lower surplus in the chosen representative farm. As long as reduced direct payments are not transformed to regional and environmental support, drops in static surplus for the representative crop farm will be greater than under the Agenda 2000 base scenario.

Impact of the French proposal on employment can be worth mentioning. According to the model calculations, the employment in agriculture would be slightly reduced. The employment in processing industry is not included in the model calculations. However, since agricultural production is only marginally affected, the impact on employment in processing would be almost insignificant. The total impact on employment is difficult to assess not knowing how the funds that have been saved will be used. If the funds are allocated to rural development

project, however, it is likely that the total employment will increase. Existing studies (Ds 1989:63) indicate that it is much cheaper to generate new employment or preserve existing jobs outside than inside agriculture.

The most important observations, in relation to the French proposal, can be summarised as follows:

- * The use of about 100 000 hectares of fallow land and 10 000 hectares of grain shifts to ley and other crops.
- * Ley will be managed more extensively and roughage will partly replace grains in animal feeding.
- * Direct payments are reduced by about 162 million ECU, of which 127 million ECU can, according to the original French proposal, be used for different rural development programs. The remaining 35 million ECU comes from a reallocation of areas used for production of grains, oil-seeds and fallow, to production of ley and other crops. Regional shifts in animal production also reduce regional support to some extent, compared with the Agenda 2000 base scenario.
- * Otherwise, only minor changes in production take place compared with the base scenario.
- * The proposal contains a redistribution of 150 million ECU, from agriculture to taxpayers, if these means are not used for rural development. The agricultural sector may reduce costs by some 23 million ECU, but the remaining 127 million ECU will reduce land rents and thereby land values.
- * If funds are reallocated to rural development measures the employment in rural areas is likely to increase.

5.2 The London scenario

The suggestion here called the London scenario contains a reduction of the intervention prices in the milk sector by 30 per cent, instead of the 15 per cent in the Agenda 2000 proposal, and an increase of the milk quotas by 4 per cent, distributed to all milk producers in a non-discriminatory fashion. The reduction in the intervention prices are, at least initially, compensated by increases in the direct payments to so-called virtual cows.

In model estimations, these suggestions have been interpreted such that intervention prices for butter and skimmed milk powder (which in the models equal export prices from Sweden) are reduced by 30 per cent and that this also reduces Swedish export prices for cheese. Milk quotas are increased by 4 per cent, equally distributed among producers, instead of the Agenda 2000 proposal with an increase of 2.34 per cent, partly directed to the northern parts. Since intervention prices are reduced twice

as much, compared with the Agenda 2000 proposal, a proportional increase is used for direct payments, i.e. a further increase of 145 ECU per virtual cow. The national number of virtual cows is, however, kept unchanged and the change will therefore have the same effect as a 4 per cent reduction of total direct payments.

As is shown in table 5.5, production is not expected to change much in relation to the Agenda 2000 base proposal. Increased milk production explains the small estimated increase in roughage and reduction in grain and oil seeds.

Table 5.5 Estimated production (1000 tons)

	Agenda 2000 base	The London scenario
Grains	4 728	4 696
Oil seeds	218	216
Sugar beets	2 651	2 651
Roughage/pasture	4 396	4 454
Milk	3 373	3 432
Beef	113	115

Source: Model estimations in SASM

When looking at calculations of land use and animal production, changes are very small, apart from the quota-driven increase in milk production. Changes in profitability can be illustrated in the estimated changes in producer surplus to "fixed" factors, summarised in table 5.6 below.

Table 5.6 Producer surplus for "fixed" factors (million ECU)

	Agenda 2000 base	The London scenario
Arable land	214	219.3
Pasture	13.6	14.3
Sugar quota	47.2	47.2
Milk quota	437.6	330.0
Suckler cow premium	25.2	23.0
Milk stable 10	0.3	0.3
Milk stable 25	13.8	14.8
Milk stable 45	102.0	112.5
Suckler cow stable	2.2	4.3
Bull stable	35.0	43.3
Sum	944.6	862.8
Change in relation to present policy	-62.5	-144.3

Source: Model estimations in SASM

The reduction of intervention prices in the milk sector, combined by an increase of the milk quotas, is estimated to reduce the quota value with

about 25 per cent, but quotas are still calculated to have a substantial value. Since milk production increases, cows will demand more feed and more stables, which explains the other calculated changes in producer surplus to "fixed" factors. With the combination of lower milk prices and direct payments to virtual cows, milk quotas also come much closer to a financial instrument, in the form of a right to a quota premium rather than a pure production right.

Estimated environmental parameters hardly change at all compared with the Agenda 2000 base scenario. For the representative milk farm, income from animals is reduced by slightly less than 10 per cent, compared with the Agenda 2000 base scenario. Since this farm has 30 cows it is smaller than the "large" farms in the model and the calculated profitability in milk production can mainly be found among "larger" milk producers.

Total calculated welfare changes to producers, consumers and taxpayers are presented below.

Table 5.7 Estimated welfare changes, long run, compared with present policy (million ECU)

	Agenda 2000 base	The London scenario
Producer surplus	-62	-144
Consumer surplus	330	528
Taxpayers	-265	-347
Total (env. not included)	23	37

Source: Model estimations in SASM

The taxpayers' line includes costs for the support to Swedish farmers, administration is not included. For a more correct picture, the figures should be adjusted for the net balance of Swedish payments to the EU budget and the agricultural support Swedish farmers receive or be replaced by the Swedish share of an estimated cost for the whole of EU.

For the London scenario the most important changes, compared with the base scenario, can be summarised as follows:

- * Milk production will increase with the higher milk quotas and the regional distribution will partly differ from the estimated production under the base scenario.
- * Consumption in Sweden will increase, as a reduction of lower prices, more than the increase in production and net imports of butter and cheese will take place.

- * The estimated reduction in consumer prices (not presented in the tables) is between 20 and 30 per cent, varying for different products. For farmers, the price reduction is estimated to be 32 per cent. The discrepancy can be explained by the model assumption that processing costs are fixed in ECU per kilo of milk.
- * Calculated direct payments to Swedish agriculture will increase by 81 million ECU, compared with the base scenario and this increase comes from higher payments to virtual cows.
- * The value of the milk quotas is estimated to decrease by 35 ECU per ton and year compared with the base scenario. Milk quotas will hereby change character and can be interpreted as a quota owner premium rather than a production quota, and financial investments in milk owner premium rights (milk quotas) may be profitable if the system is to stay in operation. The change can be explained by the fact that, in this proposal, there is no compulsory link between the ownership of milk quotas, i.e. the right to get support, and the produced milk volume.
- * Even though the producer price of milk is reduced by 102 ECU per ton, compared with the estimated present CAP, milk production is calculated to be profitable, even without the compensating direct payments of 50 ECU per ton of milk quota. This result can be explained by the estimated existing quota value of 128 ECU per ton and year.
- * Apart from this, there are only marginal changes in production.

5.3 Summary and conclusions

In this chapter the implication of two reform proposals were compared with the base version of Agenda 2000 one by one. The two proposals are very different in scope and are, hence, not alternatives but rather variations of or additions to the original Agenda 2000 proposal.

References:

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6 Sensitivity analyses

6.1 Introduction

Estimations are always dependent on the chosen assumptions. In this chapter, implications of two additional scenarios and a number of sensitivity analyses will be discussed. The two additional scenarios are related to alternative design of essential policy parameters that have been left to the discretion of national governments, namely the limit on voluntary set aside and beef envelope. In the model simulations presented in chapter 3, it has been assumed that prices will fall as much as the proposed changes in intervention prices. Impact of alternative assumptions is examined in section 6.2. Finally, sensitivity of the model results to change of values of some of the parameters is analysed.

6.2 Set aside and national envelopes

From the presentations in chapter 3 it is clear that the chosen restrictions of fallow land are of major importance to the results. A scenario where fallow is free, i.e. where farmers may choose to convert all land to fallow, is therefore chosen in order to analyse the consequences. Further, from a Swedish perspective the customary use of natural pastures is of high national interest. Therefore a scenario under which a different use of the national envelope is chosen to analyse its effects on beef production. The reason is that changes in beef production may be essential to keep natural pastures in production. In this scenario, the national envelope, in the first place, is directed towards bulls, and the residual used for steers and heifers.

Table 6.1 Estimated production (in 1000 tons)

	Agenda 2000 base	No limit on voluntary set-aside	Intensive beef
Grains	4728	687	4 767
Oil seeds	218	17	222
Sugar beets	2651	2 651	2 651
Roughage/pasture	4396	4 395	29 605
Milk	3373	3 373	3 373
Beef	113	113	116

Source: Model estimations in SASM

Table 6.2 Estimated use of arable land (in million hectares)

	Agenda 2000 base	No limit on voluntary set-aside	Intensive beef
Winter grain	0.305	0.064	0.308
Spring grain	0.642	0.069	0.647
Oil plants	0.080	0.006	0.082
Fallow	0.370	1.780	0.383
Ley	1.192	0.702	1.158
Potatoes	0.040	0.040	0.040
Sugar beets	0.058	0.058	0.058
Other crops	0.083	0.050	0.092
Sum	2.768	2.768	2.768
Cultivated	2.367	0.988	2.348
Fallow*	26%	93%	27%

* *These figures represent fallow as per cent of the base area*

Source: Model estimations in SASM

Table 6.3 Estimated number of animals (in 1000s, figures on Bulls, Steers and Heifers represent slaughtered animal per year)

	Agenda 2000 base	No limit on voluntary set-aside	Intensive beef
Milk cows	466.0	466.0	466.0
Suckler cows	106.0	106.0	106.0
Bulls	42.4	42.4	133.2
Steers	191.1	191.1	100.3
Heifers for slaughter	21.2	21.2	21.2

Source: Model estimations in SASM

Table 6.4 Producer surplus for "fixed" factors (in million ECU)

	Agenda 2000 base	No limit on voluntary fallow	Intensive beef
Arable land	214.1	636.6	204.3
Pasture	13.6	25.0	7.1
Sugar quota	47.2	27.7	47.3
Milk quota	437.6	311.2	429.4
Suckler cow premium	25.2	5.9	29.6
Milk stable 10	0.3	0.5	0.3
Milk stable 25	13.8	14.1	13.4
Milk stable 45	102.0	104.0	100.6
Suckler cow stable	2.2	1.3	2.8
Bull stable	35.0	33.8	29.2
Sow stable	37.5	25.5	37.5
Fattening pig stable	16.2	10.6	16.2
Sum	944.6	1 196.3	917.5
Change in relation to present policy	-62.5	189.2	-89.7

Source: Model estimations in SASM

Table 6.5 Environmental parameters and employment in agriculture (nitrogen and phosphorus, methane and ammonium in 1000 tons, pesticides in million ECU fixed prices, and tractive power in million litres)

	Agenda 2000 base	No limit on voluntary fallow	Intensive beef
N to water	41.0	27.3	41.1
Ammonium	49.7	49.3	50.0
Methane	147.0	146.9	144.0
N in mineral fertilisers	135.9	32.9	134.9
P in mineral fertilisers	12.7	0.1	12.6
Pesticides	59.6	25.7	60.0
Tractive power	22.9	11.0	22.9
Customary use of natural pasture	335.0	350.9	297.2
Working hours	75.7	63.1	74.0

Source: Model estimations in SASM

Table 6.6 Estimated welfare changes, long run, compared with present policy (in million ECU)

	Agenda 2000 Base	No limit on voluntary set-aside	Intensive beef
Producer surplus	-62.5	190	-0.78
Consumer surplus	329.6	313	2.85
Taxpayers	-264.9	-287	-1.93
Sum (env. Not included)	2.2	215	0.15

The taxpayers' line includes costs for the support to Swedish farmers, administration is not included. These figure should be adjusted for the net balance of Swedish payments to the EU budget and the agricultural support Swedish farmers receive or be replaced by the Swedish share of an estimated cost for the whole of EU.

Source: Model estimations in SASM

As can be seen from the tables above, the implications of different designs of national envelopes can be dramatic, especially in the case of the limit on the voluntary set-aside. This issue is further discussed in chapter 8. The beef envelope is analysed in more depth in chapter 12.

6.3 Interpretation of the sensitivity analyses

Assumptions, that may be critical for the results, relate to the expected price effects of the Agenda 2000 proposal. Since the model is national, EU prices are added to the model. In a number of sensitivity analyses, lower price reductions on milk, grain and beef are discussed. Also price elasticities are varied. Since the analyses of the estimated effects of the Agenda 2000 proposal on Swedish agriculture illustrate the key role of fallow land, one analysis also varies the cost of crop machinery. Farmers may adjust to lower grain prices in a number of ways. One way could be wider co-operation in the use of farm machinery, or an increased structural change, and the last sensitivity analysis is used to illustrate the importance of machinery costs in the model estimations.

6.3.1 Lower price reduction on milk

The chosen assumptions are that Swedish producer-owned milk processing co-operatives can make use of local monopoly power and keep the prices of fresh milk and cream at the same level as before the Agenda 2000 proposal. Only the prices of butter, skim milk powder and cheese are

assumed to decrease. Results from these assumptions, in relation to the Agenda 2000 base scenario, can be summarised as follows:

- * A slight reduction in the consumption of fresh milk and cream, and thereby a lower production of these products and a corresponding increase in the production of butter, skimmed milk powder and cheese, will take place.
- * A slight increase in net exports of milk products.
- * The price reduction to farmers is estimated to be 9 per cent instead of 15 per cent under the base scenario.
- * A corresponding increase in the value of the milk quotas, 18.5 ECU/ton and year, will take place.
- * About 58 million ECU is redistributed from milk consumers to milk producers, compared with the base run scenario.

6.3.2 Lower price reduction on grains

It is assumed that the price reduction for grains will be only 50 per cent of the reduction in the intervention price for grains for human consumption and 70 per cent of the intervention price reduction for grains used for animal feed on the EU-market. These prices work as Swedish export prices in the model. The main conclusions, in relation to the base scenario, are:

- * The Swedish price will be 11.6 ECU/ton higher for bread grain and 9.2 ECU/ton higher for feed grain, compared with the base scenario.
- * About 120 000 hectares will be converted from fallow land to grain production.
- * Land values will increase by about 26.6 ECU/ha (or 70 million ECU). At the same time quota values for sugar, milk and suckler cows will decrease by about 46 million ECU, caused by higher opportunity costs for land.
- * Some smaller regional changes of cattle towards less fertile land will follow the increased land values.

6.3.3 Lower price reduction on beef

It is assumed that the drop in beef prices stops at 10 per cent of the intervention price reduction. Conclusions, compared with the Agenda 2000 base scenario, are:

- * A small number of heifer calves (4000) from milk cows are estimated to be reared for later slaughter, instead of being slaughtered as calves.
- * The increased use of roughage increases the ley area by 4000 hectares, at the expense of grains and fallow land.
- * Consumers lose 67 million ECU, of which 40 turns up in the producer surplus for Swedish farmers, while the rest goes to producers elsewhere in the EU.
- * The increased producer surplus raises the quota value for milk by 26.6 million ECU, for suckler cow premiums with 9.2 million ECU, while 4.6 million covers increased production costs

6.3.4 Lower price elasticities on demand

Since, what we have called the London scenario increased the Swedish consumption of milk significantly, the sensitivity of these results was tested with a reduction of all demand elasticities for milk products by 50 per cent. The conclusions, compared with the so-called London scenario are listed below:

- * A lower increase in demand.
- * The lower demand resulted in a slight net export of butter.
- * Lower prices on all milk products, to consumers and to producers.
- * About 17 million ECU were redistributed from producers to consumers.
- * A corresponding reduction in the value of the milk quota.

6.3.5 Lower machinery costs

If there is no limit on voluntary set aside, the fallow land increases substantially as illustrated in the previous section. The reason is that by setting the land aside, farmers can save on the cost of the machinery. Accordingly, it is interesting to examine how the cost of machinery impacts on the incentive to set land aside. The effect of lower cost of machinery is examined below. Here it is assumed that farmers can reduce their costs for interest rates and for depreciation on machinery. Results are compared with the scenario where no restrictions were put on the share of fallow land, since that scenario indicated a significant reduction in grain production and therefore also a significant reduction in the use of machinery:

- * The area converted to fallow would stop at 1.6 million hectares, instead of 1.8 million hectares.
- * The grain area increased from 130 000 hectares to 350 000 hectares.
- * Both land values and quota values increased as a result of lower costs.
- * Production of ley will be slightly intensified and reduced as a reaction to higher land values.
- * A minor reduction in the imports of grains is identified.

6.4 Summary and conclusions

The general conclusion is that model estimations are quite robust, in relation to the chosen sensitivity analyses. Only minor real changes are identified, even if welfare redistributions among different actors and commodities may take place with the changed assumptions.

7 Comparisons with other studies

The Agenda 2000 proposal has triggered an intensive research activity among agricultural policy analysts. Unfortunately, a lot of this research is not yet published. In this chapter, model results are compared with three other studies, where results are available (REF). Two of those studies, SPEL and CAPMAT, cover the whole Union. The third shows results at a regional level, namely for Germany. Comparing results of different modelling experiments is never a straight-forward exercise. The interesting question in all such comparisons is whether the models show a fundamentally different pattern of adjustment to changes proposed by Agenda 2000. The results may, however, differ strongly depending on assumptions about policies, exogenous variables, as well as on specific features of the models. All models aim at comparing effects of Agenda 2000 with continuation of present policy or with a business as usual scenario. The interpretation of the continuation of the present policy differs among the models, though. In this chapter results, policy assumptions and behavioural features of the models are compared.

7.1 Differences in modelling approaches

SPEL is based on an econometric framework. The advantage of such an approach is that past behavior of farmers is reflected in the estimated parameters (elasticities). Uncertainties increase, however, when the model is used to assess effects of policy changes outside the type and range of variability observed in the past.

CAPMAT (ECAM) is a model of the applied general equilibrium type (AGE). Farmers maximise net revenues by allocating crops to available land and livestock to available buildings and equipment. Participation in set-aside programs is voluntary in the CAPMAT model, but those who participate cannot set aside more than a certain fraction of the COP (Cereals, Oilseed and Protein crops) area. SASM is based on explicit and detailed modelling of agricultural technology. Parameters are estimated on the basis of recent farm accounting data. Farmers are assumed to behave as profit maximisers. Voluntary set-asides are endogenous in the model. Programming models, such as SASM, tend to overstate the impact of changes in profitability, but are able to cope with

policies that have not been used before. Especially, that approach makes it possible to take into account special requirements connected with direct payments or other types of support. CAPMAT and RAUMIS are also based on the programming approach (linear/non-linear). RAUMIS is closest in approach to SASM. SPEL, RAUMIS and CAPMAT incorporate technical progress (yield increases). This is not the case for SASM. The results of those models correspond, accordingly, more closely to a projection, while the SASM shows the impact of Agenda 2000 at the present level of technology. Technical progress is not, however, ignored in the model. Changes in technology are embodied in the structural change of the milk sector. As capital is worn off, new investments are taking place in larger herd sizes. Results that are presented in the SASM model represent, accordingly, a long-term equilibrium. In contrast to the other models, the calculations presented in this report do not take into account inflation. The reason for excluding inflation is that results are highly sensitive to the level of inflation, while there is no reliable way of predicting the future level of inflation.

7.2 Differences in policy assumptions for the reference run

SPEL/RAUMIS assume compulsory set-asides to be 17.5 per cent. CAPMAT maintains the set-aside rate at 5 per cent, which is the level of 1997. SASM assumes also compulsory set-aside to be 5 per cent. This assumption is not decisive for the result in Sweden, as farmers tend to voluntarily set-aside more land than that.

7.2.1 Policy assumptions for Agenda 2000

SASM assumes that prices will fall as much as the proposed cuts in intervention prices. The same assumption is made in "Agenda 1" version in the other models. Consequently, all comparisons below will be made with this version. Both SPEL and CAPMAT show surplus for milk and grains at the EU level, indicating that assumptions about national prices that are made in SASM can be seen as reasonable. Ultimately, soundness of the assumptions will depend on the future development of world market prices. Beef, milk and coarse grain prices in the EU are likely to remain above the world market level. The wheat price is more likely to come close to the world market level. The recent level of wheat prices lies, however, substantially below the earlier projections. SASM takes into

account the expected design of the national envelope for Sweden. In SPEL and CAPMAT payments are paid per animal.

7.3 Impact on use of acreage

Cereal area expands in both SPEL and CAPMAT by approximately 6 per cent. Oilseed area expands as well, by 4 per cent according to SPEL and almost 9 per cent according to CAPMAT. Results are strongly dependent on changes of policy parameters. New mandatory set-aside is set to zero and restriction on oil seed acreage (due to the Blair House agreement) is removed. The expansion is somewhat higher for wheat than for coarse grains. RAUMIS predicts that the cereal area will decline by 5 per cent and that oilseeds will strongly expand (62 per cent). Voluntary set-asides becomes an attractive option in German regions where yields are low. In model simulations, the voluntary set-aside has been exogenously restricted to 33 per cent. The cereal area is expected to shrink by almost 10 per cent (2 per cent for wheat and 13 for coarse grains) according to SASM. The oilseed area decreases by 3.6 per cent. Voluntary set-aside expands to 26 per cent.

7.4 Impact on production

Both grain and oilseed production expands according to SPEL and CAPMAT. RAUMIS shows a strong decline in grain production (-10 per cent) and a very strong expansion of oilseed production. Meat production expands slightly according to SPEL. (Beef expands somewhat and pork declines). CAPMAT expects higher production of meat by 1 per cent. (Slightly higher for pork, slightly lower for beef). According to RAUMIS, beef declines (6 per cent) and pork increases (3 per cent). SASM indicates a considerable decline in beef production (13.8 per cent) and a small expansion of pork production (1.5 per cent). It should be observed, however, that in regional models such as SASM or RAUMIS, substitution between pork and beef on the consumption side could not be fully represented. Those models react to the price level that has been determined at the EU level. Results from the models with respect to milk production are not directly comparable, since SPEL and SASM refer to whole milk, whereas the CAPMAT refers to skimmed milk and milk fat. All models indicate however an increase in production following the expansion of quotas. Despite the reduction of milk prices, the milk quotas remain binding.

7.5 Impact on farm incomes

Farm income declines in nominal terms by 5.6 per cent according to CAPMAT and by 7.8 per cent according to SPEL. RAUMIS indicates larger decline of incomes by 12 per cent in nominal terms. According to SASM, farm incomes will decline by 46.2 thousand ECU, if Agenda 2000 is implemented.

7.6 Summary

The general picture of agriculture post-Agenda 2000 seems to some extent to be similar according to all the models compared above. The overall impact of Agenda 2000 on prices, quantities and incomes appears to be relatively small in all models. Generally speaking, most of the impact of Agenda 2000 on European agriculture, as predicted by SPEL and CAPMAT models is not due to changes in profitability but depends on changes in supply management parameters. Expansion of production of milk, cereals and oilseeds is due to the changed supply restrictions on those commodities. Profitability of milk production appears to be high enough to leave milk production unchanged. Swedish results, however, seem to differ considerably from SPEL and CAPMAT. This is especially the case for grains and beef production. To some extent, this is a result of differences in assumptions.

Assuming 17.5 per cent set-asides, and then relaxing this assumption is bound to produce an expansion of production, at least on good quality land. It could be argued that by taking into account differences in land quality and by letting the model choose to produce or to set-aside, a more realistic representation of the choices facing the producers is obtained.

Similarly, de facto decoupling of suckler cow premiums, which is not incorporated in the other models, contributes to the strong decline of beef production, which can be observed in Sweden.

The results for Sweden seem closest to the results for Germany. Both sets of results have been obtained relying on highly differentiated regional approach and allowing for an endogenous determination of the set-aside area. Both models indicate that voluntary set-asides become an attractive option for low-yielding arable land (for further discussions, see chapter 8). The results are not fully comparable because set-asides have been exogenously restricted in less productive regions.

References:

European Commission, DGVI. CAP reform proposals. Impact analyses. October 1998.

Part B: Specific aspects within the Agenda 2000

8 Set-aside requirements

In the Agenda 2000 proposal the compulsory set-aside level is set at 0 per cent and it is up to the member states to decide the upper limit for the voluntary set-aside, which presently is 50 per cent. Removal of the compulsory set-aside will result in an increase of efficiency. If compulsory set-aside would be kept at its present level, forcing farmers to set grain land aside to alleviate the surplus problem, the consequence is higher average costs in the remaining production, as the supply curve for grains shifts upwards. The reason is that in taking away land from production, also the low cost production on that land is eliminated. Actually, set-aside policies in this way would aggravate the basic surplus problem, which is not the actual volume of grains per se, but too high costs in producing them. The cost-effective policy would be to reduce prices only. The change of the upper limit for the voluntary set-aside, combined with the lower grain prices and with the lowered direct payment for set-asides to the same level as for grain acreages, makes set-aside an attractive "production activity". This is certainly the case for Sweden as the analysis in chapter 6 indicates. Removal of the upper limit on the voluntary set-aside results in dramatic changes in production etc.

This chapter provides a deeper understanding of; why voluntary set-aside may appear as an attractive option, what mechanisms may work in the opposite direction and what the consequences are at regional level. Finally, policy implications are discussed. Evidently, there is a need for Sweden to formulate a set-aside policy of its own.

8.1 Model results

The elimination of the upper limit for voluntary set-asides dramatically changes production mixture and the welfare outcome of the Agenda 2000 proposal. Results of model calculations have been presented in chapter 6.

More than 90 per cent of the existing grain acreage would be set aside compared to 26 per cent under the base version of the Agenda 2000 proposal (see table 6.2). As a result production of grains and oilseeds would decrease considerably (table 6.1). Sweden would switch from being a net exporter of grains - 0.9 million tons in the base scenario - to become a large importer - 3.6 million tons - in the scenario with voluntary set-asides with no upper limit. (Swedish grain production would consist only of bread grain for the domestic market and some feed grains for renewal of grassland. If Sweden would become a large *importer of grains*, the market price reduction would not become as large as the proposed intervention price reduction.) Animal production seems to be only marginally influenced according to the production volume. Values of milk quotas, sugar quotas, headage payments for suckler cows and some farm building would decline, however (table 6.4).

In relation to the basic Agenda 2000 scenario, there would be a welfare gain for farmers of more than 252.5 million ECU annually while society as a whole would gain 213 million ECU. Consumers would experience marginal losses - 16.6 million ECU. All figures are given in table 6.6. Producer surplus from arable land would increase from being 214 million ECU annually to become 636 million ECU, (table 6.4).

8.2 Mechanisms responsible for increased attractiveness of voluntary set aside and possible countervailing forces

An important aspect of the set-aside popularity in model runs, in spite of its lowered absolute profitability, is that the profitability in alternative land usage, mainly grains and oil-seed, declines as well. As the *oil-seed* acreage payment is lowered to the same level as for grains and as the existing payment for oil-seed is higher than for the set-asides, the reduced profitability will become more drastic than for the set-asides. The reduction would become 58 - 173 ECU per hectare, depending upon district. The incentive to reduce oil-seed production consequently becomes higher than to reduce the set-aside area.

Grain production results are more complicated to scrutinise, as the intervention price will be reduced by 23.8 ECU per ton. The price

reduction is proposed to be compensated half-way by increasing the acreage payment by 11.6 ECU per ton, i.e. 21 per cent. If the reduction in the intervention price is fully transferred to the market price, the net reduction in grain production profitability is estimated to become 38 - 61 ECU per hectare for farmers, with average productivity farmers in the respective districts of Sweden. In reality, the difference may become higher as yields may differ considerably between individual farmers. Generally, high-productivity farmers lose more than the others.

In all, *fallow* is the land use alternative where the profitability is reduced the least. Profitability of fallow increases by about 23 ECU per hectare in relation to grains and considerably more in relation to oil-seed production. It is anticipated to increase in areas where it already is common and to become a new phenomenon in other areas.

Not only grains and oil-seeds may be taken out of production with the Agenda 2000 proposal, but also acreage used for *ley, potatoes, sugar and others*. Those crops will, as they are not explicitly considered in the Agenda 2000 reform, attain a higher relative profitability. The ley area is, however, an exemption as grains as feed in animal production may replace it. When the grain price is reduced, costs for hay and grass production must be lowered accordingly to avoid substitution of grains for hay and silage, etc. While grain price reduction is partly compensated through raised acreage payments, ley production is not. The result is reduced profitability in ley production and more grains will be used as feed. In this respect, the profitability in set-asides is enhanced also relative to the ley production. To the extent ley commodities cannot be replaced by grains in feeding, calculations will become extremely complicated and the question is if animal production can pay a higher price for feed without becoming unprofitable. Those calculations are affected also by the proposed changes in milk and beef regimes, as well as by changes in all environmental and regional support that is directed to ley, pasture and grass-based animal production.

The most decisive point is whether the *upper limit* for voluntary set-asides will be kept at its present level or totally abolished. If eliminated, a farm can set all its acreage aside and reduce costs drastically by selling the machinery, something that is not possible as long as some parts of the arable land must be cultivated. That means reduced costs of at least 173 ECU per hectare and year. If such a high cost could be eliminated, the incentive to set aside the arable land is strongly enhanced. If the existing upper limit for set-asides is kept, machinery costs cannot be avoided in the short run and revenues just have to cover costs for labour and working capital.

There are some reasons to believe that farmers, in spite of the enhanced profitability in the set-aside activity, *nevertheless may continue*

to use the arable land even if costs in production are not fully covered by revenues. The reasons to continue cultivation can be divided in two main categories: economic benefits not fully accounted for in the model and political risk connected with discontinuation of production. The former will be analysed below. The latter will be discussed in chapter 16.

Farmers may have no alternative employment opportunities outside farming. By taking land out of production they eliminate their only job opportunity, even if the resulting salary may be low. With set-asides the salary may be even lower or even nothing at all. Net revenue per labour hour input may, totally, be considered higher if the acreage payment is included, even if the extra time needed for the production per se is poorly remunerated. It may be a good enough reason to continue production, that production from a total point of view is profitable. Set-asides may, consequently, be rejected as long as total farm revenues cover total costs.

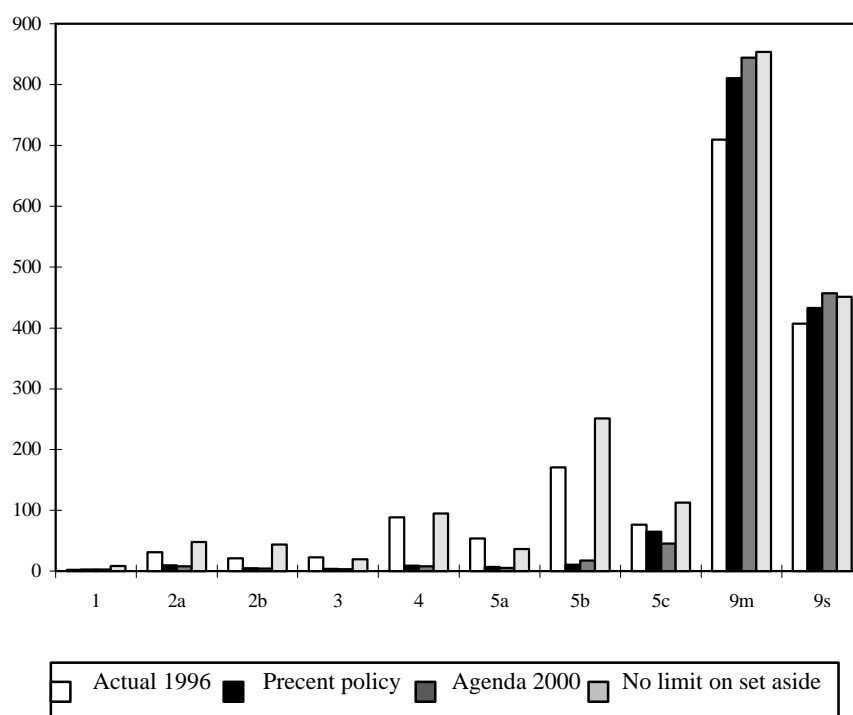
There may be on-farm need for grain activity, in the form of feed to animal production, areas needed for manure, straw needed for strew, balanced rotation of crops, renewal of grasslands, etc. That means that revenues in grain production actually may be higher (or costs lower) than is presumed in the model used in the study, in which grain production is treated independent of other farming activities. From a holistic point of view, consequently, there may be rational reasons for continued production even if a partial analysis indicates the opposite. Long term set aside is not an option for a tenant. As long as the land is cultivated, the landowner may settle for a lease contract at a lower level than the direct payment for the acreage. The reason for such behaviour is that continued cultivation can be perceived by the landowner as a kind of option value. If the land is not cultivated the landowner may simply collect the payment himself. The fact that 74 per cent of arable land in Sweden is partly or wholly leased may, thus, counterbalance the tendency to set land aside. However, the same mechanism may also work in the opposite direction since the incentive for the landowner to terminate the lease contract increases. (Regional implications regarding tenancy are discussed in section 8.4.)

8.3 Regional implications

Behind the national figures on set-aside effects of Agenda 2000 lie different regional consequences. The model used indicates that the existing policy implies a minimal set-aside strategy in the northern parts (regions 1- 3) of Sweden, something that is contradicted by the reality of today (see figure 8.1). The grain area is lower in reality than in the model for these regions, while the model finds grain production to be profitable. The explanation may be that the considered area is not eligible for acreage

subsidies. Another reason may be the problem of getting access to adequate machinery equipment, primarily composite machines. If such machinery is not available within a reasonable geographical distance, there will be no possibility for profitable grain production. Without a national compensation subsidy to feed grain production (introduced in 1995), grain production would be unprofitable, indicating the great political risk in investing in machinery 15 - 20 years ahead, based on persisting political support conditions. That risk becomes obvious in the case of the elimination of the upper limit on set-asides, in which case grain production is not profitable and acreage subsidies may be received without any grain production. Presently, grain production may be motivated for economic reasons, when grass production commodities must be reseeded, and in combination with the regional support.

Figure 8.1 Regional estimates on set aside under some scenarios (thousand hectares)



Source: Model estimations in SASM

In the middle parts of Sweden (regions 4 and 5), there are no regional grain support means. The model therefore predicts maximal set-asides. In reality, set-asides are less than that, indicating that many farmers go on producing at a rather low remuneration to production inputs at the margin. Even some expansion of grains and set-asides seems to take place at the

cost of reduced ley production, something that becomes obvious if the set-aside upper limit is eliminated. In these areas such policies may lead to a reduced number of cattle, substitution of hay for grains in feeding and enhanced intensity in remaining ley production.

Even if set-asides may become common in the less favourable areas as a result of the reform proposal, the main part of the set-asides lies outside those areas; in the southern parts of Sweden and in the most fertile districts from yield points of view. Profitability in set-asides and in grain production to-day are rather close to each other in those districts and on-farm specific circumstances heavily influence *individual farm behaviour*.

8.4 Implications of shrinking ley area for tenancy

As indicated in table 6.2, set aside is expected to expand not only at expense of grain area but also at expense of ley. The problem with set-asides replacing ley land (in the case of no upper limit for set-asides) is especially obvious in forest districts and in the northern parts of Sweden. Production in those areas is mainly based on milk and beef and on *leased arable land* with low leasing prices. Landowners have no alternatives to lease out the land and appreciate that tenants keep the land open, even if the leasing price may be low or even zero. If the upper limit on set-asides is removed, landowners (“arm-chair farmers”) suddenly get a new alternative. They may then break the tenancy contract and put the land into set-aside in order to get the set-aside payment of about 231 ECU annually per hectare. To-day, this is not an option as some production must take place to achieve the acreage payments. Allowing no upper limit on set-aside land may consequently imply a strong capitalisation of values for land not used in production, at the same time as the land basis for milk and beef producers is threatened. That may lead to fewer cattle units in these districts and intensified production methods on remaining ley land production.

In table 8.1, the number of farms, in great need of leased land for ley production, is shown in different regions. The numbers of farms and their acreages are shown for farms where the ley acreage is 10 per cent or more than the owned acreage.

Table 8.1 Farms where the ley area is more than 10 per cent of the total owned area

Region	Number of farms	Total area	Owned area	Tenancy area	Ley area
Region 1	939	21 799	5 705	16 389	20 347
Region 2a	2 446	87 135	27 009	59 928	69 805
Region 2b	1 609	52 638	17 528	35 507	41 418
Region 3	1 490	43 090	11 121	31 407	30 899
Region 4	1 561	60 660	15 288	45 593	38 048
Region 5a	5 580	132 207	38 809	94 094	104 062
Region 5b	4 537	157 753	37 782	120 548	100 169
Region 5c	1 473	62 616	11 579	51 059	35 898
Region 9	5 162	341 373	26 562	315 286	106 372
Region Mi*	155	11 331	1 683	9 676	4 701
Total	24 953	970 601	193 065	779 487	551 717

* Region Mi is a small region containing part of the islands Gotland and Öland; in the model estimation in SASM this region is included in 9s

Source: The Swedish farm register, (LBR)

Results in the table indicate, that a large share of ley production takes place on farms, that cannot manage their grass feed production if they lose the leased land. About 350 000 hectares of leys are dependent upon existing leasing contracts. As leasing prices generally are lower than the set-aside payments, animal production would be affected by the no upper limit option on set-asides, either through higher land leasing prices or through reduced land for ley production.

8.5 Concluding discussion

Changes proposed in Agenda 2000 generally stimulate less production and more set-asides. The time horizon also is of importance and in a longer time perspective disfavours grain production still more, as larger cost reductions can be attained in a long run. Eliminating the upper limit on voluntary set aside, farmers are not forced to produce in order to receive subsidies and set-asides may become rather profitable resulting in a dramatic decline in grain and oilseeds production as estimated by the model. Note, however, that an expansion of the set-asides is counteracted by the political risks involved, expectations of higher future prices, inability of the model to capture the true profitability in production, and the behaviour of tenants.

Having all the caveats in mind, it is, nevertheless, very likely that the attractiveness of set aside will increase if Agenda 2000 will be implemented. The model calculation indicates, moreover, that welfare improves, if farmers are allowed to freely choose whether to set the land aside or not. The issue that emerges for the national policy is whether farmers should be allowed to do so. The question is: can a future Swedish agricultural policy, enhancing international competitiveness, be based on a profitable *non-use* of agricultural resources?

9 National envelopes

9.1 Impact on the budget and net contribution

The increase of animal premiums and national envelopes, that has been proposed in Agenda 2000, requires additional budget funds amounting to 7 billion ECU. Direct payments to milk cows account for 2 billion ECU. Table 9.1 below shows the distribution of additional funds by livestock category.

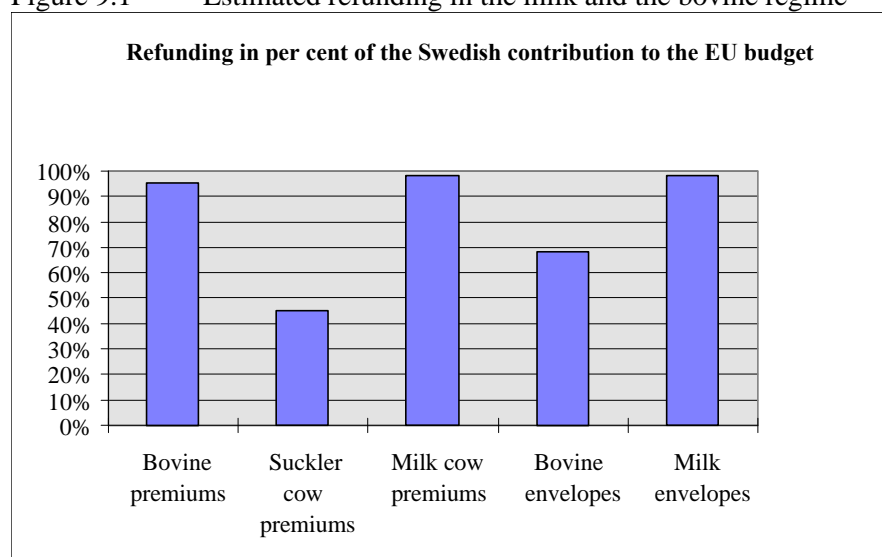
Table 9.1 Implications for the EU budget of increase in animal premiums and national envelopes, million ECU

Payment category	Total amount
Male beef premiums	823
Suckler cow premiums	361
Milk cow premiums	2 025
Supplementary payments	708
National envelopes, beef	1 962
National envelopes, milk	911
Total	6 791

Source: Calculation based on the Agenda 2000 proposal

An increase of the budget implies that the Swedish contribution will have to increase by almost 200 million ECU. The estimate has been based on the share of Sweden in the EU budget in relation to the BNI share. Sweden will also benefit from increased payments in relation to the number of eligible animals, the national milk quota and the allocation of the envelopes. The direct payments to recipients in Sweden will however be lower, 160 million ECU, leaving a net balance of minus 40 million ECU. Figure 9.1 below illustrates the relationship between transfers to and from the EU budget by payment category.

Figure 9.1 Estimated refunding in the milk and the bovine regime



Source: Estimations built on the Agenda 2000 proposal

For milk production and milk envelopes the net contribution is close to zero. In the case of suckler cows, less than one-half of the contribution to the EU budget comes back to Sweden as payments. Also in case of beef the balance is unfavourable; only two-thirds of the transfer to the EU budget come back. This is due to a limited number of eligible animals. The figure illustrates clearly that the net effect on Sweden is strongly dependent on the structure of direct payments since the net contribution varies considerably between different categories.

Introduction of national envelopes was one of the changes in the Mars 1998 regulation proposal compared with the summer 1997 Agenda 2000 proposal. Table 9.2 shows the difference between the two proposals in the case of the beef envelope. Direct payments are reduced from 368 ECU to 220 plus additional payments for bulls, from 232 ECU to 170, plus additional payments for steers, and from 215 ECU to 180 plus additional payments for suckler cows.

The introduction of beef envelopes implies a net loss for Swedens as the taxpayers lose 21 million ECU while the producers gain only 13 million ECU. Introduction of envelopes for beef increases the demand on budget funds by 739 million ECU, as demonstrated by table 9.2. The proposal is, accordingly, not neutral with respect to the effect on the EU budget but implies a sizeable increase of the budget, if the envelope model is used compared with animal premiums in the original proposal. To obtain such neutrality, the envelopes need to be reduced by 38 per cent.

Table 9.2 Budget flows as a result of the beef envelope, million ECU

Country	Producers	Taxpayers	Net
Austria	2	-20	-18
Bel/Lux	46	-25	21
Denmark	20	-15	5
Finland	3	-11	-8
France	98	-133	-35
Greece	-1	-11	-12
Ireland	-19	-5	-24
Italy	200	-103	97
Netherlands	89	-34	55
Portugal	1	-9	-8
Spain	33	-52	-20
Sweden	13	-21	-8
Germany	188	-203	-15
UK	66	-97	-31
EU	739	-739	0

Source: Calculations based on the Agenda 2000 proposal

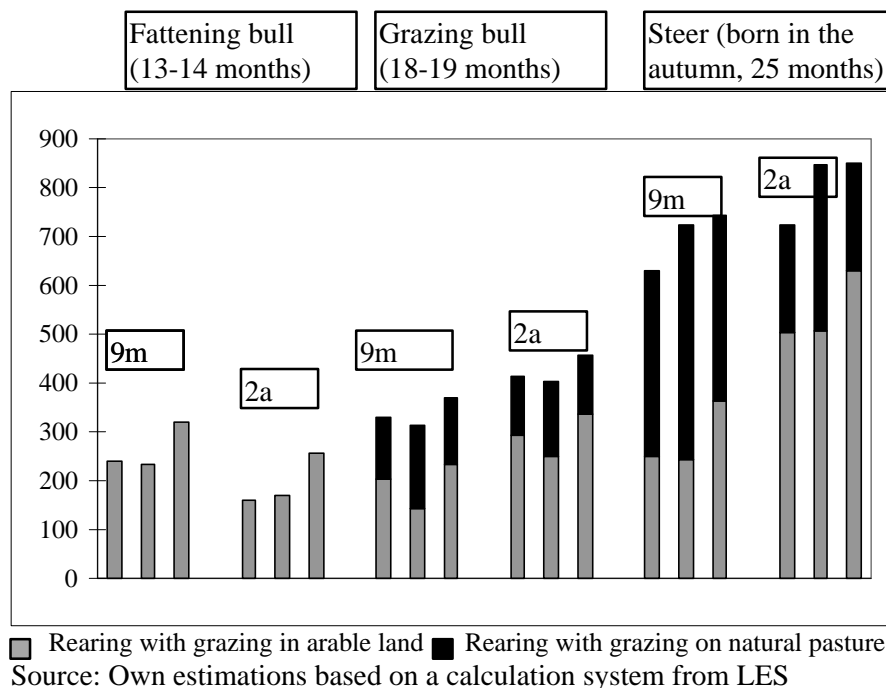
9.2 Distribution of the beef envelope

The envelope models imply that the design of the direct payments is partly left to the discretion of Member States, which have the option to choose between payments per hectare and per animal. Two options are analysed below:

- Payment per hectare of natural pasture on condition that the land is grazed
- Headage payment as in the original Agenda 2000 proposal.

The second option follows the compensation principle. The loss of gross income due to price reduction is replaced by an equivalent increase in direct payments. This option is neutral with respect to different production technology. The first option, on the other hand, favours extensive production over intensive.

Figure 9.2 Gross margins in different rearing systems in two regions; present policy (the left bar) is compared with a second scenario with envelopes paid per hectare of grazing area with requirements on well grazed land (the middle bar), and a third scenario where the envelopes are distributed such that they are neutral in relation to the Agenda 2000 proposal without envelopes (the right bar); gross margins in ECU/animal



Source: Own estimations based on a calculation system from LES

Effects of those two options compared with the present policy are first analysed at production level. In figure 9.2 gross margins for fattened bulls, grazing bulls and steers are presented. To avoid too many details, the comparison covers only two of the ten producing regions: 9m and 2b. Region 9m includes fertile areas in middle-southern Sweden and region 2b qualifies for the second highest support in northern Sweden. The lower part of the bars shows profitability of the livestock that is raised on ley, the upper part shows the increase in profitability if the livestock is grazing on natural pasture. The increase of the profitability is due to payments for biodiversity that grazing animals are eligible for. The fattened bulls never graze. Hence, no additional payments are available.

Several interesting conclusions can be derived from the analysis above:

- Profitability is considerably higher in LFA-areas than in normal areas

- Profitability is higher for animals that graze on natural pasture than on ley
- Profitability is higher for extensive methods of production than for intensive ones
- Changes introduced by Agenda 2000 are relatively small compared with existing differences in profitability between regions and methods of production
- The differences between the two designs of the beef envelope, headage vs. per hectare of pasture, are small with exception of production of fattened bulls, which would benefit from headage payments.

The figures above do not cover heifers for slaughter where profitability, which is low already, declines even more if the Agenda 2000 proposal is implemented. The decline of profitability of this livestock category would be especially pronounced, if the first option is followed because, in this case, no compensation is paid for the reduction of prices.

9.3 Model-based analysis

The analysis above is based on a static calculation of gross margins. Estimations in the SASM model illustrates calculated effects of the same two envelop scenarios. According to model-based analysis heifer for slaughter will, as noted above, not be profitable and therefore they will be slaughtered as calves under the scenario where the beef envelope is distributed as an headage payment. If, on the other hand, the beef envelope is directed towards pasture the production of slaughter heifers is calculated to increase slightly.

Grazing natural pasture decline in both cases, but less if payments are paid per hectare of pasture. The decline is due to the decline of suckler cows. The number of suckler cows declines, with more than 30 per cent in both scenarios, because heifers are now also eligible for suckler cow premiums.

For bulls no change is identified. The number of steers increase with 2-3 per cent in both scenarios, because of the increased number of milk cows due to higher milk quota. The number of heifers increase if payments are made per hectare of pastureland. In this case heifers indirectly receive a part of the support that they do not in the original Agenda 2000 proposal, where all payments are directed to male bovine.

The incentive to use natural pasture is highest, if the envelope is allocated as payment per hectare of natural pasture. Under this scenario grazing on arable land (ley) is at its lowest level in the three alternatives, i.e. at slightly less than 70 per cent of the estimated use under the present policy

scenario. The major disadvantage of the pasture payment option is in the implementation, or rather its enforcement. Incentives to cheat are considerable if payments are allocated on the basis of natural pasture. Keeping the grazing animals is not profitable as such. The only reason for a farmer to keep them is environmental support (for biodiversity, open landscape and the beef envelope). Since farmers are "loosing" money on each head of livestock, the incentive to keep fewer (or none) is strong and supervision is consequently required.

In the base version of Agenda 2000, the support has been allocated as headage payment but designed in such a way as to favour grazing animals, (cf. chapter 2). The present policy is, however, already favouring this type of production. Below, this policy is compared with allocation of the support to intensive beef production. Table 9.3 shows major differences between the two alternatives, omitted variables do not show significant differences.

Table 9.3 Agenda 2000 base compared with support to intensive beef production

	Agenda 2000 base	Intensive beef
Number of bulls, 1000's	42	133
Number of steers, 1000's	191	100
Hectares of natural pasture, 1000's	430	387
Labour input, million hours	76	74
Production of beef meat, 1000 tonnes	113	116
Return on pasture ECU/hectare	32	18
Net welfare (change from present policy, million ECU)	2	17

Source: Model estimations in SASM

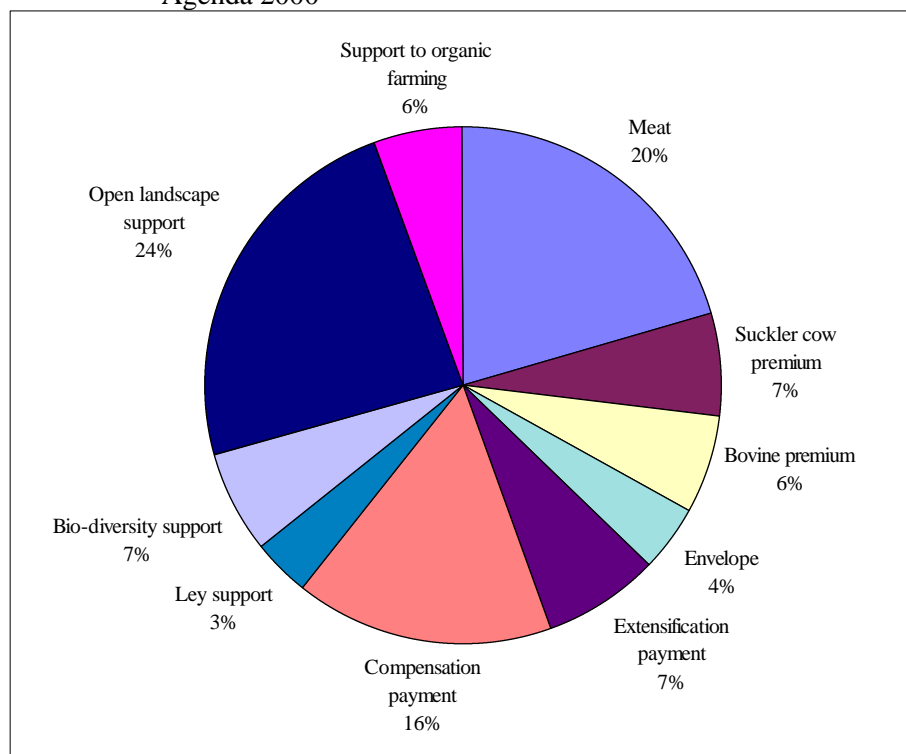
9.4 Is the model an adequate representation of reality?

Both the result of the model and the calculation of gross margins indicate that farmers should, if they are profit maximisers, choose extensive forms of productions such as steers and not fattened bulls. Yet the number of steers is today only 4 per cent of the number of bulls. The share has been increasing but very slowly (from 3.6 in 1995 to 4.5 in 1997). This marginal change may be due to other factors than relative profitability. Several factors why more bulls are produced in spite of apparently higher profitability for steers can be identified. Some of those factors relate to the speed of adjustment (the model results represent a long-term equilibrium), others connects to various

impediments that have not been included in the model, which may reduce profitability advantage for steers:

- *Mismatch between availability of pasture and availability of livestock at the outset and delay in adjustment.* The considerable profitability advantage that steers have over fattened bulls is a relatively recent phenomenon. The structure of production as it can be observed is a result of past profitability relations. Adjustment to the new conditions may be slow. In the model, each of the producing regions is treated as one farm. Availability of pasture at regional level does not imply, however, that this also is the case for all individual farmers. Those who now are engaged in intensive beef production may not have enough pasture to switch. Those with pasture may lack experience. Reallocation of production to sub-regions with good availability of natural pasture will take time in such circumstances.
- *High transaction cost between landowners and animal owners.* Lack of suitable pasture may be remedied by renting land from landowners that do not wish to be engaged in livestock production themselves. It may, however, be relatively costly to arrange suitable contracts, especially for a small number of livestock. Moreover, it may take time before such contracts materialise.
- *Credibility of the policy.* A switch from an intensive to an extensive form of production is a major change of the mode of operation. Farmers may not be prepared to adjust, especially not if new investments are required, unless they believe that the shift of profitability will be durable. Since the policy has been changing frequently in recent years, it may take time before the credibility is established.
- *Satisfying, non maximising, behaviour on behalf of farmers.* If profitability of raising fattened bulls is high enough (satisfactory), farmers may settle for this rather than try to increase the total profit by switching to steers. This may especially be the case if the total amount of animals is small and the gain on adjustment, thus, is limited.
- *Lack of knowledge and understanding of the system.* The higher level of profitability for extensive beef production is a combined result of many different types of support measures, see figure 9.3 below. The figure shows the structure of gross income of a producer, who raises suckler cows in support area 3. It is conceivable that farmers may fail to see the connection between the method of production and the profitability.

Figure 9.3 Income possibilities in the breeding of suckler cows under Agenda 2000



Source: Model estimations in SASM

9.5 Summary

The introduction of envelopes implies, compared with the original proposal where an animal premium would be applied, an increased net burden for Sweden. The share of Sweden, in the budget increases in order to finance the national envelopes, amounts to 21 million ECU. Livestock producers in Sweden would receive 13 million ECU, which results in a negative net balance of 8 million ECU.

Policy discretion with respect to the use of the envelopes is limited. They can be used either as additions to the existing animal premiums (with supplementary payments to heifers for slaughter) or as acreage payments to pastureland. The results are similar in both alternatives but the underlying structure of incentives would be different. If the payments were directed to pastureland, it would be profitable to keep such land. The grazing animals as such would, however, not be profitable. Such a system creates an incentive

to keep pastureland but requires supervision and creates also a disincentive for the upkeep of such land.

10 Distribution of additional milk quotas

In Agenda 2000 three of the proposed changes concern milk production. The total quota is proposed to increase by 2 per cent for the EU as a whole. Intervention prices for milk will be reduced by 15 per cent and compensatory headage payments introduced will be based on the number of virtual cows (producing 5 800 kilos per year). In addition, quota usage and quota values are, among several other things, influenced by changes in the market regimes for grains and beef. This chapter examines implications of the increase in milk quotas.

10.1 Quota distribution

The expansion of quota volume is proposed to be directed to specific farmer groups. Half of the expansion should be directed to young farmers and half to farmers in mountainous and arctic districts. The young farmer share is proposed to be distributed among EU member countries according to the national total quota amounts, while the mountainous share is distributed according to the size of mountainous areas. For Sweden, this implies a total quota increment of 2.3 per cent (77 million kilos of milk). Accordingly, Finland, Austria and Spain get the largest increments of their national milk quotas, while Denmark, the Netherlands, Belgium, Luxemburg, Great Britain and Ireland only receive the young farmer share, i.e. only 1 per cent increase in their national quotas. As parts of the total quota increase are directed to countries - Portugal, Finland and Greece - that do not fully use their existing quotas, total quota increase may not increase EU's total milk production to its full extent, especially since Portugal, Finland and Greece are proposed to get 10 per cent together of EU total quota increment. Farmers in Portugal produced less than 90 per cent of their national quota during the years 95/96 and 96/97.

10.2 Swedish consequences

Out of the total increment of the Swedish milk quota, 33 million kilos would, according to the Agenda 2000 proposal, be distributed to young farmers and 44 million kilos to the "arctic" area (north of the 62nd parallel). Farmers of 40 years of age or less are considered as "young", a farmer group that to-day controls about 20 per cent of the total stocks of cows and milk quotas. That farmer group may consequently expand its quota stock by 5 per cent. For the northern parts of Sweden the policy change implies a milk production increase close to 10 per cent.

In spite of the total quota volume expansion the number of virtual Swedish cows will not increase. Sweden as a nation, thus, cannot expand its headage payments in line with the raised production. Producers receiving increased quotas will, however, get headage payments in relation to their expanded number of virtual cows. Consequently, the number of virtual cows will be reduced proportionally and equally for all milk farmers, implying a redistribution of headage payments from the large bulk of milk producing farmers to those few achieving the increased quota volumes. All together, about 1.7 million ECU of annual payments are redistributed in this way, from the large bulk of milk farmers to the expanding farmers being 40 years old or less and/or live in the arctic districts of Sweden. In this way the expanders get the embedded capital value in the new quotas, estimated to 13.3 million ECU, at the policy set quota price of 173 ECU per ton of milk. About 5 000 farmers are eligible for getting extra quotas. If one-third of these expand through extra quotas, they actually achieve a capital value of almost 7000 ECU per farmer embedded in the quota value.

As the national support to milk production in the northern parts of Sweden is linked to the milk quota, the EU quota expansion for Sweden means an extra budget cost of about 5.8 million ECU on top of the expanded regional support that is paid by the EU. Similarly, however, there is a restriction, that production in those areas is not allowed to expand unless total support is reduced. Consequently, something must be changed as these rules are in conflict. Furthermore, milk production expansion is estimated to reduce the milk price in the concerned districts by 5.8 ECU per ton of milk, as expanded production has to be sold as butter and milk powder, which both have relatively low levels of profitability.

It may be questioned if it is reasonable to stimulate expanded production of milk in an area that has comparative disadvantages and in which the production is heavily dependent upon financial support. It is

also questionable whether producers in southern districts of Sweden should receive lower amounts of compensation for milk price reductions than their competitors in Denmark, Germany, the Netherlands, etc., just because producers in the north of Sweden get higher milk quotas, especially since the production expansion implies lower milk prices than otherwise.

10.3 Production quotas become subsidy rights

The reduced prices on milk commodities imply a reduced farmer milk price of 47.4 ECU per ton, if reductions in intervention prices are fully transferred to the market level. Nothing indicates that the Agenda 2000 intervention price change proposal will reduce milk production, in Sweden or in the EU as a whole. The price effect of the expanded milk production quotas will offset the price effect of raised milk consumption. It seems, consequently, that intervention prices also in the future will govern market conditions, as they determine prices at the margin.

The calculated price reduction is partly compensated by raised headage payments (23.1 ECU per ton), national envelopes (5.8 ECU per ton) and reduced feed grain prices. In the present Agenda 2000 proposal, compensation is decoupled from production and based on virtual cows. The only requirement to keep the milk quota is that the farmer delivers milk annually. As there are no requirements according to delivered quantities, the quota volume may outrange production and the farmer/quota owner achieves headage payments for (virtual) cows that he doesn't have.

The value of quotas with respect to the right to *produce* will be sharply reduced through the proposed price changes in Agenda 2000. That is compensated partly through the increased right to get *subsidies*. The subsidy right corresponds to an annual remuneration of 23 -29 ECU per ton of milk, partly depending upon how the national envelopes will be distributed. At existing quota values of 173 ECU per ton, that corresponds to an annual interest rate of 13 - 17 per cent as long as the subsidy system persists. That means high profitability in just owning the subsidy right of the milk quota (and not necessarily producing any milk). The demand for quotas may therefore increase while the supply, related to production stops, may decrease.

In all, the Agenda 2000 proposal is anticipated to imply a permanent demand surplus for milk quotas, even if that does not mean increased production pressures. Owning quotas may become more

profitable than milk production per se. If the proposal, with no links between milk production and the number of virtual cows, becomes a fact, Swedish rules for distribution of milk quotas and their prices will have to be adjusted accordingly.

10.4 Summary and conclusions

The proposed changes in the milk regime and the increase in the total quota, which is to be allocated to young farmers and to northern regions, has a number of interesting implications. Some of those are not obvious at first sight. The proposed distribution of additional quotas implies a considerable redistribution of production and wealth between milk producers. In the case of Sweden, the redistribution is from productive areas in the south to less productive in the north. Finally, the quota turns from production right into a subsidy right, since profitability of production decreases while direct payments that are introduced as a compensation are linked to the possession of the quota and not to production.

11 Principles of compensation

11.1 Why compensate?

In welfare theory the compensation problem is important. There, the Pareto-principle rejects all reforms that make some-body worse off, even if all others gain, while the Kaldor-Hicks compensation principle claims that a policy reform is socially beneficial if gainers are able to compensate the losers, potentially being able to make all actors better off. As the latter principle is stated only as a possibility to compensate, but without a demand to do so, consequences of compensation really taking place are cumbersome to anticipate. The Agenda 2000 proposal passes the Kaldor-Hicks compensation test - there are net social gains for the EU as a whole to be obtained. According to Søren Frandsen at "Statens Jordbrugs- og Fiskeriøkonomiske Institut" in Copenhagen, Denmark, analyses with a so called GTAP model indicated a net welfare gain of the Agenda 2000 proposal corresponding to 3.3 billions of US (1995) dollars for EU-15 as a whole. As individual countries tend to lose, however, the cumbersome question of country-wise compensation becomes crucial. The real content of the net social gain consists of reduced production of costly commodities, expansion of beneficial ones and, above all, expanded food consumption, all consequences of narrowing the gap between EU and world market prices.

In welfare theory, the compensation is justified by a desire to create a Pareto improvement making everybody better off. This type of argument is seldom invoked in practice. Compensations are, however, often advocated in connection with reform proposals to eliminate opposition against changes that are beneficial for society but which could be blocked by the losers. By "bribing" the losers, a reform may be facilitated. Moreover, many reforms include various kinds of adjustment measures as compensation; see below for a discussion. Accordingly, the concept "compensation" is widely used and covers different types of payments. Proposals to reform agricultural policy often include various ideas of compensation (see, e.g. Marsh and Tangerman, 1996). Compensations are sometimes justified by invoking the implicit contract between farmers and

the society that has been created by decades of agricultural support (e.g. Haraldsson, 1989). Longevity of the policy has created expectations about the continuation and an "entitlement" to be supported. If the argument about existence of a contract is accepted, the question can be asked: what is the nature of such a contract? Three interpretations can be distinguished (cf. Rabinowicz, 1998):

- * Commercial contract
- * Social contract
- * Obligations to revise existing policies under socially accepted forms.

If a commercial contract is broken, full damage is paid by those who are responsible to those who lose. It is, however, questionable whether a long-lasting public policy (originally claimed to be of a temporary nature) can be treated as an entitlement to the historic beneficiaries of it. Moreover, it can be pointed out that any kind of commercial activity entails risk, and investors in other sectors of the economy may experience large fluctuations in wealth.

Viewing agricultural policy reforms as breaking a *social contract* would to some extent be based on the same idea that long-established policies create entitlements, and would produce a rather similar distribution of compensations. However, compensation in that case should be modified according to societal objectives such as equity, fairness, cohesion, etc., thereby excluding large transfers of money to wealthy persons. Above all, unintended outcomes of past policies would not be compensated. Transferring large sums of money to people with incomes and assets above national averages is hardly in accordance with principles of justice or what the founding fathers of the EU have meant by assuring "fair incomes". Moreover, the compensation made should be related to other groups of society. Arguments for being more generous to farmers could be the fact that farmers live poor but die rich, i.e. the farm is used as a kind of pension fund.

The third interpretation is a fundamentally different one. In this case no contract - formal or informal - is broken, but the state has a general obligation to reform society under socially acceptable forms. Specific groups should not alone pay for reforms improving the welfare of society as a whole, following the idea of Corden's conservative social welfare function. Compensation payments should be directed to those farmers most severely affected by the policy change, most probably found amongst recent entrants, having made considerable investments under the existing policy regime.

Compensations for policy reforms are rare. Some examples can be found, though. In Canada, farmers were paid an *ex gratia* payment of 1.6

billion C\$ in recognition of a negative impact on their welfare of the elimination of long term transport subsidies (Western Grain Transportation Act, see e.g. Bureau, 1998). In New Zealand, in connection with the radical policy reform in 1984, debt write-offs and interest subsidies were introduced. The Swedish agricultural reform of 1990 involved paying a temporary - a three year - and digressive acreage subsidy, complemented by a supporting scheme for farmers severely affected by the reform. The purpose was that no farmer should go bankrupt as a consequence of the agricultural policy reform. The indebted farmers were, inter alia, given a possibility to sell the farm to the government at the price they themselves had paid. The policy reform never came to its full implementation as Sweden applied for EU membership one year after the reform decision was taken. The 1992 reform of the CAP introduced direct payments, called compensation payments as a replacement of high prices for some commodities. Those payments were calculated so as to compensate for expected losses. Agenda 2000 follows the same principle. The proposal, however, does not offer full compensation and, moreover, proposes some modulation of payments.

Apparently, different principles have been followed when farmers were compensated. The Swedish and New Zealand cases seem to closely follow the third interpretation of the nature of the implicit contract between society and the farmers. The 1992 CAP reform followed the first one. (However, in case of the EU, the compensation principle has not been strictly followed, as compensations extended even to successors of farmers active at the time of the reform.) Agenda 2000 constitutes a small step in the direction of the second interpretation of the nature of the contract between farmers and society. Full compensation is not offered and modulation is introduced. The modulation is, however, minor.

Fully-fledged compensations are rare in other sectors of society. Compensations defined as social measures to facilitate adjustment or ease the burdens are, on the other hand, not uncommon in other sectors of the economy. Restructuring of shipyards, steel-mills, mines, etc has been a gradual process in all Member States.

11.2 Impact on Sweden

As shown in chapter 3, increased direct payments amounting to 264 million ECU for Swedish agriculture fail to compensate fully for the price decline as the producer surplus is anticipated to decline with 62,5 million ECU. The average amount of direct payments per farmer will, with the Agenda 2000 proposal, turn out to be about 12 000 ECU. The change in consumer surpluses, however, off-set farmer losses, as they are anticipated

to go up by 330 million ECU. More complicated are the tax-payer consequences, as Sweden is a net contributor of financial means to the EU budget, indicating that Sweden pays a larger amount to the common budget for increased EU direct support than her own farmers would receive from those payment schemes. From a narrow Swedish point of view, social gains from the Agenda 2000 reform might consequently become futile, or even negative.

In table 3.4, chapter 3, anticipated producer surplus consequences for durable inputs in production of the Agenda 2000 reform proposal are labelled for the Swedish case. Some of them - small milk stables - become more valuable. That also applies to the milk and sugar quotas and, above all, for the suckler cow premium. Some factors, like large milk stables and bull stables, are only marginally influenced. Losing factors of production are arable land and suckler cow stables. The falling land values are a consequence of the reduced profitability in crop production, while the increased value of premium rights in animal production raises the values of most existing farm buildings. Even if the net change in the sector producer surplus constitutes an annual loss of 62,5 million ECU, some parts of the agricultural sector will gain.

The final outcome, however, is extremely dependent upon national policy assumptions, and foremost, the upper limit for fallow land. In the base scenario, not more than 50 per cent of the grain producing land could be set aside. With no upper limit, set-asides are anticipated to increase from 0.5 to 1.8 million of hectares, i.e. most grain land would be outcompeted by the more profitable set-aside option. Producer surpluses losses would be reduced by 240 million ECU, taxpayers and consumers would lose 23 and 12 million ECU, respectively. That indicates a net social gain of 208 million ECU from reducing the upper set-aside limit (if taxpayers are considered to be Swedish). The distributional consequences would be different to the base scenario as income from agriculture employment might be reduced by 92 million ECU and from machinery by 185 million ECU. If these resources, on the other hand, have no alternative employment opportunities outside agriculture, farmers would lose 35 million ECU, implying a net social loss. Changing basic assumptions according to opportunity costs and to the set-aside limits in this way will imply far-reaching consequences for the compensation outcome. So, even if the policy may look like a kind of (partly) compensation scheme at the sectorial level and in total amounts of money, the proposed compensations poorly reflect producer losses, especially if the sector is disaggregated into different categories of commodities or farmers.

Another way of illustrating peculiar compensation results of the Agenda 2000 reform proposal is shown in table 11.1 below, where the regional changes in production value are listed along with the change in

direct payments. The drop in gross revenues, 380 million ECU, is not fully compensated by increased direct payments, 264 million ECU. The fact that farmers do not lose the full difference between these two sums has to do with lower costs in production in the Agenda 2000 alternative. In the northern parts of Sweden, with lower productivity in farming, direct payments compensate for changes in production values, while the reverse would take place in the southern more fertile districts. Also here, it is hard to relate anticipated producer losses to the proposed compensatory payments. Actually, the Agenda 2000 reform proposal implies a redistribution of farm wealth from the better farming districts (in which the set-aside land use is especially favourable and frequent) to the poor ones. A compensation policy that seems to follow the (first) principle of compensation for a broken commercial contract on the sector level, in fact materialises as a policy according to the (third) principle of reforms, stressing the socially acceptable conditions. Again, official rhetoric advocating the policy does not appear to match up with real outcome. Notably, the reform proposal favours agricultural production in less favourable areas compared with the better ones, which may be open to criticism as one of the outspoken objectives of Agenda 2000 reform proposal is to make European agriculture more competitive on the world market.

Table 11.1. Regional changes in production value and direct payments (million ECU)

	Production value			Direct payments			Total change in income
	Present policy	Agenda 2000 base	Change	Present policy	Agenda 2000 base	Change	
Reg. 1	30.5	23.2	-24%	31.0	39.3	27%	2%
Reg. 2a	83.0	74.5	-10%	72.7	93.8	29%	8%
Reg. 2b	46.1	37.9	-18%	41.6	47.6	15%	-2%
Reg. 3	59.7	48.9	-18%	46.6	49.2	6%	-8%
Reg. 4	92.6	78.8	-15%	56.6	71.4	26%	1%
Reg. 5a	206.6	174.6	-16%	62.0	106.2	71%	5%
Reg. 5b	278.4	233.3	-16%	81.4	137.9	70%	3%
Reg. 5c	119.1	91.6	-23%	49.8	75.7	52%	-1%
Reg. 9m	649.0	514.5	-21%	243.5	289.5	19%	-10%
Region 9s	771.8	690.4	-11%	126.8	166.4	31%	-5%
Sweden	2 336.9	1 967.5	-16%	812.0	1 077.0	33%	-3%

Source: Model estimations in SASM

11.3 Discussion

If losers of social reform activities should be compensated or not is basically a political question. Full compensation to achieve Pareto-improvements is seldom paid. Political measures like adjustment periods, transitory rules, etc. are commonly used. The reasons for *not* compensating for political reform activities are, basically, two:

- * policy-makers cannot afford to do it - the old rules are too generous and therefore unsustainable
- * old rules do not work as intended, in this case there is no obvious compensation motive.

Already existing compensatory direct payments in the CAP - as a result of the MacSharry reform - are paid as compensation for an anticipated fall in producer prices that actually did not take place. No follow-up adjustments have occurred in spite of the obvious overcompensation. The development has, furthermore, been different in various Member Countries and regions. Consequently, there has been no relation between the damage really caused and the compensation paid so far in the existing CAP.

The Agenda 2000 reform proposal indicates a further change in the incentive structure in reducing producer prices and increasing support for resource ownership. Evidently, the ambition is not to enhance food security by stimulating production. In fact the opposite is intended, as production is too high at existing costs. Compensating for reduced incomes, caused by reduced revenues from sales of production, by paying annual subsidies to existing stocks of land and animals, seems to be a short term alleviation of the income problem, as capitalisation tends to raise the prices/values of these stocks accordingly, implying higher future production costs. No sustained income improvement is to be expected from such a compensation strategy. The main consequence seems to be a one-off increment of existing farmers' levels of wealth. Future farmers will have to pay for the subsidy streams in higher prices for land and animals connected with such premiums and will not be better off compared with a situation without these subsidies.

The proposed compensation efforts seem to be determined from a sectorial and national perspective and based on annual payments. Nevertheless, they are complemented with additional ambitions according to regional, distributional and environmental efforts, ambitions that reduce the compensation content of the payments, making them look as a "mädchen für alles". Compensation could, however, be made as a lump-sum payment, something that corresponds to the real character of farmer

support. Looking upon the Agenda 2000 reform proposal as a one-off change of farmers' future income streams, the present discounted value of that stream could form the basis for a single payment compensation. In the Swedish case, the annual value of making farmers not a losing group as a result of the Agenda 2000 reform, is calculated to be 254 million ECU in the form of raised direct payments and 46 million ECU as a reduction in total producer surplus. In all, 300 million ECU would be needed annually to fully compensate farmers. With a discounting factor of 0.02, representing the time preference of future income streams, and an infinite future, that corresponds to a one-off transfer of 15 billion ECU. If farmers are not fully compensated (following the levels in the proposal) and if farmers completely distrust future support for more than four years, farmers may be indifferent between the proposed annual payments and a one-off transfer of 1 billion ECU. That corresponds to a one-time payment of about 12 000 ECU per Swedish farmer, as a partial compensation for the Agenda 2000 changes.

Even if the one-off transfer approach is used, the problem of how to distribute the national amount of money between farmers still has to be resolved. As such a policy implies a pure compensation strategy (our first principle), aspects of regional balances, environmental consequences and social effects, etc., are of no relevance. Ideally, compensation should relate exactly to individual changes in producer surpluses. Such a perfect kind of compensation is, of course, hard to materialise with reasonable inputs of administrative efforts and simplifying rules have to be established, sacrificing absolute justice. One way could be to base individual payments on existing endowments of arable land. In the Swedish case, that would mean a lump-sum payment of about 380 ECU per hectare, if the total amount to be distributed is 1020 million ECU. At the other extreme, 15 billion ECU would be distributed and the average one-off payment would be close to 5 800 ECU per hectare, which more than outweighs existing average Swedish market values of arable land. Evidently, it would be hard to exactly calculate the reasonable individual compensation payments, based on a farmer's specific cost structures, preferences and expectations, and the amounts finally paid most probably would be the outcome of a negotiating procedure favouring strong negotiators in a "game" characterised by elements of the "prisoner's dilemma". One way of solving the problem would be to internalise it, by letting the farmers' union distribute the total amount of direct support among members within a given set of rules so as to avoid distorting market competition conditions.

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12 Principles of modulation

12.1 Introduction

Horizontal provisions in Agenda 2000 include a number of proposals. All direct payments over 100 000 ECU are proposed to be reduced by 20 per cent (with additional reduction of 5 per cent for payments over 200 000 ECU). Moreover, additional modulation based on labour force used on holdings will be possible. Implicitly, the proposal about ceilings is based on an assumption that payments of that size are unfair or rather that resulting agricultural income would be unjustifiably high. Since the concept of fairness is central here, the analysis in this chapter starts with a discussion of the concept of fair income. Impact of modulation based on different definition of fairness is illustrated next. The calculations are based on agricultural census data. The analysis continues with a discussion of the impact of modulation based on use of labour. Information is also provided on the impact of reduction of payments by 20 per cent (French proposal). In contrast to the analysis in the first part of this report, the figures that are provided in this chapter are based on census data and illustrate a static effect at farm level.

12.2 Income objective and fair income

According to art 39, Treaty of Rome, the CAP aims at assuring farmers a fair standard of living. Since the Treaty has not been revised, the objectives of the CAP still apply. Improvement of competitiveness on domestic and external markets is on the top of priority list of Agenda 2000. The list of objectives includes also an objective to "ensure a fair standard of living for agricultural community and contribute to the stability of farm incomes. The concept "standard of living" is much wider than income. Comparisons of standard of living between farmers and non-farmers conducted by Central Office of Statistics in Sweden (similar studies can be found in other Nordic countries) include, inter alia, such aspects as health status, incidence of occupational hazards,

housing, leisure etc. It is not clear if the use of the concept of "standard of living" in Agenda 2000 implies a deliberately higher level of ambition or what is primarily intended farm income. In the discussion below, we concentrate on incomes because many of the variables that affect the standard of living are not subject to a common policy at present.

In spite of the fact that farm income was, in reality, the main objective of the CAP, the concept "fair income" is rather vague and allows for various interpretations (von Witzke, 1986). In particular, such a fundamental issue as whether fairness should be assessed in absolute or relative (i.e. compared with other groups in the society) terms has not been resolved. Additional pertinent issues are whether the relevant concept is annual income or remuneration per hour and whether efficiency of the operator should be taken into consideration while assessing whether the income is equitable. Thus, the concept is highly ambiguous. Lack of a clear definition complicates a discussion about a reasonable modulation. What is left is the implicit definition of the concept, as reflected or revealed in past policy decisions. Before doing this, a few comparisons with other countries may be in place.

A farm income objective has been used in several other countries. In the Nordic countries, fair income had always been defined as fair in relation to other groups in the society. The definitions have, however, varied between countries and between different periods of time in the same country. In Sweden, the concept of fair income was used in semi-annual price negotiations where the objective was to determine (in reality increase) prices in such a way as to assure farmers the same *development of incomes* at the sector level, as the reference group had experienced. Reasonable or fair income as such has not been defined. Furthermore, calculated price increases were reduced taking into consideration growth of productivity (assumed to be 4 per cent per year). Price reviews were abolished in 1990 reform of agricultural policy in Sweden. Equalisation of farm and non-farm incomes was pursued most vividly in Norway. Based on a highly fine-tuned system (32 model farms) farmers, including small farmers in the northernmost regions of Norway, were guaranteed the same remuneration as industrial workers.

Level of prices of agricultural products in the EU, which has indirectly influenced the present level of direct payments has been a result of amalgamation of the price levels of the founding members of the Union, somewhat biased (Neville-Rolffe, 1984) towards German prices. In 1973 sc. objective method was introduced aiming at provision of "a working income comparable with non-agricultural incomes for modern farm enterprises". While in use, the method was

revised when calculated price increase had become excessively high. Moreover, the Commission regarded the objective method as only one factor that needed to be taken into consideration (Fennel, 1979). The objective method was abandoned in 1983. Since that time, the price reviews have been based on discretion rather than rules. Substantial research on the subject Fearne (1989), von Witzke (1986) indicates, however, that development of farm incomes (as well as budgetary considerations) have influenced price setting and the behaviour of the Commission. The income concept that has been used is value added per annual work unit. Accordingly, the focus has not been on incomes that farm households actually have, but on remuneration to labour engaged in farming, or in other words on a sectoral rather than on a social perspective.

To summarise, it is difficult to find a well-established definition of the concept fair income. The direct method, while it was in use, was based on the notion of relative income including some regards to efficiency. Development of farm incomes appears, furthermore, to have influenced the price decisions of the Agricultural Council. Implicitly it means that the relative income concept must, to some extent, have been underlying in the process of price setting since development of farm income must have been contrasted with growth of incomes in the economy outside farming.

At the same time, the proposed ceiling is not defined in relative terms. The ceiling is excessively high compared to average GDP per capita in the union, which amounted to 17 260 ECU. The same ceiling applies, moreover, in Portugal and Luxembourg in spite of the fact that GDP per capita is more than twice as high in the latter country. There is no argument presented why just 100 000 ECU should be considered as the limit (indicating nothing but the level where direct supports per farm starts to become marginally reduced) and it may be considered as taken out of the open air. The fact that only direct payments should be modulated, while price support is not, underlines that conclusion, not least because the direct payments are motivated as a compensation for reduced price support.

12.3 Possible definitions of fair income

Since the discussion above has pointed to the lack of a clear and consistent definition of the concept of "fair" income in the existing regulations or practical use, it seems useful to attempt to formulate such a definition for the purpose of a modulation exercise. Agriculture is for most producers a part time occupation, hence the relevant concept is remuneration per hour

(or annual work unit) rather than total income per farm. Two alternative principles could be advanced: equal pay for equal work or market-determined remuneration. The two principles entail two different views on agricultural incomes. The former assumes implicitly that agriculture is specific and farmers unable to command a fair return on an unregulated market. According to the latter, farming is not different from any other economic activity.

12.4 Equal pay for equal work

The principle of "equal pay for equal work" has always been strongly endorsed by the Swedish Labour unions and has played an important role in wage determination on Swedish labour market. Accordingly, the principle is well established. Application of this principle to determination of farmer's "wages" implies that an assessment of content of the work farmers are performing is made and the results are compared with other groups where the wages are known. The group that performs most similar work is hired farm labour. Accordingly, modulation could be based on comparison of actual incomes with wages paid to hired farm labour, who is paid about 15 ECU per hour. Next section presents calculations based on application of this principle.

12.5 Market related remuneration

Free mobility of resources between sectors tends to equalise returns to production factors. Assuming that the farm labour is freely mobile between agriculture and other sectors, farmers will receive the return on their own labour that is adequate according to their own expectations. If, given a free choice of exit (i.e. availability of alternative jobs) farmers still continue on producing, then the return to their own resources must, according to their own perception be adequate. If the level of support is higher than (implicitly) demanded by farmers, the competition for fix resources, especially land, will raise the land values and make it more expensive for young farmers to establish themselves. Accordingly, the level of land values can be seen as an indicator of what is perceived by farmers as fair income. Raising land prices indicate that farmers consider remuneration as more than adequate.

A modulation based on this principle could imply reducing support to the level that is required to keep production at a level that is socially desirable in the long run. It should be observed that according to this perception, the fairness cannot be defined independently from the socially

desirable level of production. Leaving the question on what such a level may be, it could be observed that a reduction of direct payments with 20 per cent implies, according to analysis in chapter 5, that production would be almost unaffected in the long-run. Accordingly, the implicit level of return on farm resources is adequate and can be seen as fair for the present level of production. However, this applies only in the long run. Reduction of direct payments may cause serious hardship on recent entrants in the short run and could be compensated by temporary payments.

12.6 Modulation exercises with respect to income distribution

Modulation is proposed in relation to direct payments. OECD (1994) identifies four kinds of direct payments:

- * Adjustment support
- * Income stabilisation support
- * Income floor guarantee
- * Payments for services, e.g. environmental services

Agenda 2000 direct payments, however, don't fit to any of these categories. Since the payments are permanent and constant, they cannot be seen as adjustment support or income stabilisation. The payments are sometimes defended as rewards for stewardship of the land but they have not been designed as remuneration for environmental services. The payments originated by transferring price support, which was a result of pursuing of farm income objective to direct transfers. Accordingly, the payments should be seen as a permanent direct income support.

Below results of different modulation principles are presented. The purpose is not to generate specific policy recommendations. It should be recognised that farmer's behaviour may be affected and efficiency impaired by introduction of arbitrary ceilings on payments. The purpose is instead to illustrate implication of different principles.

In the table 12.1 below, the impact of the ceiling of 100 000 ECU is illustrated. All payments above the ceiling, according to agricultural census statistics, have been reduced by 20 per cent. The total impact of such an operation is almost negligible. In total 2.64 million ECU could be modulated which is less than 0,01 per cent of total payments. The table indicates that almost all the impact is concentrated on normal areas.

Table 12.1 Impact of ceiling at 100 000 ECU

Region	Reduction of support, 1000 ECU
Region 1	
Region 2a	
Region 2b	
Region 3	
Region 4	48.0
Region 5a	2.8
Region 5b	54.9
Region 5c	14.6
Normal areas	2 116.4
Region covered by environmental support only	4.9
Total	2 641.6

Source: Own calculations based on The Swedish Farm Register, (LBR)

Table 12.2 show the number of farms receiving more direct payments than (standardised) labour input in man-hours multiplied by 15 ECU. Assuming that agricultural production generates at least zero profits, if direct payments are excluded, those farms are earning more than "fair incomes". The number of such farms amounts to 9 790, i.e. 11 per cent of all farms. Most of them can be found outside LFA. The table also shows the difference between the actual income and "fair income" as defined above. In total 43.7 million ECU could be reallocated if modulation is designed according to this principle.

Table 12.2 Modulation of direct payments based on the principle equal pay for equal work, number of farms and "excessive" transfers according to region in 1000 ECU

Region	Number of farms	"Excessive" transfers
Region 1	27	31.1
Region 2a	306	722.4
Region 2b	256	523.1
Region 3	319	997.6
Region 4	787	1 868.1
Region 5a	93	94.0
Region 5b	670	1 374.8
Region 5c	410	1 602.8
Normal areas	6 880	36 435.7
Region covered by environmental support only	62	77.7
Total	9 790	43 728.5

Source: Own calculations based on The Swedish Farm Register, (LBR)

Table 12.3 provides the same information specified after type of production indicating that grain growers are clearly over-represented among farmers with "unfairly" high incomes as defined above. The explanation is twofold. Firstly, direct payments are concentrated on this sector. Secondly, labour input is low and subsidy per hour, consequently, quite high.

Table 12.3 Modulation of direct payments based on principle equal pay for equal work, number of farms and "excessive" transfers in 1000 ECU according to type of production

Type of production	Number of farms	"Excessive" transfers
Beef	257	870.0
Pork	11	58.2
Grains and oilseeds	6 027	36 721.5
Other crops	2	20.3
Mixed	393	2 237.8
Sheep and goats	3	38.4
Small units	3 097	3 782.3
Total	9 790	43 728.5

Source: Own calculations based on The Swedish Farm Register, (LBR)

In principle, it is difficult to justify why direct payments and not the total support should be modulated. If the reason for modulation is equity considerations, such as that some transfers are too high to be justifiable from a social justice point of view, modulation of some category of payments rather than all support appears artificial, especially as most of the direct payments have been introduced in 1992 as compensations for price cuts. Modulation of other types of support than direct payments is hardly possible for practical reasons but for the sake of argument, it may be worthwhile to repeat the same calculations for total support, i.e. including price support. The results are given in table 12.4.

Table 12.4 Modulation of total support based on principle equal pay for equal work, number of farms and "excessive" transfers in 1000 ECU according to region

Region	Number of farms	"Excessive" transfers
Region 1	366	6 437
Region 2a	1 567	3 139
Region 2b	877	15 248
Region 3	733	7 280
Region 4	1 476	12 209
Region 5a	1 347	13 325
Region 5b	2 779	25 668
Region 5c	1 163	11 674
Normal areas	13 197	158 556
Region covered by environmental support only	336	3 643
Total	23 841	285 431

Source: Own calculation based on The Swedish Farm Register, (LBR)

If all support is taken into consideration, more than 280 million ECU is transferred "in excess" and more than one forth of farms is affected. It should be observed, however, that the figures in the tables above do not reveal anything about actual incomes of farmers. Some part of the support may be needed to cover operating losses on "unsupported" production. As pointed above, the transfers can be seen as unjustly high if production is generating at least zero profits. The figures above could instead be interpreted as follows: If all support would be converted to direct payments and fully decoupled with no demand on production then the resulting total transfers could be reduced by 285 million ECU still guaranteeing farmers equal pay for equal work as defined above. It is possible, however, that in such a case some production would disappear.

12.7 Modulation and employment

The horizontal provisions allow for reduction of payments to farmers who "fail to demonstrate their active role in maintaining rural areas by exercising genuine farming activities". Several interpretations are possible. One possibility would be to reduce payments to farms where labour input is low in relation to direct payments. Such a modulation would be similar to modulation based on the concept of fair income as defined above. As seen from the table 12.3, grain producers receive income which are high in relation to the labour input. This result is hardly surprising since grain growing is a capital-intensive activity.

(However, growing grains in a more labour intensive manner can hardly be an aim per se.)

Absentee landlords whose income is enhanced by intervention on agricultural markets and passive owners of quotas who derive income from artificially created assets can be seen as a group who does not exercise genuine farming activities. It is however, hardly doable to reduce incomes of those groups. As long as market regimes are in operation as they are it is neither possible nor efficient to eliminate those phenomena.

Finally, one possibility could be to reduce payments where total labour input is small. Table 12.5 illustrates the result of such an exercise. If payments for all farms where total employment is lower than two annual work units were reduced by 20 per cent, the total reduction would be 78 million ECU. The major impact of such a reduction would fall on normal areas rather than on LFA. A possible justification of such a reduction would be that larger farms are more dependent on farm incomes and should, hence, have priority. However, such a reduction would be at odds with rural development ambitions, because of the role that small farms play in keeping the countryside alive. Moreover, reduction of payments to smaller farms would speed the structural change as larger farms could compete more effectively for resources such as land. This would also have negative impact on rural development.

Table 12.5 Modulation based on insufficient employment

Region	Reduction of payments 1000 ECU	Per cent of total payments
Region 1	282	17
Region 2a	1 842	14
Region 2b	1 334	15
Region 3	1 491	15
Region 4	4 620	14
Region 5a	5 857	15
Region 5b	10 153	13
Region 5c	4 132	12
Normal areas	47 539	12
Region covered by env. Support only	1 104	8
Total	78 355	12

Source: Own calculation based on The Swedish Farm Register, (LBR)

12.8 Reallocation of funds to rural development

This modulation exercise is similar to one of the policy alternatives analysed in the first part of the report. In short, the proposal amounted to cut direct payments and reallocate the funds to rural development measures. Full impact of such a policy cannot be assessed without taking into account the use of the fund. It is not sure that all funds could be absorbed by meaningful projects. However, judging from past experiences (Ds 1989:63), such a change can be expected to generate a positive impact on rural employment since generation of job outside agriculture is less expensive than in agriculture. In chapter 6 implications of the French proposal were analysed based on SASM. The table below is based on census data and reflects, accordingly, a static effect of the proposal. If the funds, which would result from a modulation of such a kind, would be used for rural development measures within the same producing region, the largest amount would be available in normal areas.

Table 12.6. Reduction of support according to the scenario of the French proposal (1000 ECU)

Region	Number of farms	Total direct payments	Reduction	Per cent of total support
Region 1	2 647	10 130	1 429	13
Region 2a	6 676	51 388	9 190	18
Region 2b	4 627	31 669	5 860	19
Region 3	4 326	28 065	5 488	20
Region 4	6 472	52 831	10 510	20
Region 5a	13 107	74 230	9 359	13
Region 5b	14 866	122 953	18 109	15
Region 5c	4 304	47 078	8 340	18
Normal areas	31 589	437 428	103 646	24
Region covered by environmental support only	1 138	15 309	2 044	13
Total	89 577	870 156	173 975	20

Source: Own calculation based on The Swedish Farm Register, (LBR)

12.9 Summary and conclusions

All modulation exercises shown in this chapter point in the same direction. The results indicate that some of the transfers may be too high from the point of view of fairness but it is very difficult to design a modulation programme in a consistent and fair way. Without knowing the cost of production, other incomes and wealth, we cannot know for sure if incomes are too high. If only highest payments are reduced, the impact of modulation is almost negligible. A modulation of direct payments rather than of all payments because this is doable appears arbitrary. If the ambition is to achieve a fair income, all support should be modulated and net incomes from farming as well as total wealth, should be considered. The difficulties to design a reasonable modulation of payments reveals the fundamental dilemma of the CAP (and similar agricultural policies.) The CAP has originated, primarily, from social concerns and has been focussed on farm income problem. The alleged low farm incomes have, however, been seen as a sector and not a social problem. The remedies have been designed accordingly and consisted of price support. The switch to price support makes it technically possible to introduce modulation. Introducing some socially motivated restrictions on a sectoral policy will not result in having a consistent social policy. Buckwell et. al. (1997) argues that "unless the income payments are arranged on a household basis and all income and household wealth is assessed they have no right to their name". Hill (1996) claims that adopting an overall view of the income of agricultural households (rather than a sectoral income) would reduce the uniqueness of farm incomes and the agricultural income problem. Taking the household approach puts the incomes of agricultural households on the same basis as any other groups of households. Low incomes of farmers are then presented as primarily an income distribution problem and not an agricultural problem.

A permanent general income support is hard to motivate as it presumes that agriculture is so specific that normal incomes can't be attained at market conditions. Even if this really was the case, the income support should be managed through a general social policy rather than through a sector oriented policy based on acreage and animal headage payments.

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13 Some environmental impacts of the Agenda 2000 proposal

13.1 Introduction

The changes in Agenda 2000 that is related to environmental aspects are rather limited. According to Sumpsi (1998) the most notable changes are:

- changes in horizontal provisions to including optional cross-compliance for the Member States and the possibility for the Member States to use funds available from cross-compliance and modulation as additional support for agri-environmental measures,
- enhancement and improvement of regulation 2078/92,
- the greening of the LFA allowances.

Long term implications of the proposed changes are not easy to evaluate, especially since most of them are not mandatory, but optional.

Accordingly, the impact on environment will depend on choices made by the Member States. In addition, the environment will be affected by changes in production and production technologies that will follow from lower prices and higher direct payments. This chapter does not attempt to evaluate the possible consequences of the aforementioned changes in environmental regulations, rather it focus on model based implications of changes in prices and direct payments on the natural environment in Sweden.

13.2 Environmental policy objectives

Environmental aspects are explicitly mentioned in the Agenda 2000 proposal. Environmental concerns should guide the proposals. The Union has some general environmental goals, according to the treaty of Rome, e.g. articles 2, 100a and 130 r-t. Environmental policy is largely a question of national concern, but goals such as preservation, protection and

improvement of the environment, protection of human health, cautious and rational treatment of natural resources, are valid for the whole Union. Within the Union the polluter pays principle should be used.

According to the Amsterdam treaty one of the goals for the Union is to establish sustainable development. The need to integrate environmental protection in the implementation of different EU policies is stressed. Even if the CAP does not have strong environmental goals in it, the general EU goals apply also to the agricultural sector.

Under the CAP, national environmental programs have been developed, especially during the 1990s. For Sweden, as well as for Finland and Austria, these programs are of larger importance than for other EU member states. The Swedish environmental program for agriculture therefore has rather high ambitions. The program can be divided into 12 sub-programs. Broadly speaking, the chosen measures are directed towards reductions of negative external effects and payments for positive public goods related to agriculture. The main share of the total budget of about 325 million ECU/year, goes to programs related to positive public goods and more extensive production forms.

Environmental problems in Swedish agriculture relate to the same broad aspects: the nutrient and pesticide leakage, the leakage of ammonium to the air, other negative externalities and to stimulate the permanent use of natural pasture, to keep the agricultural landscape open and to protect the biological and cultural values in the agricultural landscape.

Sweden is to 50 per cent covered by forests and the cultivated area is less than 7 per cent of the total area. Over the last 50 years the cultivated area has declined and today a large number of endangered species are strongly connected to the agricultural landscape. In Sweden, biodiversity is related to agricultural practises. Some of the most important political environmental goals are, therefore, an upkeep of the existing natural and seminatural pasture landscapes and extensive farming practises as a means to protect the biodiversity in Sweden.

From a Swedish perspective, the beef sector differs in relation to many other member countries. In Sweden, specialised beef production does not have a long tradition. Historically, slaughtered beef usually came from milk-producing farms. During the last ten years the number of non-dairy farms with cattle have increased. Many of these farmers have applied for different environmental programs, directed at grazing animals. Within Sweden, the total number of cattle, and especially their regional distribution, is important in relation to the national goals concerning biodiversity. A reduced number of grazing animals will threaten the continuous use of natural pasture.

From the model estimations of farmers' adjustments to the different scenarios some environmentally related parameters can be focused. Tables below will include many of the scenarios presented earlier (see part A for presentations).

13.3 Land use

Under the Agenda 2000 proposal the intervention price of grains is reduced and direct payments are increased. At a first glance, the lower intervention price implies that the amounts of nutrients and pesticides applied per hectare will be reduced. This result is valid whether the increased acreage subsidy fully or partly compensates the producers for the lower intervention price, as long as farmers treat the direct payments as a fixed income per hectare that does not affect their choice of production intensity. On the other hand, an increase of the acreage subsidy will, *ceteris paribus*, stimulate crop production in the choice of acreage use. Increased crop production could result in an increased use of nutrients and pesticides. However, as shown in part A, model estimations indicate that producers will be more willing to take acreage out of production under the Agenda 2000 proposal.

In the model, the use of inputs is fixed for different crop alternatives. Model calculations therefore probably overestimate the use of pesticides and fertilisers, since the intensity effect of lower grain prices is not included. In the model the production alternative "fallow" is represented by a crop budget for sown land, for which pesticides are used when the fallow is broken. In all scenarios, except the one where no upper limit on fallow is used, the fallow can remain unbroken up to five years. In the scenario with no upper limit on voluntary set-side, fallow is permanent. From the figures on land use, presented in various tables in part A, the various uses of crop inputs are presented below.

Table 13.1 Estimated use of certain inputs (in **1000 ton** and *as per cent of the use under present policy*, except for pesticides that are expressed as the costs in million ECU and where a fixed price is used)

	Present policy	Agenda 2000 base	London scenario	French Scenario	No limit on voluntary set-aside	Intensive beef
Nitrogen (N) Total	197	181	182	182	75	181
		92	92	92	38	92
N in mineral fertilisers	155	136	136	138	33	135
		88	88	89	21	87
Phosphorus (P) total	28.4	26.1	26.1	26.4	9.0	26.2
		92	92	93	32	92
P in mineral fertilisers	14.6	12.7	12.6	13.0	0.1	12.6
		87	86	89	0.01	86
Pesticides	55.5	59.7	59.3	58.3	25.8	60.1
		108	107	105	46	108

Source: Model estimations in SASM

The effects of an increased set-aside area are particularly large for the use of nitrogen and phosphorus in mineral fertilisers. Under the different scenarios the total number of farm animals is relatively constant, as also is the calculated amount of manure for each animal. A reduction of phosphorus from mineral fertilisers is desirable from two aspects, leakage may be reduced and mineralised phosphorous is also a limited resource that often contains cadmium.

Changes in use of land

The discussion related to land use is based on assumptions of traditional production practices for all crops and the mentioned difference in the treatment of fallow, sown but broken after one to five years in all scenarios except for no upper limit in fallow, where set-aside is permanent.

Table 13.2. Estimated use of set-aside in **thousand hectares** and *in per cent of total use of arable land*.

Present policy	Agenda 2000 base	London scenario	French scenario	No limit on set aside	Intensive beef
300	370	360	250	1 780	380
17	26	26	20	93	27

Source: Model estimations in SASM

All scenarios, except where no upper limit on voluntary set-aside is determined, result in one-fifth to one-fourth of the total acreage under set-aside. These figures can be compared to the preliminary figures of 1998, which indicate that 13 per cent of the arable land in Sweden will be set-aside.

The outcome of not having an upper limit of fallow acreage is that grain production more or less will be eliminated within certain regions, in particular the Northern regions. This contradicts one of the goals in the Swedish environmental program under regulation EEG 2078/92 to maintain the cultivation of agricultural land and open landscape in the northern, or forest-dominated, regions. Accordingly, it may also be against another objective in the Swedish implementation of regulation EEC 2078/92, which stipulates that all typical agricultural landscapes with high environmental and cultural values in all parts of Sweden shall be maintained. The impact that an upper limit will have from an environmental point of view cannot be overemphasised.

Sown acreage

Given that the chosen rules for set-aside are fulfilled, i.e., that fallow is sowed, a number of positive environmental effects follow and there are few negative physical environmental effects of setting acreage aside.

Fallow may, compared with grain production, reduce the leakage of nitrogen from arable land. Absolute levels vary a lot depending e.g. on soil and weather conditions, but the figures for annual average leakage may be reduced from levels in today's grain production of about 20-30 kilo/hectare and year to somewhere around 5-20 kilo/hectare and year for fallow land. The reduction is continuous over a couple of years, but will be reached faster in areas where the soil rapidly drains water, such as the sandy soil types in Halland, in south-western Sweden. This soil type is dominating in areas with heavy leakage of nutrients to coastal water. The actual effects on water quality therefore depend on the regions in which land is set-aside. A relatively large share of the land that is set-aside is found in model region 9s, in all scenarios. This area is of particular interest since it

is here that the negative effects of eutrophication are most intensive. Decreasing the acreage used in production in this area may result in significant improvements of water quality, but for this to be achieved the reduction in leakage must be stable for many years.

Acreage set aside improves the soil structure and humus content, which improves conditions for future production. Even if the acreage has been set-aside for a number of years, it can easily be used for production again as long as the soil is kept free from larger trees. The fertility of the soil is maintained even if trees are produced, as long as they are deciduous.

Acreage not sown

Acreage not sown has initially a higher leakage of nutrients, but converges rapidly to the level of leakage from sown acreage, since the acreage is soon covered by vegetation, such as weeds. The weeds can be a future problem if the land is to be used for production again. This problem can be handled either by applying pesticides before the fallow is broken or by a rather heavy use of pesticides in the first couple of years of production, or by mechanical treatment without pesticides of the fallow before it is taken into crop production. Mechanical treatment of weeds in a long-term fallow may need lot of tractive hours and the leakage may also be rather high during the treatment period.

Biological diversity

An increased use of fallow is, in comparison with e.g. traditional grain production, positive with respect to biological diversity. Animals living close to, or in, the cultivated landscape have at least as good opportunities under set aside acreage as they have in traditionally used arable land. However, if the fallow land is rotating annually, the heavier use of pesticides will counteract these positive effects to an unknown degree.

Positive landscape values

The use of land not only affects the well-being of the environment, also human well-being is affected. Large areas of fallow land may be regarded as something negative, in comparison with a diverse landscape and a maintained level and use of valuable historical and cultural environments. While no survey has been undertaken to measure the experienced cost of set-aside in relation to traditional land use, intuitively it may be seen as something negative. Drake (1992) estimated that Swedish citizens were willing on average to pay 54.3 ECU per hectare to ensure that half of the

total acreage was not converted to forestry. Political goals also stress the importance of the agricultural landscape in Sweden; it should preserve nature and cultural values.

Grazing cattle

One of the important environmental goals related to Swedish agriculture concerns bio-diversity and thus grazing is essential. It should be pointed out that in the comparison of different scenarios the present policy is the base scenario. Estimations of farmers' optimal adjustments to this policy indicate a lower number of suckler cows and a reduced total number of cattle, compared with preliminary figures for 1998. Looking at the regional figures, the estimated reduction of cattle should be concentrated to Southern parts of Sweden. The reduction of cattle implies that a large number of natural pasture in these regions may be difficult to maintain. Figures that follow will, though, compare different scenarios with the present policy scenario.

The estimated net effects of Agenda 2000 on the number of grazing cattle and milk cows are relatively smaller than the effects within the grain sector. Table 13.3 lists the total national acreage of well-maintained acreage under the different scenarios.

Table 13.3. Total national acreage well maintained (1000 hectares, current use is 442 000 hectares)

	Present policy	Agenda 2000 base	London scen.	French scen.	No limit on set aside	Intensive beef
Maintained grazing area	337	335	341	339	350	297
per cent of "present"	100	99	101	100	104	88

Source: Model estimations in SASM

Except for the scenario with envelopes directed towards intensive beef production, relatively small changes are expected. However, despite small total changes, large regional changes are expected. These are listed in Table 13.4.

Table 13.4. Well maintained grazing land (in per cent of grazed land under the present policy scenario)

Region	Total area Today*	Present policy* 2000 base	Agenda 2000 base	London scenario	French scenario	No upper limit on voluntary set-aside	Intensive beef
1	6.4	5.9	0.84	0.83	0.83	1.08	0.81
2a	8.8	8.8	0.97	0.95	0.98	1.00	0.96
2b	8.6	8.6	1.00	1.00	1.00	1.00	1.00
3	7.9	7.9	1.00	1.00	1.00	1.00	1.00
4	12.3	12.3	1.00	1.00	0.85	1.00	0.86
5a	91.7	89.1	1.03	1.03	1.00	1.03	0.92
5b	110.2	99.5	1.10	1.10	1.10	1.01	0.95
5c	49.4	24.7	1.34	1.40	1.50	1.23	0.92
9m	83.3	41.1	0.76	0.77	0.76	0.77	0.72
9s	63.5	39.5	0.70	0.79	0.81	1.33	0.69
Total	442.1	337.5	0.99	1.01	1.00	1.04	0.88

* Total area today and estimated use under present policy in thousand hectares.

Source: Model estimations in SASM

In the small region 5c, the number of cattle, and therefore also the use of natural pasture, increases in all scenarios, compared with the estimated effects of present policy. On the other hand, the estimated use of natural pasture is still lower than it is today, also in region 5c. Large reductions can be expected in regions 9m, 9s and to a smaller extent also in region 1. In regions 9m and 9s, fertile land in southern Sweden, the expected drop can be explained by lower beef prices and the fact that these regions do not qualify for some of the Swedish environmental programs related to natural pasture.

Air

Relatively modest changes in estimated amounts of manure imply that the changes in released ammonium are relatively modest as well. The changes are modest also for methane. Since ammonium and methane emissions mainly come from cattle, national modest figures may conceal larger regional differences. The estimated reduction of the number of cattle indicates regional reductions of ammonium and methane emission in regions 9s and 9m, where the cattle concentration is highest today.

The use of fuel is significantly lower in several of the scenarios, especially if no limit is set on fallow. This infers decreased emissions of

several substances, such as carbon dioxide and nitrogen oxide. Absolute and relative quantities of the different emissions are presented in Table 13.5.

Table.13.5. Air emissions, in 1000 tons for ammonium and methane, 1000 litres for fuel and as per cent of estimation under present policy

	Present policy	Agenda 2000 base	London scenario	French scenario	No upper limit on voluntary set aside	Intensive beef
Ammonium	51.9	97.6	98.8	97.6	96.9	98.2
Methane	150.6	97.6	98.9	97.6	97.5	95.6
Fuel	263.1	92.1	96.0	92.1	44.1	91.9

Source: Model estimations in SASM

Water

Nitrogen and phosphorus are applied in all crop production. There is a natural flow of nutrients, called the natural background leakage. Human activities not only affect this leakage, they also create their own. In modern Swedish society, the main sources of nutrient emissions are agriculture, industries, municipalities and traffic (Frykblom 1998). Leakage from agricultural land causes an increased growth of algae and higher plants. However, it is only up to a certain point that there exists a positive relation between production intensity in the biological mass and the amount of nutrients. Besides massive algae blooming, high production intensity can result in conditions that make it difficult for many species to survive. Eutrophication and its symptoms is an almost annual phenomenon in Swedish coastal waters. Besides affecting recreational activities, the fish populations are also negatively affected. Furthermore, high concentrations of nutrients in ground water are carcinogenic, but this is not a real problem in Sweden.

Since the problems of nutrient run-off differ between regions, it may be of interest to study the changes for each region.

The amount of nitrogen leakage to lakes and seawater is relatively constant in most scenarios, except for the scenario with no limit on set-aside. The relative changes of phosphorus are believed to be approximately equal to the changes of nitrogen, see table 13.6. Despite the relatively stable leakage of nitrogen between the scenarios, the regional differences are larger. Figures for the northern regions are missing. Estimations are based on fixed regional relations between leakage and crop choice. Results are listed in table 13.6.

Table 13.6. Regional changes of nitrogen leakage to water, in 1000 tons for present policy and in per cent of that for other scenarios

	Present policy	Agenda 2000 base	London scenario	French scenario	No upper limit on set-aside	Intensive beef
4	1.4	100.1	103.4	98.7	91.0	136.4
5a	2.8	102.7	103.7	106.4	108.7	105.2
5b	4.5	100.8	100.5	116.5	96.5	99.9
5c	1.8	98.4	96.4	93.1	85.9	99.2
9m	13.9	91.3	91.3	93.8	38.7	91.0
9s	17.5	101.4	101.5	100.5	66.6	101.4
Total	41.9	97.9	98.0	100.0	65.0	99.1

Source: Model estimations in SASM

The largest decreases occur in region 9m, which together with region 9s, has a high degree of eutrophication in its coastal waters.

13.4 Environmental programs

As mentioned, the Swedish environmental program related to agriculture now contains 12 sub-programs. Most of these programs will be influenced by the Agenda 2000 proposal. In the model estimations, none of the environmental programs have been changed. A group of programs is directed towards different land uses that, from various aspects, can be seen as environmentally desirable. All these programs will become more attractive in relation to grain production. This far, some programs related to different measures towards reduction of nutrient and pesticide leakage have had a much lower attendance than the stipulated goals. For those programs, the Agenda 2000 proposal may be favourable. On the other hand, the stronger incentive to set land aside may reduce the positive effect on these programs from the lower grain prices. Increased fallow will, though, probably lead to some effects that are desirable also under the environmental programs directed towards lower leakage.

If the program supporting organic production is kept unchanged it ought to be more attractive, at least for organic grain producers, since traditional grain farmers are not fully compensated for the reduced intervention price.

Other environmental programs focus on open landscape, maintenance of natural and cultural values and continuous use of natural pasture. All these programs will be affected by the estimated changes in the number of cattle, especially the programs for natural pasture and open landscape.

Swedish goals concerning bio-diversity may be difficult to fulfil if the number of cattle follows the estimated changes.

13.5 Summary and conclusions

From the model analysis the most important assumption concerns fallow. The outcome of a number of environmentally related parameters strongly depends on the chosen restrictions concerning set-aside. Not only are estimations of changes in land use strongly dependent on the possibility for farmers to set-aside their total land, but the relative profitability in many of the sub-programs in the Swedish environmental program for agriculture is also strongly linked to the rules for fallow. If farmers are allowed to set the whole farmland aside, and still qualify for direct payments, this option will be more profitable than most environmental programs. Sown fallow, that is not broken for many years, is also positive in a number of environmental aspects, such as lower nutrient leakage, less use of pesticides, improvements of the humus content, more favourable conditions for a number of the endangered species, etc. compared with traditional agricultural cultivation. On the other hand, a high share of fallow land may reduce the number of active farmers and threaten the continuous upkeep of natural pasture, which is of ultimate importance for the biodiversity in Sweden.

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14 Impact on consumers and taxpayers

In this section Agenda 2000 and other scenarios will be scrutinised from taxpayers and consumers point of view - often neglected in the formation of agricultural policy. Figures in table 14.1 below show how welfare for different actors may be influenced by the scenarios.

Table 14.1 Estimated welfare changes under different scenarios

	Present policy	Agenda 2000 base	London scenario	French scenario	No limit on voluntary set aside	Intensive beef
Producer surplus	0.00	-0.54	-1.25	-1.74	1.64	-0.78
Coconsumer surplus	0.00	2.85	4.57	2.85	2.71	2.85
Taxpayers	0.00	-2.29	-3.00	-0.90	-2.49	-1.93
Sum	0.00	0.02	0.33	0.21	1.86	0.15

It should be noted that the table excludes effects on the environment and a number of other welfare effects

Source: Model estimations in SASM

What is meant by changes in producer and consumer welfare? Producer welfare (or surplus) is farmer net revenues after deduction of costs for labour, machinery, fertilisers etc. This residual is the remuneration for land, buildings and the "producer rights" (i.e. quotas). The first row in the table above shows changes in producer surpluses for the scenarios as differences to the base run, i.e. the unchanged policy run.

EU food boarder protection raises domestic prices above the world market level. Reducing boarder protection is to reduce the consumption "tax" that CAP implies. Lower food prices increase consumer welfare through more purchases of food as well as other commodities and services. Changes in consumer welfare in the table above is a measure of this improvement in consumer well-being.

Farmers are partly compensated for lower prices by direct payments that are financed through taxes in the third row in the table. The main part of direct payments are transferred via the EU-budget and financed through

raised taxes in member countries. Citizens have to pay raised taxes, which reduce their room for private consumption.

The table above indicates that the most profitable option for farmers is to set most arable land aside, which is permitted in the case of no upper limit on set-asides. The "French scenario", in which direct farmer payments may be the lowest, seems to be least attractive for the farmers. But as noticed below other forms of support are included in that proposal. Close to that, from the farmer point of view, is the "London scenario", in which milk price reductions are twice as high compared to the proposal in Agenda 2000.

The London scenario seems to be the best for consumers since prices are reduced the most. In the set-aside scenario without an upper limit, the Swedish grain production is reduced, making Sweden to become a net importer of grains, something that raises domestic prices for grains and egg commodities. That means a less attractive scenario for consumers than the other scenarios.

The French option seems to be the best for taxpayers. It should be noted, however, that the saved amount of direct payments (0.12 billion ECU) is supposed to be used for environmental support and rural development, something not considered in the table above. It is interesting to compare the base run with the intensive beef production run. Taxpayers gain 42 million ECU in maximising beef envelope payments to bulls instead of paying all the money to the steers. About 90 000 steers will in that case be replaced by the same amount of bulls. The producer surplus would be reduced by 28 million ECU. The difference, 14 million ECU, is a clear indication of the fact that raising steers is more costly than raising bulls.

In the set-aside scenario, with no upper limit, farmers gain 0.25 billion ECU by achieving land payments without necessarily cultivating the land. Raised taxpayer outlays for this scenario is not more than 0.02 billion ECU.

14.1 Total welfare

The fourth row in table 14.1 shows the net welfare consequences in the different model runs. The free set-aside scenario is the best one, as farmers are free to use the most profitable option, while consumers and taxpayers are modestly affected. In the London option the milk price is reduced and in the French option direct payments are cut. In both of these, farmers loose while the consumers/taxpayers gain. Net welfare is better in both, compared to the base run, as reduced support stimulates a more efficient use of resources, however small. In the intensive beef production option

the net welfare gain is due to the more efficient beef production through bulls compared with steers.

Total welfare - a deeper discussion

The model doesn't calculate all welfare effects - above all not the full consequences of taxation. In the table above, taxpayer effects are calculated as EU-budget consequences of direct payments to Swedish farmers. Swedish taxpayers, however, pay 15 per cent more to the EU-budget than what Swedish farmers get back as direct payments. For a specific calculation of Swedish welfare effects, taxes paid should be multiplied with 1.15. Doing so, all scenarios imply a negative welfare outcome, except the free set-aside scenario. The result can be somewhat modified, because Agenda 2000 also gives lower costs for intervention and export subsidies, which is an advantage to the taxpayers.

Another aspect is that taxpayer outlays only measure what is transferred from taxpayers to farmers, something that implies a kind of lump sum taxes. Taxation, however, must be done through raised taxes on commodities, labour or capital income. Doing so, a still larger tax wedge between the price and the cost of a commodity is achieved as also between the social value of a labour hour and the labourer's net wage. This implies raised social costs, as consumers and labourers, reacting on gross prices and net wages, will not behave efficiently, from a societal point of view.

Agell et. al. (1998, ch 8) show, in scrutinising the Swedish tax reform, that the marginal excess burden per extra tax revenue unit was 20.1 per cent on the average income in 1991 (one year after the reform), at a reasonable low level of the compensated labour supply elasticity - 0.11. The marginal excess burden has after that gone up as a consequence of raised taxes. The total social cost of raising the taxes with one ECU is at present, consequently, about 1.25 ECU.

Also the boarder protection - the CAP corner stone - has a marginal excess burden, like a tax, by increasing food prices in order to enhance farmer incomes. Boarder protection drives a wedge between consumer prices and world market production costs. Reforms in the CAP in order to reduce prices and compensate through direct payments have reduced this wedge. As a price reduction on food above all is favourable to consumers with a high budget share for food, the reform strategy has an appealing distributional profile. Several countries have also differentiated the value added tax to furthermore reduce the food prices, by taxing food less and other commodities and services relatively more.

The analysis shows the limited possibilities to rebalance in the tax structure from food to other goods and to labour. Distributional efforts conflict with efficiency as the fundamental tax bases are labour income

and price inelastic commodities and services, which can't be moved to low-tax countries and for which the excess burden increases with raised taxes. The burden of these taxes are mainly borne by the large group of people with average incomes.

The theoretically ideal lump sum taxes, not affecting prices or wages and not causing real changes, are hard to find in reality, but are nevertheless used in model exercises. Within DG 6 (1998, Ch 8) a study of the macro economic consequences of Agenda 2000 has recently been used to show implications for production and employment. The outcome indicates positive macro economic side-effects of Agenda 2000.

The explanation of this model result is that lower food prices decrease the over all consumer price index, which is supposed to reduce wages. Thereby, labour costs of the firms are reduced, enhancing the derived demand for labour input and leading to increased output. The government budget income side in the model only includes lump sum taxes, however, which adjusts to stabilise the public deficit ratio, i.e. without any requirements that the policy change must be tax-financed.

If the direct payments had been taken up on the budget outlay side and a realistic tax increase, on either other consumer goods or labour income, had been introduced to finance the increased outlays, the consumer price index wouldn't have fallen with the first financing method. With a labour income tax instead the increased tax wedge would have raised nominal wages and the result might have been reduced production and employment.

Sometimes a pragmatic political argument is used to replace price support by direct payments. The reason is not that this will be a better system, but it is advocated for pedagogical reasons. The replacement makes it clear that the price support functions as an income support in relation to how much land or how many animals farmers have, which may make the outcome absurd. Modulation, or even deregulation, would in this way be easier to materialise.

The argument may be true, even if it is doubtful how large the political pressure might become. Farmer direct payments and accompanying raised costs of bureaucracy are decided by the EU. The confusion in the public mind about whether the Commission, the Council or national governments are responsible for the agricultural policy relaxes the political and economic constraints (Winters, 1995). However, it can hardly be denied, that the increased visibility of agricultural transfers, that followed from the MacSharryreform, has contributed to a questioning of them, especially in the case of large payments. The proposals about modulation of payments that are included in the horizontal provisions indicate that legitimacy of such transfers is fading. In the Cork Declaration

(1996) it is stated: "Expecting that the justification for the compensatory payments of the 1992 CAP reforms will be increasingly challenged".

14.2 Beef from steers or bulls?

Beef from steers is favoured in the Agenda 2000 proposal, at the cost of beef from bulls, directly through higher headage payments and indirectly through support of production methods suitable for steers. In the base run this is enforced by directing envelope support to steers and as a consequence the steer share becomes more than 80 per cent.

Present steer share is only 4 per cent in Sweden. In spite of steer beef being so exclusive it is priced less than beef from bulls. A possible explanation is that this reveals consumer preferences - consumer prefer beef from bulls to beef from steers. Such a conclusion could be criticised, notifying that consumer preferences don't govern the present CAP price regulation system. The price difference might instead be the result of lower slaughter costs in handling large volumes compared to higher costs for smaller volumes.

Suppose that the first interpretation is correct, i.e. consumers prefer beef from bulls to beef from steers. The case might illustrate conflicts in a policy trying to satisfy several objectives simultaneously. The steer/bull example in this way highlights a basic problem in the CAP. In article 39 in the Treaty of Rome is one of the stated objectives in agricultural policy to attain efficiency in production. That is equally important as to achieve a fair standard of living for farmers and reasonable consumer prices. On top of this, other objectives concerning regional development and environment have been added to the CAP and the Agenda 2000 proposal goes even further in adding objectives to the existing policy. With "conflict between objectives" is meant that measures used to fulfil one objective have negative effects on other objectives. The political question is if they can be mitigated or eliminated through for instance institutional changes. The distribution of expanded milk quotas to regions with the highest production costs is motivated by regional ambitions. The support directed to the relatively costly steer production is an environmental effort.

Beef from steers demands more financial support from taxpayers without raising farmer producer surplus in the same way. A steer grows 30 per cent slower than a bull, it eats more, uses more stable area, demands more labour input and the slaughter weight is nevertheless 10 per cent lower than the bull's. Beef from steers costs about 0.8 ECU more per kilo to produce than beef from bulls. But, the steer is preferred from an environmental point of view. Living longer than bulls before slaughter, a

larger stock of steers is needed to produce the same amount of beef. Agenda 2000 proposes a rich variety of support measures to low yielding pasture, to keep the landscape open, to reduce nitrogen leakage and to enhance biological diversity. Steers are well suited for that kind of measures.

Figure 9.3 (chapter 9) clearly shows the implicit importance of the new objectives in the Agenda 2000 proposal, making it urgent to highlight the built-in conflict. The objective to produce high quality beef to consumers is evidently low ranked if 80 per cent of farmer revenue is paid for other purposes. Incentives in breeding will become influenced by these purposes rather than to satisfy consumer demands for high quality beef.

EU citizens probably have a willingness to pay for a raised environmental quality. With Agenda 2000 they, however, risk to pay for this as consumers achieving low quality beef. As taxpayers they pay through higher direct farmer support. Persons environmentally concerned probably demands the higher environmental quality they pay for. The conclusion is that the centralised policy is running the risk of becoming involved in serious conflicts between objectives, if it, on top of food consumer preferences, also intends to satisfy a wide range of other objectives.

The underlying question is if local, regionally and environmentally oriented objectives are best attained through taxpayer financed support governed by a centralised agricultural policy determined in Brussels. Local objectives might be better managed in decentralised organisations. The envelope idea is one effort to satisfy such demands, but it seems to be of minor importance in Agenda 2000 as rules are predominantly rigid.

14.3 Market or regulation in an efficient provision of environmental benefits?

Most probably environmentally concerned taxpayers/consumers find environmental improvements worth paying for, but they surely also demand that the improvements are effectuated. If this is generally thought, market solutions often make the job. Examples can be found on the food markets. Well-known is the International Federation of Organic Agriculture Movement, IFOAM. It decides upon rules for farming practices regarding which commodities to accept as being labelled ecological and how to control that producers don't deviate from accepted methods of production. In Sweden KRAV (Controlling Agency for Ecological Production) and Svenska Demeterförbundet apply those rules in modified forms. According to EU prescriptions it must be the national

government that establishes or elects such control organisations. Sweden has chosen the latter form.

As it normally is hard to see, smell or taste to find out if a commodity is ecologically produced, the controlling organisation is per se a warrant for that established rules have been followed. As costs are higher in ecological production, there is always an incentive for producers to cheat. Consumers, however, easily lose confidence for producer and controlling organisations if media reveal misuses or scandals. To counteract this possibility producers spontaneously develop efficient controlling methods, something that also contributes to lower costs in controlling organisations.

Consequently, it is not the EU rule (that controlling organisations should be the state itself, or elected by the state) that legitimates the controlling agencies among consumers. The EU rules could probably be an effect of the fact that large amounts of money from EU and national ecological support programs are directed to ecological farming. On the market, consumer attitudes must be based on confidence for products distributed via the typical market channels.

In Sweden, it has been easier to develop market solutions for ecological food than for environmentally nice food in a more general context, i.e. food that preserves the pasture landscape and food suitable for a closed ecological system, etc. It may be due to that ecological food are easier to link to individual desires, e.g. individuals wanting to consume food without poisonous residuals and heavy metals to safeguard their own health.

The preserved landscape is available for many people simultaneously, i.e. it is more of a public than a private good. Nevertheless, markets may be organised to deliver them as well. During recent years, markets for fair food have been developed in Sweden with different brands and related control organisations. Consequently, markets may even satisfy altruistic desires. In buying a fair-labelled commodity consumers pay a higher price to support small independent and collectively owned coffee plantations in developing countries.

In scrutinising the environmentally oriented proposals in Agenda 2000 it is important to note that ecologically or fair labelled food commodities don't necessarily taste less good. Taste is an important commodity attribute for organisations fighting for expanded market shares. Consequently, taste is important for market governed organisations, but not necessarily for market regulated commodities, like the previous example of beef from steers indicated.

The problem with farm regulations like Agenda 2000 is that they don't guarantee that the more expensive beef from steers improve environment accordingly. Even if farmers have applied and received all

the requested support for the desired agricultural production there are incentives to produce something else. It may be more profitable to raise the animals on ley land rather than on pasture and to feed them by grains rather than hay. The risk in being detected is small in doing so as the probability in being controlled is only 5 per cent. Punishment costs are small compared to profitability in cheating. On the other hand, the social punishment for a cheating KRAV-farmer is high, because all the other KRAV-related farmers will directly lose money when the credibility of the label is questioned, which is not the case for a farmer cheating on EU rules. Besides, the low prestige in EU rules may make the cheating almost forgivable.

In market governed control organisations there is a collective incentive for farmers to control each other, as they know that consumers would vote with their feet and stop buying the beef if cheating is detected. In the regulated market consumers can't do this as the beef is anonymously sold on the market. There is no actor in this case offering his honour in guaranteeing that no cheating is done.

Policy makers and consumers/taxpayers should ask whether the regulation system advocated in Agenda 2000 is a good instrument to enhance environmental demands. Conflicts in objectives and missing confidence may counteract these ambitions. Examples given show that supporting market oriented organisations may better adjust to environmentally interested consumers' willingness to pay for the environment.

The MacSharryreform has increased and Agenda 2000 will increase the system costs of an agricultural policy directed to achieve more objectives. The change-over to farmer direct payments, a broadening of environmental and rural development policies demand an increased, more heterogeneous bureaucracy to decide upon supports, follow up, control and develop the systems and scrutinise project applications etc. System costs should be lower in the market controlled organisations as the incentives for self control and efficiency are stronger there. Such costs are generally not considered in discussing agricultural policy options.

14.4 Are system costs negligible?

The Swedish National Board of Agriculture annually calculates Swedish government budget costs used to administrate the EU agricultural policy. Below some figures for year 1997 are presented from the last report (SJV, 1998).

In 1997 the total administrative outlays by Swedish government authorities, particularly the Swedish Board of Agriculture and the 23

County Administrative Boards, were 64 million ECU. Almost two thirds had to do with farmer direct payments (land, animals and environment) and regional support payments of totally 771 million ECU. The cost of every ECU paid as environmental support was 0,13 ECU and the (of similar size) structural and regional support needed 0.05 ECU and the half as large animal headage payments about 0.044 ECU for one ECU to be paid out to the farmers. A good half of total support went to land, with a pay out cost of 0.027 ECU per ECU in farmer support. In addition to that there were also some costs to develop the payment systems.

These figures do not actually show the total administrative costs to decide about, develop, analyse and finally, pay out the support. Since figures only cover government authorities' costs there are additional costs of the obligations concerning the central administration in Brussels. Also, in the Ministry of Agriculture, in all Swedish local authorities, in the food industry etc., administrators work with problems related to the direct farmer support. These costs should be included in calculating the social costs of the administrative burden connected to the support policy.

The costs farmers have in applying for the support and reporting about how it is used should also be included. The figures from SJV (1998) show that about 400 persons at the County Administrative Boards were demanded at an annual cost of 70 000 ECU per person, including all related administrative costs in controlling about 75 000 enterprises. On average these boards used little more than one working day per controlled enterprise. If farmers use 10 hours of work for this at a cost of 17 ECU per hour and for 75 000 farms, the total annual cost would be 13 million ECU.

The aim here is not to discuss the level of these costs or to scrutinise the efficiency of the administrative system. For the tax payer the support payments per se mostly is a much higher cost than the cost of the administrative burden. The economist doesn't consider the administration in itself as the big social cost with the agricultural policy. They arise instead as an effect of the political task to regulate prices and manage production by quotes, subsidies, charges etc. The scrutiny in this chapter is limited to system costs implicated by Agenda 2000.

The message in Agenda 2000 is to integrate new employee demanding tasks in the organisation, for example in the environment field. The environmentla support has, as shown above, exceptionally high costs per support ECU paid out. It's already about one third of total administrative outlays and half the costs for paying out supports. Here has also the risk of built-in conflicts between different objectives been illustrated and also how to avoid or alleviate them in some cases through support to establish market managed organisations.

14.5 Summary and conclusions.

This chapter has scrutinised the implication of the Agenda 2000 proposal from the point of view of total welfare. Taking into account the distortions that follow from increased taxation due to the need to pay for higher direct subsidies, the welfare implications are less favourable and may even turn to be negative for a country that is net a contributor to the EU budget. The efficiency of the market versus government regulations in provision of environmental goods was also discussed. Without aspiring to provide a full coverage of the subject, some conclusions can nevertheless be drawn. Market appears to be efficient in provision of some environmental benefits. Hence, market-led provisions should be encouraged. Payments of environmental support are costly from an administrative point of view. These costs need to be taken into account while evaluating the reform. Moreover, there is an urgent need to find a new and more cost-effective design of environmental payments and environmental contracts between the farmers and the society.

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15 Rural development regulations and theoretical foundations of rural development policies

15.1 Changes proposed in Agenda 2000

In spite of the fact that Agenda 2000 identifies rural development as a major challenge for the future, the suggestions presented in Agenda 2000 are mainly limited to reorganisation of existing measures within the present Community policy framework. The proposed new rural development policy should accompany and complement the other instruments in the common agricultural policy and contribute to the policy in regions whose development is lagging behind (objective 1) and regions facing structural difficulties (objective 2) as defined in the proposed new structural fund regulation.

For the structural policy the proposal is to maintain the ceiling on structural expenditure of 0.46 of EU GDP, for the period 2000 - 2006. The proposals are to reduce the present seven Objectives to three, two of which are regional-based and the third, dealing with human resources, is horizontal.

Objective 1 regions, regions whose development is lagging behind, are to be redefined more rigorously in terms of the threshold of 75 per cent of average per capita Community GDP and in terms of their boundaries and financial allocations.

A new Objective 2 on areas undergoing economic and social conversion should be defined as those which include areas undergoing socio-economic change in the industrial and service sectors, declining rural areas, urban areas in difficulty and depressed areas dependent on fisheries. The indicative population covered by this Objective in the case of industrial areas should constitute about 10 per cent of the population of the Community, 5 per cent in the case of rural areas, 2 per cent in case of urban areas and 1 per cent in case of fisherie's areas. The maximum possible reduction in population covered by the new Objective 2 will be

limited to one-third as compared to the coverage under the present Objectives 2 and 5b.

The simplification is also envisaged for Community initiatives which are proposed to be reduced from current 13 to 3, one of which will continue to be for rural development, such as the LEADER program and 5 per cent of the total commitment appropriations available should be devoted to the Community Initiatives. (For the period 1994 - 1999, it was 9 per cent.)

The new rural development regulation will replace the EAGGF Structural Fund Regulation, four objective 5a regulations, the three accompanying measures regulations, and the regulation on structural forestry support. The fusion under a single legal framework for rural development support will constitute a simplification of Community legislation.

Rural development measures concern in particular:

- support for structural adjustment of the farming sector (investment in agricultural holdings, establishment of young farmers, early retirement),
- support for farming in less favoured areas,
- training,
- remuneration for agri-environmental activities,
- support for investments in processing and marketing facilities,
- forestry and
- measures promoting the adaptation of rural areas insofar as these are related to farming activities and their conversion.

Measures in favour of producers' organisations have been reassigned from rural development to market policy.

There are some important new elements in eligibility criteria for the different measures.

- Only certain basic eligibility criteria are proposed to be laid down in the framework regulation. Details will be decided at programming level, which means greater flexibility and subsidiarity.
- Current eligibility criteria for support in Less Favoured Areas will be modified to maintain and promote low-input farming systems and in order better to integrate environmental goals into rural development policy. Targeted agri-environmental measures will be aimed more specifically at achieving the objectives of protecting the environment and maintaining the countryside.
- Coherence between rural development measures and other instruments of the Common Agricultural Policy or other Community policies will be ensured to avoid overlapping between instruments.

Practical implications of the proposed changes, for national rural development policies, are as follows: for all rural areas outside Objective 1, rural development policies will be co-financed under FEOGA Guarantee section. In areas inside Objective 1 the rural development measures policy will be financed by FEOGA guidance except for existing accompanying measures and LFA compensations. The current approach of integrated rural development will continue. The most fragile rural areas outside Objective 1 will be eligible under the new Objective 2. Here, the rural development measures will be integrated in the same programming framework together with the measures eligible under the regional and social funds. In all other rural areas, Member States will have the possibility of inserting into the single framework: agricultural structural measures (like current 5a), rural development measures (like current 5b), agri-environmental measures, reforestation schemes, and compensatory allowances for less favoured areas.

In short, the most important changes with respect to rural policy are that the policy will cover all rural regions and that there will be single rural development programs for all accompanying measures and for other rural development measures in areas outside objectives 1 and 2 (financed by FEOGA). Both changes follow recommendations of the Cork Declaration on a simplified and all-embracing rural policy. In addition, some minor changes and simplifications of existing regulations are proposed:

- Support to producer organisations, to extension services and to bookkeeping have been changed (or partly removed).
- Support to investments (art. 4 - 7) has been simplified and changed. The concept reference income has been removed. Economic viability is a main criterion for support. The support is conditioned on compliance with minimum standards regarding environment, hygiene and animal welfare. The highest level of support to investment is left to the discretion of MS.
- Support to young farmers (art. 8) has been simplified and maximum level of the subsidy is increased by 70 per cent to 25 000 ECU.
- Rules for early retirement for farmers (art. 10 - 12) have been simplified, including eligibility criteria, removal of demand that land has to be allocated to farms increasing size etc. The economic viability of the transferee's holding must be improved within a period and in compliance with conditions to be defined in terms of in particular, the transferee's occupational skill and competence and the surface area and volume of work or income, according to the region and type of production.
- Support to LFA (art 13. - 19) will be paid per hectare and conditioned on fulfilment of environmental standards. LFA with special handicaps,

especially related to environment, can be extended to 10 per cent of the land area of the State concerned.

To evaluate proposed changes of rural development regulations is more difficult than with market regulations, where farmers' responses to different levels of prices and subsidies could be assessed, relying on an agricultural sector model. Usefulness of some of the proposed changes such as policy integration will, at the end of the day, have to be demonstrated in a practical implementation integrated approach. Accordingly, the ex-ante evaluation has to depend more on theoretical considerations. Below, an attempt is made to identify theoretical foundations of rural and regional policies and to relate them to the actual policy. In addition, the analysis focuses on internal consistency of proposed policy measures.

15.2 Conceptual issues

The very concept of rural development is not entirely clear. Thompson (1997) distinguishes three different interpretations. In one sense, "development" suggests *investment* to change and improve (make more productive in value-added terms) the capital base (physical or human) of socio-economic activity. A second interpretation of "rural development" might be better termed "rural support", i.e. more or less continuous assistance to people and enterprises in areas where it is felt that conditions will deteriorate unacceptably without such help. A further meaning of "rural development" is more social in nature, and focuses on the perceived need for empowerment and activation of rural communities so that they can organise and obtain higher living standards, by both social and economic initiatives. Thus interpretation connects more to participatory and bottom-up approaches and activities within the framework of the LEADER program. The analysis in this chapter will concentrate on the first two interpretations as they are more closely related to the functioning of the market.

Rural development regulations, as listed above, cover seven major categories of policies. This broad coverage creates confusion as policies which, as a rule, are not primarily seen, as rural development policies are included. Moreover, theoretical justification of policies in those seven categories differs considerably between categories. This adds to confusion as well. Support to agro-environment constitutes a good case in point. Those policies account, in the case of Sweden, for more than sixty percent of budgetary spending and constitute, accordingly, the most important measure under rural development regulation. Although remuneration for

agri-environmental activities may be vital for developing rural regions, such measures are more usefully perceived as environmental policies. Accordingly, the environmental policies are discussed in chapter 13.

Relating the measures included under rural development regulation to the two definitions of rural development presented above, it can be observed that both interpretations can be found. Support to farming in less favoured areas can be seen as rural support whereas support to investment and marketing or measures promoting adaptation of rural areas are measures of a more "developmental" nature.

Regional policy is often associated with support to declining industrial areas and seen as distinctly different from rural development measures. Whether those policies should be seen as different depends on the definition and policy coverage of the respective policy. Narrowly defined, rural development policy having main focus on enhancement of prosperity of rural region and being multi-sectoral in coverage and territorially designed could be seen as similar to regional policy focusing on regional development in general (rather than on problem-only regions). Swedish regional policy before the accession evolved in this direction as unemployment and structural problems had started to emerge even outside previously disadvantaged regions.

Accordingly, it could be useful to perceive a rural development policy as regional policy for a special type of regions, namely rural areas. This is underlined by the fact that, under the new Objective 2, regions strongly affected by structural change in agriculture are placed together with other regions stricken by structural change. However, keeping strictly to existing regulations, rural development regulations cover several horizontal measures that do not have much in common with regional policies.

Regardless of the classification, there is a need for justification of rural policies against some idea of "specificity" of rural regions, and against a notion of fairness especially as urban problems constantly growing in relative size, both economically and demographically (Thompson 1997). Moreover, changes in rural and regional policy, as envisaged in Agenda 2000, seem to some extent be at odds with each other. Reform of Objective 1 is based on the principle of concentration of funds to the most needy regions. At the same time those rural policy measures that previously were confined to objective 5b regions are now proposed to be extended to the entire area of the Union.

It is not easy to define the concept of a rural region. Concepts such as rural or urban cover several different characteristics. Depending on what is emphasised, different delimitations can be obtained, (see e.g. SOU 1997: 74 for further discussions). The OECD (1994) defines rurality in terms of population density. Communities are classified as rural if they have population density below 150 persons per square kilometre. Regions

having more than 50 per cent of the population living in rural communities are seen as predominantly rural. The traditional definition used in Sweden was based on a dichotomy rural - urban, where urban is any agglomeration of more than 200 persons. The concept rural region is not defined in rural development regulations.

15.2.1 Rural development - in search of a theoretical framework.

Because, as argued above, regional and rural development policies are in some sense related and because rural problems differ depending on whether rural regions are located in prosperous or backward regions, it may be useful to start the discussion with an analysis of rural development theories. Understanding of the underlying economic processes that generate regional disparities is fundamental for a proper design of a policy that aims at producing a remedy. Unfortunately, there is no universal agreement about why some regions and, indeed, nations do grow faster than other. A short review of the literature is provided below.

Neo-classical models

Internal EU factor price equalisation is expected to follow from trade and in particular the EU market, according to the traditional *trade theory*. The new theory of trade predicts, however, that the internal market may be insufficient for achieving regional convergence. Free trade and increasing capital mobility may increase rather than reduce regional differences. This may arise if firms are operating under increasing returns to scale. If cost of trade is reduced, firms will exploit economies of scale and concentrate to fewer locations and, moreover, locate to the market in central as opposed to peripheral regions (CEPR, 1995).

Endogenous theory of growth

Romer (1994) points also to the possibility that the poorer regions of the EU could continue to grow at slower rates than richer regions. The new growth theory focuses on accumulation of knowledge by forward looking profit-maximising agents as the key mechanism behind technological change. According to the theory, trade could lead to growth divergencies if countries/regions specialise in sectors with different dynamic externalities. The "old" (neo-classical) theory of growth implies, on the other hand, that the poorer nations/regions will catch up since marginal productivity of capital declines as more capital is accumulated.

There is a growing empirical literature on convergence among European regions as well as on impact of regional policy on the convergence. The implications are highly policy relevant. A spontaneous and fast convergence would obviously weaken the case for regional policies. Such a case would, on the other hand, be strengthened if it could be shown that disparities decrease in response to regional measures. A correct assessment of convergence sheds, moreover, some light on the relevance of new growth models. Romer argues that alleged lack of convergence across economies represents strong evidence against the neo-classical growth theory and in favour of his theory of endogenous growth.

Work of Barro and Sala-i-Martin (1992) indicates that a pattern of convergence has been emerging across European regions. The speed of convergence is, however, low, around 2 per cent per year. Amstrong (1995) has re-examined the same model utilising a larger sample of data (for all pre-1995 members of the EU). The estimates suggest that results of Sala-i-Martin (1992) have to be reduced downwards and that convergence rates have been reduced in the 1970s and 1980s compared with the 1960s. Neuven and Gouyette (1994) found that in the 1980s a process of divergence between North and South emerged. The authors also argue that their results lend support to the view that trade can exacerbate disparities. Fagerberg and Verspagen (1996) find that after a slow and but steady reduction of disparities in GDP per capita across Europe, there are now some signs of reversal. EU support to R&D and investment only have positive impacts on growth in relatively prosperous regions. In regions with high unemployment, those policies seem largely ineffective. Sala-i-Martin (1996) argues that the fact that the speed of convergence is surprisingly similar across data sets indicates that public policy plays a very small role in it. Bergström (1997) finds that a convergence between richer and poorer regions in Sweden has taken place, but regional policy has not significantly affected this process.

Management literature

Theories of competitiveness emanating from management literature aim at understanding why places that occupy similar spatial positions exhibit different economic structure and develop differently. Porter's *Competitive Advantage of Nations* (1990), *locus classicus* in the field of international competitiveness is often invoked in discussing competitive advantages of regions as well. Porter claims that competitive advantage can be created and that certain conditions, which are embodied in his "national diamond model", influence its creation. In this dynamic approach, four sets of variables, i.e: factor conditions, demand conditions, related and supporting industries and firm strategy, structure, and rivalry constitute four "horns"

of the diamond. The Porterian analysis of competitiveness emphasises strongly a continuously high level of technical and social innovation. However, the work of Porter and his followers is based on generalisation from case studies. It remains to be seen whether those generalisations hold for other cases. Consequently, the work has been criticised for having weak empirical foundations (for a discussion see Abbot et al).

The analyses by Cappelin (1992) of effects of support programmes in Southern Italy, probably the most subsidised region in Europe, point in the same direction as the work of Porter. The studies indicate that the long-term effects of extensive subsidisation policies may have been counterproductive. Cappelin argues that the programmes contributed to a slowing down the process of innovation and hampered the ability to adapt to new circumstances.

Agglomeration and rural development

Rural problems connect to allocation of activities across the space. There is hardly a special rural development theory. However, since rural areas can be seen as non-urban, urban economics can contribute to understanding of the process since decreases of concentration elsewhere mirror clustering of activities in some other places.

Scale economies are a historical rationale for existence of cities. Without the existence of economies of scale in production, activities would disperse to save on transportation costs (Quigley, 1998). Many activities display (internal) economies of scale over some range i.e. cost curves are U-shaped. In addition, firms may benefit from external economies of scale, i.e. achieve cost savings when operating in the context of a larger local economy by drawing upon common pools of space, labour, materials and services (Quigley, 1998). As a result, there are socially increasing returns, as aggregate production rises, even if production from individual firms exhibits constant returns. Such external economies of scale, agglomeration externalities, may result from reduced costs of transactions, information or increasing the productivity of firm. All benefits of cities come ultimately from reduced transportation of goods, people and ideas (Glaser, 1988). Decreasing costs may occur due to ready availability of specialised workers in accounting, law, advertising and other technical fields. Better matching between worker skills and job requirement contributes to reduction of transaction costs. This decreases costs for workers with differentiated skills. Moreover, thick labour markets insure workers against industry-specific shocks.

Scale economies can be found in consumption as well. Public goods and parks constitute good examples. Shared inputs in consumption include networks for disseminating information about cultural activities, facilities

for such activities. More differentiated consumer goods can be found in larger cities. Under reasonable assumptions the utility of a household in a city will be positively related to the aggregate quantity of local goods it consumes and number of types of these goods that are available in the economy (Quigley, 1998).

There are, however, dispersion forces that counteract agglomeration. First, competition for land will emerge around the central places. Other dispersion forces which may be envisaged are limited agglomeration economies for some type of economic activities and competition between the firms (Krugman, 1991). High costs of living and of commuting is obvious disadvantages of urban life as well as pollution, crime and urban anonymity.

Origin of rural problems

Looking especially at the rise of rural problems, the process of growth has been accompanied by out-migration from rural areas and the spatial concentration of activities and population. The economic mechanism involved in shaping the development, including economies of scale, preference for variety, agglomeration externalities and transport costs, reinforced through the effect of circular and cumulative phenomena (Schmitt and Goffette-Nagot, 1997). The tendency for a smaller share of income to be spent on food as an economy grows, combined with rapid technological advance in agriculture, resulted in decreasing demand for labour in the sector. The labour has tended to move to activities, in particular industry, which were characterised by greater economies of scale, which also were inclined to benefit from agglomeration externalities. Decreasing costs of transportation of goods also facilitated this development. Increased shares of spending on non-agricultural goods contributed likewise to a desire of households to move to towns or cities, where a larger variety of goods was available. The result of all aforementioned factors was a persistent rural out-migration, in particular from peripheral regions.

However, in numerous rural areas shifts in the urban/rural migration pattern occurred in the 1970s. Migration towards the centres has been replaced by net migration towards peri-urban and rural areas. Diseconomies of agglomeration, and among other thing congestion, contributed to increasing attractiveness of rural regions. Other important factors have been the reduction of travelling costs, through better roads, combined with the desire for home-ownership and growing demands for space and for certain rural amenities. The level of commuting and commuting zones have widened considerably due to improved traffic facilities. Moreover, in several countries dynamic rural regions, although

not a majority, perform better than the more urbanised but lagging behind regions. As a result the structure of many rural areas is now similar to that of urban areas.

15.3 Development of rural regions in the future

The complex interplay between agglomeration forces and dispersion forces appears to have changed over time, as demonstrated above. Proper identification of the trends affecting the future development of rural regions would make it easier to design a suitable rural development policy. Predicting the future of rural areas requires an understanding of unfolding costs and benefits of urban vs. rural life.

The countryside remains a relatively cheap location for some activities such as tourism, food processing, as well as necessary space for others such as mineral extraction, new forms of primary products e.g. energy crops and biomass. Small-scale business structure and a culture of entrepreneurship may provide conditions for rapid economic adjustment. In addition, the work force and the working of the labour market may prove attractive to certain types of firms (Blanc, 1987).

Technological advances, the Single Market and globalisation will continue to put pressure on the traditional activities of the more disadvantaged regions, particularly in terms of manufacturing and service scale. Furthermore, fiscal pressures - likely to be intensified within the European Monetary Union - are putting great strain on central financing of the public sector, which now plays a critical role in maintaining the economic life of rural regions (Thompson 1997).

There is a general shift to a service-based economy in which the information and knowledge-based industries are playing an increasing role, bringing both opportunities and threats to rural areas. Customised production, increasing weight of differentiated markets and increased emphasis on informational products have tended to diminish the importance of increasing returns technologies. This may benefit rural areas or smaller agglomerations. Establishment of new organisational principles and communication systems may improve the scope for decentralisation and spatial dispersion. In particular, the development of distance-independent production technology, such as telemarketing, booking agencies etc. make it possible to establish or to move jobs in those branches to remote rural areas, a development which already has started in some countries. Increasing awareness about how the food has been produced and where it comes from may create opportunities for rural

regions of creating local products that depend on local identity for their market niche.

However, recent innovations in production methods and organisations may also have increased the importance of skilled labour. The rise of returns to skill is a well-established feature of modern labour markets and this rise should increase the value of cities as centres of learning. A common labour market pool is a most important determinant of which industries locate together. There is little to suspect that this force will decline in the future. Thus the advantages of urban locations for business locations may be greater than before. Glaeser (1988) argues that cities may have comparative advantages in exploiting new informational technology. Even if new substitutes for face-to-face contacts have been developed, the rising demand for contacts and information may still increase demand for cities.

On the consumption side, the new information technology may be likely to remove some of the present disadvantages of rural life, namely a narrow availability of high quality of goods and services. The preference for variety could be fulfilled by the new and unfolding possibilities such as shopping on the Internet for quality goods and other items not available locally. Internet shopping has been on the rise. Use of modern telephones, fax machines and PCs make some of services offered by a local post office, or a local bank office etc. accessible from home.

15.4 Policy implications and reforms of the structural funds

There is a lack of clear foundations of rural development policies in the Union, especially in terms of efficiency. "Measures to develop agriculture are now implemented with a number of complex measures without any coherent strategy". Rural development measures, according to proposals in Agenda 2000 include seven major categories. A very broad range of measures is included but the focus is strongly on agriculture and forestry. Only Art. 31 is (partly) devoted to more narrowly defined rural development measures. The policy focuses very strongly on counteracting those processes that historically have contributed to emptying of the countryside, namely declining employment in agriculture.

Thus, rural policy can still be described as reactive rather than proactive. As discussed above, depopulation of rural regions has mainly been a result of declining shares of food in consumer budgets and low competitiveness of rural regions in producing goods and services that were demanded instead. In retrospect, it would hardly have been possible to

counteract those changes by any reasonable economic measures.

Agricultural protectionism and support to small farmers have affected the level of agricultural employment, but hardly affected the underlying dynamics. Rural development policy also tends to be supply-side oriented and too narrowly focused on farmers and farm resources. In the market economy, however, the ultimate purpose of production is consumption. If rural regions are engaged in producing similar products the danger is obvious that they may run into a demand barrier. Potential for rural tourism may be limited, only relatively affluent consumers are interested in buying more expensive regional specialities etc. However, greater emphasis on subsidiarity and flexibility in the new regulations could enable Member Countries to apply more offensive, pro-active strategies.

Policy implications from agglomeration theories would indicate that the more specific rural development policies should, instead, concentrate on promoting competitiveness of rural regions as places to pursue economic activity and to live in, by enhancing the advantages and unique features (economic, social, environmental) of such regions while counteracting the disadvantages. Generally speaking, rural policies should enhance the "dispersion forces", while mitigating to some extent the agglomeration forces. Infrastructure subsidies, which would make peripheral regions less peripheral, are relatively efficient, non-distorting ways to help the more underdeveloped regions. Such infrastructure subsidies should, in particular, imply broad access of rural population to education institutions at all levels. External economies of scale, which contribute to higher efficiency in urban areas, originate from a pool of common resources and ideas. Diversity and variety of inputs can yield external benefits even if the individual firm is earning normal profits. Modern information technology could be used to enable participation in such pools of resources by smaller firms in rural areas, for instance by improving access to high quality services. Such a process could be facilitated by a rural development policy.

In addition, it could be noted that many regulations may entail a hidden bias to the disadvantage of small firms and, consequently, rural regions since the economy of such regions is dominated by small-scale activities. Such a bias contributes to creation of economies of scale at firm level which, in turn, contributes to clustering of economic activities. Enforcing the same regulations with respect to food safety may, for example, make it more difficult to advance small-scale food processing in the countryside. When possible and desirable, rural development policy should correct such biases as well as other unintended results for rural regions of policies applied at country level.

Another important objective for rural policy should be enhancing of the quality of rural life from the point of view of the consumer. Changing

consumer preferences mainly drove the rural revival in the 1970s and 1980s.

It should be observed, however, that policy implications from agglomeration theories and new trade and growth theories are not clear-cut. If there are benefits from agglomeration, as often argued, then the reallocation of activities will come at a cost. Moreover, if an agglomeration mechanism is at work and is self-sustaining, then improving marginally the attractiveness of the periphery may have no impact on location of the firms (Martin, 1997).

Dauce (1997) observed that geographical coverage of rural development efforts in the Union was defined more with a view to compensate than to foster mechanisms of growth of rural areas since prosperous rural areas, which could be a driving force behind development are excluded. The changes that are proposed in Agenda 2000 remove this criticism. However, resources spent on such rural areas have to be justified in terms of equity or efficiency. It is hardly possible to justify permanent support in these type regions. Rather, support measures should be oriented towards initiation of new activities that can be competitively pursued in rural areas, promoting the self-sustaining process of growth. Work conducted by Capelin indicates, moreover, that long-term support to unprofitable activities should be avoided. Such support may hamper rather than enhance chances for long-term rural prosperity. Instead, support should be directed towards forward-looking projects and development of indigenous potential of rural regions.

The concept of rural region is not defined in the rural development regulation. Accordingly, there is no requirement that support should exclusively benefit rural areas. Especially support to processing industries may, in view of ongoing concentration in that sector, end outside what may reasonably be considered as genuine rural areas. This was to some extent the case in Sweden. (According to an evaluation by the Board of Agriculture, support to the food processing industry was allocated as follows: 65 per cent of funds was given to the 60 largest projects receiving at least 115 600 ECU each. Projects below 57 800 ECU received 20 per cent of funds and projects below 11 560 million ECU only 2 per cent. One-third of the firms receiving support have more than 50 employees. Such firms are usually located outside rural areas. Most of those large beneficiaries admitted, more or less openly, that the support was not pivotal for the decision to invest. At worst, the support may contribute to the structural change within the processing industry towards larger units.

The most important purpose of rural development measures is to generate and preserve jobs. The choice of instruments, especially support to investment, appears in this perspective questionable. If the objective is to create jobs, labour, and not capital, should be subsidised. Most probably

investment support will, to some extent, displace labour by promoting more capital-intensive technologies than otherwise would be the case. Employment subsidies for small firms (micro enterprises) in rural areas would seem a more appropriate choice of instrument. However, support to investments may contribute to modernisation of rural areas since technological progress often is embodied in new equipment.

Support to young farmers is probably not a first best solution for generation of jobs in rural areas. Most probably such support will leak to other beneficiaries because support to young farmers is likely to raise the cost of establishing a farm for the new entrants. Several studies indicate that local socio-economic conditions and opportunities for employment outside agriculture have major influence on viability of farming in more marginal areas (Baldock et al, 1996).

Looking at the envisaged changes in detail, several simplifications have been proposed. Support to investments is no longer linked with the concept of reference income. Under the previous regulations, support to incomes above 20 per cent of reference income, was not allowed. This change may be questionable from an equity point of view but the practical relevance, at least in case of Sweden, is limited. Generally speaking, if support is justified primarily on equity grounds, support to incomes above the regional or national average can hardly be motivated. If support is justified due to efficiency considerations (i.e. correction for imperfect credit markets), the equity implications are less important. Support for consultants, which should facilitate access of high quality service in rural areas, seems in line with policy implications of agglomeration theories. Changes with respect to support of bookkeeping, producer organisations and extension appear motivated for the present members of the EU. Those regulations could, however, be potentially useful from the CEECs point of view where education level and knowledge about bookkeeping is limited among smaller farmers and producers are poorly organised.

Making support to LFA conditional on compliance with environmental regulation is a reasonable demand. The major rationale for continuous use of land in those regions is positive externalities attributed mainly to environmental benefits. Hence, support of activities that are detrimental to the environment is difficult to justify. If the objective is to generate employment, it is difficult to find reasons for pre-committing regional or rural support to any particular activity. Good business ideas may emerge in any sector. Hence, a strong pre-commitment of resources to any sector is likely to generate inefficiency.

15.5 Rural and structural policies in Sweden

Regional/structural support in Sweden consists of structural support according to objectives 5a and 6, projects in regions 5b and 6, LEADER project and national regional and structural support to agriculture and reindeer husbandry. Table 15.1 below illustrates some of the measures.

Table 15.1 Structural, regional and national support to farmers, 1997, 1000 ECU

Type of support	Number of payments	Total payment	Per payment
Structural support			
- investments	87	1 356	15.6
- young farmers	535	2 458	4.6
Subtotal		3 825	
Regional support			
-LFA	24 006	70 670	2.9
-national support			
* milk	3 063	30 870	10.1
* pork	179	1 474	8.2
* egg	25	282	11.3
* potatoes etc.	934	1 154	1.2
Subtotal		104 450	
Total		108 274	

* *Sweden have a regional national price support for these commodities*

Source: Årsredovisning för räkenskapsåret 1997, Swedish Board of Agriculture

Table 15.2 Structural, regional and national support to other than farmers, 1000 ECU

Type of support	Number of payments	Total payment	Per payment
Structural support			
-investments	170	11 454	67.4
-processing industry			
Subtotal		11 454	
National support			
* milk	44	2 085	47.4
* milk to dairies	9	424	47.1
* 5b	176	3 331	18.9
* vacations	35	1 249	35.7
Subtotal		7 089	
Total		18 543	

* *Sweden have regional national support measures in these areas*

Source: Årsredovisning för räkenskapsåret 1997, Swedish Board of Agriculture

The total amount paid was 1997: $108.3 + 18.5 = 126.8$ million ECU. The share of regional support amounted to 88 per cent.

In addition, rural development measures in 5b regions, according to figures from supervising committees should be added. Five such committees are in place. A uniform classification of measures is lacking. A general problem in Objective 5b areas, as well as Objective 6, is declining population and difficulties in finding national funds to satisfy the demand for co-financing. The original project plans have, in several cases, been revised by merging narrow categories to bigger ones to remedy problems with co-financing.

15.6 Future changes in regulations from a Swedish perspective

The proposed changes may have major implications for Sweden. Objective 6 is proposed to be included in the new objective 1. The key issues will be the future status of present 5b areas. It is not clear which of the 5b areas will be eligible under the new objective 2. Additional issues relate to the implementation of rural policy in regions outside objective 2. It is still unclear how much (additional) resources will be available. Application of the principle of subsidiarity would indicate that regional administration, which is at present involved in handling

applications for most of the agricultural support would be suitable for administration of the new rural development measures. Project support (objectives 5b and 6) is, however, handled by decision groups.

The principle of policy integration will be followed in all regions. Member States will have the possibility of inserting into the single framework agricultural structural measures, rural development measures, agri-environmental measures, reforestation schemes and compensatory allowances for less favoured areas. Table 15.3 below shows availability of funds at county level. Several counties would have substantial amounts at their disposal. The table includes environmental support, and regional support (including national). Distribution of 5a and 5b measures and objective 6 measures at the regional level are not available. Policy integration is motivated by a possibility to achieve economies of scope, avoidance of overlapping and possibility to handle larger projects. It should also facilitate fulfilment of co-financing requirements. Policy integration may, however, imply increased administrative burden and feuds over territories by participating authorities. The closest potential for efficiency gain appears to be between environmental support measures such as organic farming and rural development measures devoted towards environment, rural tourism, small-scale processing etc. For example, aids for farm level changes, such as conversion to organic farming could be linked to aids for local processing and marketing of organic products (Dwyer, 1988).

Table 15.3. Regional and environmental support at county level in Sweden, 1000 ECU

County	Environmental support	Regional support	Total
Stockholm	4 549	94	4 644
Uppsala	5 537	577	6 115
Södermanland	6 234	15	6 250
Östgötland	12 403	507	12 910
Jönköping	11 444	4 828	16 273
Kronoberg	6 773	2 285	9 058
Kalmar	16 127	3 142	19 269
Gotland	6 582	894	7 475
Blekinge	2 855	526	3 381
Skåne	15 284	1 862	17 146
Halland	6 955	1 144	8 098
Göteborg	4 698	1 587	6 285
Älvsborg	10 775	3 817	14 593
Skaraborg	10 334	1 215	11 549
Värmland	8 643	6 840	15 483
Örebro	5 362	1 299	6 661
Västmanland	3 154	89	3 242
Dalarna	6 312	5 349	11 661
Gävleborg	9 042	11 212	20 254
Västernorland	8 460	10 856	19 316
Jämtland	9 630	12 813	22 443
Västerbotten	10 723	20 499	31 222
Norrbottn	6 247	10 792	17 039
Total	188 123	102 242	290 365

Source: Own estimations based on figures provided by Swedish Agricultural Board.

15.7 Summary and conclusions

It is generally agreed that rural development policies should play a more important role for the future vitality of rural regions. Changes that are proposed in Agenda 2000 consist, however, mainly of some minor simplifications and reorganisation of existing measures. The very concept of rural development is not entirely clear and a universal blue print for

rural development policies is lacking. It is also disputed to what extent convergence of regional growth rates is affected by regional policies.

One important explanation of depopulation of rural regions has been the declining share of food in people's budget expenditures and a low competitiveness of rural regions in producing those commodities that have been demanded instead. Rural development policies will hardly be able to counteract the continuous decline of agricultural employment. Instead, rural development policies should enhance competitiveness of rural regions by making some of the benefits that contribute to higher efficiency in urban regions, such as access to larger pools of resources available in rural areas and by removing negative implications for such regions that may emerge as by-products of policies in other areas. The principle of policy integration that will be followed if the Agenda 2000 proposal is implemented should be able to improve efficiency by achieving economies of scope, avoidance of overlapping and by making it possible to handle larger projects. The closest potential for efficiency gain can be found between project based on environmental support and rural development measures devoted to environment and small-scale processing. The increased importance of subsidiarity in the design and implementation of rural development regulations may enhance efficiency by improving flexibility and by achieving a better adjustment to national potentials and preferences.

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16 WTO aspects

16.1 Introduction

As indicated by the analysis in the Agenda 2000 proposal, an unreformed CAP is not compatible with Uruguay Round Agreement on Agriculture (URAA). Growing surpluses of grains and beef are expected to develop by the year 2006, while subsidised exports are reduced. Surpluses of butter and SMP (skimmed milk powder) are also likely to emerge. A number of other studies (see for instance Banse 1998, Weyerbrock 1998) arrive at similar conclusions with respect to the GATT compatibility of the previous CAP. Will CAP, reformed according to Agenda 2000, achieve such compatibility? Furthermore, preparations for the next WTO round have already started. The new round can be expected to result in further liberalisation of trade. Hence, one should also examine whether Agenda 2000 will be sufficient to fulfil the requirements of the next WTO round. Those issues are discussed below. For obvious reasons, most of the issues involved are more suitable for analyses on an aggregated EU level rather than on a national level. Hence, the discussion does not aspire to provide a comprehensive analysis. Instead, some specific points, where national figures may provide useful insights, are highlighted.

16.2 Agenda 2000 and the URAA

The URAA contains three major areas: import access, export competition and domestic support. With respect to market access, the Agreement requires tariffication of all non-tariff-measures (NTM), and 36 per cent cut in tariffs (measured as an average over tariff lines). The Agreement includes also minimum access commitments of 3 per cent of domestic consumption rising to 5 per cent of domestic consumption. With respect to export competition the Agreement requires a cutback of export subsidies of 21 per cent in volume and 36 per cent in spending from the 1986 - 90 base. Domestic support reduction commitment calls for a reduction of 20 per cent of total support (Aggregated Measure of Support, AMS). AMS includes both product-specific and non-product-specific measures but

excludes so-called green box policies. These include general government services as well as certain forms of "decoupled" payments. In addition, as a result of the Blair House agreement, a number of so-called blue box measures were created. (Blue box measures are defined in the Blair House Accord, paragraph 5 (a) of Article 6). Blue box measures can be described as production limiting programs temporarily excluded from reductions.

There is a common agreement that for the EU, the least binding commitment of the URAA for the period until 2001 is that concerning the reduction of AMS (Buckwell et. al. 1997). This is because compensation payments in the 1992 CAP reform have been classified as blue box measures and consequently have not been the subject of reduction commitment. Similarly, the tariff reductions are expected to have little effect on domestic market in the EU for the period of agreement. Applied tariffs are expected to be below the binding levels, despite the reduction of them, see table 16.2 below for further discussion. Instead, the major challenge for the EU relates to restriction of subsidised exports. Table 16.1 below illustrates estimated development of net export from Sweden under various scenarios.

Table 16.1 Net export from Sweden under various scenarios (1000 tons)

	Present policy	Agenda 2000 base	London	French	No limit on voluntary set-aside	Intensive beef
Grains	1600.6	858.5	815.2	975.8	-3567.7	823.3
Liquid milk	-	-	-	-	-	-
Cheese	21.0	-3.1	-5.4	-2.7	-	-3.3
Butter	4.1	5.8	-1.3	5.7	4.7	5.8
Cream	-	-	-	-	-	-
SMP	-42.4	-29.9	-43.0	-30.2	-32.8	-29.7
Beef	-44.2	-87.8	-87.2	-87.8	-87.8	-85.5

Source: Model estimations in SASM

Compared with the present policy, net exports of agricultural products from Sweden decrease considerably. In the base line simulation, exports of all farm products but butter decline. Exports of grains would decline and almost be halved. If 100 per cent voluntary set-aside would be allowed and such a policy would be credible (compare the discussion below), Sweden would turn into a substantial net importer of grains.

The figures for Sweden may not be indicative for development of export from the EU as a whole. Comparisons with other studies indicates, (see discussion in chapter 7), that production of grains and beef may increase in the EU if Agenda 2000 is implemented, while estimations here show a decline in Sweden.

16.3 Is further liberalisation of agricultural trade likely?

A brief evaluation of the URAA may be useful as a starting point in assessing the prospects of further liberalisation of agricultural trade during the next round of negotiations. The impact of the URAA on the EU was, as demonstrated above, restricted. This observation applies fairly well to other countries as well. It is widely recognised that the actual liberalisation of the world trade in agriculture as a result of the URAA is very limited, in spite of seemingly impressive reduction of tariffs, permitted export quantities and domestic support. The following factors account for the outcome (OECD 1995a, Hathaway and Ingco 1995, Tangerman 1994, GATT 1994):

The choice of base year for tariffication (1986 - 88) resulted in an unusually high protection since prices of many commodities were at their lowest for decades.

Many countries made matters worse by relying on dirty tariffication. Tariff cuts were unevenly distributed and biased towards minor commodities.

With respect to minimum access commitments, the countries individual tariff lines were aggregated into product groups and countries were allowed to count special arrangements as a part of their minimum access commitment, benefiting exporters having such arrangements.

Permissible upper export limits on exports are defined commodity for commodity, but commodities are broadly defined aggregates and not individual tariff lines.

With respect to reduction of domestic support, the reduction requirement is formulated in an aggregate measure of support for all commodities and not for individual commodities. In addition, compensatory payments and deficiency payments were excluded from reduction.

This modest liberalisation could indicate that the movement to a more liberalised trade would be slow in the future as well. Several arguments can be advanced to the contrary, though. Trade liberalisation was not the major achievement of the Uruguay Round (UR) with respect to agriculture. Instead, the major accomplishment was the improvement of trade rules. Prior to the (UR) agriculture was, in reality, accorded a special status within the GATT. Now, for the first time in the history of GATT the majority of the agricultural policies in the world are a subject to legally effective binding. This, could be argued, constitutes a quantum leap (Tangerman, 1994). Increased transparency should increase pressure for

liberalisation in the long run. Countries which had no export subsidies in the base period cannot use them in the future, and countries which use them cannot use them on products where they were not used in the base period. Hathaway (1994) has argued that trade liberalisation was largely sacrificed to achieve policy reforms. This "sacrifice" could be seen, however, as an investment in the future possibilities to liberalise agriculture. Since a framework has been created, the next WTO round will not be a repetition of the previous one and will concentrate on liberalisation of trade.

Moreover, prior to the UR it was possible to exclude agriculture from free trade areas and customs unions. This may no longer be acceptable since agriculture is a part of WTO. Art 24, paragraph 8 of the GATT requires, that substantially all the trade in the constituents' territories should be covered. This may create problems for the EU because the Union has now free trade agreements with a large number of countries.

Taking a political economy perspective, it can be observed that attempts to reform the rules of agricultural trade were made during all the previous rounds of the GATT but largely without success. The previous status of agriculture in the GATT, which has been ironically described as being inside the GATT but outside the rules, was hardly coincidental but reflected policy preferences of the signatories. In the UR, agricultural issues caused considerable delay beyond the scheduled completion date, but agriculture was not left outside the agreement as done previously. Neither was it permitted to jeopardise the whole agreement. The success of the UR indicates that the balance of power between farmers and other groups has changed to the disadvantage of the former. The fact that the GATT agreement has been reached shows that the interests of those who would have suffered considerable losses, if a failure in agriculture aspects would have been allowed to ruin the overall agreement, including agreements on trade in goods and services, on intellectual property rights, on foreign direct investment etc., were given more weight. Continuously the diminishing relative importance of agriculture and the declining number of farmers will reinforce this new trend in the future. Taking the EU as a case in point, at the outset of UR, agriculture accounted for 8 per cent of total employment, 1997 the figure was 5 per cent, at the end of next round it perhaps will be not more than 3 per cent.

16.4 Key issues for the future WTO negotiations

It is highly probable that the future WTO negotiations will be structured around the same themes as the UR and concentrate on issues that had not found satisfactory solutions last time. Accordingly, the likely focus of negotiations will be:

- Market access including high tariffs and administration of tariff-rate quotas.
- Further reductions of export subsidies.
- Domestic support policies.
- Sanitary and phytosanitary (SPS) barriers.
-

Market access issues

Further reduction of tariffs is likely to materialise. The previously used formula, i.e. average over tariff lines with lower bounds will probably be continued. It is not possible to foresee with any degree of certainty the extent of a future tariff reduction. For the sake of illustration, the same cuts as during UR are assumed in the table below.

Table 16.2 GATT agreements and EU prices

Commodity	Bound tariff 2000, ECU or per cent	Hypothetical additional reduction (36 per cent)	Average world price 1990-93	Reduced tariff + world price	EU price, Post Agenda 2000**
Wheat	95	61	92	153	95
Maize	94	60	85	154	95
Barley	93	60		153	95
Oats	89	60		149	95
Refined sugar	524	419*	247	515	494
SMP	1 188	950*	1 211	2 161	1 994
Butter	1 896	1 213	1 591	2 804	2 784
Cheese (Cheddar)	1 671	1 069	3 069	4 138	3 246
Beef meat	1 768	1 132	2 180	3 312	1 950

20 per cent reduction as in URAA

** According to estimations by SASM

Source: Own calculations based on OECD 1995a

It is clear from the table above that if tariffs were to be reduced with the same percentage as during UR, not much would happen to domestic

prices. Average world price (1990 - 93) plus the reduced tariff remains for most commodities far above domestic prices. All commodities where price support was partly transformed to direct payments stay immune for tariff reductions for a foreseeable future. The remaining commodities are less secure for large tariff cuts. In the case of sugar and SMP it was assumed that the future reduction would be lower, following the pattern observed in the UR.

The commitments on market access in the URAA have not resulted in a substantial increase of the trade for reasons explained above. It is probable that exporting countries will demand a real access during the next round of negotiations.

Several countries have tariff quota commitments (TRQ) in their schedules. TRQs originated from various sources, including the UR tariffication methodology. In order to assure required market access in a situation where border protection is too high to generate a sufficient import a number of tariff quotas had to be created. The EU has 85 tariff quotas. There is a lack of precise guidelines for setting of TRQ. Methods of administration that are used include applied tariffs, "first come - first serve" licences on demand, auctioning among importers, etc. The complicated system of administration constitutes an obstacle for full utilisation of quotas. Tariffs granted to historical importers have high level of fill rates. On average tariffs are far from filled. The likely impact of the next WTO round is an increase of "real" access, i.e. beyond existing preferential agreement and simplification of rules for TRQ.

Domestic support

AMS commitment is, as opposed to commitments on exports and imports defined for the whole sector and not for individual commodities, albeit broadly defined. This construction makes it possible to exempt some commodities from reduction of domestic support all together or even increase the support for some products, provided that the reduction is substantial enough for remaining products. It is likely that such a construction will be challenged. However, it is not unusual that agricultural policy reforms concentrate on few commodities rather than on agricultural sector in its entirety. Hence, it is possible that the same model will be retained.

AMS exempts a large number of measures from reduction commitments (so-called green box measures). In addition, as a result of the Blair House agreement a number of so-called blue box measures were created. Those include production-limiting programmes (deficiency payments and area and headage payments) which were exempted from Current Total AMS which is used to measure the compliance during the

implementation period. The value of such payments is, however, included in Base Total AMS on which reduction commitments have been taken. Blue box measures can, accordingly, be described as temporarily excluded from reductions. The payments are secure until 2003 under the terms of article 13, the Peace Clause.

Several of those measures that are classified as green box measures are included in PSE as calculated by the OECD. This applies to: marketing and promotion, income insurance and safety net programmes, payments for relief from natural disasters, structural adjustment assistance, environmental and regional assistance. PSE intends to measure the value of monetary transfers to producers from consumers and from taxpayers resulting from a given set of agricultural policies broadly defined. Purely social transfers, such as pensions, are excluded from PSE calculations. Apparently, AMS is much more narrowly defined.

The future of both green and blue box measures in the next WTO round is unclear. Both can come under pressure. The following outcomes of the next WTO round are all possible:

1. Green box and blue box unchanged
2. Green box unchanged, blue box removed
3. Existing blue box measures transferred to red box, i.e. subject of reductions
4. Existing blue box measures transferred to green box after "greening"
5. Green box more rigorously defined. Distinction between green and blue payments abandoned. Agreement in terms of reduction of total transfers.

The first option implies a very limited liberalisation of trade also in the next round of agricultural trade negotiations. Creation of the blue box was a key device for avoiding of a "real" reduction of support to agriculture in URAA. As argued before, further liberalisation of agricultural trade is likely. Accordingly, the blue box, as presently defined, will probably cease to exist beyond the current implementation period. In such case, the payments will be either a subject of reduction, according to URAA and possible additional demand, at most 30 per cent together, or transferred to the green box. The direct payments, which are a part of the new American agricultural policy, are claimed to belong to this category, compare below. Comparisons of the American policy reform and Agenda 2000 with respect to impact on production and "greenness" is discussed in the next section.

The green box contains a multiplicity of measures some of them "greener" than others. The third option would imply a more careful assessment of the impact on production and especially on trade, using possibly such concepts as trade restrictiveness index (OECD, 1995b).

The fourth option implies that the distinction between green and blue measures is abandoned. In such a case, the new agreement will be staged in terms of total transfers to agriculture. Given the present categorisation of payments the distinction is highly arbitrary. Obviously, several of the measures, which have been included in the green box, have more than a small or an insignificant impact on production. It is obvious that, in many cases, green measures may be more production-enhancing than the blue ones. This is especially the case for environmental and regional support that is paid in northern Sweden and Finland. Generous use of such support (compared with the "old" members of the EU) has been motivated by the fear that production in the absence of such support may disappear which, in turn, would have negative impact on environment since many of positive impacts on environment are linked to production actually taking place. At the same time, arable land payments to fertile land in the southernmost regions of Sweden only increase land values.

Long-term survival of the blue box

The blue box is a result of the Blair House agreement, i.e. a compromise between the US and the EU. The compromise reflected a mutual interest to keep similar type of payments outside the reduction commitment. The compensation payments in the 1992 CAP reform were exempted from the reduction commitment. The American deficiency payments, a somewhat similar measure, afforded a similar treatment as a *quid pro quo*. Accordingly, future survival of this construction is dependent on whether this mutual interest still exists. In both regions agricultural policy has been, or is proposed to be, reformed. Thus, the issue emerges whether there exists a similarity in reform proposals that could create a common interest in keeping the blue box alive. The use of blue box measures is at present confined to very few countries.

Deficiency payments, acreage reduction and market loans constituted major elements of the American agricultural policy since the 1930s. Agricultural policy reform in the US in 1996, the Federal Agriculture Improvement and Reform Act (FAIR) act has put an end to production control. Moreover, the link between farm payments and prices of commodities has been eliminated. Farmers receive a flat rate payment, which is based on past payments and is to be reduced by 30 per cent over the seven years and (possibly) eliminated after that. Farm programmes will, however, have to be considered again in 2002. (Ongoing changes of American agricultural policy indicate that the payments may be prolonged.) The payments, called Production Flexibility Contract payments (PFC) are based on 85 per cent of contract acreage base (the total of current crop acreage bases for 1996 year). Farmers can plant any

commodity, including haying and grazing, and still receive payments. The land needs, however, to be kept in some kind of agricultural use. Prices are still supported by market loans but the 1995 level is the maximum allowable during the period. Hence, as a result of the reform the old blue measure, the deficiency payments, have been removed and the new measure, PFC, introduced. The new payments has been notified to the WTO as a green box measure. Accordingly, the US is not formally relying on the blue box measures. It is not clear, however, whether PFC payments will be accepted as green box measures in the next round of trade negotiations.

Comparing both reforms some similarities can be found. In both cases, reforms are somewhat limited in scope and cover only some commodities while leaving others untouched. Especially sugar market regulations appear to be resilient to change on both sides of the Atlantic. FAIR act can, however, be argued to be less ambitious as it is confined to crops only. Concentrating only on direct payments, the PFC payments and direct payments in the EU (DPEU), it can be observed that both are based on historical levels of activity and provide, hence, no stimuli to expand production. No time limits are foreseen for the direct payments in the EU. Neither are those payments degressive. The PFC are reduced by 30 per cent and no guarantees beyond the contract period (seven years) are given. Accordingly, the EU payments may be perceived as a more permanent feature of the agricultural policy. Permanent payments are likely to attract investments to the sector that would otherwise have been made elsewhere and are hence more production enhancing. However, the recent rescue program for American agriculture in response to crop failure is an obvious signal that if the need is bad enough, additional support will be provided. The real difference between the payments with respect to the durability, may, thus, be less than would appear at first sight.

The major differences, of the relevance in the GATT context, between the PFC and DPEU are the conditions attached for receiving them. PFA apply to all commodities (with exception of fruits and vegetables, which can only be planted on 15 per cent of unpaid contract base area). DPEU apply to cereals, oilseeds and non-textile linseed. The payments are not crop specific within this category. Higher payments are offered for durum wheat. The land is required to be cultivated with some of those crops but the farmer may put land aside and still receive the direct payment for the idled land. Agenda 2000 envisages the possibility of putting 100 per cent of land-aside, if desired by a member country. PFC payments appear to be much more flexible and less coupled than DPEU but the PFC payments are not completely detached from production. As an experiment, the impact of allowing 100 per cent set aside was compared with flexible payments, similar in style to the PFC. The impact on

production and trade, compared with the base run are given in the tables below. It is not easy to make a fully adequate comparison. Four different versions of the model were run. The total level of support was kept unchanged.

- PFC1: total support to grains, oilseeds and set-aside was distributed as direct payment to all land in agricultural use, including long-term fallow. The resulting level of support per hectare became 155.5 ECU.
- PFC2: the same level of acreage payment was assumed but applied only to land which is harvested.
- PFC3: All blue box payments (including animal premiums) were converted to a PFC-payment, raising the total payment to 262.2 ECU. Long-term fallow was allowed as agricultural use.
- PFC4: The same as above but only harvested land receives support.

The results are given in the tables below. Relaxing production demands or allowing for some kind of more or less artificial activity for the purpose of obtaining support obviously results in quite a dramatic effect on production assuming that the farmers really behave as optimising agents and that the policy is credible (see further discussion below). The tables illustrate clearly that conditionality of support matters. If farmers are allowed not produce “genuine” agricultural commodities but only to keep land fallow, this seems to be the optimal solution. Production of grains and oilseeds decreases dramatically in all cases except when direct payments are 257 ECU and harvesting of land is required. Milk production is, however, largely unaffected. The number of grazing animals decreases when animal premiums are distributed to arable land. Present support favours steers over bulls due to environmental reasons. When animal premiums are reallocated, and no harvest (grazing) required, intensive beef production out-competes steers. Harvesting requirements favour steers.

Comparison with Agenda 2000 under the assumption of 100 per cent set-aside is not clear-cut. Conditions attached to production matter, as observed above. If all direct payments are distributed to land and harvesting is required, the difference between the Agenda 2000 base version and PFO is very small. Allowing for 100 per cent set-aside, makes DPEU more decoupled than PFC. Otherwise the differences are small.

Table 16.3 Use of arable land under different WTO scenarios (million hectares)

	Agenda base	100 per cent set- aside	PFC1	PFC2	PFC3	PFC4
Grains	0,947	0,133	0,109	0,553	0,113	0,953
Oilseeds	0,080	0,006	0,006	0,047	0,006	0,075
Fallow	0,370	1,780	0,971	0,027	1,126	0,027
Ley	1,192	0,702	1,305	1,425	1,166	1,536
Potato	0,040	0,040	0,040	0,040	0,039	0,040
Sugarbeet	0,058	0,058	0,058	0,058	0,058	0,058
Other crops	0,084	0,050	0,281	0,212	0,260	0,080
Total	2,768	2,768	2,768	2,361	2,768	2,767
Cultivated land	2,366	0,988	1,590	2,202	1,456	2,741
per cent fallow land	26	93	89	4	90	3

Source: Model estimations in SASM

Table 16.4 Number of livestock under different WTO scenarios (1000's)

	Agenda base	100 per cent set- aside	PFC1	PFC2	PFC3	PFC4
Milk cows	466,0	466,0	466,0	466,0	466,0	466,0
Beef cows	106,0	106,0	106,0	106,0	0,0	14,8
Bulls	42,4	42,4	42,4	42,4	143,4	87,2
Steers	191,1	191,1	191,1	191,1	47,7	109,8
Heifer	21,2	21,2	2,1	37,3	37,3	37,3

Source: Model estimations in SASM

Table 16.5 Crop production under different WTO scenarios (1000 tons)

	Agenda base	100 per cent set- aside	PFC1	PFC2	PFC3	PFC4
Grains	4 728	687	593	2 763	618	4 632
Oilseeds	218	17	17	102	17	157
Sugarbeet	2 651	2 651	2 651	2 651	2 651	2 651
Hay/pasture	4 396	4 395	4 407	4 787	3 686	4 782
Milk	3 373	3 373	3 373	3 373	3 373	3 373
Beef	113	113	114	123	100	102

Source: Model estimations in SASM

Leaving some of the policy discretion to the Member States creates problems in the WTO context. Set-aside requirements are one such decision that can be taken at national level. As demonstrated in this chapter, the impact on production may be very different, depending on what is required from farmers to obtain the support. Accordingly, depending on national implementation and rules, some measures may qualify as green box measures in one country and blue box measures in other countries. Will the WTO status of the measures depend on "average" interpretation? Individual agreements will undermine the exclusive competence of the EU in foreign affairs.

16.5 Expectations and credibility - are decoupled payments possible?

Direct payments will undoubtedly play an important role in the next WTO negotiations. Not least because such payments now constitute a major policy instrument. A theoretical issue underlying the discussion about classification of direct payments as green box measures is the question whether the direct payments are decoupled.

Starting with a general reflection, direct payments related to current production or use of resources have more or less similar impact on production as prices. Fixed payments per hectare, which are based on historical yields, are less production-enhancing than price support. In particular, application of inputs such as fertilisers can be expected to be lower and hence the production. But even payments related to past production, etc. may have an impact if agricultural activity is required. Impact will depend on profitability of production, excluding direct payments. If profitability is high enough, the impact will be zero because the land would have been cultivated even in the absence of payments. At the other end of the scale, when losses on current production are higher than direct payments, nothing will be produced regardless of whether payments are available or not. Hence, the impact on production will occur at "medium range of prices".

As could be seen from the previous section, at the level of prices, direct payments and production costs in Sweden, the direct payments have a decisive impact on production if cultivation is required. In the absence of such a requirement, production of relevant commodities shrinks considerably. Few caveats apply, though. Our results indicate what would be an optimal cause of action, not necessarily what farmers may do. In Chapter 8 some arguments were presented why farmers may choose to

produce more grains than indicated by the model. Those arguments relate mainly to the fact that some benefits of producing grains have not been fully accounted for in the model estimations.

In addition, the issue emerges whether farmers would perceive payments as truly decoupled, i.e. if farmers would believe that they would be paid permanently even if they do not produce. In other words the issue is whether decoupled payments are credible. It is highly doubtful if this is the case. All so-called non-economic objectives of agriculture are inherently linked with productive activities in agriculture. All justifications of agricultural policy are related to production, environmental qualities, employment, rural development, and rural amenities. Accordingly, decoupling is threatening the legitimacy of the policy. The payments have been frequently defended as rewards for "preserving our beloved country-side". The Commission furthermore says (Article 8): "Member States shall take the measures they consider to be appropriate to restrict the benefit of payments under support schemes to farmers whose active role in maintaining rural areas by their genuine farming activities cannot be contested". This expresses *ambiguity* according to the set-asides, especially whether a 100 per cent set-aside farm can be considered belong to "genuine farming activities" or not. The message to farmers appear, to be clear. Only those "who labour the land are the chosen people of God". Accordingly, farmers may find it hard to believe that society will extend a time-unlimited support to them if they have given up farming, especially as they are, on average, not poorer than other groups in society. Such beliefs or expectations create a credibility problem for the decoupled payments and create a coupling of direct payments to production even in the absence of formal requirements.

It may also create a credibility problem for the Union in the WTO context if decoupling, i.e. the argument that transfers are not enhancing production, and public benefits of agriculture, i.e. that agricultural production generates external benefits, are simultaneously used as justifications for protection of agriculture.

According to the argument above, farmers may feel obliged to produce even in the absence of formal demand on activity, or if superficial activities are allowed. The question emerges whether such an obligation can be felt also at an individual level. An individual farmer may believe that long-term survival of support to agriculture is dependent on involvement in productive activities by farmers as a group but this does not imply that he himself, being only one of numerous producers, should feel obliged to produce if it would be more profitable for him not to do that.

However, several arguments can be found in favour that even an individual farmer may be motivated to produce. He may feel better to

achieve the payments in a production activity with low profitability than to get the money for nothing - a kind of Lutheran attitude. Additional reasons are inherent amenities of farming. Also, to give up farming to achieve set-aside payments for 100 per cent of the arable land may be considered a political risk. Rules may change and to restart production may be costly, especially if the farmer has changed his occupation and reduced the machinery equipment. At the extreme, a farm without farming activities may fall completely outside the support system, as it is no longer to be considered a farm

Moreover, arguments for support to agriculture identified above have been frequently used by farm organisations and have been, consequently, internalised by the members. Social pressures and disapproval at the level of the local community may also induce farmers to produce. Finally, suppliers of inputs and processors of farm products may push farmers to deliver and purchase, especially as farmers are the owners of co-ops that are supplying inputs and handling the outputs. Future survival of many branches of such co-ops may be endangered if production declines.

The discussion above boils down to a conclusion that decoupled payments are really coupled because of expectations that absence of involvement in production will counteract willingness to support agriculture and may eventually eliminate the support. For obvious reasons knowledge about behaviour of farmers confronted with long-term payments with "no strings attached" is limited. Some lessons can be learned, however, from the implementation of the Swedish agricultural policy reform of 1990. The reform was a much more radical approach than the MacSharry reform implemented at about the same time and supported by a broad political majority. In contrast, the Swedish farmers were offered only temporary and degressive payments. Farmers were also offered a possibility to receive all payments in one instalment on the condition that the land was durably removed from production. The durable removal was defined as five years. Many farmers found this option attractive. In total 380 000 hectares were removed from production. What was an attractive solution was to put a whole farm aside, not just part of it. Farmers who put land aside sold their tractors and harvesters etc., causing an oversupply of used farm machinery and a collapse of investment in new equipment. However, the interest in putting land aside ceased quickly after application for membership in the Union. Farmers started fearing that, by not producing, they would lose eligibility for direct payments under the EU market regimes.

Experiences of the Swedish reform confirm that the credibility of policy plays an important role for the behaviour of farmers. Farmers quitted production because they were required to and because they themselves had low expectations on continuation of the support in the

future. The reform was, as pointed out above, a radical attempt to liberalise agricultural policy and was broadly supported by politicians of different persuasions as well as general public. However, as soon as joining the Union became a possible future option, the attractiveness of putting the whole farm aside ceased to exist. The farmers who stopped producing behaved as indicated in the model, they withdrew completely and sold the machinery. Hence the difference between 50 per cent and 100 per cent set-aside allowance is crucial.

16.6 Are decoupled payments desirable?

The discussion above questioned the possibility of designing permanent decoupled direct payments. A more relevant question is that of desirability of such payments in the long run from an efficiency or equity point of view.

The concept of direct payments is widely used. Proliferation contributes easily to confusion. It may therefore be useful to distinguish only two broad categories of such payments, those that are primarily motivated by equity considerations and those that are mainly justified on efficiency grounds. The first category includes various kinds of direct income supports, both permanent and temporary. (The discussion below relates only to permanent payments.) The second group covers correction of market failures, primarily payments for provision of public goods.

Concentration of the discussion of direct payments in WTO on decoupling is mainly related to payments motivated by equity considerations. It could be argued that, the prescription of decoupling originates from the past when the main objective of agricultural policy was income support. In such a case, the argument runs, due to low transfer efficiency the money to the farmers should be paid directly rather than through prices. Implicit in the prescription is the assumption about specificity of agriculture that necessitates support of farm income through sectoral measures rather than through social measures targeted at particular individuals. Justification for a sectoral social policy can also be found if the sector is large. In such a case handling the income problem of the sector would overburden the ordinary welfare system. Otherwise, higher administrative costs of specialised solutions will absorb potential efficiency gain. Administrative costs are usually ignored as well as distortion created by the fact that taxes have to be higher than otherwise to pay for the direct subsidies. Depending on what is taxed, the efficiency cost may be higher compared with price support where food consumption, characterised by low price elasticity is taxed. These issues were discussed in chapter 14.

If payments can be proved to have no (or negligible) effects on production in the long run, they may be very difficult to justify on equity grounds. Apparently, remuneration to production factors involved in production is high enough to attract resources in competition with other activities. Further discussion on this point was included in chapter 12.

It is ill conceived to discuss decoupling or negligible effects on production in relation to payments motivated by efficiency considerations, such as environmental payments or food security. In this case, the impact on production or particular methods of production, etc. is often the very reason for granting the payments. It should also be remembered that in many countries, for instance Sweden, income support, although often defined as an independent objective, was closely linked with food security. The ultimate justification of supporting farm incomes was the need of self-sufficiency in basic food, i.e. a production objective. To advocate decoupled payments as a more efficient solution would, in this case, completely miss the point. The relevant issue is, instead, whether the link between food security and food self-sufficiency is relevant. The link has been increasingly questionable as a result of both economic and political development in Europe. Agriculture is strongly dependent on imported inputs and the risk for a rich country of not being able to import food is almost non-existent.

Similar arguments apply to generous use of environmental support in northern Sweden, Finland and Austria. This support is more production enhancing than arable payments to fertile areas where such payments only add to already high land values. Support to marginal areas where land values are close to zero is certainly production enhancing as such regions could hardly cope with reduction of support.

The relevant issue is, very similarly to the food security question, that of proportionality between the payments and the intended environmental effect. The question is to achieve a positive impact on environment at so low an impact on trade as possible. The issue is thus not decoupling but efficient coupling of payments to legitimate social objectives.

16.7 Summary

Creation of an institutional framework for agricultural trade has been the major achievement of the UR. It is likely that agricultural trade will be further liberalised in the next WTO round and that negotiations will evolve around market access and tariffs, export subsidies and domestic support. The tariff bindings are likely to remain at a high level compared with the EU prices, especially as implementation of Agenda 2000 will result in reduction of prices in the EU. The crucial issue will, most

probably, be that of direct payments, i.e. whether such payments will be accepted and on what conditions. If Agenda 2000 will be implemented, the direct payments will constitute the major agricultural support measure, accounting for 70 per cent of the budget. A key question in this context is the impact of the direct payments on the incentives to produce since decoupled payments can be considered as green box measures. American direct payments, PFC, are notified as green measures. Comparison between PFC payment and direct payments in the EU under the assumption that 100 per cent set-aside is allowed, indicates, that depending on conditions, the PFC payment may be more production- enhancing. If all direct payments are distributed to land and the harvesting is required, the difference between Agenda 2000 base version and PFC is very small. Allowing for 100 per cent set-aside, makes EU payments more decoupled than PFC. Conditions attached to production obviously matter. However, even if payments were formally decoupled such a policy may not be credible. Farmers might find it difficult to believe that society will extend support to them even if they do not engage in any productive activity.

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17 Eastern enlargement

17.1 Introduction

Agriculture is a key economic sector in the Central Eastern European Countries (CEECs). Agriculture accounts for 8 per cent of the GDP while the figure is less than 3 per cent in the EU. The share of agricultural employment is 19 per cent on average compared with 5 per cent in the EU. The overall number of more than 10 million employed in agriculture for the CEECs is high compared to EUs 7.5 million. The level of support to agriculture is also considerably lower there than in the EU. Eastern enlargement of the EU constitutes probably the biggest challenge ever encountered by the Union. Especially extension of the CAP to the CEECs entails numerous difficulties. The chapter addresses the question whether the Agenda 2000 proposals facilitates the eastern enlargement of the EU.

17.2 Agriculture in the CEECs - problems and potentials

Transition of agriculture to the market economy has proved more complicated than expected. Most of the difficulties that were encountered during the transition were in one way or another inherited from the past. Before the transition, the agricultural sector in Eastern Europe was characterised by large and inefficient farms with high costs of production, too high consumption of food in relation to the level of income, pervasive monopoly/monopsony in food processing, distribution and input supply industries and high dependence on the Soviet market for food exports (Brooks et al 1991). Productivity of agriculture in the region was considerably lower than in the Western Europe. The yields per hectare were below West European levels. (This can to some extent be explained by lower quality of soils, especially in Poland.) The region lagged behind Western Europe even more in animal husbandry, though.

This backwardness was (and still is) reflected in the breeds kept, animal hygiene and unfavourable feed utilisation rate (Csaki, 1993).

Table 17.1 Evolution of Real Gross Agricultural Output in some CEECs, 1990 = 1.0

Country	1991	1992	1993	1994	1995	1996	1997
Poland	0.98	0.87	0.94	0.85	0.98	0.89	0.89
Hungary	0.94	0.75	0.68	0.70	0.71	0.75	0.75
Czech Rep	0.91	0.80	0.78	0.73	0.77	0.77	0.72
Slovenia	1.00	0.90	0.88	1.08	1.10	1.12	1.12
Estonia	0.96	0.78	0.72	0.62	0.61	0.60	0.58
Romania	0.99	0.87	0.96	0.96	1.01	1.03	1.04
Bulgaria	0.99	0.88	0.72	0.77	0.88	0.77	1.00
Slovakia	0.93	0.81	0.75	0.82	0.84	0.87	0.87
Lithuania	0.96	0.73	0.67	0.55	0.58	0.64	0.68
Latvia	0.96	0.80	0.62	0.50	0.54	0.58	0.56

Source: Own calculations based on OECD 1998

The transition to market economy entailed the liberalisation of producer and food prices, withdrawal of input and food subsidies and restructuring of state monopolies. The agricultural output fell considerably as a result of transition (see table 17.1). The decline was not, however, uniform across regions or commodities. The decline of agricultural output is hardly surprising, since agriculture was highly subsidised during the communist period (see next section). Consequently, deregulation, unless accompanied by a marked increase in efficiency, should be expected to result in a decline in production. The decline is generally worse for livestock products than for crops. This was a result of agricultural production adjusting to new patterns of domestic consumption. Due to the fall of incomes and removal of food subsidies, food consumption fell substantially, especially for livestock products where consumption in the CEECs was very high compared with other countries at a similar level of economic development. In some countries, however, the decline in production fell well below the adjustment to the domestic demand. Latvia and Estonia, for instance, which were considerable net exporters of livestock products, now exhibit very low levels of self-sufficiency for products such as pork and poultry. Moreover, input prices such as energy and fertiliser prices, have tended to move to the world market levels, while the output prices tend to stagnate.

In addition to the loss of internal markets, the breakdown of the COMECON has led to a sharp decline in agricultural exports for some of the CEECs. The export to Russia resumed markedly, however, especially for processed food products. Orientation towards the Russian market was

largely due to the inability to enter markets in the West. Difficulties are caused both by the protection and by the inability to meet health and quality standards. Due to the importance of the Russian market for the CEECs, the recent crisis in the Russian economy is likely to cause a negative impact on the CEECs. This may be due to both loss of opportunities on the Russian market and more intensive competition on third markets, to which exports originally intended for Russia have been redirected.

The decline of output was further explained by difficulties of de-collectivisation. Collective farms were originally designed as integrated production units making them difficult to divide. Indivisibility of assets is a major problem in agricultural privatisation (Rabinowicz and Swinnen, 1997). The process of restructuring and privatisation, which in many cases has been disruptive, has led to a temporary drop in production. The process of transformation has, contrary to expectations at the outset, not resulted in an re-emergence of family farming as a dominant form of organisation of agricultural production in all countries. Instead, the production structure is characterised by diversity and considerable differences among countries. Countries where collectivisation did not occur continue small-scale individual farming. In Hungary, the Czech Republic and Slovakia farming remains on a large scale with widespread use of some form of land leasing by large farms operating under forms of reformed co-operative or corporate structure.

Another important factor that had a negative impact on restructuring of agriculture and continues to constitute a serious obstacle, not least from the point of view of the accession, is the status of up-stream and down-stream industries. Lack of competition in upstream and downstream sectors has contributed to technical inefficiencies, low quality of products and high margins. The first stages of processing, such as milling, slaughterhouses and dairies, face over-capacity and much of the equipment is obsolete. Foreign direct investments (FDI), which have contributed to a considerable improvement of quality, have tended to concentrate on the higher value-added sections of the food industry such as soft drinks, alcoholic beverages, tobacco and confectionery (OECD, 1998). Preferential treatments, which in many countries was offered to farmers while privatising primary processing, have deterred FDI.

The decline of output appears to slow down in 1993 in some countries, and has recovered in 1994 and 1995. A decline has continued in Estonia and Latvia, while output has started to improve in Lithuania. Only in Slovenia and Romania output levels have returned to the pre-transition levels. Table 17.2 summarises key socio-economic and agronomic data for east European agriculture.

Table 17.2 Socio-economic and agronomic indicators for agriculture in Eastern Europe

Country	GDP per cap	Share of food	Agr prod in % of GDP	Gar Emp in % of tot	Arable and Mill. ha	Arable land per capita	Grain yield Ton/ha	Milk per cow
Poland	2762	35	6.0	26.7	18.5	0.37	3.3	3.3
Hungary	3466	24	5.8	8.2	6.1	0.46	5.5	5.0
Czech rep	3980	31	2.9	4.1	4.3	0.31	4.7	4.0
Slovenia	7523	23	4.4	6.3	0.8	0.13	4.2	2.5
Estonia	2274	30	8.0	9.2	1.5	0.63	2.4	4.3
Romania	1229	58	19.0	37.2	14.8	0.41	3.2	2.0
Bulgaria	881	64	12.8	23.4	6.2	0.48	4.4	3.3
Slovakia	2759	35	4.6	6.0	2.4	0.28	5.2	3.7
Lithuania	1324	62	19.2	24.0	3.1	0.62	3.0	3.8
Latvia	1568	39	7.6	15.2	2.6	0.65	2.4	3.6
EU	18153	18	1.7	5.1	135.3	0.21	4.6	4.6

Source: COC, Agricultural Situation and perspective in the Central and Eastern European Countries, Summary report

Low productivity in agriculture, especially in Poland, Lithuania, Latvia and Slovenia is visible when comparing columns 3 and 4 in table 17.2. Lack of improvement and even declining productivity is due to agriculture absorbing excess labour from industry, as has been the case in Latvia and Lithuania, where employment in agricultural has increased, or retaining labour in the countryside for which there does not appear to be a demand in the cities, as in Poland.

A more fundamental and long term issue related to the enlargement is whether the CEECs have comparative advantages in agriculture. The CEECs are land and labour abundant and should, accordingly be expected to have a comparative advantage in labour- and land-intensive products. In Poland, however, where 31 per cent of the land resources of the CEECs are to be found, the land is of relatively low quality and divided in small plots. Tangerman (1993) and Koester (1992), as well as several other authors, have argued that the CEECs have comparative advantages in agriculture and will soon become agricultural exporters. The development so far does not lend much support to this hypothesis. Taking Poland as a case in point, Polish economy has been exhibiting an impressive growth, 5-6 per cent per annum for the last six years. At the same time, agricultural production has more or less stagnated. The same applies to several other countries among the applicants. Moreover, the net trade balance of the CEECs has deteriorated. Most of the CEECs, with the exception of Hun-

gary and Bulgaria are, or have become, net exporters. The most important trade partner for many CEECs is the EU, in particular on the import side.

Table 17.3 Development of the net trade in agrofood, million ECU

Country	1993	1994	1995	1996	1997
Poland	-481	-293	-365	-970	-418
Hungary	1004	1043	1470	1423	1553
Czech rep	23	-336	-347	-648	-577
Slovenia	-217	-230	-293	-286	-362
Estonia	49	21	-46	-132	-225
Romania	-524	-196	-253	-108	
Bulgaria	261	369	541	404	232
Slovakia		-189	-183	-337	
Lithuania			6	-18	-10
Latvia	75	-5	21	-52	-119

Source: Agricultural Situation and perspectives in the Central and Eastern European Countries, Summary Report, CEC, 1998.

17.3 Development of agricultural policies in the CEECs- a short overview

After the accession, the CEECs will have to replace their own agricultural policies by the CAP. Hence it may be of interest to compare those policies with the CAP. Development of agricultural policies can most easily be followed for those countries where PSE figures are available, see table 17.4. During the communist period agriculture was highly supported. The level of support in the Baltic countries, which were major agricultural exporters was remarkably high. The lowest level of support during this period can be found in Poland.

Looking at the development in individual countries, since the beginning of the transition period, there has been a steady and steep decline in the total and percentage PSE and the shift to direct payments in the Czech Republic. The decline of PSE can also be observed in Slovakia, but the level of support is considerably higher. Moreover, the scope of public market price support has increased in 1996 and covers now a wide range of products. There has been a reduction of transfers to Hungarian agriculture in the post-reform period. In 1995 and 1996, the percentage PSE was among the lowest in the OECD area. Poland's percentage PSE has fluctuated from low or even negative, but has increased considerably in recent years. After a period of macroeconomic crisis, with strongly

negative PSE figures, the support to agriculture increased in the Baltic countries but is still very modest, especially in Latvia and Estonia.

PSE figures are not available for all countries. Some countries, as Bulgaria and until recently Romania, still adjust policies on an ad hoc basis.

Table 17.4 Development of percentage PSE

Country	1989	1990	1991	1992	1993	1994	1995	1996	1997
Czech R.	55	54	51	30	27	21	15	14	11
Estonia	80	72	57	-91	-30	-6	3	8	9
Hungary	1	27	15	20	24	31	21	15	16
Latvia	83	77	83	-93	-38	9	8	47	8
Lithuania	78	71	-259	-113	-33	-8	6	12	18
Poland	9	-13	3	21	15	22	21	23	22
Slovenia*						39	41		
Slovakia	56	57	45	40	35	31	25	19	25

* *Estimated by Rednar et al 1997*

Source: OECD 1998

Major agricultural policy measures in use in CEECs (the first wave of applicants) in 1996-1998 are summarised in table 17.5 below. Several observations can be made in relation to table 17.5:

- CEECs are involved in extensive intervention in agricultural markets
- Estonia stands out as pursuing liberal and market-oriented policies
- It seems as if the CAP strongly have influenced the choice of policy instruments in the CEECs. With a view to future EU membership, most CEECs are seeking to adjust their policies to the present CAP, including such measures as guaranteed floor prices for the main commodities and production quotas. Preparation for the accession is also visible for some minor regulations, such as support to suckler cows.
- Preparation of the CAP also includes some shifts towards direct payments, mainly in less favoured areas. Estonia and Poland have however, recently introduced direct payments, comparable to the acreage payment in the EU. Apparently, the CEECs will demonstrate the ability to implement such a system as well as the need of such payments.
- Comparing table 17.4 and 17.5, it can be concluded that the CEECs have been copying design of regulations, not the level of support which is still considerably below the level in the EU
- Credit subsidies and tax exemptions are common measures
- Environmental concerns are, with few exceptions, a low political priority in CEECs at present and there is very little legislation incorporating specific environmental policy measures.

Measures	Estonia	Czech Republic	Hungary
Market access	Not applied		
-import tariffs			
-non-tariff			
Export measures	Not applied	Dairy products	Most commodities
-subsidies			Licensing
-impediments			
Domestic price support	Not applied	Procurement price for limited quant of bread-wheat, milk	Minimum prices for production quota: for wheat, maize, milk, live cattle, slaughter pig
Direct payments	Acreeage and headage payments introduced in 1998		
Input subsidies		Credit subsidies	Interest rate concession,
Tax exemptions	Comp for fuel tax	Several tax concessions	Reduction of fuel tax
Structural policy, Rural development	Support through Agriculture and Rural Life Credit Fund	Payments for afforestation etc	Payments for irrigation development
LFA		Direct payments for suckler cows and grassland prod	
Environmental policy		Levies on air and water pollution. Restriction on farming practices in landscape protection areas. Direct payments for conservation of natural resources	

Table 17.5 Measures in agricultural policy in CEECs, part 2

	Poland	Slovenia
Market access		
-import tariffs		
-non-tariff		
Export measures		
-subsidies	Sugar, dairy, pork	Not applied
-impediments	Licensing, quotas,	
Domestic price support	Minimum prices for rye, wheat, milk + some additional commodities	Wheat, rye, milk and sugar
Input subsidies	Subsidies to certified seeds, new animal breeds etc., credit subsidies	Interest subsidies
Structural policy, Rural development	Support to rural infrastructure and several programs	
LFA		Payments per cow and support to suckler cows
Environmental policy	Subsidies to prevent further increase in soil acidity, investment subsidy for facilities for treatment of animal waste	

Source: Built on OECD 1997, OECD 1998a

17.4 Impact of Agenda 2000 through Europe Agreements

The most important bilateral agreement for the CEECs are the Europe Agreements (EA). All CEECs, except Albania, have signed the EA. The EA are based on the principle of asymmetry. Food and agricultural products are only subject of limited liberalisation (tariff quotas). Several authors (De Frahan, 1994, Piskorz et. al. 1995) have pointed to problems with the implementation of the EA, such as favouring importers in EU over exporters in the CEECs, lack of correspondence between the quota allocation and the comparative advantages of the CEECs including even empty concessions. Moreover, agricultural policy measures that do not concern the liberalisation foreseen in the Agreement, e.g. minimum price fixing, can be taken without further notice.

It is highly probable that Agenda 2000 will be implemented before all the applicants will join the Union. Before the accession the impact of Agenda 2000 on the applicant country will be visible through the application of the EA. Because the quota quantities are relatively small and have limited impact on market prices in both the EU and the CEECs, the major effects will be on the quota rents that are generated, when products are bought at lower prices and sold at higher ones. Lowering of the prices in the EU due to the reform will lower the value of trade preferences and hence the value of quotas. This will mainly affect those who have access to the quotas.

17.5 Eastern enlargement and the unreformed CAP

Seen from the EU perspective, the major challenges of the enlargement relate to the impact on the budget and possibilities to meet the Uruguay round commitments. The major concern of the CEECs is high food prices, application of supply controls and administrative complexity of the system. The difference in price level between the EU and the applicant countries is one of the key parameters in the enlargement equation. The extent of the price gaps is given in table 17.6. The gap is narrower than was the case at the beginning of the transition, due to appreciation of real exchange rates in the CEECs.

Table 17.6 Prices in the CEECs compared with prices in the EU

Commodity	Price gap in per cent
Cereals	10-30
Milk	30-40
Beef	35-45
Sugar beet	40-50
Fruits and vegetables	50-80

Source: CEPS

It should be observed that price comparisons between the EU and the CEECs are difficult to make. Pouliquen (1998) has argued that the price gap between the EU and the CEECs is lower than indicated by official figures, especially for livestock products, due to the low quality of east European produce. If quality is properly accounted for, most of the gap disappears. In the case of Poland, high quality milk is already fetching almost 90 per cent of the EU price (Piskorz, 1998). Low quality milk was priced considerably less. At the same time, it is not the low cost/low

quality producers who are the most able to expand production. Most of those farmers, who have one to two cows, mainly produce for subsistence.

There is huge range of estimates of the impact of the enlargement on the budget, from 4 to 44 billion ECU (Buckwell, 1997). The range of more recent estimates is narrower, however. According to estimates by the Commission (Agenda 2000) in the hypothetical scenario of all ten associated countries joining in 2002 and fully applying the CAP in its current form, the budgetary impact would be an additional cost to the FEOGA Guarantee section in the order of 11 billion ECU per year by 2005. Of these, arable payments and animal premiums would be close to 7 billion ECU and accompanying measures 1.5 billion ECU. Market support measures to the CEECs would cost up to 2.5 billion, largely absorbed by the dairy sector.

Estimates by a Danish committee on enlargement indicate that the application of an unreformed CAP, to seven of the applicants, would result in a cost (net of own contributions of the CEECs) amounting to 12.3 billion ECU (Rapport om de økonomiske konsekvenser af den fremtidige fælles landbrugspolitik set i lyset af EU's udvidelse, 1997). A more recent analysis, using the same modelling approach, indicates a cost to the EU budget of 13.7 billion ECU. The enlargement will cause a considerable welfare gain to the CEECs (11.9 billion ECU) and a welfare loss to the EU-15 (12.0 billion ECU). The gain to the CEECs originates from transfers, and would be big enough to offset the efficiency losses caused by higher prices and other distortions related to the CAP. Banse et al. (1998) arrive at an assessment of the budgetary effects of the present CAP for seven CEECs that amounts to 11 billion ECU. Direct payments amount to 40 per cent of the total cost.

Consistency of the enlargement with the Uruguay Round Agreement on Agriculture is one of the most critical issues. Aggregation of the EU and the CEECs commitments adds to the domestic support limits, to export subsidy volumes and value limits and to harmonisation of tariff bindings. The enlarged EU will most certainly be unable to respect these limits. In estimates by the Commission for the main commodity markets, adoption of the *acquis* in its current form would tend to increase surpluses in most sectors, which would add to the growing market imbalances foreseen after 2000 in the existing EU. The estimates by the Danish Committee and Banse et al. (1998) also indicate considerable increases in net exports from the CEECs.

17.6 CAP and CEECs

Increases of food prices, which would follow from application of the CAP in to Eastern Europe, would be detrimental for the poor consumers. Share of food in the consumer budget amounts in those countries is 31 per cent among the first wave of applicants and 52 per cent among the remanding five, compared with 22 per cent on average in the EU. Especially negative would be the impact on the poorest consumers, who spend considerably more on food. A survey in Latvia indicated that the poorest 10 per cent of the population spend as much as 75 per cent of their budget on food.

Incomes used to be relatively evenly distributed in the CEECs.

Considerable disparities emerged, however, as a result of the transition.

Higher prices for consumers and producers would result in lower consumption and higher production. The impact on the budget and the WTO commitments, as discussed above, are based on such assumptions. It should be observed, however, that there exist considerable difficulties in assessing the impact of higher prices on production. Judging from historical experiences of low income countries joining the EU (Greece, Spain and Portugal), a large expansion of the output is not likely.

Relatively higher prices and subsidies granted under the CAP have not encouraged agricultural growth in the Iberian peninsula (Fernandez, 1988). On the contrary, the real value of agricultural output has been declining since the integration into the EU. This may also be the case in the CEECs, since agricultural output is possibly held back by non-price factors such as the adverse agrarian structure.

Use of supply controls, which are the corner stone of the CAP, would be detrimental for the CEECs. Restructuring of agricultural sectors is not finalised by far and the process would be made much more complicated in the presence of production quotas. Especially difficult would it be to apply the milk quota system in Poland, where there are more milk producers, most of them having one or two cows, than all the present milk producers in the EU. A low milk quota for Poland may limit the possibility to exploit comparative advantages in milk production (Piskorz, 1998). Moreover, low quotas for milk and sugar may force Poland, having abundant production capacities, to import those products.

A complicated system such as the CAP would be very difficult to implement in the CEECs. This applies both to market regimes and structural and accompanying measures especially preparation of projects, programming approaches and co-financing. As seen from table 17.5, rural

development and environmental policies still play a relatively minor role in the CEECs.

Direct payments would have several positive impacts on producers in the CEECs in the short run. Higher profitability and liquidity would facilitate investments, modernisation and restructuring. In the long run, however, the payments will be capitalised in higher land values, which in turn may hamper structural change in agriculture. Moreover, eligibility problems would emerge. In many countries, agriculture is dominated by new co-operatives farming the land of former land owners who have been restituted the land. Moreover, the administration of the system would be complicated.

17.7 Impact of the Agenda 2000 proposal

The Agenda 2000 proposal suggests that direct payment will not be extended to the CEECs. Instead, funds will be allocated to rural and structural developments in the CEECs.

Decline of prices, which are expected to follow from the proposal, will more or less eliminate the price gap between the EU and the CEECs for beef and grains. For some countries and commodities, most notably Slovenia where price levels are already almost at par with the EU (Bojnec and Munch 1998), and for several commodities in Poland (most notably wheat), the prices would decline after the accession. This lower level of prices would result in lower production and lower exports, with the exception of grains, where elimination of the set-aside requirements would increase the surplus (compared with the unreformed CAP), according to estimates by Banse et al. (1998). If world market prices would develop unfavourably, this may constitute a major problem. (The set aside system has, however, not been removed. The compulsory set-aside, which is proposed to be equal to zero, may well increase).

Lower prices, which would follow from implementation of the Agenda 2000 proposal, would be beneficiary for consumers. Taking Swedish figures as an indication, the order of magnitude of the decline in consumer prices would be 10-15 per cent.

Support to rural development and restructuring, as an alternative for extending direct payments to the CEECs and boosting agricultural production, which has been proposed in the Agenda 2000 proposal, constitutes a more efficient long-term solution for agriculture in the CEECs. The same argument applies, however, to a large extent even to the incumbent members of the EU. In the meantime, if farmers in the CEECs would be excluded from direct payments, they would have to compete with farmers in the present members countries on equal terms. As long as the

payments are not decoupled, they create unequal competition between the receivers and non-receivers. In general, the result of application of the post Agenda 2000 CAP to the CEECs would be an extremely unbalanced structure of support, ranging from zero for oil seeds as mentioned above, to a very high level for sugar. The PSE figures for sugar have ranged between 60-70 per cent during the 1990s. Such an unbalanced level of protection causes both allocative inefficiency as well as social tensions between farmers. Since support to oilseed production is almost zero, if direct payments are excluded, while there is a positive protection for this commodity in the applicant countries, production is likely to decrease.

One of the major disadvantages of extending the present version of the CAP relates to the application of supply management policies, especially milk quotas. Removal of the compulsory set-aside constitutes a desirable simplification. Production quotas for milk and sugar are, however, retained. The proposal to cut the milk prices and increase quotas by 2 per cent may be seen as a first step in the direction of removal of quotas, but there is no firm commitment. At worst the new members may find themselves in a situation of being forced to introduce quotas only to remove them a few years later.

One of the stated objectives of the Agenda 2000 proposal was the simplification of the CAP. Weak administrative capacity to implement CAP regulations is, as stated above, a major challenge of the enlargement. If the direct payments, and consequently national envelopes, were not applied to CEECs, the increased complexity would not affect them.

If direct payments are not applied to the CEECs, the impact on the budget improves. According to Banse (1998), payments to the five applicants who are first in line would decline by 3 billion ECU. Extending the payments to the new applicants would result, however, in raising the burden on the budget, according to estimates by Danish researchers (compare previous section) from 13.7 to 14.4 billion ECU. According to the same study, implementing Agenda 2000 would result in approximately the same impact on welfare of the incumbent and the applicants as if the CAP would not be reformed.

17.8 Problems with the Agenda 2000 proposal

The Agenda 2000 proposal, if applied as proposed, would facilitate the eastern enlargement. This positive effect is, however, achieved at the expense of postponing some problems and creating new ones. Exclusion of the CEECs from direct payments is not a long-term solution. For those countries where the prices after the accession may fall, such as wheat in Poland, problems will emerge already in the short run. By increasing the

relative importance of direct payments the issue will become more contentious in the unfolding negotiations.

Can the issues of direct payments be resolved by a long transition period? Transition periods were, albeit to a different degree, always relied on to cope with past enlargements. Those were mainly used as a device for mitigating adjustment problems. However, transition periods were also used as a way of postponing certain conflicts, possibly in expectation of re-negotiating the issue at some later stage. It is not likely, however, that decisions on crucial issues, such as direct payments, can be postponed. In particular, farmers in the CEECs will demand, before voting in the referendum on the accession, to know what kind of CAP will apply to them in the long run. Moreover, it would be impossible to effectively organise transition measures not knowing what will apply at the end of the process.

Different arguments are invoked against the payment of compensations in the CEECs. Two types of arguments are most commonly used, claiming: 1) that farmers in the CEECs have not experienced high prices and there is, hence, no need to for compensation, 2) that farm incomes would become excessively high as compared with other income groups, therefore the policy would be socially disruptive.

The closing price gap, between the EU and the first wave of applicant countries, weakens the already weak arguments for excluding those countries from direct payments. Moreover, the regulations permit successors to present generation of farmers to obtain the payments. It is difficult to invoke the compensation argument in relation to farmers who have entered farming after the 1992 reform. The task will not become simpler at the time of a possible accession of the CEECs, perhaps a decade after the 1992 CAP reform. It could also be argued that the fact that even farmers in the new Member States (Sweden, Finland and Austria) have been offered compensatory payments, has definitely transformed those payments from an adjustment measure to a part of the *acquis*. Furthermore, as long as payments are not fully decoupled, the competition between receivers and non-receivers is disturbed.

The argument for excluding farmers in the CEECs on the grounds that their incomes would be too high as compared with other income groups in their societies is based on a relative income concept. The relative income interpretation is, however, not applied in relation to farmers in the present member countries. As discussed in chapter 12, payments to large producers are high in relation to incomes of other income groups. Taking Sweden as a case in point, the 50 largest beneficiaries, almost all of them organised as limited liability companies, received about 234 000 ECU on average. Such payments are also excessively high in relation to GDP and to incomes of the average Swedish citizen. The legitimacy of CAP's

income objective would be seriously threatened if the poorest farmers were be excluded.

17.9 Long-term options

Possible long-term options for direct payments include two alternatives:

- the payments are extended to the CEECs
- payments are removed as a part of a common policy i.e. re-nationalised or abolished all together

Full application of direct payments to all countries and the resulting demand on budget funds will have to be justified against other requirements on the budget. Taking into account increasing scarcity of funds at present and in the future due to the evolving age structure of the European population, it is very unlikely that such a solution will be acceptable to major net contributors to the budget. The amount required to extend the present CAP to the CEECs is not excessive in relation to budget availability, though. The budget proposal included in Agenda 2000 contains a margin for EU 21 of 6 570 million ECU. This would almost cover the costs of direct payments in the CEECs. That the money seems to be (almost) available does not mean, however, that it will be paid. Firstly, the process of reaching a compromise around Agenda 2000 will most certainly absorb additional resources. Moreover, a possible budget reserve will not wait for the CEECs but will most likely be absorbed or repaid to the member states.

Past enlargements have resulted in amendments for the newcomers and a novel use of existing instruments. The CAP for the incumbents has hardly changed. It is questionable whether the same approach can be followed in the next enlargement. As argued below, efficient response to the challenge of the enlargement will be partial re-nationalisation of the CAP. The CAP has already been evolving in the direction of re-nationalisation. Especially, the EFTA-enlargement constitutes a big leap towards a re-nationalisation of the CAP (Rabinowicz and Bolin, 1998). The Union now contains countries with (in reality) permanently and considerably higher level of support to agriculture than the previous members. This higher level of support is to a substantial degree paid by the new members themselves and involves instruments that are not used elsewhere in the Union. Moreover, a strong tendency towards re-nationalisation was already visible in the 1992 CAP reform. Due to the use of *national* reference values for yields, base acreages, etc., payments to Member States from FEOGA have been transformed to national envelopes with an almost fixed content. Likewise, de facto re-nationalisation has also

taken place with respect to the application of regulation 2078/92. (This environmental regulation is arranged as a menu allowing a freedom of choice. There is a substantial variability in the application of 2078/92 among the member countries.) A partial re-nationalisation occurred, moreover, in relation to the EFTA accession. Agenda 2000 establishes a further step in the direction of re-nationalisation of the CAP by creating national envelopes.

17.10 Is re-nationalisation an efficient long term solution?

The development towards re-nationalisation is intriguing as it occurs at a time when all policy areas point in the direction of more integration in the European Union. It could be argued that re-nationalisation is a rational response to the changing nature of the objectives and to changing economic constraints. Starting with the latter, tighter budget constraints make it impossible to solve the problems brought about by increased diversity by adding up national demands. Instead, consensus has to be achieved by increasing the room for national discretion.

Looking at what agricultural policy aims to achieve, it can be decomposed into four main areas: management of markets, support of incomes, protection of environment and development of rural areas. The question emerges as to whether, or rather which, of those four areas, are suitable subjects for a common policy. According to the principle of subsidiarity, the EU shall act only "if ... the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore by reason of the scale of effects of the proposed action, be better achieved by the Community". Following CEPR (1993), subsidiarity can be interpreted as a presumption to decentralise, unless a clear case can be made for centralisation. Suitable criteria for analysing if such a case can be made are: *efficiency*, *equity* and *accountability*.

Market regulations must obviously be a common responsibility. Otherwise, when applying the above criteria to the remaining three policy areas, several arguments in favour of a decentralised approach can be found, in particular in relation to income support as soon as it has been separated from price support. A case for a common social policy is weak (CEPR 1993). Even weaker is the case for a common social policy in one sector. Diversity of economic, social and environmental problems and preferences tends to make it difficult to achieve efficiency gains by having common regional or environmental policies as well (for a detailed discussion, see SOU 1997:74). There is, however, an obvious need to co-

ordinate national measures to avoid distortions in competition and to respond to global and international issues, particularly in trade negotiations, where issues of environmental support are likely to be highly controversial. Hence, application of the subsidiarity principle would point to a partial transfer of sovereignty from the EU to the member states and not for a complete re-nationalisation.

The partial re-nationalisation would certainly be efficiency-improving. By vastly increasing the diversity of the conditions in the member countries, the enlargement will reinforce arguments in favour of moving policy discretion in agriculture towards national governments. Such an option would also be a stable solution, in contrast to the exclusion from direct payments. Baldwin et al (1997) claim that in a democratic body such as the EU, new entrants will use their newly granted political power to undo any accession terms they feel are unjust. Accordingly, terms of entry would be re-negotiated. The amount spent on new members, including pre-accession aid would, according to estimates by the Commission, amount to 4.5 billion ECU as compared with 48.6 billion ECU spent on the incumbents.

A possible solution, cf. European Economy (1998), could include distinguishing between pure income support payments and payments for preservation of nature and cultural landscape, which could be relatively generously applied at the expense of direct income support. To be viable, this option presupposes that a shift from price support to direct payments is applied to all commodities. A compromise could include movement of income support payments to the national level, making such payments fully decoupled (and possibly transitory) and extension of the other policy components (i.e. of environmental and rural support), which would be expected to expand to the CEECs. Decoupling of payments would ensure that the internal market is not disturbed. Tailoring environmental (and rural) support to local and national conditions, i.e. paying strictly what is needed to get the job done, could allow for differentiation of payments without creating explicit discrimination. In short, this option would avoid discrimination by reducing the scope of a common redistributive policy or, in other words, by re-nationalisation.

The term re-nationalisation is itself a contentious one since the CAP has been seen as a cornerstone of the integration process. But the CAP is no longer as central to the EU as it once was and its importance will continue to diminish. A sector that accounts for less than 3 per cent of the GDP and falling, can hardly remain a central piece of the integration. Moreover, the issue is not full re-nationalisation but re-balancing of national and supra-national responsibilities.

The option could be accepted in the WTO context if the total support was reduced, the income support component decoupled and environmental

support organised in such a way as to provide the delivery of public goods where markets have failed.

17.11 Summary and conclusions

Implementation of the Agenda 2000 proposal contains some "good news" from the point of view of easing the eastern enlargement. Prices for consumers would be lower, some simplifications of the CAP have been proposed, funds for rural development and restructuring that the CEECs have been promised, are in the long-run, more efficient than boosting agricultural production in response to higher prices. Meeting WTO commitments will also be facilitated, since expansion of production at lower prices and without direct payments will be lower. The long-term problems, however, have not been solved. Milk and sugar quotas are retained. These are detrimental for the CEECs, which may end absorbing structural surpluses from the incumbent members of the EU. The CAP is still very complicated and the resulting structure of support to agriculture would be extremely unbalanced. Farmers in the CEECs would be forced to compete on very uneven terms.

The price gap between the CEECs and the EU will be narrowed considerably for several commodities if the Agenda 2000 reform is implemented. This weakens the argument for excluding the CEECs from direct payments. Moreover, the decision on direct payments will be difficult to postpone due to the importance of the issue. Two long-term solutions are possible: either to extend direct payments to all countries or to re-nationalise or remove direct payments from the budget (i.e. make the present payments only transitory). If payments are transitory and decoupled, there is no need to extend them to the new members as long as there is a credible commitment that the payments will be removed. Growing scarcity of budgetary funds at the national levels makes the re-nationalisation (or removal) option more attractive.

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